SCITECH FORUM

8–12 JANUARY 2018

KISSIMMEE, FL

SEIZING THE NEXT DIGITAL TRANSFORMATION

See what's in the HUB

Check pages 169-172 for details.

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Contents

Please be advised that AIAA's partner for our forums is no longer supporting the conference app. The full program can be found online here: **http://aiaa-mst18.abstractcentral.com/itin.jsp** or by scanning the QR code. AIAA is currently investigating a new conference app for future forums and would like your feedback regarding tools you would like to see included in the app.

AIAA staff will be in the HUB on Wednesday, 0930–1130 hrs, to gather feedback from attendees. Please join us.

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AIAA
Shaping the Future of Aerospace

The American Institute of Aeronautics and Astronautics (AIAA) is the world's largest aerospace technical society. With nearly 30,000 individual members from 88 countries, and 95 corporate members, AIAA brings together industry, academia, and government to advance engineering and science in aviation, space, and defense. For more information, visit aiaa.org, or follow us on Twitter @AIAA.

Organizing Committee

EXECUTIVE STEERING COMMITTEE

Pamela Melroy, Forum General Chair, Former NASA Astronaut

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Chuck Gustafson, The Aerospace Corporation

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Darryll Pines, University of Maryland

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Derek Doyle, Air Force Research Laboratory - Space Vehicles Directorate

AEROACOUSTICS
Cliff Brown, NASA Glenn Research Center

AERODYNAMIC MEASUREMENT TECHNOLOGY
Daniel Richardson, Spectral Energies, LLC

AEROSPACE EDUCATION
K. Ravindra, Saint Louis University

AIRCRAFT DESIGN
Cees Bil, RMIT University

APPLIED AERODYNAMICS
Khaled Abdol-Hamid, NASA Langley Research Center

ATMOSPHERIC FLIGHT MECHANICS
Mudassir Lone, Cranfield University

COMMUNICATIONS SYSTEMS
James Stegeman, NASA Glenn Research Center

COMPUTER SYSTEMS
Rick Tuggle, PeopleTec, Inc.

DESIGN ENGINEERING
Nathan Hines, The Boeing Company

DIGITAL AVIONICS
Douglas Abernathy, Lockheed Martin Corporation

FLUID DYNAMICS
Matthew Munson, U.S. Army Research Office

GAS TURBINE ENGINES
Steve Gorrell, Brigham Young University

GREEN ENGINEERING
Tarek Abdel-Salam, East Carolina University

GROUND TEST
Chris Jorgens, The Boeing Company

GUIDANCE, NAVIGATION, AND CONTROL
Yang Cheng, Mississippi State University

HIGH-SPEED AIR-BREATHING PROPULSION
Dan Paxson, NASA Glenn Research Center

HISTORY
Richard Hallion, Florida Polytechnic University

INFORMATION AND COMMAND & CONTROL SYSTEMS
Mike Sotak, Kratos Defense

INLETS, NOZZLES, AND PROPULSION SYSTEMS INTEGRATION
Chen Chuck, The Boeing Company

INTELLIGENT SYSTEMS
Amanda Lampton, Systems Technology, Inc.

MATERIALS
Ray Fertig, University of Wyoming

MESHING VISUALIZATION AND COMPUTATIONAL ENVIRONMENTS
Hugh Thornburg, Engility Corporation

MODELING AND SIMULATION TECHNOLOGIES
Umut Durak, German Aerospace Center (DLR)

MULTIDISCIPLINARY DESIGN OPTIMIZATION
Ali Najafi, ANSYS, Inc.

NON-DETERMINISTIC APPROACHES
Yongming Liu, Arizona State University

PLASMADYNAMICS AND LASERS
Andrey Starikovskiy, Princeton University

PROPELLANTS AND COMBUSTION
Joanna Austin, California Institute of Technology

SENSOR SYSTEMS AND INFORMATION FUSION
Tom Frey, Lockheed Martin Aeronautics Company

SMALL SATELLITES
Jeremy Straub, University of North Dakota

SOCIETY AND AEROSPACE TECHNOLOGY
Matthew Kuester, Virginia Polytechnic Institute and State University

SOFTWARE
Christoph Torens, German Aerospace Center (DLR)

SPACE EXPLORATION
Surendra Sharma, NASA Ames Research Center

SPACE FLIGHT MECHANICS
Kyle DeMars, Missouri University of Science and Technology

SPACE OPERATIONS AND SUPPORT
Scott Burleigh, NASA Jet Propulsion Laboratory

SPACECRAFT STRUCTURES
Mark Silver, MIT Lincoln Laboratory

STUDENT PAPER COMPETITION – AD&S
Evan Pineda, NASA Glenn Research Center

STRUCTURAL DYNAMICS
Mayuresh Patil, Virginia Polytechnic Institute and State University

STRUCTURES
Scott Norwood, Lockheed Martin Aeronautics Company

SURVIVABILITY
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SCITECH FORUM

EXECUTIVE STEERING COMMITTEE
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Darryll Pines
University of Maryland

Martiqua Post
U.S. Air Force Academy

Douglas Stanley
National Institute of Aerospace

Welcome

Welcome to the 2018 AIAA Science and Technology Forum and Exposition (AIAA SciTech Forum), the world's largest event for aerospace research, development, and technology. This forum will give you unparalleled access to a diverse range of thought leaders, not only in their own areas of expertise, but across technological boundaries, sparking the collaboration necessary for innovation in our community. Our theme—**seizing the next digital transformation**—focuses on how disruptions in business markets, the dawn of digital engineering, a profusion of data, human machine teaming, and the latest innovative technology are all shaking up the status quo and driving the evolution of aerospace. Through discussions and collaboration, we will consider how our community can best respond and adapt to this changing landscape.

The Technical Program Committee worked hard since last year's forum, putting together the high-quality technical programming our participants have come to expect. There are over 2,700 presentations scheduled across more than 450 technical sessions! In addition, the Executive Steering Committee has planned a plenary and Forum 360 program that will engage and challenge attendees to think outside of their technical specialty areas while considering how disruptors—be they people, events, or technologies—are impacting the aerospace industry. We have lined up diverse, thought-provoking and compelling speakers who will discuss the digital transformation occurring in aerospace along with many other topics—and they will do so in ways that will challenge you to learn, to think anew, and to engage with your fellow attendees.

Another exciting development at this forum is the debut of the HUB in the Exposition Hall—"Where great minds gather." The HUB, as its name implies, will become a center of activity and will include many attendee favorites, informal presentations, and even surprises. Make sure to check it out!

There are few places more fitting to host the AIAA SciTech Forum than Kissimmee. Central Florida is home to a wealth of aerospace history and innovation, including the nation's busiest gateway to space and one of its busiest airports. The companies, government facilities, and academic institutions that call this region home represent the cutting-edge organizations shaping the future of aerospace. We're excited to be here and hope you are too!

The 2019 AIAA SciTech Forum will be held 7–11 January 2019, in San Diego, CA.

Sponsors and Supporters

AIAA would like to thank the following organizations for their support of the 2018 AIAA SciTech Forum

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Pre-Forum Activities

CONTINUING EDUCATION OFFERINGS

Stay at the top of your game with AIAA's continuing education offerings. You will leave with invaluable knowledge and solutions that you can put to immediate use.

SAT. 6 - SUN. 7 JANUARY

0800–1700 HRS MIAMI 3

COURSE

Aircraft and Rotorcraft System Identification Engineering Methods for Manned and UAV Applications with Hands-on Training using CIFER®

This course will review the fundamental methods of manned and UAV aircraft and rotorcraft system identification methods, illustrate the benefits of their broad application throughout the flight vehicle development process, and provide the attendees with an intensive hands-on training of the CIFER® system identification using flight test data and extensive lab exercises.

SAT. 6 - SUN. 7 JANUARY

0800–1700 HRS MIAMI 1

COURSE

Large Eddy Simulation of Turbulent Combustion: Theory, Modeling and Practice

The purpose of the course is to introduce the large eddy simulation (LES) approach to modeling complex reacting flows through three different elements: 1) theory, 2) modeling, and 3) practical implementation or practice.

SAT. 6 - SUN. 7 JANUARY

0800–1700 HRS DAYTONA 1

COURSE

Introduction to Software Engineering

This course is an introduction to software engineering. Software engineering includes all aspects of professional software production, and is especially important for safety-critical and mission-critical software. Software is a major cost of all aerospace systems.

SAT. 6 - SUN. 7 JANUARY

0800–1700 HRS DAYTONA 2

COURSE

Stochastic Mechanics of Materials and Structures

This course presents an array of methods to study mechanics of spatially random material microstructures involving several scales.

SAT. 6 - SUN. 7 JANUARY

0800–1700 HRS MIAMI 2

COURSE

Missile Guidance

A system-level, integrated method is provided on missile guidance design, development, and system engineering activities in addressing requirements such as performance, cost, risk, and launch platform integration.

SUNDAY, 7 JANUARY

0800–1700 HRS CAPTIVA 1

COURSE

Aeroelastic Wind Tunnel Testing and Aeroelasticity Considerations for Non-Aeroelastic Tests

This course is specific to aeroelasticity concerns and wind tunnel testing. The greater emphasis will be on the testing of aeroelastic models; however, some attention will be given to aeroelasticity considerations for non-aeroelastic tests.

SAT. 6 - SUN. 7 JANUARY

0800–1700 HRS SUN B

WORKSHOP

Future CFD Technologies Workshop

Sponsored by the AIAA CFD2030 Integration Committee and NASA's Transformative Tools and Technologies Project (T3).

The focus of this workshop will be to explore past, present, and future contributions of applied mathematics and computer science for simulation-based aerospace applications, and to motivate the case for increased interdisciplinary contributions between these fields. For these purposes, workshop presentations will include a combination of fundamental research and applied aerospace CFD work.

SAT. 6 - SUN. 7 JANUARY

0800–1700 HRS SUN A

WORKSHOP

5th International Workshop on High-Order CFD Methods

The workshop provides an open and impartial forum for evaluating the status of high-order methods (order of accuracy > 2) in solving a wide range of flow problems.


TO NEW
WORLDS.
Our planet is just one among billions. Just like every great idea, it's our starting place to find the next one. Boeing is proud to support those who are dedicated to finding new horizons.
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Pre-Forum Activities

SUNDAY, 7 JANUARY

0800–1700 HRS SANIBEL 1

WORKSHOP

Space Standards and Architecture Workshop

This workshop is intended for individuals and organizations that desire to increase their teams' understanding of the benefits of and the usability of 1) space standards and 2) architecture framework.

SUNDAY, 7 JANUARY

1530–1730 HRS SUN D

TUTORIAL

A Tutorial on a Unified Approach for Computational Aeroelasticity

Aeroelasticity consists of the modeling and understanding of the interactions between the structural dynamics and unsteady aerodynamics of a configuration such as an airplane, a launch vehicle, or a bridge. By its very nature, aeroelasticity is a multidisciplinary field and can, therefore, include other disciplines such as controls (aeroservoelasticity) and thermal effects (aerothermoelasticity). Over the last few years, the field of aeroelasticity has been transitioning from its classical origins involving linear, frequency-domain methods to more modern, nonlinear, computational-based methods.

SUNDAY, 7 JANUARY

1600–1800 HRS OSCEOLA B

Meet the Employers Recruiting Event

AIAA's recruiting event brings together corporate members and students/young professional attendees. This fun and dynamic environment allows students and professionals to interact with organizations regarding employment opportunities. Participating companies/organizations will present an organizational overview and opportunities available, then have follow-on discussions with the attendees. All attendees are welcome; no registration required.

SUNDAY, 7 JANUARY

1800–1930 HRS OSCEOLA 1-3

Student Welcome Reception

AIAA SciTech has one of the largest gatherings of students of any of the AIAA forums. Come meet fellow students who you are sure to see again throughout the week. Many student award winners and presenters will be in attendance. AIAA Executive Director Dan Dumbacher will address the attendees, as will a representative from the corporate sponsors.

Members of the AIAA Board of Trustees and the Technical Activities Division will also be in attendance. Take advantage of this chance to meet key members of AIAA and learn about opportunities that are available.

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Forum Overview

	SATURDAY/SUNDAY 6-7	MONDAY 8	TUESDAY 9
0730 hrs		Speakers' Briefing	Speakers' Briefing
0800 hrs	Continuing Education Courses and Workshops *0815–1700 hrs Saturday and Sunday*	Plenary	Plenary
0830 hrs			
0900 hrs		Networking Break	Networking Break
0930 hrs		Technical Sessions; Forum 360	Technical Sessions; Forum 360
1000 hrs			
1030 hrs			
1100 hrs			
1130 hrs			
1200 hrs			
1230 hrs		Networking Lunch on Own; Durand Lecture for Public Service and Luncheon	Recognition Luncheon; Rising Leaders Lunch Panel
1300 hrs			Exposition Hall Open *Networking Break at 1530 hrs*
1330 hrs			
1400 hrs		Technical Sessions; Forum 360	Dedicated Time for HUB Activities!
1430 hrs			Technical Sessions; Forum 360
1500 hrs			
1530 hrs		Networking Break	
1600 hrs	Meet the Employers Recruiting Event *1600–1800 hrs Sunday*	Technical Sessions; Rising Leaders Speed Mentoring	Tweet Up
1630 hrs			
1700 hrs			
1730 hrs		von Kármán in Astronautics Lecture	Dryden Lecture in Research
1800 hrs	Student Welcome Reception 1800–1930 hrs Sunday *(all students welcome)*	Technical Sessions; Rising Leaders Networking Reception	
1830 hrs		Associate Fellows Reception	Opening Reception in the Exposition Hall *Hall opens at 1815 hrs*
1900 hrs			
1930 hrs		AIAA Associate Fellows Dinner *(Tickets Required)*	
2000 hrs			
2030 hrs			
2100 hrs			
2130 hrs			
2200 hrs			
2230 hrs			

GROW Technical Career Development

CONNECT Networking

EXPLORE The HUB & Exposition

DISCOVER High Level

DEVELOPMENT Student & Young Professionals

Forum Overview

	WEDNESDAY 10	THURSDAY 11	FRIDAY 12
0730 hrs	Speakers' Briefing	Speakers' Briefing	Speakers' Briefing
0800 hrs	Plenary	Plenary	Plenary
0830 hrs			
0900 hrs	Networking Break in Exposition Hall	Networking Break in Exposition Hall	Networking Break
0930 hrs	Technical Sessions; Forum 360; Exposition Hall Open 0845–1600 hrs	Technical Sessions; Forum 360; Exposition Hall Open 0845–1600 hrs	Technical Sessions
1000 hrs			
1030 hrs			
1100 hrs			
1130 hrs			
1200 hrs		Recognition Luncheon; Networking Lunch on Own; Rising Leaders	
1230 hrs	Luncheon in Exposition Hall		
1300 hrs			Networking break in Exposition Hall 1530-1600 hrs
1330 hrs			
1400 hrs	Dedicated Time for HUB Activities!	Technical Sessions; Forum 360	
1430 hrs	Technical Sessions; Forum 360		
1500 hrs	Rising Leaders		
1530 hrs			
1600 hrs			
1630 hrs		Enhancing the Musical Brain	
1700 hrs			
1730 hrs	Celebrating 80 Years of Liebeck	Women at SciTech Social Hour and Keynote (open to all attendees)	
1800 hrs	Technical Sessions; SDM Lecture	Technical Sessions	
1830 hrs			
1900 hrs			
1930 hrs			
2000 hrs			
2030 hrs			
2100 hrs			
2130 hrs			
2200 hrs			
2230 hrs			

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Plenary Sessions

MONDAY, 8 JANUARY

0800–0900 HRS OSCEOLA CD

Digital Enterprise Business Models and Their Impact on the Aerospace Industry

KEYNOTE: Naguib Attia, Vice President, Global University Programs, IBM

TUESDAY, 9 JANUARY

0800–0900 HRS OSCEOLA CD

Data, Data Everywhere… the Power & Potential

MODERATOR: Joseph Morrison, Associate Project Manager, Transformational Tools and Technologies, NASA Langley Research Center / Aeronautics Research Directorate

SPEAKERS:

David Keyes, Director, Extreme Computing Research Center, King Abdullah University of Science & Technology

Pamela Kobryn, Principal Aerospace Engineer, Aerospace Vehicles Division, Air Force Research Laboratory

Dimitri Mavris, Director, Aerospace Systems Design Laboratory, Georgia Institute of Technology

Mark Valentine, DOD Strategic Initiatives Group, Microsoft

WEDNESDAY, 10 JANUARY

0800–0900 HRS OSCEOLA CD

Dude, Where's My Flying Car?

MODERATOR: Bruce J. Holmes, Vice President, Digital Aviation, SmartSky Networks, LLC

PANELISTS:

Mark Cousin, Senior Vice President, Flight Demonstrators, Airbus

Carl Dietrich, CTO/Co-Founder, Terrafugia

Mark Moore, Director of Engineering, Uber Elevate

Diana Siegel, Program Manager, eVTOL Aircraft, Aurora Flight Sciences

THURSDAY, 11 JANUARY

0800–0900 HRS OSCEOLA CD

Welcome to the Holodeck

KEYNOTE: Elizabeth Baron, Virtual Reality & Advanced Visualization Technology Specialist, Ford Motor Company

FRIDAY, 12 JANUARY

0800–0900 HRS OSCEOLA CD

Serving our Robot Overlords

MODERATOR: Scott Fouse, Vice President, Advanced Technology Center, Lockheed Martin Corporation

PANELISTS:

Gerhard Grunwald, Head of Orbital Robotics, Institute of Robotics and Mechatronics

Kristen Kearns, Senior Advisor, Autonomy Research, Air Force Research Laboratory

Stefanie Tellex, Assistant Professor of Computer Science and Assistant Professor of Engineering, Brown University

Forum 360

FORUM 360°

MONDAY, 8 JANUARY

0930–1130 HRS OSCEOLA A

The Dawn of Digital Engineering

MODERATOR: Philomena Zimmerman, Deputy Director, Engineering Tools and Environments, Office of the Deputy Assistant Secretary of Defense for Systems Engineering

PANELISTS:

Brenchley (Brench) Boden, Chief Technology Officer, Digital Manufacturing and Design Innovation Institute and Senior Industrial Engineer, Air Force Research Laboratory

Caroline Gorski, Global Partnership Director - Digital, Rolls-Royce

Michael W. Grieves, Executive Director, Center for Advanced Manufacturing and Innovative Design, Florida Institute of Technology

Brunon (Dave) Kepczynski, Chief Information Officer, GE Global Research & Engineering Product Leader, GE Digital Technologies

John H. Vickers, Principal Technologist, Space Technology Mission Directorate, NASA

Charles (Chuck) Ward, Chief, Manufacturing and Industrial Technologies, Materials & Manufacturing Directorate, Air Force Research Laboratory

1400–1600 HRS OSCEOLA A

Digital Transformations Disrupting Aerospace Business Models

MODERATOR: Darryll J. Pines, Nariman Farvardin Professor of Aerospace Engineering and Dean of the A. James Clark School of Engineering, University of Maryland

PANELISTS:

Andreas Bernhard, Chief Engineer, CH-53K, Sikorsky Aircraft Corporation (a Lockheed Martin Company)

James Dorrell, Vice President, Tactical Systems, Advanced Development Programs, Lockheed Martin Aeronautics Company

Brendan Iribe, Co-Founder and Vice President of PC VR, Oculus

LaNetra Tate, Program Executive, Game Changing Development Program, Space Technology Mission Directorate, NASA

TUESDAY, 9 JANUARY

0930–1130 HRS OSCEOLA A

Data, Data Everywhere… the Devil in the Details

MODERATOR: Joseph Morrison, Associate Project Manager, Transformational Tools and Technologies, NASA Langley Research Center / Aeronautics Research Directorate

PANELISTS:

David Keyes, Director, Extreme Computing Research Center, King Abdullah University of Science & Technology

Pamela Kobryn, Principal Aerospace Engineer, Aerospace Vehicles Division, Air Force Research Laboratory

Dimitri Mavris, Director, Aerospace Systems Design Laboratory, Georgia Institute of Technology

Mark Valentine, DOD Strategic Initiatives Group, Microsoft

1430–1630 HRS OSCEOLA A

Prizes & Challenges: How Crowdsourcing Can Help Solve Technology Gaps

MODERATOR: Jenn Gustetic, Program Executive, Small Business Innovation Research, NASA

PANELISTS:

Jason Crusan, Director, Advanced Exploration Systems Division, Human Exploration and Operations Mission Directorate, NASA

Chris Frangione, Open Innovation Advisor

Dustin Fraze, Program Manager, Information Innovation Office, DARPA

Monsi Roman, Program Manager, Centennial Challenges, NASA

Zoe Szajnfarber, Associate Professor, Engineering Management & Systems Engineering and Space Policy, George Washington University

Forum 360

WEDNESDAY, 10 JANUARY

0930–1130 HRS OSCEOLA A

On-Demand Mobility – Enabling Technologies and Capabilities

MODERATOR: Michael Patterson, Aerospace Technologist, NASA Langley Research Center

PANELISTS:

Danette Allen, Senior Technologist, Intelligent Flight Systems, NASA Langley Research Center

Brian J. German, Langley Associate Professor, School of Aerospace Engineering, Georgia Institute of Technology

Andrew Gibson, President, Empirical Systems Aerospace

Ken Goodrich, Senior Research Engineer, NASA Langley Research Center

Stephen A. Rizzi, Senior Researcher, Aeroacoustics, NASA Langley Research Center

1430–1630 HRS OSCEOLA A

On-Demand Mobility – Regulatory and Operational Challenges

MODERATOR: Tom Gunnarson, Regulatory Affairs Lead, Zee Aero

PANELISTS:

Gregory J. Bowles, Vice President, Global Innovation & Policy, General Aviation Manufacturers Association

Carl Dietrich, CTO/Co-Founder, Terrafugia

Eric Mueller, Aerospace Engineer, NASA Ames Research Center

Sasha G. Rao, Chair, Intellectual Property Practice, Maynard Cooper & Gale

Wes Ryan, Unmanned Systems Certification Lead, FAA

THURSDAY, 11 JANUARY

0930–1130 HRS OSCEOLA A

Digital Natives Leading the Digital Transformation in Design and Knowledge Environments

MODERATOR: David E. Bowles, Director, NASA Langley Research Center

PANELISTS:

Michael Bergin, Principal Research Scientist, Autodesk

Adam Clark, Aerodynamics Engineer, Enabling Technology & Research, Boeing Commercial Aircraft

Thomas Convard, Technical Product Manager, Unreal Engine Enterprise, Epic Games

Rachel Narciso, Immersive Technology Specialist, Ball Aerospace

Rodney Martin, Deputy Data Sciences Group Lead, NASA Ames Research Center

1400–1600 HRS OSCEOLA A

Human-Machine Teaming

MODERATOR: Bill Casebeer, Senior Research Area Manager, Human Systems and Autonomy, Lockheed Martin Advanced Technology Laboratories

PANELISTS:

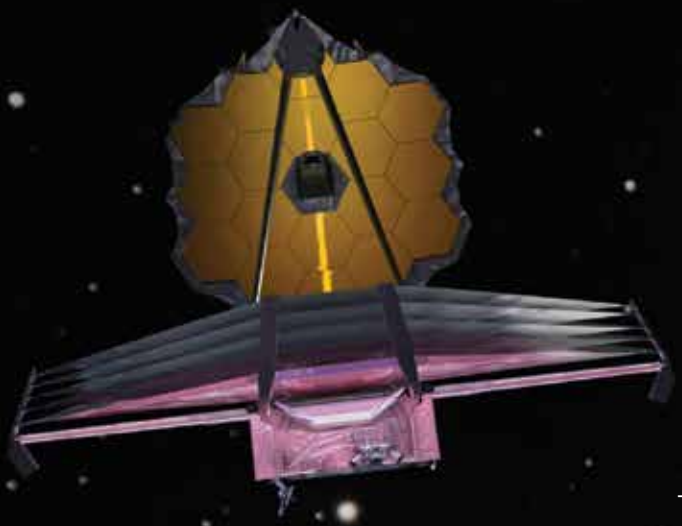
Julia Badger, Robonaut Project Manager, Autonomous Spacecraft Management Projects, NASA Johnson Space Center

Michael Casale, Chief Science Officer, STRIVR

Victoria Coleman, Chief Technology Officer, Wikimedia Foundation

Eileen Liu, Research Scientist, Human Systems and Autonomy, Lockheed Martin Advanced Technology Laboratories

Matthias Scheutz, Director, Human-Robot Interaction Lab, Tufts University



UP HERE WE DON'T HEAR "NO." WE DON'T UNDERSTAND "CAN'T," AND "IMPOSSIBLE" ISN'T IN OUR VOCABULARY. UP HERE IT'S ABOUT POSSIBILITIES. IT'S ABOUT A WORKING LABORATORY SET TO TEMPERATURES OF 380 DEGREES BELOW ZERO. IT'S ABOUT A FRONT-ROW SEAT TO THE BIRTH OF OUR UNIVERSE AND EVERY LIFE-SUSTAINING EXOPLANET THEREAFTER. IT'S ABOUT LOOKING UP AND KNOWING THERE IS NO LIMIT BECAUSE IF THERE'S ONE THING WE'VE LEARNED FROM THE PAST, IT'S THAT WE AS HUMANS HAVE ALWAYS UNDERESTIMATED THE POSSIBILITIES OF THE FUTURE. IT'S ABOUT PINPOINT PRECISION AND THE CONFIDENCE IN KNOWING WE'RE READY FOR THE SURPRISES THE UNIVERSE ALWAYS PROVIDES IN SUCH AN AMBITIOUS UNDERTAKING. UP HERE IT'S ABOUT PERFORMANCE.

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Sessions at a Glance

ABBREVIATION	TITLE	DATE	START TIME	END TIME	LOCATION
Aeroacoustics					
7-AA-1	**Airframe/Propulsion Integration**	8-Jan	0930 hrs	1230 hrs	Tampa 2
63-AA-2	**Jet Noise I**	8-Jan	1400 hrs	1730 hrs	Tampa 1
64-AA-3	**Community and UAV Noise**	8-Jan	1400 hrs	1730 hrs	Tampa 2
128-AA-4	**CAA**	9-Jan	0930 hrs	1230 hrs	Tampa 2
182-AA-5	**Airframe Noise**	9-Jan	1430 hrs	1730 hrs	Tampa 2
239-AA-6	**Propeller, Fan and Duct Acoustics**	10-Jan	0930 hrs	1230 hrs	Tampa 2
292-AA-7	**Jet Noise II**	10-Jan	1430 hrs	1730 hrs	Tampa 2
411-AA-8	**Jet Noise III**	11-Jan	1400 hrs	1730 hrs	Tampa 2
Aircraft Design					
65-ACD-1	**Methodologies for Aerodynamic Design**	8-Jan	1400 hrs	1730 hrs	Tampa 3
66-ACD-2/TFPC-1	**Vehicle/Propulsion System Design**	8-Jan	1400 hrs	1730 hrs	Daytona 1
465-ACD-10	**CADWG--Battle Stories and Lessons Learned in Conceptual Design**	11-Jan	1800 hrs	2100 hrs	Emerald 8
471-ACD-11/TFPC-6	**Electric Aircraft Design II**	12-Jan	0930 hrs	1300 hrs	Tampa 3
472-ACD-12	**Multidisciplinary Design and Optimization**	12-Jan	0930 hrs	1300 hrs	Tampa 1
67-ACD-3	**Aircraft Operations and ATM**	8-Jan	1400 hrs	1730 hrs	Naples 3
129-ACD-4	**Blended/Hybrid Wing Body Design**	9-Jan	0930 hrs	1230 hrs	Tampa 3
183-ACD-5	**Flight Load Prediction and Certification**	9-Jan	1430 hrs	1730 hrs	Tampa 3
240-ACD-6	**UAV and Micro UAV Design**	10-Jan	0930 hrs	1230 hrs	Tampa 3
412-ACD-7	**New Technologies and Aircraft System Architectures**	11-Jan	1400 hrs	1730 hrs	Tampa 1
413-ACD-8/TFPC-4	**Electric Aircraft Design I**	11-Jan	1400 hrs	1730 hrs	Tampa 3
414-ACD-9	**Aircraft Sizing and Performance Analysis**	11-Jan	1400 hrs	1730 hrs	Daytona 1
Atmospheric Flight Mechanics					
8-AFM-1	**Launch Vehicle, Entry Vehicle, and Projectile Flight Dynamics I**	8-Jan	0930 hrs	1230 hrs	Osceola 1
9-AFM-2	**Small Unmanned Aircraft I**	8-Jan	0930 hrs	1230 hrs	Sarasota 1
68-AFM-3	**Launch Vehicle, Entry Vehicle, and Projectile Flight Dynamics II**	8-Jan	1400 hrs	1700 hrs	Osceola 3
69-AFM-4	**Small Unmanned Aircraft II**	8-Jan	1400 hrs	1730 hrs	Sarasota 1
130-AFM-5	**Flight Testing and System Identification I**	9-Jan	0930 hrs	1230 hrs	Osceola 1
131-AFM-6	**Aircraft Flight Dynamics I**	9-Jan	0930 hrs	1230 hrs	Captiva 1
184-AFM-7	**Flight Testing and System Identification II**	9-Jan	1430 hrs	1730 hrs	Osceola 1
185-AFM-8	**Aircraft Flight Dynamics II**	9-Jan	1430 hrs	1730 hrs	Osceola 2
241-AFM-9	**Aeroelasticity and Flight Dynamics**	10-Jan	0930 hrs	1230 hrs	Osceola 2
242-AFM-10	**Aircraft Flying and Handling Qualities**	10-Jan	0930 hrs	1230 hrs	Osceola 1
348-AFM-11	**Handling Qualities of Unmanned Aerial Systems**	10-Jan	1800 hrs	2100 hrs	Emerald 2
415-AFM-12	**Flight Dynamic Modeling**	11-Jan	1400 hrs	1730 hrs	Osceola 3
Aerodynamic Measurement Technology					
70-AMT-1/GT-8	**Measurement Applications and Characterization**	8-Jan	1400 hrs	1730 hrs	Osceola 1
243-AMT-2	**Spectroscopic Techniques**	10-Jan	0930 hrs	1230 hrs	Flagler
244-AMT-3	**Pressure Sensitive Paint**	10-Jan	0930 hrs	1230 hrs	Osceola 4
293-AMT-4	**Pressure Sensitive Paint Workshop (Invited)**	10-Jan	1430 hrs	1730 hrs	Osceola 3
359-AMT-5	**Progress in Measurement Diagnostics in Detonation Environments (Invited)**	11-Jan	0930 hrs	1230 hrs	Osceola 2

Sessions at a Glance

ABBREVIATION	TITLE	DATE	START TIME	END TIME	LOCATION
416-AMT-6	**Velocimetry I**	11-Jan	1400 hrs	1730 hrs	Osceola 1
417-AMT-7/PC-24	**Measurements for Flame Characterization**	11-Jan	1400 hrs	1730 hrs	Osceola 2
473-AMT-8	**Velocimetry II**	12-Jan	0930 hrs	1300 hrs	Osceola 1
474-AMT-9	**Rayleigh and Raman Techniques**	12-Jan	0930 hrs	1300 hrs	Osceola 2
503-PC-22/AMT-10	**Measurements for Combustion Diagnostics**	12-Jan	0930 hrs	1300 hrs	Tampa 2
	Applied Aerodynamics				
10-APA-1	**Special Session: CREATE-AV HPC Multiphysics Applications of Full-Up Air Vehicles I**	8-Jan	0930 hrs	1230 hrs	Miami 2
11-APA-2	**Special Session: CFD Transition Modeling and Predictive Capabilities I**	8-Jan	0930 hrs	1230 hrs	Miami 3
12-APA-3	**Unsteady Aerodynamics I**	8-Jan	0930 hrs	1230 hrs	Captiva 2
13-APA-4	**Bio-Inspired Aerodynamics I**	8-Jan	0930 hrs	1230 hrs	Miami 1
14-APA-5	**Aerodynamic Design: Analysis, Methodologies, and Optimization Techniques I**	8-Jan	0930 hrs	1230 hrs	Sanibel 3
71-APA-6	**Special Session: Simulation of Rotor in Hover I**	8-Jan	1400 hrs	1730 hrs	Miami 1
72-APA-7	**Bio-Inspired Aerodynamics II**	8-Jan	1400 hrs	1730 hrs	Sanibel 3
73-APA-8	**Airfoil/Wing/Configuration Aerodynamics I**	8-Jan	1400 hrs	1730 hrs	Captiva 1
74-APA-9	**Special Session: Engineered Surfaces, Materials and Coatings (ESMC) for Viscous Drag Reduction**	8-Jan	1400 hrs	1730 hrs	Miami 3
75-APA-10/FD-4	**Flow Control I: Applications I**	8-Jan	1400 hrs	1730 hrs	Captiva 2
76-APA-11	**Special Session: Low Boom Activities**	8-Jan	1400 hrs	1700 hrs	Naples 2
360-APA-12/EDU-1	**Aerodynamics Education Panel**	11-Jan	0930 hrs	1130 hrs	Gainesville 2
132-APA-13	**Special Session: CREATE-AV HPC Multiphysics Applications of Full-Up Air Vehicles II**	9-Jan	0930 hrs	1100 hrs	Sun D
133-APA-14	**Special Session: CFD Transition Modeling and Predictive Capabilities II**	9-Jan	0930 hrs	1230 hrs	Sun D
134-APA-15	**Applied CFD and Numerical Correlations with Experimental Data I**	9-Jan	0930 hrs	1230 hrs	Sanibel 3
135-APA-16	**Unsteady Aerodynamics II**	9-Jan	0930 hrs	1230 hrs	Sanibel 2
136-APA-17	**Aerodynamic Design: Analysis, Methodologies, and Optimization Techniques II**	9-Jan	0930 hrs	1230 hrs	Sun 2
137-APA-18	**Flow Control II: Applications II**	9-Jan	0930 hrs	1230 hrs	Captiva 2
186-APA-19	**Special Session: CREATE-AV HPC Multiphysics Applications of Full-Up Air Vehicles III**	9-Jan	1430 hrs	1730 hrs	Sun D
187-APA-20	**Special Session: NASA's Revolutionary Computational Aerosciences Session on Numerical Methods and Turbulence Modeling/Simulations**	9-Jan	1430 hrs	1730 hrs	Sun B
188-APA-21	**Applied CFD and Numerical Correlations with Experimental Data II**	9-Jan	1430 hrs	1730 hrs	Sun 2
189-APA-22	**Airfoil/Wing/Configuration Aerodynamics II**	9-Jan	1430 hrs	1730 hrs	Sun 3
190-APA-23/FD-20	**Flow Control III: Aerodynamics**	9-Jan	1430 hrs	1730 hrs	Captiva 2
245-APA-24	**Special Session: 3rd High Lift Prediction Workshop (HiLiftPW-3) I**	10-Jan	0930 hrs	1230 hrs	Miami 3
246-APA-25	**Special Session: CFD Transition Modeling and Predictive Capabilities III**	10-Jan	0930 hrs	1230 hrs	Sun B
247-APA-26	**Unsteady Aerodynamics III**	10-Jan	0930 hrs	1230 hrs	Sanibel 2
248-APA-27	**Aerodynamic Design: Analysis, Methodologies, and Optimization Techniques III**	10-Jan	0930 hrs	1230 hrs	Sanibel 1
249-APA-28/FD-27	**Flow Control IV: Methods**	10-Jan	0930 hrs	1230 hrs	Captiva 2

Sessions at a Glance

ABBREVIATION	TITLE	DATE	START TIME	END TIME	LOCATION
250-APA-29/FD-28/ PDL-10	**Plasma Flow Control I**	10-Jan	0930 hrs	1230 hrs	Gainesville 2
294-APA-30	**Special Session: 3rd High Lift Prediction Workshop (HiLiftPW-3) II**	10-Jan	1430 hrs	1730 hrs	Miami 3
295-APA-31	**Applied CFD and Numerical Correlations with Experimental Data III**	10-Jan	1430 hrs	1730 hrs	Sun 4
296-APA-32	**Propeller/Rotorcraft/Wind Turbine Aerodynamics I**	10-Jan	1430 hrs	1730 hrs	Miami 2
297-APA-33	**Weapons Aerodynamics: Missile/Projectile/ Guided-Munitions, Carriage and Store Separation I**	10-Jan	1430 hrs	1700 hrs	Sun 3
298-APA-34	**Airfoil/Wing/Configuration Aerodynamics III**	10-Jan	1430 hrs	1730 hrs	Sun 6
299-APA-35/FD-36	**Flow Control V: NASA Hump and Internal Flows**	10-Jan	1430 hrs	1730 hrs	Captiva 2
361-APA-36	**Special Session: CREATE-AV HPC Multiphysics Applications of Full-Up Air Vehicles IV**	11-Jan	0930 hrs	1230 hrs	Sun D
362-APA-37	**Transonic and Supersonic Aerodynamics I**	11-Jan	0930 hrs	1230 hrs	Gainesville 1
363-APA-38	**Aerodynamic Results from Ground Tests or Flight Tests**	11-Jan	0930 hrs	1230 hrs	Sun 2
364-APA-39	**Weapons Aerodynamics: Missile/Projectile/ Guided-Munitions, Carriage and Store Separation II**	11-Jan	0930 hrs	1230 hrs	Tampa 1
365-APA-41	**Propeller/Rotorcraft/Wind Turbine Aerodynamics II**	11-Jan	0930 hrs	1230 hrs	Miami 3
366-APA-42/FD-42	**Flow Control VI: Shocked Flows**	11-Jan	0930 hrs	1230 hrs	Captiva 2
418-APA-43	**Special Session: Simulation of Rotor in Hover II**	11-Jan	1400 hrs	1730 hrs	Miami 3
419-APA-44	**Transonic and Supersonic Aerodynamics II**	11-Jan	1400 hrs	1730 hrs	Gainesville 1
420-APA-45	**Airfoil/Wing/Configuration Aerodynamics IV**	11-Jan	1400 hrs	1730 hrs	Gainesville 2
421-APA-46/FD-50	**Flow Control VII: Sweeping Jets**	11-Jan	1400 hrs	1730 hrs	Captiva 2
475-APA-47/FD-57/ PDL-15	**Plasma Flow Control III**	12-Jan	0930 hrs	1300 hrs	Destin 1
476-APA-48	**Aero-Propulsive Interaction**	12-Jan	0930 hrs	1300 hrs	Sun 3
477-APA-49	**High Angle of Attack and High Lift Aerodynamics**	12-Jan	0930 hrs	1300 hrs	Sanibel 2
478-APA-50	**Low-Speed and Low Reynolds Number Aerodynamics**	12-Jan	0930 hrs	1300 hrs	Miami 2
479-APA-51	**Aerodynamic-Structural Dynamics Interaction**	12-Jan	0930 hrs	1300 hrs	Miami 3
480-APA-52	**VSTOL/STOL Aerodynamics**	12-Jan	0930 hrs	1300 hrs	Sun 2
Adaptive Structures					
15-ASC-1	**Advances in Manufacturing Approaches for Adaptive Structures**	8-Jan	0930 hrs	1100 hrs	Emerald 4
77-ASC-2	**Smart Materials**	8-Jan	1400 hrs	1730 hrs	Emerald 3
138-ASC-3	**Smart Assemblies/Systems**	9-Jan	0930 hrs	1230 hrs	Emerald 4
191-ASC-4	**Adaptive Aerospace Structures I**	9-Jan	1430 hrs	1730 hrs	Emerald 3
251-ASC-5	**Adaptive Aerospace Structures II**	10-Jan	0930 hrs	1230 hrs	Emerald 4
300-ASC-6	**Modeling Approaches for Adaptive Materials/ Structures**	10-Jan	1430 hrs	1730 hrs	Emerald 3
Communication Systems					
422-CMS-1	**Communication Systems**	11-Jan	1400 hrs	1730 hrs	Tallahassee 3
Computer Systems					
93-CPS-1	**Computing Systems**	8-Jan	1400 hrs	1730 hrs	Sanibel 2
Design Engineering					
16-DE-1	**Design Education**	8-Jan	0930 hrs	1230 hrs	Emerald 4

Sessions at a Glance

ABBREVIATION	TITLE	DATE	START TIME	END TIME	LOCATION
78-DE-2	**The Impact of Technology on Design Engineering**	8-Jan	1400 hrs	1730 hrs	Sun A
139-DE-3	**Additive Manufacturing And Design with the Cloud or Digital Threads**	9-Jan	0930 hrs	1230 hrs	Emerald 3
192-DE-4	**Innovative Design**	9-Jan	1430 hrs	1730 hrs	Emerald 4
252-DE-5	**Model Based Design and Knowledge Based Engineering**	10-Jan	0930 hrs	1230 hrs	Emerald 3
Digital Engineering Integration					
353-SE-3/DEI-1	**Digital Engineering – Elements and Context**	10-Jan	1800 hrs	1900 hrs	Naples 3
Education					
360-APA-12/EDU-1	**Aerodynamics Education Panel**	11-Jan	0930 hrs	1130 hrs	Gainesville 2
193-EDU-2	**Advances in Aerospace Education I**	9-Jan	1430 hrs	1730 hrs	Sanibel 1
253-EDU-3	**Advances in Aerospace Education II**	10-Jan	0930 hrs	1230 hrs	Gainesville 1
Space Exploration					
367-EXPL-1	**Emerging Technologies for Mars and Other Planetary Exploration**	11-Jan	0930 hrs	1230 hrs	Tampa 2
501-OPS-1/EXPL-2/ GEPC-3	**Space Operations Services**	12-Jan	0930 hrs	1300 hrs	Sun B
Fluid Dynamics					
18-FD-1	**Shear Flows: Jets**	8-Jan	0930 hrs	1230 hrs	Sun 6
19-FD-2	**Special Session: NATO AVT-240–Hypersonic Boundary Layer Transition Prediction I**	8-Jan	0930 hrs	1230 hrs	Sun B
20-FD-3	**CFD for Capturing Flow Discontinuities**	8-Jan	0930 hrs	1230 hrs	Sun 5
75-APA-10/FD-4	**Flow Control I: Applications I**	8-Jan	1400 hrs	1730 hrs	Captiva 2
80-FD-5	**Shear Flows: Wakes**	8-Jan	1400 hrs	1730 hrs	Sun 3
81-FD-6	**Special Session: NATO AVT-240–Hypersonic Boundary Layer Transition Prediction II**	8-Jan	1400 hrs	1730 hrs	Sun B
82-FD-7	**Unsteady Flows I**	8-Jan	1400 hrs	1730 hrs	Miami 2
83-FD-8	**Novel CFD Methods**	8-Jan	1400 hrs	1730 hrs	Sun 2
84-FD-9	**CFD Solver Techniques**	8-Jan	1400 hrs	1730 hrs	Osceola 2
85-FD-10	**Turbulence Modeling and Simulation**	8-Jan	1400 hrs	1730 hrs	Sun 5
86-FD-11	**High-Speed Flows**	8-Jan	1400 hrs	1730 hrs	Sun 4
87-FD-12	**Special Session: Surging Airfoils**	8-Jan	1400 hrs	1730 hrs	Sun 6
122-FD-13	**Special Session: Starting and Supercharging STEM Programs**	8-Jan	1800 hrs	2100 hrs	Emerald 5
141-FD-14	**Special Session: Massively Separated Flows I**	9-Jan	0930 hrs	1230 hrs	Miami 1
142-FD-15	**Fluid-Structure Interaction I**	9-Jan	0930 hrs	1230 hrs	Sun 3
143-FD-16	**Wall-Bounded Flows I**	9-Jan	0930 hrs	1230 hrs	Sun 6
144-FD-17	**Stability and Transition I: Shear Flows I**	9-Jan	0930 hrs	1230 hrs	Miami 2
145-FD-18	**RANS/Hybrid/LES Modeling I**	9-Jan	0930 hrs	1230 hrs	Sun 4
146-FD-19	**CFD Methods for Compressible Flows I**	9-Jan	0930 hrs	1230 hrs	Sun 5
190-APA-23/FD-20	**Flow Control III: Aerodynamics**	9-Jan	1430 hrs	1730 hrs	Captiva 2
195-FD-21	**Special Session: Massively Separated Flows II**	9-Jan	1430 hrs	1730 hrs	Miami 1
196-FD-22	**Stability and Transition II: Shear Flows II**	9-Jan	1430 hrs	1730 hrs	Miami 2
197-FD-23	**Unsteady Flows II**	9-Jan	1430 hrs	1730 hrs	Gainesville 1
198-FD-24	**CFD Error Estimation and Solver Evaluation**	9-Jan	1430 hrs	1730 hrs	Sun 4
199-FD-25	**CFD Methods for Compressible Flows II**	9-Jan	1430 hrs	1730 hrs	Sun 5
200-FD-26	**Wall-Bounded Flows II**	9-Jan	1430 hrs	1730 hrs	Sun 6

Sessions at a Glance

ABBREVIATION	TITLE	DATE	START TIME	END TIME	LOCATION
249-APA-28/FD-27	**Flow Control IV: Methods**	10-Jan	0930 hrs	1230 hrs	Captiva 2
250-APA-29/FD-28/PDL-10	**Plasma Flow Control I**	10-Jan	0930 hrs	1230 hrs	Gainesville 2
255-FD-29	**Fluid-Structure Interaction II**	10-Jan	0930 hrs	1230 hrs	Sun 3
256-FD-30	**Stability and Transition III: Receptivity and Control**	10-Jan	0930 hrs	1230 hrs	Miami 1
257-FD-31	**Low Reynolds Number Flows I**	10-Jan	0930 hrs	1230 hrs	Sun 5
258-FD-32	**RANS/Hybrid/LES Applications**	10-Jan	0930 hrs	1230 hrs	Sun 4
259-FD-33	**High-Order CFD Methods I**	10-Jan	0930 hrs	1230 hrs	Sun 2
260-FD-34	**Compressible Boundary Layers**	10-Jan	0930 hrs	1230 hrs	Sun 6
261-FD-35	**Special Session: RANS Solutions for Benchmark Configurations I**	10-Jan	0930 hrs	1230 hrs	Miami 2
299-APA-35/FD-36	**Flow Control V: NASA Hump and Internal Flows**	10-Jan	1430 hrs	1730 hrs	Captiva 2
302-FD-37	**Low Reynolds Number Flows II**	10-Jan	1430 hrs	1730 hrs	Sun 5
303-FD-38/PDL-12	**Plasma Actuators III**	10-Jan	1430 hrs	1730 hrs	Gainesville 2
304-FD-39	**RANS/Hybrid/LES for High-Speed Flows**	10-Jan	1430 hrs	1730 hrs	Miami 1
305-FD-40	**High-Order CFD Methods II**	10-Jan	1430 hrs	1730 hrs	Sun 2
349-FD-41	**Transition Open Forum**	10-Jan	1800 hrs	2100 hrs	Sanibel 3
366-APA-42/FD-42	**Flow Control VI: Shocked Flows**	11-Jan	0930 hrs	1230 hrs	Captiva 2
369-FD-43	**Fluid-Membrane Interaction**	11-Jan	0930 hrs	1230 hrs	Sun 6
370-FD-44	**Multiphase Flows I: Experiments**	11-Jan	0930 hrs	1100 hrs	Sun 4
371-FD-45	**Stability and Transition IV: Subsonic Boundary Layers**	11-Jan	0930 hrs	1230 hrs	Sun 4
372-FD-46/PDL-14	**Plasma Flow Control II**	11-Jan	0930 hrs	1230 hrs	Captiva 1
373-FD-47	**CFD Applications I**	11-Jan	0930 hrs	1230 hrs	Sun 3
374-FD-48	**Cartesian, Overset, and Meshfree CFD Methods**	11-Jan	0930 hrs	1230 hrs	Sun 5
375-FD-49	**Special Session: RANS Solutions for Benchmark Configurations II**	11-Jan	0930 hrs	1230 hrs	Osceola 1
421-APA-46/FD-50	**Flow Control VII: Sweeping Jets**	11-Jan	1400 hrs	1730 hrs	Captiva 2
424-FD-51	**Shock-Boundary Layer Interactions I**	11-Jan	1400 hrs	1730 hrs	Sun 6
425-FD-52	**Multiphase Flows II: Computations**	11-Jan	1400 hrs	1730 hrs	Sun 4
426-FD-53	**Stability and Transition V: High-Speed Cones**	11-Jan	1400 hrs	1730 hrs	Miami 1
427-FD-54	**Unsteady Flows III**	11-Jan	1400 hrs	1730 hrs	Sun 5
428-FD-55	**CFD Applications II**	11-Jan	1400 hrs	1730 hrs	Sun 3
429-FD-56	**Special Session: Experimental Measurements of Gas-Surface Interactions for Hypersonic Flows**	11-Jan	1400 hrs	1730 hrs	Sun D
475-APA-47/FD-57/PDL-15	**Plasma Flow Control III**	12-Jan	0930 hrs	1300 hrs	Destin 1
481-FD-58	**Shock-Boundary Layer Interactions II**	12-Jan	0930 hrs	1300 hrs	Sun 6
482-FD-59	**Multiphase Flows III: Dispersion/Atomization**	12-Jan	0930 hrs	1300 hrs	Sun 4
483-FD-60	**Stability and Transition VI: High-Speed Flows**	12-Jan	0930 hrs	1300 hrs	Miami 1
484-FD-61	**RANS/Hybrid/LES Modeling II**	12-Jan	0930 hrs	1300 hrs	Sun 5
	Green Engineering				
124-TFPC-2/GEPC-1	**Rapid Advances for Electric Aircraft – Lessons from the Aviation Forum, Transformational Electric Flight Workshop, and Propulsion and Energy Forum**	8-Jan	1800 hrs	2100 hrs	Miami 3
404-TFPC-3/GEPC-2	**Electric Aircraft Standards and Certification**	11-Jan	0930 hrs	1200 hrs	Miami 2

Sessions at a Glance

ABBREVIATION	TITLE	DATE	START TIME	END TIME	LOCATION
501-OPS-1/EXPL-2/ GEPC-3	**Space Operations Services**	12-Jan	0930 hrs	1300 hrs	Sun B
	Guidance, Navigation, and Control				
88-GNC-1	**GN&C Lecture Quantum Information Systems and Infinite Dimensional Direct Adaptive Control**	8-Jan	1400 hrs	1500 hrs	Naples 1
89-GNC-2	**NASA DLR Flight Control Research–Design, Implementation, and Testing of Flight Control**	8-Jan	1400 hrs	1730 hrs	Naples 1
147-GNC-3	**Self-Aware Vehicles to Enable Urban Air Mobility**	9-Jan	0930 hrs	1230 hrs	St. George #114
148-GNC-4	**Robust and Adaptive Control Theory**	9-Jan	0930 hrs	1230 hrs	Gainesville 1
149-GNC-5	**Control System Methodologies I**	9-Jan	0930 hrs	1230 hrs	Destin 1
150-GNC-6	**EDL_GN&C: Entry, Descent, and Landing GN&C Technology I**	9-Jan	0930 hrs	1230 hrs	Osceola 3
151-GNC-7	**NASA DLR Flight Control Research–Aeroelastic Aircraft Flight Control**	9-Jan	0930 hrs	1230 hrs	Osceola 6
201-GNC-8/IS-4	**V&V of Adaptive Systems I**	9-Jan	1430 hrs	1730 hrs	Naples 2
202-GNC-9	**Optimal Control Theory**	9-Jan	1430 hrs	1730 hrs	Sanibel 2
203-GNC-10	**Control System Design**	9-Jan	1430 hrs	1730 hrs	Sanibel 3
204-GNC-11	**Control System Methodologies II**	9-Jan	1430 hrs	1730 hrs	Sarasota 1
205-GNC-12	**Spacecraft Formation Control and RPO**	9-Jan	1430 hrs	1730 hrs	Sarasota 3
206-GNC-13	**Intelligent Adaptive Control Applications I**	9-Jan	1430 hrs	1700 hrs	Naples 1
207-GNC-14	**Air Vehicle Design and Control**	9-Jan	1430 hrs	1730 hrs	Osceola 3
262-GNC-15/IS-6	**V&V of Adaptive Systems II**	10-Jan	0930 hrs	1230 hrs	Naples 2
263-GNC-16	**Control System Methodologies III**	10-Jan	0930 hrs	1230 hrs	Sarasota 1
264-GNC-17	**Missile Guidance and Control**	10-Jan	0930 hrs	1230 hrs	Sanibel 3
265-GNC-18	**Intelligent Adaptive Control Applications II**	10-Jan	0930 hrs	1230 hrs	Naples 1
266-GNC-19	**Aircraft Flight Control Design**	10-Jan	0930 hrs	1230 hrs	Osceola 3
267-GNC-20	**Tracking and Data Association**	10-Jan	0930 hrs	1230 hrs	Destin 1
306-GNC-21/IS-9	**V&V of Adaptive Systems III**	10-Jan	1430 hrs	1730 hrs	Naples 2
307-GNC-22	**Reentry Guidance and Control**	10-Jan	1430 hrs	1730 hrs	Osceola 2
308-GNC-23	**Missile Guidance I**	10-Jan	1430 hrs	1730 hrs	Sanibel 3
309-GNC-24	**Aerospace Robotics I**	10-Jan	1430 hrs	1730 hrs	Captiva 1
310-GNC-25	**EDL_GN&C: Entry, Descent, and Landing GN&C Technology II**	10-Jan	1430 hrs	1730 hrs	Osceola 4
311-GNC-26	**Aircraft Guidance I**	10-Jan	1430 hrs	1730 hrs	Naples 1
312-GNC-27	**Morphing Aircraft and Rotocraft Control**	10-Jan	1430 hrs	1730 hrs	Osceola 1
313-GNC-28	**Navigation and Estimation I**	10-Jan	1430 hrs	1730 hrs	Destin 1
335-SFM-15/GNC-29	**Spacecraft GN&C I**	10-Jan	1430 hrs	1730 hrs	Naples 3
376-GNC-30/IS-13	**V&V of Adaptive Systems IV**	11-Jan	0930 hrs	1230 hrs	Naples 2
377-GNC-31/SFM-16	**Spacecraft GN&C II**	11-Jan	0930 hrs	1230 hrs	Sanibel 2
378-GNC-32	**Missile Guidance II**	11-Jan	0930 hrs	1230 hrs	Sanibel 3
379-GNC-33	**Aerospace Robotics II**	11-Jan	0930 hrs	1230 hrs	Sarasota 1
380-GNC-34	**Aircraft Guidance II**	11-Jan	0930 hrs	1230 hrs	Naples 1
381-GNC-35	**Specialized Flight Phase Guidance**	11-Jan	0930 hrs	1230 hrs	Osceola 3
382-GNC-36	**Navigation and Estimation II**	11-Jan	0930 hrs	1230 hrs	Destin 1
430-GNC-37/IS-16	**V&V of Adaptive Systems V**	11-Jan	1400 hrs	1730 hrs	Naples 2
431-GNC-38	**Guidance and Control of Mini/Micro Air Vehicles**	11-Jan	1400 hrs	1730 hrs	Sanibel 1
432-GNC-39	**Aerospace Robotics III**	11-Jan	1400 hrs	1730 hrs	Captiva 1

Sessions at a Glance

ABBREVIATION	TITLE	DATE	START TIME	END TIME	LOCATION
433-GNC-40	**Distributed/Cooperative Control**	11-Jan	1400 hrs	1730 hrs	Sanibel 3
434-GNC-41	**Flying on the Edge**	11-Jan	1400 hrs	1730 hrs	Sun B
435-GNC-42	**Descent and Landing GN&C**	11-Jan	1400 hrs	1730 hrs	Sanibel 2
454-SFM-22/GNC-43	**Spacecraft GN&C III**	11-Jan	1400 hrs	1730 hrs	Naples 3
466-GNC-44	**Cassini Spacecraft Attitude Control Flight Experience I**	11-Jan	1800 hrs	1930 hrs	Sanibel 1
485-GNC-45/SFM-23	**Spacecraft GN&C IV**	12-Jan	0930 hrs	1300 hrs	Sarasota 3
486-GNC-46	**Aerospace Robotics IV**	12-Jan	0930 hrs	1300 hrs	Captiva 1
487-GNC-47	**Cassini Spacecraft Attitude Control Flight Experience II, at Saturn**	12-Jan	0930 hrs	1300 hrs	Sanibel 1
Ground Testing					
90-GT-1	**Integration of RDT&E Computational and Experimentation Capabilities: Framing a National Path Forward**	8-Jan	1400 hrs	1730 hrs	Sun C
123-GT-2	**Aerospace Human Resources in the 21st Century**	8-Jan	1800 hrs	2100 hrs	Sanibel 1
152-GT-3	**Wind Tunnel Hardware, Controls and Modelling**	9-Jan	0930 hrs	1230 hrs	Sun C
208-GT-4	**Recent Advances in Force Measurement Technology (Invited)**	9-Jan	1430 hrs	1730 hrs	Miami 3
268-GT-5	**High Reynolds Number Aerodynamics and Testing (Invited)**	10-Jan	0930 hrs	1230 hrs	Captiva 1
488-GT-6	**Wind Tunnel Corrections and Data Studies**	12-Jan	0930 hrs	1300 hrs	Sun D
489-GT-7	**Propulsion and Thermal Ground Testing Topics**	12-Jan	0930 hrs	1300 hrs	Captiva 2
70-AMT-1/GT-8	**Measurement Applications and Characterization**	8-Jan	1400 hrs	1730 hrs	Osceola 1
Gas Turbine Engines					
21-GTE-1	**Compressors**	8-Jan	0930 hrs	1230 hrs	Sanibel 1
91-GTE-2	**Turbine Heat Transfer**	8-Jan	1400 hrs	1730 hrs	Sanibel 1
92-GTE-3	**Combustor Swirl and Thermoacoustics**	8-Jan	1400 hrs	1600 hrs	Sanibel 2
153-GTE-4	**Gas Turbine Performance**	9-Jan	0930 hrs	1230 hrs	Sanibel 1
314-GTE-5	**Inlets and Compressor Operability**	10-Jan	1430 hrs	1730 hrs	Sanibel 2
383-GTE-6/PGC-6	**Pressure Gain Combustion for Gas Turbines**	11-Jan	0930 hrs	1230 hrs	Osceola 4
436-GTE-7	**Combustors**	11-Jan	1400 hrs	1730 hrs	Osceola 4
490-GTE-8	**Turbine Aerodynamics**	12-Jan	0930 hrs	1300 hrs	Sanibel 3
491-GTE-9	**Combustor Fuel and Instabilities**	12-Jan	0930 hrs	1300 hrs	Osceola 4
History					
384-HIS-1	**Perspectives on Aerospace History**	11-Jan	0930 hrs	1230 hrs	Sanibel 1
High Speed Air Breathing Propulsion					
94-HSABP-1/PGC-2	**Pressure Gain Combustion–Rotating Detonation Engines I**	8-Jan	1400 hrs	1730 hrs	Daytona 2
154-HSABP-2/PGC-3	**Pressure Gain Combustion–Rotating Detonation Engines II**	9-Jan	0930 hrs	1230 hrs	Daytona 2
155-HSABP-3	**Scramjet Engine Design and Optimization**	9-Jan	0930 hrs	1230 hrs	Daytona 1
209-HSABP-4/PGC-4	**Pressure Gain Combustion–Rotating Detonation Engines III**	9-Jan	1430 hrs	1730 hrs	Daytona 2
210-HSABP-5	**Numerical analysis of Scramjet combustors**	9-Jan	1430 hrs	1730 hrs	Daytona 1
269-HSABP-6	**Experimental Analysis of Scramjet Combustors I**	10-Jan	0930 hrs	1230 hrs	Daytona 2
270-HSABP-7	**High Fidelity Combustion Modeling For High Speed Propulsion**	10-Jan	0930 hrs	1230 hrs	Daytona 1
315-HSABP-8	**Experimental Analysis of Scramjet Combustors II**	10-Jan	1430 hrs	1730 hrs	Daytona 2

Sessions at a Glance

ABBREVIATION	TITLE	DATE	START TIME	END TIME	LOCATION
385-HSABP-9	**Scramjet Inlets**	11-Jan	0930 hrs	1230 hrs	Daytona 2
437-HSABP-10/PGC-7	**Pressure Gain Combustion–Rotating Detonation Engines IV**	11-Jan	1400 hrs	1730 hrs	Daytona 2
Information and Command & Control Systems					
211-ICC-1	**Information and Command and Control Systems**	9-Jan	1430 hrs	1730 hrs	Tallahassee 2
337-ICC-2/SEN-4	**Enabling Collaboration with Autonomous Elements**	10-Jan	1430 hrs	1730 hrs	Tallahassee 2
Inlets, Nozzles and Propulsion Systems Integration					
95-INPSI-1	**Inlets, Nozzles, Propulsion Systems Integration I**	8-Jan	1400 hrs	1730 hrs	Destin 1
386-INPSI-2	**Inlets, Nozzles, Propulsion Systems Integration II**	11-Jan	0930 hrs	1230 hrs	Destin 2
438-INPSI-3	**Inlets, Nozzles, Propulsion Systems Integration SMH (Invited)**	11-Jan	1400 hrs	1730 hrs	Destin 2
492-INPSI-4	**Inlets, Nozzles, Propulsion Systems integration III**	12-Jan	0930 hrs	1300 hrs	Destin 2
Intelligent Systems					
22-IS-1	**Human-Automation Interaction**	8-Jan	0930 hrs	1030 hrs	Tallahassee 1
23-IS-2	**Intelligent Systems Student Paper Competition**	8-Jan	0930 hrs	1230 hrs	Tallahassee 1
156-IS-3	**Multi-Agent Coordination and Control I**	9-Jan	0930 hrs	1230 hrs	Tallahassee 1
201-GNC-8/IS-4	**V&V of Adaptive Systems I**	9-Jan	1430 hrs	1730 hrs	Naples 2
212-IS-5	**Multi-Agent Coordination and Control II**	9-Jan	1430 hrs	1730 hrs	Tallahassee 1
262-GNC-15/IS-6	**V&V of Adaptive Systems II**	10-Jan	0930 hrs	1230 hrs	Naples 2
272-IS-7	**Integrated Systems Health Management (ISHM) I**	10-Jan	0930 hrs	1230 hrs	Tallahassee 1
285-SOF-2/IS-8/ UAS-5	**Interaction of Software Assurance and Risk Assessment Based Operation of Unmanned Aircraft I**	10-Jan	0930 hrs	1230 hrs	Tallahassee 2
306-GNC-21/IS-9	**V&V of Adaptive Systems III**	10-Jan	1430 hrs	1730 hrs	Naples 2
316-IS-10	**Integrated Systems Health Management (ISHM) II**	10-Jan	1430 hrs	1530 hrs	Tallahassee 1
317-IS-11	**Intelligent Systems in Engineering Design**	10-Jan	1430 hrs	1730 hrs	Tallahassee 1
336-SOF-3/IS-12/ UAS-7	**Interaction of Software Assurance and Risk Assessment Based Operation of Unmanned Aircraft II (Invited)**	10-Jan	1430 hrs	1630 hrs	Tallahassee 2
376-GNC-30/IS-13	**V&V of Adaptive Systems IV**	11-Jan	0930 hrs	1230 hrs	Naples 2
387-IS-14	**Autonomy**	11-Jan	0930 hrs	1230 hrs	Tallahassee 2
388-IS-15	**Learning, Reasoning, and Data-Driven Systems I**	11-Jan	0930 hrs	1230 hrs	Tallahassee 1
430-GNC-37/IS-16	**V&V of Adaptive Systems V**	11-Jan	1400 hrs	1730 hrs	Naples 2
439-IS-17/UAS-10	**UAS Autonomy and Path Planning I**	11-Jan	1400 hrs	1730 hrs	Tallahassee 1
493-IS-18	**Learning, Reasoning, and Data-Driven Systems II**	12-Jan	0930 hrs	1300 hrs	Tallahassee 1
494-IS-19/UAS-12	**UAS Autonomy and Path Planning II**	12-Jan	0930 hrs	1300 hrs	Tallahassee 2
International Student Conference					
24-ISC.MS-1	**International Student Conference - Masters Category**	8-Jan	0930 hrs	1230 hrs	St. George #104
25-ISC.TM-1	**International Student Conference - Team Category**	8-Jan	0930 hrs	1230 hrs	St. George #114
5-ISC.UG-1	**International Student Conference - Undergraduate Category**	8-Jan	0900 hrs	1300 hrs	Osceola B
Materials					
26-MAT-1	**Materials and Design for Additive Manufacturing**	8-Jan	0930 hrs	1230 hrs	Sun C
27-MAT-2	**Materials in Extreme Environments**	8-Jan	0930 hrs	1230 hrs	Sun 1
113-SUR-2/MAT-3/ STR-5	**Survivability II/Materials/Structures**	8-Jan	1400 hrs	1730 hrs	Emerald 4
157-MAT-4	**Fatigue and Fracture I**	9-Jan	0930 hrs	1230 hrs	Sun A

Sessions at a Glance

ABBREVIATION	TITLE	DATE	START TIME	END TIME	LOCATION
213-MAT-5	**Multiscale Modeling**	9-Jan	1430 hrs	1730 hrs	Sun A
214-MAT-6	**Nanostructured Materials I**	9-Jan	1430 hrs	1730 hrs	Sun 1
273-MAT-7	**Nanostructured Materials II**	10-Jan	0930 hrs	1230 hrs	Sun C
318-MAT-8	**Testing and Characterization**	10-Jan	1430 hrs	1730 hrs	Sun A
319-MAT-9	**Advanced or Hybrid Composites for Lightweight Structures**	10-Jan	1430 hrs	1730 hrs	Sun 1
389-MAT-10	**Fatigue and Fracture II**	11-Jan	0930 hrs	1230 hrs	Sun C
440-MAT-11/STR-17	**ICME for Structural Analysis: Validation and Application**	11-Jan	1400 hrs	1730 hrs	Sun A
495-MAT-12	**Advanced Material Behavior: Experiment and Computation**	12-Jan	0930 hrs	1300 hrs	Sun C
Multidisciplinary Design Optimization					
28-MDO-1	**Aeroelastic and Aero-Structures Optimization I**	8-Jan	0930 hrs	1230 hrs	Emerald 2
29-MDO-2	**Aircraft Design Optimization I**	8-Jan	0930 hrs	1230 hrs	Emerald 1
96-MDO-3	**Aerodynamic Shape Optimization I**	8-Jan	1400 hrs	1730 hrs	Emerald 1
158-MDO-4	**Emerging Methods, Algorithms and Software Development in MAO I**	9-Jan	0930 hrs	1230 hrs	Emerald 1
215-MDO-5	**Metamodeling and Approximation Methods**	9-Jan	1430 hrs	1730 hrs	Emerald 1
274-MDO-6	**Nondeterministic Optimization Methods and Applications**	10-Jan	0930 hrs	1230 hrs	Emerald 1
320-MDO-7	**Emerging Trends in MAO**	10-Jan	1430 hrs	1730 hrs	Emerald 1
321-MDO-8	**Shape and Topology Optimization**	10-Jan	1430 hrs	1730 hrs	Emerald 4
390-MDO-9	**Emerging Methods, Algorithms and Software Development in MAO II**	11-Jan	0930 hrs	1230 hrs	Emerald 1
391-MDO-10	**Aircraft Design Optimization II**	11-Jan	0930 hrs	1230 hrs	Emerald 2
441-MDO-11	**Applications of Metamodeling and Model Reduction**	11-Jan	1400 hrs	1730 hrs	Emerald 1
442-MDO-12	**Aerodynamic Shape Optimization II**	11-Jan	1400 hrs	1730 hrs	Emerald 2
496-MDO-13	**Aeroelastic and Aero-Structures Optimization II**	12-Jan	0930 hrs	1300 hrs	Emerald 2
Modeling and Simulation Technologies					
30-MST-1	**Modeling and Simulation of Air Traffic Management I**	8-Jan	0930 hrs	1230 hrs	Sun 2
31-MST-2	**Human Factors, Perception and Cueing**	8-Jan	0930 hrs	1230 hrs	Sun 3
32-MST-3	**Model and Simulation Design, Development and Integration**	8-Jan	0930 hrs	1230 hrs	Sun 4
33-MST-4/SOF-1	**Modeling and Simulation Based Software Development and Verification**	8-Jan	0930 hrs	1230 hrs	Sun D
97-MST-5	**Modeling and Simulation of Air Traffic Management II**	8-Jan	1400 hrs	1600 hrs	Gainesville 2
98-MST-6	**Multidisciplinary Modeling and Simulation Across Domains I**	8-Jan	1400 hrs	1730 hrs	Gainesville 2
99-MST-7	**Modeling and Simulation for Intelligent Systems**	8-Jan	1400 hrs	1600 hrs	Sun D
100-MST-8	**Model-Based Development and X-in-the-Loop Simulation**	8-Jan	1400 hrs	1730 hrs	Sun D
101-MST-9	**Modeling and Simulation of Air Vehicle Dynamics II, for Defense Applications**	8-Jan	1400 hrs	1730 hrs	Osceola 4
275-MST-10	**Modeling and Simulation of Air Vehicle Dynamics I**	10-Jan	0930 hrs	1230 hrs	Sun D
322-MST-11	**Modeling and Simulation for Spacecraft**	10-Jan	1430 hrs	1730 hrs	Sun D
323-MST-12	**Simulation Scenario Development**	10-Jan	1430 hrs	1730 hrs	Sanibel 1
443-MST-13	**Modeling and Simulation of Unmanned Aerial Systems**	11-Jan	1400 hrs	1730 hrs	Sarasota 2

Sessions at a Glance

ABBREVIATION	TITLE	DATE	START TIME	END TIME	LOCATION
444-MST-14	**Verification and Validation in Modeling and Simulation**	11-Jan	1400 hrs	1730 hrs	Sun 2
445-MST-15	**Multidisciplinary Modeling and Simulation Across Domains II**	11-Jan	1400 hrs	1730 hrs	Miami 2
467-MST-16	**Standardization in Simulation Scenario Development**	11-Jan	1800 hrs	2000 hrs	Emerald 5
497-MST-17	**Modeling and Simulation of Dynamic Systems**	12-Jan	0930 hrs	1300 hrs	Osceola 5
498-MST-18	**Multidisciplinary Modeling and Simulation Across Domains III**	12-Jan	0930 hrs	1300 hrs	Sarasota 2
Meshing, Visualization, and Computational Environments					
34-MVC-1	**1st Geometry and Mesh Generation Workshop Summaries (Invited)**	8-Jan	0930 hrs	1230 hrs	Osceola 3
159-MVC-2	**Mesh Generation for the High Lift CRM for GMGW-1 (Special)**	9-Jan	0930 hrs	1230 hrs	Miami 3
216-MVC-3	**Solution Adaptive/Deforming Meshing**	9-Jan	1430 hrs	1730 hrs	Tampa 1
276-MVC-4	**Visualization**	10-Jan	0930 hrs	1230 hrs	Tampa 1
324-MVC-5	**Geometry and Higher-Order Meshing Techniques**	10-Jan	1430 hrs	1730 hrs	Tampa 1
350-MVC-6	**Meshing Techniques**	10-Jan	1800 hrs	2100 hrs	Daytona 1
Non-Deterministic Approaches					
35-NDA-1/SCS-1	**NDA Lecture/SCS Panel**	8-Jan	0930 hrs	1230 hrs	Sun A
102-NDA-2	**Reliability Analysis Methods and Applications I**	8-Jan	1400 hrs	1730 hrs	Sun 1
160-NDA-3	**Optimization Under Uncertainty Methods I**	9-Jan	0930 hrs	1230 hrs	Sun 1
217-NDA-4	**Special Session: Validation and Uncertainty Quantification of ICME Models**	9-Jan	1430 hrs	1730 hrs	Sun C
277-NDA-5	**Special Session: DARPA Efficient Quantification of Uncertainty in Physical Systems (EQUiPS) Program**	10-Jan	0930 hrs	1230 hrs	Sun A
325-NDA-6	**Uncertainty Quantification and Management I**	10-Jan	1430 hrs	1730 hrs	Sun C
392-NDA-7	**Special Session: A Framework for Managing Multiple Information Sources of Multi-Physics Systems**	11-Jan	0930 hrs	1230 hrs	Sun A
393-NDA-8	**Model Calibration, Verification, and/or Validation**	11-Jan	0930 hrs	1230 hrs	Sun 1
446-NDA-9	**Reliability Analysis Methods and Applications II**	11-Jan	1400 hrs	1730 hrs	Sun 1
499-NDA-10	**Uncertainty Quantification and Management II**	12-Jan	0930 hrs	1300 hrs	Sun A
500-NDA-11	**Optimization Under Uncertainty Methods II**	12-Jan	0930 hrs	1300 hrs	Sun 1
Space Operations and Support					
501-OPS-1/EXPL-2/ GEPC-3	**Space Operations Services**	12-Jan	0930 hrs	1300 hrs	Sun B
Propellants and Combustion					
36-PC-1	**Advanced Combustion Concepts I**	8-Jan	0930 hrs	1230 hrs	Tampa 3
37-PC-2	**Combustion Chemistry**	8-Jan	0930 hrs	1230 hrs	Osceola 4
38-PC-3	**Combustion Diagnostics**	8-Jan	0930 hrs	1230 hrs	Daytona 1
39-PC-4	**Model Validation for Propulsion I**	8-Jan	0930 hrs	1230 hrs	Gainesville 1
41-PC-5/PGC-1	**Pressure Gain Combustion–Rotating Detonation Propulsion Physics**	8-Jan	0930 hrs	1230 hrs	Daytona 2
42-PC-6	**Turbulent Combustion I**	8-Jan	0930 hrs	1230 hrs	Sanibel 2
40-PC-7	**Turbulent Combustion II**	8-Jan	0930 hrs	1230 hrs	Gainesville 1
103-PC-8	**Model Validation for Propulsion II**	8-Jan	1400 hrs	1730 hrs	Gainesville 1
161-PC-9	**Model Validation for Propulsion III**	9-Jan	0930 hrs	1230 hrs	Osceola 2

Sessions at a Glance

ABBREVIATION	TITLE	DATE	START TIME	END TIME	LOCATION
162-PC-10	**Rocket and Air-Breathing Propulsion I**	9-Jan	0930 hrs	1230 hrs	Sarasota 3
163-PC-11	**Spray and Droplet Combustion I**	9-Jan	0930 hrs	1230 hrs	Sarasota 1
164-PC-12	**Turbulent Combustion III**	9-Jan	0930 hrs	1230 hrs	Tampa 1
278-PC-13	**Rocket and Air-Breathing Propulsion II**	10-Jan	0930 hrs	1230 hrs	Osceola 5
279-PC-14	**Turbulent Combustion IV**	10-Jan	0930 hrs	1230 hrs	Sarasota 3
326-PC-15	**Advanced Combustion Concepts II**	10-Jan	1430 hrs	1730 hrs	Tampa 3
327-PC-16/PGC-5	**Blast Wave and Detonative Pressure Gain Combustion Physics**	10-Jan	1430 hrs	1730 hrs	Daytona 1
328-PC-17	**Spray and Droplet Combustion II**	10-Jan	1430 hrs	1730 hrs	Osceola 6
329-PC-18	**Turbulent Combustion V**	10-Jan	1430 hrs	1730 hrs	Gainesville 1
394-PC-19	**Advanced Combustion Concepts III**	11-Jan	0930 hrs	1230 hrs	Tampa 3
395-PC-20	**Turbulent Combustion VI**	11-Jan	0930 hrs	1230 hrs	Daytona 1
502-PC-21	**Laminar Flames**	12-Jan	0930 hrs	1300 hrs	Daytona 1
503-PC-22/AMT-10	**Measurements for Combustion Diagnostics**	12-Jan	0930 hrs	1300 hrs	Tampa 2
417-AMT-7/PC-24	**Measurements for Flame Characterization**	11-Jan	1400 hrs	1730 hrs	Osceola 2
	Plasmadynamics and Lasers				
43-PDL-1	**Plasma Aerodynamics I**	8-Jan	0930 hrs	1230 hrs	Destin 2
44-PDL-2	**Physics of Weakly Ionized Plasma**	8-Jan	0930 hrs	1230 hrs	Tampa 1
45-PDL-3	**Plasma and Laser Physics and Propulsion**	8-Jan	0930 hrs	1230 hrs	Gainesville 2
104-PDL-4	**Plasma Actuators I**	8-Jan	1400 hrs	1730 hrs	Destin 2
165-PDL-5	**Plasma Aerodynamics II**	9-Jan	0930 hrs	1230 hrs	Gainesville 2
166-PDL-6	**Plasma Assisted Combustion and Ignition I**	9-Jan	0930 hrs	1230 hrs	Destin 2
218-PDL-7	**Plasma Assisted Combustion and Ignition II**	9-Jan	1430 hrs	1730 hrs	Destin 2
219-PDL-8	**Diagnostics and Experimental Techniques**	9-Jan	1430 hrs	1730 hrs	Captiva 1
220-PDL-9	**Plasma Actuators II**	9-Jan	1430 hrs	1730 hrs	Gainesville 2
250-APA-29/FD-28/PDL-10	**Plasma Flow Control I**	10-Jan	0930 hrs	1230 hrs	Gainesville 2
280-PDL-11	**Plasma Assisted Combustion and Ignition III**	10-Jan	0930 hrs	1230 hrs	Destin 2
303-FD-38/PDL-12	**Plasma Actuators III**	10-Jan	1430 hrs	1730 hrs	Gainesville 2
330-PDL-13	**Laser Enabled Plasma Interactions for Aerodynamics and Combustion**	10-Jan	1430 hrs	1730 hrs	Destin 2
372-FD-46/PDL-14	**Plasma Flow Control II**	11-Jan	0930 hrs	1230 hrs	Captiva 1
475-APA-47/FD-57/PDL-15	**Plasma Flow Control III**	12-Jan	0930 hrs	1300 hrs	Destin 1
504-PDL-16	**Computational Methods for Plasmas**	12-Jan	0930 hrs	1300 hrs	Naples 3
	Pressure Gain Combustion				
41-PC-5/PGC-1	**Pressure Gain Combustion–Rotating Detonation Propulsion Physics**	8-Jan	0930 hrs	1230 hrs	Daytona 2
94-HSABP-1/PGC-2	**Pressure Gain Combustion–Rotating Detonation Engines I**	8-Jan	1400 hrs	1730 hrs	Daytona 2
154-HSABP-2/PGC-3	**Pressure Gain Combustion–Rotating Detonation Engines II**	9-Jan	0930 hrs	1230 hrs	Daytona 2
209-HSABP-4/PGC-4	**Pressure Gain Combustion–Rotating Detonation Engines III**	9-Jan	1430 hrs	1730 hrs	Daytona 2
327-PC-16/PGC-5	**Blast Wave and Detonative Pressure Gain Combustion Physics**	10-Jan	1430 hrs	1730 hrs	Daytona 1
383-GTE-6/PGC-6	**Pressure Gain Combustion for Gas Turbines**	11-Jan	0930 hrs	1230 hrs	Osceola 4

Sessions at a Glance

ABBREVIATION	TITLE	DATE	START TIME	END TIME	LOCATION
437-HSABP-10/PGC-7	**Pressure Gain Combustion–Rotating Detonation Engines IV**	11-Jan	1400 hrs	1730 hrs	Daytona 2
	Small Satellites				
351-SATS-1	**Small Satellites I**	10-Jan	1800 hrs	2100 hrs	Emerald 3
447-SATS-2	**Small Satellites II**	11-Jan	1400 hrs	1730 hrs	Sarasota 1
505-SATS-3	**Small Satellites III**	12-Jan	0930 hrs	1300 hrs	Naples 2
	Society and Aerospace Technology				
46-SAT-1	**Society and Aerospace Technology**	8-Jan	0930 hrs	1230 hrs	Osceola 2
	Spacecraft Structures				
35-NDA-1/SCS-1	**NDA Lecture/SCS Panel**	8-Jan	0930 hrs	1230 hrs	Sun A
105-SCS-2	**Analysis of Lightweight Spacecraft Structures**	8-Jan	1400 hrs	1730 hrs	Emerald 2
167-SCS-3	**Deployable Booms and Trusses**	9-Jan	0930 hrs	1230 hrs	Emerald 2
221-SCS-4	**High Strain Composite Materials and Structures**	9-Jan	1430 hrs	1730 hrs	Emerald 2
281-SCS-5	**Deployable Spacecraft Apertures**	10-Jan	0930 hrs	1230 hrs	Emerald 2
331-SCS-6	**Solar Sail Design and Analysis**	10-Jan	1430 hrs	1730 hrs	Emerald 2
396-SCS-7	**Small Satellite Deployable Systems**	11-Jan	0930 hrs	1230 hrs	Emerald 3
448-SCS-8	**Next Generation Solar Arrays**	11-Jan	1400 hrs	1730 hrs	Emerald 3
506-SCS-9	**Next Generation Solar Array Enabling Technology**	12-Jan	0930 hrs	1300 hrs	Emerald 3
	Structural Dynamics				
47-SD-1	**Nonlinear Dynamics**	8-Jan	0930 hrs	1230 hrs	Emerald 7
48-SD-2	**Aeroelastic Tailoring and Control**	8-Jan	0930 hrs	1230 hrs	Emerald 8
106-SD-3	**Structural Dynamics**	8-Jan	1400 hrs	1730 hrs	Emerald 7
107-SD-4	**Limit Cycle Oscillations and Gust Response**	8-Jan	1400 hrs	1730 hrs	Emerald 8
168-SD-5	**Dewey70: Asymptotic Analysis**	9-Jan	0930 hrs	1230 hrs	Emerald 7
169-SD-6	**Flutter Test and Prediction**	9-Jan	0930 hrs	1230 hrs	Emerald 8
222-SD-7	**Dewey70: Dynamics**	9-Jan	1430 hrs	1730 hrs	Emerald 7
223-SD-8	**Aeroelastic Analysis I**	9-Jan	1430 hrs	1730 hrs	Emerald 8
282-SD-9	**Dewey70: Aeroelasticity**	10-Jan	0930 hrs	1230 hrs	Emerald 7
283-SD-10	**Computational Aeroelasticity I, Reduced Order Modeling**	10-Jan	0930 hrs	1230 hrs	Emerald 8
332-SD-11	**Dynamic Loads, Response, and Stability of Aerospace Vehicles**	10-Jan	1430 hrs	1730 hrs	Emerald 7
333-SD-12	**Computational Aeroelasticity II**	10-Jan	1430 hrs	1730 hrs	Emerald 8
352-SD-13	**SDM Lecture**	10-Jan	1800 hrs	1900 hrs	Sun A
397-SD-14	**Agile Wing Interaction**	11-Jan	0930 hrs	1230 hrs	Emerald 7
398-SD-15	**Computational Aeroelasticity III**	11-Jan	0930 hrs	1230 hrs	Emerald 8
449-SD-16	**Dynamic Testing**	11-Jan	1400 hrs	1730 hrs	Emerald 7
450-SD-17	**Aeroelastic Analysis II**	11-Jan	1400 hrs	1730 hrs	Emerald 8
507-SD-18	**Adaptive Aeroelastic Wing Shaping Control**	12-Jan	0930 hrs	1300 hrs	Emerald 7
508-SD-19	**Vibration Control**	12-Jan	0930 hrs	1300 hrs	Emerald 8
	Systems Engineering				
170-SE-1	**Systems Engineering I**	9-Jan	0930 hrs	1230 hrs	Osceola 4
284-SE-2	**Systems Engineering II**	10-Jan	0930 hrs	1230 hrs	Naples 3
353-SE-3/DEI-1	**Digital Engineering – Elements and Context**	10-Jan	1800 hrs	1900 hrs	Naples 3
	Sensor Systems				
49-SEN-1	**Advanced Sensor Data Processing**	8-Jan	0930 hrs	1230 hrs	Tallahassee 2

Sessions at a Glance

ABBREVIATION	TITLE	DATE	START TIME	END TIME	LOCATION
108-SEN-2	**Applications of Sensor Fusion**	8-Jan	1400 hrs	1730 hrs	Tallahassee 2
171-SEN-3	**Fusion of Networked Sensors or Systems**	9-Jan	0930 hrs	1230 hrs	Tallahassee 2
337-ICC-2/SEN-4	**Enabling Collaboration with Autonomous Elements**	10-Jan	1430 hrs	1730 hrs	Tallahassee 2
	Space Flight Mechanics				
50-SFM-1	**Asteroid and Non-Earth Orbiting Missions I**	8-Jan	0930 hrs	1230 hrs	Naples 1
51-SFM-2	**Attitude Dynamics, Determination, and Control I**	8-Jan	0930 hrs	1230 hrs	Osceola 6
52-SFM-3	**Dynamics and Control of Large Space Structures and Tethers**	8-Jan	0930 hrs	1230 hrs	Naples 2
53-SFM-4	**Low-Thrust Trajectory Design and Optimization I**	8-Jan	0930 hrs	1230 hrs	Naples 3
54-SFM-5	**Space Trajectory Design and Optimization I**	8-Jan	0930 hrs	1230 hrs	Destin 1
109-SFM-6	**Attitude Dynamics, Determination, and Control II**	8-Jan	1400 hrs	1530 hrs	Osceola 6
110-SFM-7	**Orbit Determination and Estimation Theory I**	8-Jan	1400 hrs	1730 hrs	Osceola 6
172-SFM-8	**Asteroid and Non-Earth Orbiting Missions II**	9-Jan	0930 hrs	1230 hrs	Naples 1
173-SFM-9	**Low-Thrust Trajectory Design and Optimization II**	9-Jan	0930 hrs	1230 hrs	Naples 3
174-SFM-10	**Orbit Determination and Estimation Theory II**	9-Jan	0930 hrs	1230 hrs	Naples 2
224-SFM-11	**Asteroid and Non-Earth Orbiting Missions III**	9-Jan	1430 hrs	1730 hrs	Naples 3
225-SFM-12	**Attitude Dynamics, Determination, and Control III**	9-Jan	1430 hrs	1730 hrs	Osceola 6
226-SFM-13	**Space Trajectory Design and Optimization II**	9-Jan	1430 hrs	1730 hrs	Destin 1
334-SFM-14	**Space Trajectory Design and Optimization III**	10-Jan	1430 hrs	1730 hrs	Sarasota 1
335-SFM-15/GNC-29	**Spacecraft GN&C I**	10-Jan	1430 hrs	1730 hrs	Naples 3
377-GNC-31/SFM-16	**Spacecraft GN&C II**	11-Jan	0930 hrs	1230 hrs	Sanibel 2
399-SFM-17	**Dynamical Systems Theory Applied to Space Flight Problems**	11-Jan	0930 hrs	1230 hrs	Naples 3
451-SFM-19	**Formation Flying and Relative Motion I**	11-Jan	1400 hrs	1730 hrs	Osceola 6
452-SFM-20	**Orbital Dynamics, Perturbations, Stability, and Satellite Drag I**	11-Jan	1400 hrs	1730 hrs	Sarasota 3
453-SFM-21	**Space Situational Awareness, Orbital Debris, and Conjunction Analysis I**	11-Jan	1400 hrs	1730 hrs	Naples 1
454-SFM-22/GNC-43	**Spacecraft GN&C III**	11-Jan	1400 hrs	1730 hrs	Naples 3
485-GNC-45/SFM-23	**Spacecraft GN&C IV**	12-Jan	0930 hrs	1300 hrs	Sarasota 3
509-SFM-24	**Formation Flying and Relative Motion II**	12-Jan	0930 hrs	1300 hrs	Osceola 6
510-SFM-25	**Orbital Dynamics, Perturbations, Stability, and Satellite Drag II**	12-Jan	0930 hrs	1300 hrs	Sarasota 1
511-SFM-26	**Space Situational Awareness, Orbital Debris, and Conjunction Analysis II**	12-Jan	0930 hrs	1300 hrs	Naples 1
	Software Systems				
33-MST-4/SOF-1	**Modeling and Simulation Based Software Development and Verification**	8-Jan	0930 hrs	1230 hrs	Sun D
285-SOF-2/IS-8/UAS-5	**Interaction of Software Assurance and Risk Assessment Based Operation of Unmanned Aircraft I**	10-Jan	0930 hrs	1230 hrs	Tallahassee 2
336-SOF-3/IS-12/UAS-7	**Interaction of Software Assurance and Risk Assessment Based Operation of Unmanned Aircraft II (Invited)**	10-Jan	1430 hrs	1630 hrs	Tallahassee 2
455-SOF-4	**Software Challenges in Aerospace**	11-Jan	1400 hrs	1730 hrs	Tallahassee 2
	Structures				
55-STR-1	**Structural Joints and Repairs**	8-Jan	0930 hrs	1230 hrs	Emerald 5
56-STR-2	**Composite Structural Design, Test and Analysis**	8-Jan	0930 hrs	1230 hrs	Emerald 6

Sessions at a Glance

ABBREVIATION	TITLE	DATE	START TIME	END TIME	LOCATION
111-STR-3	**Out-of-Autoclave Composites Wing Box Design**	8-Jan	1400 hrs	1730 hrs	Emerald 5
112-STR-4	**Impact Damage in Composite Structures**	8-Jan	1400 hrs	1730 hrs	Emerald 6
113-SUR-2/MAT-3/ STR-5	**Survivability II/Materials/Structures**	8-Jan	1400 hrs	1730 hrs	Emerald 4
175-STR-6	**Failure Analysis and Prediction I**	9-Jan	0930 hrs	1230 hrs	Emerald 5
176-STR-7	**AFRL Developments in DADT Methods for Sustainment of Bolted Composite Structures I**	9-Jan	0930 hrs	1230 hrs	Emerald 6
227-STR-8	**Failure Analysis and Prediction II**	9-Jan	1430 hrs	1730 hrs	Emerald 5
228-STR-9	**AFRL Developments in DADT Methods for Sustainment of Bolted Composite Structures II**	9-Jan	1430 hrs	1730 hrs	Emerald 6
286-STR-10	**Advanced Computational Models for Composite Structures I**	10-Jan	0930 hrs	1230 hrs	Emerald 5
287-STR-11	**Buckling, Fatigue and Fracture of Structures**	10-Jan	0930 hrs	1230 hrs	Emerald 6
338-STR-12	**Advanced Computational Models for Composite Structures II**	10-Jan	1430 hrs	1730 hrs	Emerald 5
339-STR-13	**Special Session: In Honor of Dr. Ivatury S. Raju, NASA Langley Research Center I**	10-Jan	1430 hrs	1730 hrs	Emerald 6
400-STR-14	**Stability of Structural Shells I**	11-Jan	0930 hrs	1230 hrs	Emerald 4
401-STR-15	**NASA ACC High Energy Dynamic Impact**	11-Jan	0930 hrs	1230 hrs	Emerald 5
402-STR-16	**Special Session: In Honor of Dr. Ivatury S. Raju, NASA Langley Research Center II**	11-Jan	0930 hrs	1230 hrs	Emerald 6
440-MAT-11/STR-17	**ICME for Structural Analysis: Validation and Application**	11-Jan	1400 hrs	1730 hrs	Sun A
456-STR-18	**Stability of Structural Shells II**	11-Jan	1400 hrs	1730 hrs	Emerald 4
457-STR-19	**Other Topics in Structures**	11-Jan	1400 hrs	1730 hrs	Emerald 5
458-STR-20	**Special Session: In Honor of Dr. Ivatury S. Raju, NASA Langley Research Center III**	11-Jan	1400 hrs	1730 hrs	Emerald 6
512-STR-21	**Aircraft Structural Design, Test and Analysis**	12-Jan	0930 hrs	1300 hrs	Emerald 4
513-STR-22	**Composite Structural Optimization**	12-Jan	0930 hrs	1300 hrs	Emerald 5
514-STR-23	**Special Session: A Tribute in Memory of Professor Kuen-Yuan Lin, University of Washington**	12-Jan	0930 hrs	1300 hrs	Emerald 6
	Survivability				
57-SUR-1	**Survivability I**	8-Jan	0930 hrs	1230 hrs	Emerald 3
113-SUR-2/MAT-3/ STR-5	**Survivability II/Materials/Structures**	8-Jan	1400 hrs	1730 hrs	Emerald 4
	Terrestrial Energy				
340-TES-1	**Terrestrial Energy Systems–Fuel Power Technologies**	10-Jan	1430 hrs	1730 hrs	Sun B
354-TES-2	**Recent Advances in Alternative Fuels Combustion**	10-Jan	1800 hrs	2100 hrs	Emerald 4
403-TES-3	**Terrestrial Energy Systems–Emerging Technologies**	11-Jan	0930 hrs	1230 hrs	Sun B
515-TES-4	**Terrestrial Energy Systems–Simulation and Modeling**	12-Jan	0930 hrs	1300 hrs	Daytona 2
	Unique and Transformational Flight				
66-ACD-2/TFPC-1	**Vehicle/Propulsion System Design**	8-Jan	1400 hrs	1730 hrs	Daytona 1
124-TFPC-2/GEPC-1	**Rapid Advances for Electric Aircraft – Lessons from the Aviation Forum, Transformational Electric Flight Workshop, and Propulsion and Energy Forum**	8-Jan	1800 hrs	2100 hrs	Miami 3
404-TFPC-3/GEPC-2	**Electric Aircraft Standards and Certification**	11-Jan	0930 hrs	1200 hrs	Miami 2
413-ACD-8/TFPC-4	**Electric Aircraft Design I**	11-Jan	1400 hrs	1730 hrs	Tampa 3

Sessions at a Glance

ABBREVIATION	TITLE	DATE	START TIME	END TIME	LOCATION
459-TFPC-5	**Advanced/Transformational Aircraft Requirements, Concepts of Operations, and Markets**	11-Jan	1400 hrs	1730 hrs	Destin 1
471-ACD-11/TFPC-6	**Electric Aircraft Design II**	12-Jan	0930 hrs	1300 hrs	Tampa 3
	Thermophysics				
58-TP-1	**Nonequilibrium Flows I**	8-Jan	0930 hrs	1230 hrs	Sarasota 2
59-TP-2	**Theoretical/Experimental/Computational Energy Transfer**	8-Jan	0930 hrs	1230 hrs	Sarasota 3
114-TP-3	**Thermal Protection Systems/Ablation I**	8-Jan	1400 hrs	1730 hrs	Sarasota 2
115-TP-4	**Multiphase, Droplets, Jets, and Sprays**	8-Jan	1400 hrs	1730 hrs	Sarasota 3
177-TP-5	**Nonequilibrium Flows II**	9-Jan	0930 hrs	1230 hrs	Sarasota 2
229-TP-6	**Aerothermodynamics I**	9-Jan	1430 hrs	1730 hrs	Sarasota 2
288-TP-7	**Nonequilibrium Flows III**	10-Jan	0930 hrs	1230 hrs	Sarasota 2
341-TP-8	**Thermal Protection Systems/Ablation II**	10-Jan	1430 hrs	1730 hrs	Sarasota 3
342-TP-9	**Noncontinuum and High-Speed Flows**	10-Jan	1430 hrs	1730 hrs	Sarasota 2
405-TP-10	**Nonequilibrium Flows IV**	11-Jan	0930 hrs	1230 hrs	Sarasota 3
406-TP-11	**Aerothermodynamics II**	11-Jan	0930 hrs	1230 hrs	Sarasota 2
	Unmanned Systems				
60-UAS-1	**UAS GN&C I**	8-Jan	0930 hrs	1230 hrs	Tallahassee 3
116-UAS-2	**UAS GN&C II**	8-Jan	1400 hrs	1730 hrs	Tallahassee 3
178-UAS-3	**Unmanned Aircraft Design I**	9-Jan	0930 hrs	1230 hrs	Tallahassee 3
230-UAS-4	**Unmanned Aircraft Design II**	9-Jan	1430 hrs	1730 hrs	Tallahassee 3
285-SOF-2/IS-8/ UAS-5	**Interaction of Software Assurance and Risk Assessment Based Operation of Unmanned Aircraft I**	10-Jan	0930 hrs	1230 hrs	Tallahassee 2
289-UAS-6	**UAS Missions and Applications I**	10-Jan	0930 hrs	1230 hrs	Tallahassee 3
336-SOF-3/IS-12/ UAS-7	**Interaction of Software Assurance and Risk Assessment Based Operation of Unmanned Aircraft II (Invited)**	10-Jan	1430 hrs	1630 hrs	Tallahassee 2
343-UAS-8	**UAS Missions and Applications II**	10-Jan	1430 hrs	1730 hrs	Tallahassee 3
407-UAS-9	**UAS Safety, Certification, and Integration**	11-Jan	0930 hrs	1230 hrs	Tallahassee 3
439-IS-17/UAS-10	**UAS Autonomy and Path Planning I**	11-Jan	1400 hrs	1730 hrs	Tallahassee 1
460-UAS-11	**Detect and Avoid Technologies for UAS**	11-Jan	1400 hrs	1730 hrs	Sun C
494-IS-19/UAS-12	**UAS Autonomy and Path Planning II**	12-Jan	0930 hrs	1300 hrs	Tallahassee 2
516-UAS-13	**UAS for Urban Environments and Other Topics**	12-Jan	0930 hrs	1300 hrs	Tallahassee 3
	Wind Energy				
61-WE-1	**Wake Physics, Modeling, and Experimentation I**	8-Jan	0930 hrs	1230 hrs	Osceola 5
117-WE-2	**Wake Physics, Modeling, and Experimentation II**	8-Jan	1400 hrs	1730 hrs	Osceola 5
179-WE-3	**Atmospheric Physics, Inflow, and Wake Modeling**	9-Jan	0930 hrs	1230 hrs	Osceola 5
231-WE-4	**Blade Aerodynamics and Aeroacoustics I**	9-Jan	1430 hrs	1730 hrs	Osceola 4
232-WE-5	**Wind Turbine/Wind Plant Optimization I**	9-Jan	1430 hrs	1730 hrs	Osceola 5
290-WE-6	**Aeroelasticity, Structural Dynamics, and Loads Prediction I**	10-Jan	0930 hrs	1230 hrs	Osceola 6
344-WE-7	**Blade Aerodynamics and Aeroacoustics II**	10-Jan	1430 hrs	1730 hrs	Osceola 5
408-WE-8	**Aeroelasticity, Structural Dynamics, and Loads Prediction II**	11-Jan	0930 hrs	1230 hrs	Osceola 5
461-WE-9	**Wind Turbine/Wind Plant Optimization II**	11-Jan	1400 hrs	1730 hrs	Osceola 5

Sunday

Sunday, 7 January 2018		
1-NW-1 1600 - 1800 hrs	Meet the Employers Recruiting Event	Osceola B

Sunday, 7 January 2018		
2-NW-2 1800 - 1930 hrs	Student Welcome Reception	Osceola 1-3

Monday

Monday, 8 January 2018		
3-SB-1 0730 - 0800 hrs	Monday Morning Speakers' Briefing	Session Rooms

Monday, 8 January 2018		
4-PLNRY-1 0800 - 0900 hrs	Digital Enterprise Business Models and their Impact on the Aerospace Industry	Osceola CD
Keynote Speaker Naguib Attia Vice President, Global University Programs, IBM		

Monday, 8 January 2018		
5-ISC.UG-1 0900 - 1300 hrs	International Student Conference - Undergraduate Category	Osceola B

AIAA-2018-0001 **GPU Acceleration of Helicopter Flow Field Simulation** E. Wallace, A. Sridharan, University of Maryland, College Park, College Park, MD	AIAA-2018-0002 **IEC Plasma Thruster** J. Sublett, Mississippi State University, Starkville, MS	AIAA-2018-0003 **Simulations and Preliminary Measurements of a Magnetic Nozzle Thrust Vectoring System** B. Lin, J. Sheehan, University of Michigan, Ann Arbor, Ann Arbor, MI	AIAA-2018-0004 **Small-Scale Turbojet Thrust Augmentation from a Jet Pipe with a Bellmouth Inlet** M. Durkee, K. Rouser, Oklahoma State University, Stillwater, OK	AIAA-2018-0005 **Development of a Flush Air Data System for the SpaceX Dragon Crew Capsule** N. Carpenter, J. Deaton, United States Air Force Academy, Colorado Springs, CO	AIAA-2018-0006 **Comparison of Low Pressure Turbine Trailing Edge Blowing Techniques for Wake Loss Reduction** Y. Wu, J. Tellefsen, United States Air Force Academy, Colorado Springs, CO	AIAA-2018-0007 **Design and Characterization of a Cylindrical-Orifice Injector for High-Viscosity Monopropellants** G. Derk, A. Kimber, University of Washington, Seattle, Seattle, WA	AIAA-2018-0008 **Tomographic Background-Oriented Schlieren for Three-Dimensional Density Field Reconstruction in Asymmetric Shock-containing Jets** R. Kirby, Monash University, Victoria, Australia

Monday, 8 January 2018		
6-NW-3 0900 - 0930 hrs	Monday Morning Coffee Break	Session Room Foyers

Monday, 8 January 2018						
7-AA-1	Airframe/Propulsion Integration					Tampa 2
Chaired by: K. AHUJA, Georgia Institute of Technology and C. BROWN, NASA Glenn						
0930 hrs AIAA-2018-0009 **Aeroacoustic Validation of Installed Low Noise Propulsion for NASA's N+2 Supersonic Airliner** J. Bridges, NASA Glenn Research Center, Cleveland, OH	1000 hrs AIAA-2018-0010 **An Evaluation of Assumptions in an Empirical Jet-Surface Interaction Noise Model** C. Brown, NASA Glenn Research Center, Cleveland, OH	1030 hrs AIAA-2018-0011 **Pylon Design for a Short Range Transport Aircraft with Over-the-Wing Mounted UHBR Engines** L. Savoni, R. Rudnik, German Aerospace Center (DLR), Braunschweig, Germany	1100 hrs AIAA-2018-0012 **High Temperature Supersonic Flow Measurements of a Rectangular Jet Exhausting over a Flat Surface** F. Baier, A. Karnam, E. Gutmark, University of Cincinnati, Cincinnati, OH; K. Kailasanath, Naval Research Laboratory, Washington, D.C.			

Monday, 8 January 2018						
8-AFM-1	**Launch Vehicle, Entry Vehicle, and Projectile Flight Dynamics I**					**Osceola 1**
Chaired by: M. GRANT, Purdue University and Z. PUTNAM, University of Illinois at Urbana-Champaign						
0930 hrs AIAA-2018-0013 **Near-Optimal Entry Guidance for Reference Trajectory Tracking via Convex Optimization** Z. Wang, M. Grant, Purdue University, West Lafayette, IN	1000 hrs AIAA-2018-0014 **Application of an Optimal Control Allocation Scheme with Structural Load and Aero Heating Feedback for a Morphing Inflatable Aerodynamic Decelerator** Z. Bassett, University of Texas, Austin, Austin, TX; J. Pei, A. Milne Slagle, B. Pamadi, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2018-0015 **Trajectory Reconstruction of Orion Ground Test Article Water Impact Tests** R. Lugo, C. Karlgaard, Analytical Mechanics Associates, Inc., Hampton, VA; J. Cotliss, NASA Langley Research Center, Hampton, VA; G. Vassilakos, Science and Technology Corporation, Hampton, VA; S. Mark, Northrop Grumman Corporation, Hampton, VA	1100 hrs AIAA-2018-0016 **The Relaxed Autonomously Switched Hybrid System (RASHS) Approach to Indirect Multi-Phase Trajectory Optimization for Aerospace Vehicles** H. Saranathan, M. Grant, Purdue University, West Lafayette, IN	1130 hrs AIAA-2018-0017 **The Effect of Static Stability on the Short Range Flight Trajectory of a Countermunition** M. Bent, E. Dikbas, TUBITAK, Ankara, Turkey; I. Tuncer, Middle East Technical University, Ankara, Turkey	1200 hrs AIAA-2018-0018 **Path Constraint Regularization in Optimal Control Problems using Saturation Functions** T. Antony, M. Grant, Purdue University, West Lafayette, IN	

Monday, 8 January 2018						
9-AFM-2	**Small Unmanned Aircraft I**					**Sarasota 1**
Chaired by: Y. XU, University of Central Florida and T. RICHARDSON, University of Bristol						
0930 hrs AIAA-2018-0019 **Dynamic Soaring Kinetic Energy Reference Frames** J. Koessler, University of Arizona, Tucson, Tucson, AZ	1000 hrs AIAA-2018-0020 **Payload and Power for Dynamically Similar Flapping Wing Hovering Flight on Mars** J. Pohly, C. Kang, M. Sridhar, D. Landrum, F. Fahimi, University of Alabama, Huntsville, Huntsville, AL; J. Bluman, U.S. Military Academy, West Point, NY; et al.	1030 hrs AIAA-2018-0021 **Development of an Unmanned Aerial Vehicle (UAV) Research Platform for Flutter Analysis** S. Hamada, C. Moreno, Embry-Riddle Aeronautical University, Daytona Beach, FL	1100 hrs AIAA-2018-0022 **Stability Analysis of the Coupled Unsteady Aero-Flight Dynamics of Flapping Wing MAVs During Hover Using Optimized Periodic Shooting** M. Nasr, M. AbdelGalil, A. AbdelKader, University of Science and Technology, 6th of October, Egypt	1130 hrs AIAA-2018-0023 **Mars Helicopter Technology Demonstrator** B. Balaram, T. Canham, C. Duncan, H. Grip, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; W. Johnson, NASA Ames Research Center, Moffett Field, CA; J. Maki, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; et al.	1200 hrs AIAA-2018-0024 **Artificial Bones, Muscles, and Feathers for Improved Versatility, Efficiency, and Agility of Micro Air Vehicles** M. Abdulrahim, M. Divaker, D. Patel, Prioria Robotics, Inc., Gainesville, FL; K. Kochersberger, S. Rubenking, Virginia Polytechnic Institute and State University, Blacksburg, VA	

Monday, 8 January 2018						
10-APA-1	**Special Session: CREATE-AV HPC Multiphysics Applications of Full-Up Air Vehicles I**					**Miami 2**
Chaired by: N. HARIHARAN, CREATE-AV and R. MEAKIN						
0930 hrs Oral Presentation **Future Directions in High Performnce Modeling and Simulations in Aerospace Systems** V. Sankaran, Air Force Research Laboratory, Edwards AFB, CA	1000 hrs AIAA-2018-0025 **HPCMP CREATE™-AV Kestrel Architecture Capability and Future Direction** S. Morton, D. McDaniel, CREATE Kestrel Team, Vicksburg, MS	1030 hrs AIAA-2018-0026 **Assessment of Rotorcraft Download Using Helios v8** A. Wissink, Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA; B. Jayaraman, S. Tran, Science and Technology Corporation, Moffett Field, CA; R. Jain, M. Potsdam, Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA; J. Sitaraman, Parallel Geometric Algorithms, LLC, Sunnyvale, CA; et al.	1100 hrs AIAA-2018-0027 **High-Order Time-Accurate Simulations using HPCMP CREATE(TM)-AV Kestrel Component COFFE** K. Holst, Arnold Engineering Development Complex, Arnold AFB, TN; R. Glasby, J. Erwin, D. Stefanski, University of Tennessee, Knoxville, Knoxville, TN	1130 hrs AIAA-2018-0028 **Simulation of Complex Geometries Using Automatically Generated Strand Meshes** V. Lakshminarayan, Science and Technology Corporation, Moffett Field, CA; J. Sitaraman, Parallel Geometric Algorithms, LLC, Sunnyvale, CA; B. Roget, Science and Technology Corporation, Moffett Field, CA; A. Wissink, Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA	1200 hrs Oral Presentation **Academic Deployment of the HPCMP CREATE Genesis Software Package** R. Meakin, CREATE AV Team, Lorton, VA	

Monday, 8 January 2018						
11-APA-2	**Special Session: CFD Transition Modeling and Predictive Capabilities I**					**Miami 3**
Chaired by: Z. HALL, US Army AMRDEC and J. CODER, University of Tennessee						
0930 hrs AIAA-2018-0029 **Standard Test Cases for CFD-Based Laminar-Transition Model Verification and Validation** J. Coder, University of Tennessee, Knoxville, Knoxville, TN	1000 hrs Oral Presentation **Sickle Wing - Experimental Transition Investigation on a Wing with Spanwise Varying Crossflow** F. Munoz, Technical University of Braunschweig, Braunschweig, Germany; R. Petzold, Volkswagen, Wolfsburg, Germany; M. Kruse, German Aerospace Center (DLR), Braunschweig, Germany; R. Radespiel, Technical University of Braunschweig, Braunschweig, Germany	1030 hrs AIAA-2018-0030 **Validation of Transition Modeling Techniques for a Simplified Fuselage Configuration** N. Krimmelbein, German Aerospace Center (DLR), Braunschweig, Germany; A. Krumbein, C. Grabe, German Aerospace Center (DLR), Göttingen, Germany	1100 hrs AIAA-2018-0031 **Stability Equation Based Transition Prediction** M. Tufts, R. Kimmel, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2018-0032 **Assessment of Transition Modeling Capabilities in NASA's OVERFLOW CFD Code version 2.2m** Z. Hall, Army Aviation and Missile Research Development and Engineering Center, Redstone Arsenal, AL	1200 hrs AIAA-2018-0033 **Uncertainty Quantification for Free Stream Turbulence Intensity Effects on Airfoil Characteristics** A. Salahudeen, J. Baeder, University of Maryland, College Park, College Park, MD	

Monday, 8 January 2018						
12-APA-3	**Unsteady Aerodynamics I**					**Captiva 2**
Chaired by: C. KIRIS, NASA Ames Research Center and S. SAXENA, General Electric Company						
0930 hrs AIAA-2018-0034 **Frequency Investigation on Unsteadiness of Shock-Vortex Ring Interaction** X. Dong, Nanjing University of Science and Technology, Nanjing, China; Y. Yan, Alcorn State University, Lorman, MS; Y. Yang, C. Liu, University of Texas, Arlington, Arlington, TX	1000 hrs AIAA-2018-0035 **Influence of the Fluctuating Velocity Field on the Surface Pressures in a Jet/Fin Interaction** S. Beresh, J. Henfling, R. Spillers, B. Pruett, Sandia National Laboratories, Albuquerque, NM	1030 hrs AIAA-2018-0036 **Determination of Temporal and Spatial Origination of Transonic Buffet via Unsteady Data Mining** K. Chiba, University of Electro-Communications, Tokyo, Japan; Y. Umeda, N. Hamada, Fujitsu Laboratories, Ltd., Kawasaki, Japan; S. Watanabe, Muroran Institute of Technology, Muroran, Japan; M. Nakata, Yokohama National University, Yokohama, Japan; K. Yasue, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan; et al.	1100 hrs AIAA-2018-0037 **Aerodynamic Analysis of Flapped Airfoil at High Angles of Attack** H. Shehata, Virginia Polytechnic Institute and State University, Blacksburg, VA; M. Zakaria, Military Technical College, Cairo, Egypt; A. Hussein, M. Hajj, Virginia Polytechnic Institute and State University, Blacksburg, VA	1130 hrs AIAA-2018-0038 **Unsteady Viscous Lift Frequency Response Using The Triple Deck Theory** H. Taha, A. Rezaei, University of California, Irvine, Irvine, CA		

Monday, 8 January 2018						
13-APA-4	**Bio-Inspired Aerodynamics I**					**Miami 1**
Chaired by: B. OSBORNE, The Boeing Company						
0930 hrs AIAA-2018-0039 **Computational Fluid Dynamics Study of the Propulsion Characteristics of Tandem Flapping Fins** R. Ramamurti, J. Geder, K. Viswanath, M. Pruessner, Naval Research Laboratory, Washington, D.C.	1000 hrs AIAA-2018-0040 **Low to Medium Fidelity Models for Unsteady Pitching maneuvers at Low Reynolds Number** M. Zakaria, Military Technical College, Cairo, Egypt	1030 hrs AIAA-2018-0041 **Dynamic Relationship Between Flapping Wing and Body Undulation of Monarch Butterflies in Free Flight** C. Kang, M. Sridhar, D. Landrum, University of Alabama, Huntsville, Huntsville, AL	1100 hrs AIAA-2018-0042 **Optimizing Wing Kinematics for the Artificial Dragonfly Motion** A. Kumar, C. Kaur, PEC University of Technology, Chandigarh, India; S. Padhee, Indian Institute of Technology Ropar, Ropar, India	1130 hrs AIAA-2018-0043 **Flight Dynamics of CS-25 Aircraft in Formation Flight with Atmospheric Disturbances** J. Lueckhof, E. Stumpf, RWTH Aachen University, Aachen, Germany		

Monday, 8 January 2018

14-APA-5 — **Aerodynamic Design: Analysis, Methodologies, and Optimization Techniques I** — **Sanibel 3**

Chaired by: B. DETERT, Boeing Commercial Airplanes and N. RAJMOHAN, Aerion Technologies Inc.

0930 hrs	1000 hrs	1030 hrs	1100 hrs	1130 hrs	1200 hrs
AIAA-2018-0044	AIAA-2018-0045	AIAA-2018-0046	AIAA-2018-0047	AIAA-2018-0048	AIAA-2018-0049
Aerodynamic Shape Optimization of Helicopter Rotor Blades in Hover using Genetic Algorithm and Adjoint Method	**Automatic Wind Tunnel-Based Optimisation of an Automotive Underbody Diffuser**	**Drag-Divergence Characteristics of Winglets**	**Aerodynamic Effect of Aircraft Flap with Yaw-Rotational Degree of Freedom**	**The Effect of Shape on the Aerodynamic and Thermal Performance of Hypersonic Projectiles Launched by a Ground-based Railgun**	**Comparitive Analysis of Aerodynamic Characteristics of a Transport Aircraft and its AWACS variant**
S. Darwish, Zewail City of Science and Technology, 6th of October, Egypt; M. Abdelrahman, Cairo University, Giza, Egypt; A. Elmekawy, Alexandria University, Alexandria, Egypt; K. Elsayed, Helwan University, Cairo, Egypt	P. Kekus, D. Angland, University of Southampton, Southampton, United Kingdom	T. Yuhara, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan; K. Kubota, K. Rinoie, University of Tokyo, Tokyo, Japan	T. Komatsu, K. Chiba, University of Electro-Communications, Chofu, Japan	H. Kasahara, A. Matsuo, Keio University, Yokohama, Japan	J. Masud, Z. Toor, T. Khan, O. Khan, Air University, Islamabad, Pakistan

Monday, 8 January 2018

15-ASC-1 — **Advances in Manufacturing Approaches for Adaptive Structures** — **Emerald 4**

0930 - 1100 hrs

Speakers:

Mark Benedict
America Makes Chief Technology Adviser
Air Force Research Laboratory

Derek Doyle
Energy Responsive Structures Lead/Team Technical Advisor
Integrated Structural Systems, Air Force Research Laboratory / Space Vehicles Directorate

Jerry Qi
Professor and The Woodruff Faculty Fellow
Georgia Institute of Technology

Monday, 8 January 2018

16-DE-1 — **Design Education** — **Emerald 4**

Chaired by: J. CUTSHALL, Southwest Research Institute

0930 hrs	1130 hrs	1200 hrs
No Presentations	AIAA-2018-0050	AIAA-2018-0051
	Ten Years of the Real World Design Challenge	**Controller Design and Validation of Dynamic Response for Full-Scale Helicopter Flight Simulator at CCSU**
	R. Deters, B. Terwilliger, S. Kleinke, Embry-Riddle Aeronautical University, Daytona Beach, FL; R. Coppola, J. Coppola, Real World Design Challenge, Vienna, VA	D. Broderick, F. Wei, J. Hopwood, Central Connecticut State University, New Britain, CT

Monday, 8 January 2018

17-F360-1 — **The Dawn of Digital Engineering** — **Osceola A**

0930 - 1130 hrs

Moderator: Philomena Zimmerman, Deputy Director, Engineering Tools and Environments Office of the Deputy Assistant Secretary of Defense for Systems Engineering

Panelists:

Charles (Chuck) Ward
Chief, Manufacturing and Industrial Technologies, Materials & Manufacturing Directorate
Air Force Research Laboratory

Brenchley (Brench) Boden
Chief Technology Officer, Digital Manufacturing and Design Innovation Institute and Senior Industrial Engineer
Air Force Research Laboratory

Brunon (Dave) Kepczynski
Chief Information Officer, GE Global Research & Engineering Product Leader
GE Digital Technologies

Caroline Gorski
Global Partnership Director - Digital
Rolls-Royce

Michael Grieves
Executive Director
Center for Advanced Manufacturing and Innovative Design, Florida Institute of Technology

John Vickers
Principal Technologist, Space Technology Mission Directorate
NASA

Monday, 8 January 2018

18-FD-1	Shear Flows: Jets					Sun 6
Chaired by: D. CUPPOLETTI, Northrop Grumman						
0930 hrs AIAA-2018-0052 **Vortex Core Dynamics in a Swirling Jet Near Vortex Breakdown** S. Clees, Pennsylvania State University, University Park, PA; J. Lewalle, Syracuse University, Syracuse, NY; M. Frederick, J. O'Connor, Pennsylvania State University, University Park, PA	1000 hrs AIAA-2018-0053 **Turbulence Modulation of a Weakly Compressible Wall-Jet by Kelvin-Helmholtz Instabilities** C. Garnica, B. Rollin, Embry-Riddle Aeronautical University, Daytona Beach, FL	1030 hrs AIAA-2018-0054 **Stereo PIV Measurements in a Multi-stream, Rectangular, Supersonic Jet** A. Magstadt, M. Glauser, Syracuse University, Syracuse, NY	1100 hrs AIAA-2018-0055 **The Dynamics of Globally Unstable Helium Jets using Round and Elliptical Nozzles** J. Eayrs, B. Tierney, D. Forliti, University of St. Thomas, St. Paul, MN			

Monday, 8 January 2018

19-FD-2	Special Session: NATO AVT-240–Hypersonic Boundary Layer Transition Prediction I					Sun B
Chaired by: S. SCHNEIDER, Purdue University and R. RADESPIEL, Technische Universitaet Braunschweig						
0930 hrs AIAA-2018-0056 **HIFiRE-1 and -5 Flight and Ground Tests** R. Kimmel, D. Adamczak, M. Borg, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Jewell, Spectral Energies, LLC, Dayton, OH; T. Juliano, University of Notre Dame, Notre Dame, IN; S. Stanfield, Innovative Scientific Solutions, Inc., Dayton, OH; et al.	1000 hrs AIAA-2018-0057 **Nosetip bluntness effects on transition at hypersonic speeds: experimental and numerical analysis under NATO STO AVT-240** P. Paredes, M. Choudhari, F. Li, NASA Langley Research Center, Hampton, VA; J. Jewell, R. Kimmel, Air Force Research Laboratory, Wright-Patterson AFB, OH; E. Marineau, Arnold Engineering Development Complex, Silver Spring, MD; et al.	1030 hrs AIAA-2018-0058 **Numerical Investigation of Roughness Effects on Transition on Spherical Capsules** S. Hein, A. Theiss, German Aerospace Center (DLR), Göttingen, Germany; A. Di Giovanni, C. Stemmer, Technical University of Munich, Munich, Germany; T. Schilden, W. Schroeder, RWTH Aachen University, Aachen, Germany; et al.	1100 hrs AIAA-2018-0059 **Experimental Investigations of Roughness Effects on Transition on Blunt Spherical Capsule Shapes** R. Radespiel, S. Ali, Technical University of Braunschweig, Braunschweig, Germany; R. Bowersox, A. Leidy, Texas A&M University, College Station, TX; H. Tanno, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan; L. Kirk, NASA Johnson Space Center, Houston, TX; et al.	1130 hrs AIAA-2018-0060 **A history and progress of second mode dominated boundary-layer transition on a Mach 6 flared cone** B. Chynoweth, Purdue University, West Lafayette, IN; C. Hader, University of Arizona, Tucson, Tucson, AZ; A. Batista, University of Delaware, Newark, Newark, DE; T. Juliano, University of Notre Dame, Notre Dame, IN; J. Kuehl, University of Delaware, Newark, Newark, DE; B. Wheaton, Johns Hopkins University Applied Physics Laboratory, Laurel, MD; et al.	1200 hrs AIAA-2018-0061 **Hypersonic Crossflow Instability** T. Kocian, A. Moyes, H. Reed, Texas A&M University, College Station, TX; S. Craig, University of Arizona, Tucson, Tucson, AZ; W. Saric, Texas A&M University, College Station, TX; S. Schneider, Purdue University, West Lafayette, IN; et al.	

Monday, 8 January 2018

20-FD-3	CFD for Capturing Flow Discontinuities					Sun 5
Chaired by: W. ANDERSON, NASA Langley Research Center						
0930 hrs AIAA-2018-0062 **A physics-based shock capturing method for unsteady laminar and turbulent flows** P. Fernandez, C. Nguyen, J. Peraire, Massachusetts Institute of Technology, Cambridge, MA	1000 hrs AIAA-2018-0063 **An Optimization Based Discontinuous Galerkin Approach for High-Order Accurate Shock Tracking** M. Zahr, Lawrence Berkeley National Laboratory, Berkeley, CA; P. Persson, University of California, Berkeley, Berkeley, CA	1030 hrs AIAA-2018-0064 **An Edge-based Galerkin Formulation for Thermal Non-equilibrium Flows** S. Gao, W. Habashi, McGill University, Montréal, Canada; D. Isola, G. Baruzzi, ANSYS, Inc., Montréal, Canada; M. Fossati, University of Strathclyde, Glasgow, United Kingdom	1100 hrs AIAA-2018-0065 **Maintaining Monotonicity and High-order Accuracy of Discontinuous, Multi-species, and Reacting Flows** N. Mundis, ERC, Inc., Edwards AFB, CA; C. Lietz, Sierra Lobo, Inc., Edwards AFB, CA; Z. Jozefik, ERC, Inc., Edwards AFB, CA	1130 hrs AIAA-2018-0066 **Numerical Simulation of Flows with Shocks and Turbulence Using Observable Methodology** M. Allahyari, K. Mohseni, University of Florida, Gainesville, Gainesville, FL	1200 hrs AIAA-2018-0067 **A Central Compact-Reconstruction WENO Method for Hyperbolic Conservation Laws** K. Cooley, J. Baeder, University of Maryland, College Park, College Park, MD	

Monday, 8 January 2018

21-GTE-1	Compressors					Sanibel 1
Chaired by: G. KUMAR, Convergent Science, Inc.						
0930 hrs AIAA-2018-0068 **Uncertainty Quantification of Geometric and Flow Variables Affecting the Performance of a Transonic Axial Compressor** Z. Li, Y. Liu, Beijing Institute of Technology, Beijing, China; R. Agarwal, Washington University in St. Louis, St. Louis, MO	1000 hrs AIAA-2018-0069 **Numerical Analysis of Fluid Dynamics of Tip Leakage Vortex with Different Gap Widths in an Axial Flow Pump** S. Shen, Z. Qian, Wuhan University, Wuhan, China; R. Agarwal, Washington University in St. Louis, St. Louis, MO	1030 hrs AIAA-2018-0070 **The Effects of Non-uniform Blade Spacing on Compressor Rotor Forced Response and Aeroacoustic Behavior** Y. Leng, N. Key, Purdue University, West Lafayette, IN	1100 hrs AIAA-2018-0071 **Design Considerations for Tip Clearance Sensitivity of Centrifugal Compressors in Aero Engines** F. Lou, J. Fabian, N. Key, Purdue University, West Lafayette, IN	1130 hrs AIAA-2018-0072 **Computational Investigation of Upstream-Propagating Potential Disturbances in a Fan Stage: IGV Results** K. Gordon, E. Jumper, A. Jemcov, University of Notre Dame, Notre Dame, IN	1200 hrs AIAA-2018-0073 **Investigation of Three Types of Diffusers for a Centrifugal Compressor Stage** A. Engeda, M. Messele, Michigan State University, East Lansing, MI	

Monday, 8 January 2018						
22-IS-1	**Human-Automation Interaction**					**Tallahassee 1**
Chaired by: A. LAMPTON, Systems Technology, Inc. and T. YUCELEN						
0930 hrs AIAA-2018-0074 **Building Strategic Conformal Automation for Air Traffic Control Using Machine Learning** R. Regtuit, C. Borst, E. Van Kampen, Delft University of Technology, Delft, The Netherlands	1000 hrs AIAA-2018-0075 **Formal Evaluation of IMU-based Gesture Recognition for UAS Aircraft Carrier Deck Handling** A. Lampton, J. Gray, J. Miller, Systems Technology, Inc., Hawthorne, CA					

Monday, 8 January 2018						
23-IS-2	**Intelligent Systems Student Paper Competition**					**Tallahassee 1**
Chaired by: T. YUCELEN and A. LAMPTON, Systems Technology, Inc.						
0930 hrs **No Presentations**		1030 hrs AIAA-2018-0076 **Analysis of Random Mobility Model with Sense and Avoid Protocols for UAV Traffic Management** M. Liu, Y. Wan, University of Texas, Arlington, Arlington, TX	1100 hrs AIAA-2018-0077 **UAS Surveillance in Low-altitude Airspace with Geofencing: Constrained Stochastic Linear Hybrid Systems Approach** J. Lee, I. Hwang, Purdue University, West Lafayette, IN; D. Shim, Korea Advanced Institute of Science and Technology, Deajeon, South Korea	1130 hrs AIAA-2018-0078 **Delay-tolerant Adaptive Robust Control for Unmanned Aerial System** J. Suraj Nandiganahalli, C. Kwon, I. Hwang, Purdue University, West Lafayette, IN		

Monday, 8 January 2018						
24-ISC.MS-1	**International Student Conference - Masters Category**					**St. George #104**
Chaired by: S. CORBETS, Lockheed Martin Corporation						
0930 hrs AIAA-2018-0079 **Linear Inlet Optimization for Capture of River Kinetic Energy** C. Yan, J. Hochstein, University of Memphis, Memphis, TN	1000 hrs AIAA-2018-0080 **Understanding Unsteady Aerodynamics of Cycloidal Rotors in Hover at Ultra-low Reynolds Numbers** C. Walther, D. Coleman, M. Benedict, Texas A&M University, College Station, TX	1030 hrs AIAA-2018-0081 **Origami-based Tunable Structures with Simultaneously Foldable and Stiff Behavior** B. Gopalarethinam, J. Yang, University of Washington, Seattle, Seattle, WA	1100 hrs AIAA-2018-0082 **Non-linear Estimation Methods for Aircraft Dynamic Parameters during Taxiing** T. Marduel, Higher Institute of Aeronautics and Space, Toulouse, France			

Monday, 8 January 2018						
25-ISC.TM-1	**International Student Conference - Team Category**					**St. George #114**
Chaired by: S. CORBETS, Lockheed Martin Corporation						
0930 hrs AIAA-2018-0083 **Virginia Tech-NASA Auto-Deployable Mars Rover Design and Development Project** T. Cleckner, E. Krutyanskiy, A. Knust, M. Moller, A. Morales, C. Nickles, Virginia Polytechnic Institute and State University, Blacksburg, VA; et al.	1000 hrs AIAA-2018-0084 **Concept Study of a Reusable Suborbital Launch Vehicle** J. Fuchs, M. Haskell, B. Thompson, T. Harriman, W. Hankins, University of Alabama, Huntsville, Huntsville, AL	1030 hrs AIAA-2018-0085 **Complete Design and Build of a Convectively Cooled Rocket Nozzle Test Bed** A. Harms, J. Bhatt, A. Krishnan, N. Williams, A. Baumgarten, University of Michigan, Ann Arbor, Ann Arbor, MI	1100 hrs AIAA-2018-0086 **A New Approach on Sampling Microorganisms from the Lower Stratosphere** J. Lehnen, B. Gunawan, J. Prince, E. Bering, University of Houston, Houston, TX	1130 hrs AIAA-2018-0087 **Design of a Paddle-Driven Wave Generator** H. Miskaryan, D. Freeman, A. Lindo, University of Southern California, Los Angeles, CA	1200 hrs AIAA-2018-0088 **Project REPTAR REcoverable ProTection After Re-entry** C. Buechler, K. Faggiano, D. Fishelman, C. Gondek, L. Huynh, A. McCusker, University of Colorado, Boulder, Boulder, CO; et al.	

Monday, 8 January 2018						
26-MAT-1	**Materials and Design for Additive Manufacturing**					**Sun C**
Chaired by: S. WANTHAL, Boeing Research & Technology and J. KOO, The University of Texas at Austin						
0930 hrs AIAA-2018-0089 **Static Material Properties and Fatigue Characterization of Additive-Manufactured Parts in Extrusion-Based Technologies** K. Pham, W. O'Brien, S. Case, Virginia Polytechnic Institute and State University, Blacksburg, VA	1000 hrs AIAA-2018-0090 **Development of residual stress of parts fabricated via selective laser melting (SLM) techniques under di erent scanning strategies** A. Ukwattage, A. Achuthan, Clarkson University, Potsdam, NY	1030 hrs AIAA-2018-0091 **Multi-Axis Multi-Material Fused Filament Fabrication with Continuous Fiber Reinforcement** W. De Backer, University of South Carolina, Columbia, Columbia, SC; A. Bergs, TIGHITCO, Inc., Atlanta, GA; M. Van Tooren, University of South Carolina, Columbia, Columbia, SC	1100 hrs AIAA-2018-0092 **Additive Manufacturing of Thermal Protection System Materials** M. Sulkis, J. Driver, A. Saade-Castillo, A. Thompson, H. Wu, J. Koo, University of Texas, Austin, Austin, TX	1130 hrs AIAA-2018-0093 **An Analysis Framework for Topology Optimization of 3D Printed Reinforced Composites** L. Bahamonde, B. Tatting, R. Harik, Z. Gurdal, University of South Carolina, Columbia, Columbia, SC; A. Blom-Schieber, M. Rassaian, The Boeing Company, Seattle, WA; et al.	1200 hrs Oral Presentation **Toward the Development of a Computationally Efficient Multi-Scale Finite Element Modeling Framework to Simulate Additive Manufacturing Process** S. Jayanath, A. Achuthan, Clarkson University, Potsdam, NY	

Monday, 8 January 2018						
27-MAT-2	**Materials in Extreme Environments**					**Sun 1**
Chaired by: E. PINEDA, NASA Glenn Research Ctr and S. ARNOLD, NASA Glenn Research Center						
0930 hrs AIAA-2018-0094 **A Reduced Order Life Prediction Modeling Approach for Materials under Thermomechanical Fatigue** F. Irmak, A. Gordon, T. Bouchenot, University of Central Florida, Orlando, FL	1000 hrs AIAA-2018-0095 **Compression Ramp Induced Shock Wave/Turbulent Boundary Layer Interactions on a Compliant Material** H. Pham, Z. Gianikos, V. Narayanaswamy, North Carolina State University, Raleigh, NC	1030 hrs AIAA-2018-0096 **Investigation of the Effects of CMAS-infiltration in EB-PVD 7% Yttria-Stabilized Zirconia via Raman Spectroscopy** E. Bohorquez, B. Sarley, J. Hernandez, R. Hoover, L. Tetard, University of Central Florida, Orlando, FL; R. Naraparaju, German Aerospace Center (DLR), Cologne, Germany; et al.	1100 hrs AIAA-2018-0097 **Testing and Modeling of Thermomechanical Buckling Fatigue in Combined Extreme Environments** M. Sedlack, S. Deane, B. Felemban, N. Stoll, A. Gordon, University of Central Florida, Orlando, FL	1130 hrs AIAA-2018-0098 **Characterization of 3-D Woven Carbon/Phenolic using In-Situ Ablation Sensing, Video Imaging, and Numerical Simulation** R. Menz, J. Koo, B. Lisco, J. Sammak, J. Mendez, University of Texas, Austin, Austin, TX; M. Berdoyes, Airbus, Le Haillan, France; et al.	1200 hrs AIAA-2018-0099 **Cryogenic composite fuel tanks: The mechanical performance of advanced composites at low temperatures** B. Atli-Veltin, TNO, Delft, The Netherlands	

Monday, 8 January 2018						
28-MDO-1	**Aeroelastic and Aero-Structures Optimization I**					**Emerald 2**
Chaired by: A. NING, BYU and T. ASHURI, University of texas at Dallas						
0930 hrs AIAA-2018-0100 **An Aeroelastic Coupling Framework for Time-accurate Analysis and Optimization** K. Jacobson, J. Kiviaho, M. Smith, G. Kennedy, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2018-0101 **Flutter Related Design Optimization using the Time Spectral and Coupled Adjoint Method** R. Prasad, H. Kim, S. Choi, Virginia Polytechnic Institute and State University, Blacksburg, VA	1030 hrs AIAA-2018-0102 **Aeroelastic Design Optimization using a Multifidelity Quasi-Newton Method** D. Bryson, M. Rumpfkeil, University of Dayton, Dayton, OH	1100 hrs AIAA-2018-0103 **Automation of Structural Sizing of Aircraft Concepts Under Static Aeroelastic Constraints** W. Li, K. Geiselhart, E. Olson, J. Robinson, NASA Langley Research Center, Hampton, VA	1130 hrs AIAA-2018-0104 **Multiobjective aerostructural optimization for efficient transport wing conceptual design** S. Kontogiannis, Cranfield University, Bedford, United Kingdom; T. Kipouros, University of Cambridge, Cambridge, United Kingdom; A. Savill, Cranfield University, Bedford, United Kingdom		

Monday, 8 January 2018						
29-MDO-2	**Aircraft Design Optimization I**					**Emerald 1**
Chaired by: B. STANFORD, NASA Langley Research Center and S. KAMBAMPATI						
0930 hrs AIAA-2018-0105 **A Vehicle Design and Optimization Model for On-Demand Aviation** A. Brown, W. Harris, Massachusetts Institute of Technology, Cambridge, MA	1000 hrs AIAA-2018-0106 **High-Fidelity Aerodynamic Shape Optimization of a Full Configuration Regional Jet** N. Bons, C. Mader, J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI; A. Cuco, F. Odaguil, Embraer, São José dos Campos, Brazil	1030 hrs AIAA-2018-0107 **Multidisciplinary Design Optimization Analysis of Flexible Solar-Regenerative High-Altitude Long-Endurance Aircraft** T. McDonnell, J. Mehr, A. Ning, Brigham Young University, Provo, UT				

Monday, 8 January 2018						
30-MST-1	**Modeling and Simulation of Air Traffic Management I**					**Sun 2**
Chaired by: B. APONSO, NASA Ames Research Center						
0930 hrs AIAA-2018-0108 **Modeling Spatial Distribution of Itinerant General Aviation Operations by Aircraft Type** T. Li, University of Texas, Arlington, Arlington, TX	1000 hrs AIAA-2018-0109 **A Modeling Framework for Assessing Cyber Disruptions and Attacks to the National Airspace System** S. Roy, A. Tamimi, A. Hahn, M. Xue, Washington State University, Pullman, WA; S. Das, Missouri University of Science and Technology, Rolla, MO; A. Vosughi, Washington State University, Pullman, WA; et al.	1030 hrs AIAA-2018-0110 **An Efficient Route Design using Wind Patterns Classification** Y. Nakamura, K. Kageyama, Electronic Navigation Research Institute, Tokyo, Japan	1100 hrs AIAA-2018-0111 **Dynamics-Preserving Model-Reduction Techniques for Air Traffic Flow Management** S. Roy, M. Xue, Washington State University, Pullman, WA	1130 hrs AIAA-2018-0112 **Implementation and Evaluation of a Multi-Model Filter for Aircraft Ground Operations** K. Theuma, K. Chircop, J. Gauci, D. Zammit-Mangion, University of Malta, Msida, Malta		

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31-MST-2	**Human Factors, Perception and Cueing**					**Sun 3**
Chaired by: F. CARDULLO, State University of NY and P. ZAAL, NASA Ames Research Center						
0930 hrs AIAA-2018-0113 **Design and Evaluation of a Haptic Aid for Training of the Manual Flare Manoeuvre** P. Deldycke, D. Van Baelen, D. Pool, M. van Paassen, M. Mulder, Delft University of Technology, Delft, The Netherlands	1000 hrs AIAA-2018-0114 **A Review of the Recent Literature on the Mathematical Modeling of the Vestibular System** A. Momani, F. Cardullo, Binghamton University, Vestal, NY	1030 hrs AIAA-2018-0115 **A Cybernetic Analysis of Biodynamic Effects in Touchscreen Operation in Turbulence** X. Mobertz, D. Pool, M. van Paassen, M. Mulder, Delft University of Technology, Delft, The Netherlands	1100 hrs AIAA-2018-0116 **A Pilot Intent Estimator for Haptic Support Systems in Helicopter Maneuvering Tasks** G. D'Intino, M. Olivari, S. Geluardi, D. Fabbroni, H. Buelthoff, Max Planck Institute for Biological Cybernetics, Tübingen, Germany; L. Pollini, University of Pisa, Pisa, Italy	1130 hrs AIAA-2018-0117 **Design of a Haptic Feedback System for Flight Envelope Protection** D. Van Baelen, J. Ellerbroek, M. van Paassen, M. Mulder, Delft University of Technology, Delft, The Netherlands	1200 hrs AIAA-2018-0118 **Identification of Time-Varying Manual Control Adaptations with Recursive ARX Models** A. van Grootheest, D. Pool, M. van Paassen, M. Mulder, Delft University of Technology, Delft, The Netherlands	

Monday, 8 January 2018						
32-MST-3	**Model and Simulation Design, Development and Integration**					**Sun 4**
Chaired by: S. KOWALCHUK, Sandia National Laboratories						
0930 hrs AIAA-2018-0119 **An Object Oriented Agent Based Framework for Modeling and Simulation in Aerospace** B. Görür, A. Calli, Roketsan A.S., Ankara, Turkey	1000 hrs AIAA-2018-0120 **Online Trimming of Flight Dynamic Models Using the 2Simulate Realtime Simulation Framework** J. Gotschlich, M. Jones, German Aerospace Center (DLR), Braunschweig, Germany	1030 hrs AIAA-2018-0121 **Live Aircraft Encounter Visualization at FutureFlight Central** J. Murphy, F. Chinn, S. Monheim, NASA Ames Research Center, Moffett Field, CA; N. Otto, Flight Research Associates, Moffett Field, CA; K. Kato, A. John, Arctic Slope Regional Corporation, Moffett Field, CA	1100 hrs AIAA-2018-0122 **Sensitivity Analysis of a Neural Network based Avionic System by Simulated Fault and Noise Injection** A. Brandl, M. Battipede, P. Gili, Technical University of Turin, Turin, Italy; A. Lerro, AeroSmart srl, Caserta, Italy			

Monday, 8 January 2018						
33-MST-4/SOF-1	**Modeling and Simulation Based Software Development and Verification**					**Sun D**
Chaired by: U. DURAK, DLR-German Aerospace Center and C. TORENS, DLR - German Aerospace Center						
0930 hrs AIAA-2018-0123 **Interfacing & Interchanging – Reusing Real-Time Tests for Safety-Critical Systems** R. Rasche, A. Himmler, dSPACE GmbH, Paderborn, Germany; M. Franke, University of Bremen, Bremen, Germany; V. Meyer, Airbus, Bremen, Germany; T. Klaus-Dieter, University of Bremen, Bremen, Germany	1000 hrs Oral Presentation **Modeling and Implementation of Variable Structural Dynamics for Software Verification** M. Bigelow, Sandia National Laboratories, Albuquerque, NM	1030 hrs AIAA-2018-0124 **Real-time Simulation Infrastructure for Model-based Design of Helicopter Flight Control System** H. Aydemir, U. Zengin, Turkish Aerospace Industries, Inc., Ankara, Turkey	1100 hrs AIAA-2018-0125 **Using FMI- and FPGA-Based Models for the Real-Time Simulation of Aircraft Systems** A. Himmler, A. Pillekeit, dSPACE GmbH, Paderborn, Germany; B. Loyer, S. Mouvand, V. Dezobry, Siemens, Lyon, France	1130 hrs AIAA-2018-0126 **A versatile Simulation environment for Design Verification, System Integration Testing and Pilot Training of a diamond-shaped Unmanned Aerial Vehicle** R. Kuchar, German Aerospace Center (DLR), Wessling, Germany	1200 hrs AIAA-2018-0127 **Adapting Scenario Definition Language for Formalizing UAS Concept of Operations** C. Torens, U. Durak, German Aerospace Center (DLR), Braunschweig, Germany	

Monday, 8 January 2018

34-MVC-1	1st Geometry and Mesh Generation Workshop Summaries (Invited)					Osceola 3
Chaired by: H. THORNBURG, Egility PETTT and S. DEY, NRL						
0930 hrs AIAA-2018-0128 **Summary of the 1st AIAA Geometry and Mesh Generation Workshop (GMGW-1) and Future Plans** J. Chawner, Pointwise, Inc., Fort Worth, TX; T. Michal, J. Slotnick, The Boeing Company, Seattle, WA; C. Rumsey, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2018-0129 **Analysis of Participant Questionnaires Submitted to the 1st AIAA Geometry & Mesh Generation Workshop (Invited)** N. Taylor, MBDA, Filton, United Kingdom	1030 hrs AIAA-2018-0130 **Preparation and Analysis of the Geometry Models used in the 1st AIAA Geometry and Mesh Generation Workshop** N. Taylor, MBDA, Filton, United Kingdom; W. Jones, NASA Langley Research Center, Hampton, VA; M. Gammon, International TechneGroup, Inc., Cambridge, United Kingdom	1100 hrs AIAA-2018-0131 **Analysis of GMGW1 Structured Grids (Invited)** J. Dannenhoffer, Syracuse University, Syracuse, NY	1130 hrs AIAA-2018-0132 **Analysis of Unstructured Meshes from GMGW-1 / HiLiftPW-3** C. Ollivier Gooch, University of British Columbia, Vancouver, Canada	1200 hrs **Open Discussion**	

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35-NDA-1/SCS-1 0930 - 1230 hrs	NDA Lecture/SCS Panel	Sun A

0930-1100 hrs

NDA Special Lecture: Harnessing Uncertainty in Modeling and Design: Lessons from the DARPA EQUiPS Program

Fariba Fahroo
Program Manager, Defense Sciences Office
DARPA

1100-1230 hrs

SCS Panel: A Few JWST Lessons Learned During Final Integration and Test

Moderator: Gregory Davis, Associate Chief Technologist, Jet Propulsion Laboratory

Panelists:

Jon Arenberg
JWST Chief Engineer
Northrop Grumman Aerospace

Sandra Irish
James Webb Space Telescope NASA Mechanical Systems
Lead Structures Engineer
NASA Goddard Space Flight Center

Michael Menze
James Webb Space Telescope NASA Mission Systems Engineer
NASA Goddard Space Flight Center

Jim Moore
Vice President NeXolve Division
ManTech International Corporation

Monday, 8 January 2018

36-PC-1	Advanced Combustion Concepts I					Tampa 3
Chaired by: C. CADOU, University of Maryland and M. HARVAZINSKI, AFRL/RQRC						
0930 hrs AIAA-2018-0133 **Application of Graphene Oxide in Jet A-1 in Air to Enhance Combustion Process** J. Li, P. Chang, L. Li, C. Teo, B. Khoo, National University of Singapore, Singapore, Singapore; H. Duan, Nanyang Technological University, Singapore, Singapore; et al.	1000 hrs AIAA-2018-0134 **Ignition of Methane-Air Mixture at Low Temperature Using Dielectric Barrier Discharge Plasma** R. Patel, C. Oommen, J. Thomas, Indian Institute of Science, Bengaluru, India	1030 hrs AIAA-2018-0135 **Dry reforming of methane by vibrational excitation in a non-equilibrium plasma : kinetic modeling** Q. Chen, Beijing Jiaotong University, Beijing, China	1100 hrs AIAA-2018-0136 **Flow Characteristics of a Recirculating Flameless Combustor Configuration** R. Johnson, D. Schwer, A. Kercher, A. Corrigan, K. Kailasanath, Naval Research Laboratory, Washington, D.C.; E. Gutmark, University of Cincinnati, Cincinnati, OH; et al.	1130 hrs AIAA-2018-0137 **Correlation of Alternative Jet Fuel Physical Properties to Engine Ignition at Altitude Conditions** P. Canteenwalla, A. Corber, W. Chishty, National Research Council Canada, Ottawa, Canada		

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37-PC-2	**Combustion Chemistry**					**Osceola 4**
Chaired by: W. SUN, Georgia Institute of Technology and T. OMBRELLO, Air Force Research Laboratory						
0930 hrs AIAA-2018-0138 **Automatic generation of reduced chemical mechanisms of liquid aviation fuels for application in combustion dynamics computations** A. Naor, D. Michaels, Technion–Israel Institute of Technology, Haifa, Israel; A. Grinberg Dana, Massachusetts Institute of Technology, Cambridge, MA	1000 hrs AIAA-2018-0139 **Study of Kinetic Effect of NOx Sensitization on the Low Temperature Oxidation of N-pentane in a Jet Stirred Reactor** H. Zhao, Princeton University, Princeton, NJ; L. Wu, Chinese Academy of Sciences, Beijing, China; Z. Zhang, Wuhan University of Technology, Wuhan, China; C. Patrick, Princeton University, Princeton, NJ; Y. Rezgui, University of Oum El Bouaghi, Oum El Bouaghi, Algeria; G. Wysocki, Princeton University, Princeton, NJ; et al.	1030 hrs AIAA-2018-0140 **Kinetic Modeling of Cyclohexane and n-Propylcyclohexane Oxidation with the PAH Precursor Formation** M. Abbasi, N. Slavinskaya, U. Riedel, German Aerospace Center (DLR), Stuttgart, Germany	1100 hrs AIAA-2018-0141 **The Investigation of Ozonolysis Reactions of Ethylene Using a Plug Flow Reactor and Measurement of Global Reaction Rate Constant at Different Temperatures** B. Wu, X. Gao, W. Sun, Georgia Institute of Technology, Atlanta, GA	1130 hrs AIAA-2018-0142 **Sarin simulants combustion at high temperature: Time-resolved laser absorption spectroscopy of intermediate products in a shock tube** S. Neupane, F. Barnes, S. Barak, E. Ninnemann, Z. Loparo, A. Masunov, University of Central Florida, Orlando, FL; et al.	1200 hrs AIAA-2018-0143 **Investigation of Dataset Construction Parameters and their Impact on Reaction Model Optimization using PrIMe** A. Mirzayeva, N. Slavinskaya, U. Riedel, German Aerospace Center (DLR), Stuttgart, Germany; M. Frenklach, A. Packard, W. Li, University of California, Berkeley, Berkeley, CA; et al.	

Monday, 8 January 2018						
38-PC-3	**Combustion Diagnostics**					**Daytona 1**
Chaired by: R. PITZ, Vanderbilt University and A. CASWELL, USAF AFRL/RQTC						
0930 hrs AIAA-2018-0144 **Is Ignition in a Shock Tube Homogeneous? An Experimental Study Behind Reflected Shock Waves** E. Ninnemann, S. Barak, O. Pryor, S. Vasu, University of Central Florida, Orlando, FL	1000 hrs AIAA-2018-0145 **CO time-histories measurements behind reflected shockwaves during ignition of various gaseous fuels** O. Pryor, S. Barak, Z. Loparo, University of Central Florida, Orlando, FL; X. Lu, B. Forrest, D. Freed, 8 Rivers Capital, LLC, Durham, NC; et al.	1030 hrs AIAA-2018-0146 **A Study of Methane and Hydrogen Ignition Delay Times in CO_2 at High Pressures Near 40 atm** S. Barak, E. Ninnemann, S. Neupane, F. Barnes, S. Vasu, University of Central Florida, Orlando, FL	1100 hrs AIAA-2018-0147 **Extended Proper Orthogonal Decomposition (EPOD) and Dynamic Mode Decomposition (DMD) for Analysis of Mesoscale Burner Array Flame Dynamics** R. Rajasegar, J. Choi, S. Ghanekar, C. Mitsingas, E. Mayhew, Q. Liu, University of Illinois, Urbana-Champaign, Urbana, IL; et al.	1130 hrs AIAA-2018-0148 **Integration of spatially distributed flame transfer functions with the non-linear Euler equations** G. Tamanampudi, C. Huang, S. Sardeshmukh, W. Anderson, Purdue University, West Lafayette, IN		

Monday, 8 January 2018						
39-PC-4	**Model Validation for Propulsion I**					**Gainesville 1**
Chaired by: A. COMER, Air Force Institute of Technology and J. OEFELIN, Georgia Institute of Technology						
0930 hrs AIAA-2018-0149 **The Volvo Validation Rig – A Comparative Study of Large Eddy Simulation Combustion Models at Different Operating Conditions** C. Fureby, Swedish Defense Research Agency (FOI), Stockholm, Sweden	1000 hrs AIAA-2018-0150 **A Sensitivity Study on the Large Eddy Simulation of Bluff Body Stabilized Premixed Flame with Detailed Chemistry and Adaptive Mesh Refinement** V. Hasti, J. Gore, Purdue University, West Lafayette, IN; G. Kumar, S. Liu, Convergent Science, Inc., New Braunfels, TX	1030 hrs AIAA-2018-0151 **Application of Both Anisotropic AMR and High-Order Finite-Volume Schemes to Large Eddy Simulation of a Bluff-Body-Stabilized Premixed Flame** C. Groth, University of Toronto, Toronto, Canada				

Monday, 8 January 2018						
40-PC-7	**Turbulent Combustion II**					**Gainesville 1**
Chaired by: H. IM, King Abdullah University of Science and Technology and D. PETERSON, Air Force Research Laboratory						
0930 hrs **No Presentations**			1100 hrs AIAA-2018-0152 **Turbulent, Low-Speed, Ballistic Bluff-Body Stabilized Flames' Extinction Conditions** C. Engelmann, M. Geikie, A. Morales, K. Ahmed, University of Central Florida, Orlando, FL	1130 hrs AIAA-2018-0153 **Complete Determination of the Velocity Gradient Tensor upstream of the Flame Front with High-Speed Tomo-PIV/Dual-Plane-PIV/OH-PLIF Measurements** T. Yi, C. Fugger, N. Jiang, J. Felver, M. Slipchenko, S. Roy, Spectral Energies, LLC, Dayton, OH; et al.	1200 hrs AIAA-2018-0154 **Auto-ignition Dynamics of Turbulent Fuel Jets Issuing into High-Temperature Vitiated Coflows** R. Saksena, J. Sutton, Ohio State University, Columbus, OH	

Monday, 8 January 2018						
41-PC-5/PGC-1	**Pressure Gain Combustion–Rotating Detonation Propulsion Physics**					**Daytona 2**
Chaired by: E. LYNCH, Aerojet Rocketdyne and S. SCHUMAKER, Air Force Reseach Laboratory						
0930 hrs AIAA-2018-0155 **Numerical Study of High-Frequency Fluidic valve** S. Yalavarthi, F. Lu, University of Texas, Arlington, Arlington, TX	1000 hrs AIAA-2018-0156 **Experimental Investigation of Detonation Wave Propagation in a Supersonic Crossflow** J. Sosa, K. Ahmed, University of Central Florida, Orlando, FL; J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2018-0157 **Preliminary Experiments on Rotating Detonation Rocket Engine for Flight Demonstration Using Soundng Rocket** K. Goto, J. Nishimura, J. Higashi, H. Taki, T. Ukai, Y. Hayamizu, Nagoya University, Nagoya, Japan; et al.	1100 hrs AIAA-2018-0158 **Transducer Installation Effects on Pressure Measurements in PGC Devices** R. Gejji, I. Walters, A. Lemcherfi, S. Sardeshmukh, S. Heister, C. Slabaugh, Purdue University, West Lafayette, IN	1130 hrs AIAA-2018-0159 **Velocimetry Measurements using Structured Light-Field Focusing in a Rotating Detonation Engine** J. Sosa, K. Ahmed, University of Central Florida, Orlando, FL; J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH		

Monday, 8 January 2018						
42-PC-6	**Turbulent Combustion I**					**Sanibel 2**
Chaired by: A. STEINBERG, University of Toronto and C. HUANG, University of Michigan						
0930 hrs AIAA-2018-0160 **Turbulence Regime Characterization for Premixed Combustion** A. Morales, M. Geikie, C. Engelmann, K. Ahmed, I. Lasky, University of Central Florida, Orlando, FL	1000 hrs AIAA-2018-0161 **Structure of Flames in Flame Interaction Zones** A. Tyagi, Pennsylvania State University, University Park, PA; I. Boxx, German Aerospace Center (DLR), Stuttgart, Germany; S. Peluso, R. Shupp, J. O'Connor, Pennsylvania State University, University Park, PA	1030 hrs AIAA-2018-0162 **Turbulence-Flame Interaction in the Broken Reaction Regime** M. Geikie, A. Morales, C. Engelmann, K. Ahmed, University of Central Florida, Orlando, FL	1100 hrs AIAA-2018-0163 **Topological analysis of premixed and stratified V-flames** T. Gallagher, S. Menon, Georgia Institute of Technology, Atlanta, GA			

Monday, 8 January 2018						
43-PDL-1	**Plasma Aerodynamics I**					**Destin 2**
Chaired by: J. ZIMMERMAN, CU Aerospace						
0930 hrs AIAA-2018-0164 **An Experimental Investigation on the Thermal Effects of NS-DBD and AC-DBD Plasma Actuators for Aircraft Icing Mitigation** C. Kolbakir, Y. Liu, H. Hu, Iowa State University, Ames, IA; A. Starikovskiy, R. Miles, Princeton University, Princeton, NJ	1000 hrs AIAA-2018-0165 **Effects of strouhal numbers on asymmetric vortices control using plasma actuation** Y. Long, H. Li, X. Meng, Northwestern Polytechnical University, Xi'an, China; F. Liu, L. Shijun, University of California, Irvine, Irvine, CA	1030 hrs AIAA-2018-0166 **Numerical Simulation of Magnetohydrodynamic Flow Control in Reentry Flight with Three-Temperature Model** Y. Imamura, T. Fujino, University of Tsukuba, Tsukuba, Japan	1100 hrs AIAA-2018-0167 **A Comparison Study on AC-DBD Plasma and Electrical Heating for Aircraft Icing Mitigation** Y. Liu, C. Kolbakir, H. Hu, Iowa State University, Ames, IA	1130 hrs AIAA-2018-0168 **Utilization of Thermal Effect Induced by AC-DBD Plasma Generation for Aircraft Icing Mitigation** W. Zhou, Y. Liu, Iowa State University, Ames, IA; H. Hu, X. Meng, Northwestern Polytechnical University, Xi'an, China; H. Hu, Iowa State University, Ames, IA		

Monday, 8 January 2018						
44-PDL-2	**Physics of Weakly Ionized Plasma**					**Tampa 1**
Chaired by: S. MACHERET, Purdue University						
0930 hrs AIAA-2018-0169 **Corona-Glow-Arc Transition in High Pressure He/Ar Microplasma for Diode Pumped Rare Gas Lasers** K. Xu, C. Sanderson, University of Alabama, Huntsville, Huntsville, AL; B. Hokr, Army Space Missile Defense Command, Huntsville, AL	1000 hrs AIAA-2018-0170 **Numerical Modeling of Microwave Driven Surface Plasma Discharge Induced by Resonantly Exciting Spoof Surface Plasmon Polariton** Y. Kim, L. Raja, University of Texas, Austin, Austin, TX	1030 hrs AIAA-2018-0171 **Modeling of Laser-Induced Breakdown Phenomena in Non-Equilibrium Plasmas** A. Munafò, A. Alberti, C. Pantano, J. Freund, M. Panesi, University of Illinois, Urbana-Champaign, Urbana, IL	1100 hrs AIAA-2018-0172 **Collisional deactivation of N2(C3Πu) and N2+(B2Σ+u) by hydrocarbon molecules in afterglow of the picosecond discharge** A. Starikovskiy, Princeton University, Princeton, NJ	1130 hrs AIAA-2018-0173 **Study of Atmopheric Pressure Plasma Jet Driven by DC High Voltage** X. Wang, A. Shashurin, Purdue University, West Lafayette, IN		

Monday, 8 January 2018						
45-PDL-3	**Plasma and Laser Physics and Propulsion**					**Gainesville 2**
Chaired by: K. XU, University of Alabama in Huntsville						
0930 hrs AIAA-2018-0174 **Acceleration Modes and Transitions in Pulsed Plasma Accelerators** K. Polzin, C. Greve, NASA Marshall Space Flight Center, Huntsville, AL	1000 hrs AIAA-2018-0175 **Hyperbolic System Approach for Magnetized Electron Fluids in ExB Discharge Plasmas** R. Kawashima, Z. Wang, A. Chamarthi, H. Koizumi, K. Komurasaki, University of Tokyo, Tokyo, Japan	1030 hrs AIAA-2018-0176 **Fundamental Experiment of CW Laser Propulsion with Porous Carbon Heat Exchanger** K. Eguchi, T. Tran, Nagoya University, Nagoya, Japan; H. Yamamori, Nadex Company, Ltd., Nagoya, Japan; K. Mori, Nagoya University, Nagoya, Japan	1100 hrs AIAA-2018-0177 **Measurements of Electron Numbers in Femtosecond Laser Induced Plasmas Using Rayleigh Microwave Scattering** A. Sharma, M. Slipchenko, Purdue University, West Lafayette, IN; M. Shneider, Princeton University, Princeton, NJ; K. Rahman, A. Shashurin, X. Wang, Purdue University, West Lafayette, IN	1130 hrs AIAA-2018-0178 **Evolution of electronically excited nitrogen species in a nanosecond capillary discharge and in the afterglow** N. Lepikhin, École Polytechnique, Paris, France; N. Popov, Moscow State University, Moscow, Russia; S. Starikovskaia, École Polytechnique, Paris, France	1200 hrs AIAA-2018-0179 **Scaling Up Generation of Vibrationally Excited CO in a Chemical Reaction between Carbon Vapor and Oxygen** E. Jans, Z. Eckert, K. Frederickson, I. Gulko, J. Rich, I. Adamovich, Ohio State University, Columbus, OH	

Monday, 8 January 2018						
46-SAT-1	**Society and Aerospace Technology**					**Osceola 2**
Chaired by: M. KUESTER, Virginia Tech and S. DUTTA, NASA Langley Research Center						
0930 hrs AIAA-2018-0180 **DroneHack Journalism: Educating & Inspiring Journalists in the Capacities & Possibilities of Unmanned Aerial Systems** A. Heaton, J. Mills, D. Ansell, University of Central Lancashire, Preston, United Kingdom	1000 hrs AIAA-2018-0181 **Evaluating a Balance of Cooperation and Competition in United States Space Policy** J. Beauregard, Space Policy Institute, Washington, D.C.					

Monday, 8 January 2018						
47-SD-1	**Nonlinear Dynamics**					**Emerald 7**
Chaired by: W. SCHNEIDER, Lockheed Martin Aeronautics and S. SHIN, Seoul National University						
0930 hrs AIAA-2018-0182 **The Motion Formalism for Flexible Multibody Systems** V. Sonneville, O. Bauchau, University of Maryland, College Park, College Park, MD	1000 hrs AIAA-2018-0183 **Vibration Localization in Cyclic Structures: A Discrete Low-Order Model** A. Rodriguez, J. Kauffman, University of Central Florida, Orlando, FL	1030 hrs AIAA-2018-0184 **Identification of Nonlinear Constitutive Properties of Damping Coatings** J. Slater, M. Tidball, Wright State University, Dayton, OH	1100 hrs AIAA-2018-0185 **Nonlinear Structural Model Updating Based Upon Nonlinear Normal Modes** C. VanDamme, M. Allen, University of Wisconsin, Madison, Madison, WI; J. Hollkamp, Air Force Research Laboratory, Dayton, OH	1130 hrs AIAA-2018-0186 **Characterization of Control Surface Freeplay with Nonstationary Aerodynamic Loading via the Hilbert-Huang Transform** M. Candon, R. Carrese, N. Joseph, H. Ogawa, P. Marzocca, RMIT University, Melbourne, Australia	1200 hrs AIAA-2018-0187 **Evaluation of a Nonlinear Melt Region Produced Within a High Speed Environment** A. DeLeon, W. Baker, A. Palazotto, Air Force Institute of Technology, Wright-Patterson AFB, OH	

Monday, 8 January 2018						
48-SD-2	**Aeroelastic Tailoring and Control**					**Emerald 8**
Chaired by: K. GRIFFIN, Southwest Research Institute and D. JOHNSON, NASA Glenn Research Center						
0930 hrs AIAA-2018-0188 **Active Flutter Suppression on Composite Tow Steered Panels based on Piezoelectric Actuation** T. Guimarães, Federal University of Uberlandia, Uberlandia, Brazil; D. Rade, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; C. Cesnik, University of Michigan, Ann Arbor, Ann Arbor, MI	1000 hrs AIAA-2018-0189 **Validation and Verification of Flight Test Data on an Aircraft Equipped with Active Winglets** N. Olson, Tamarack Aerospace Group, Sandpoint, ID	1030 hrs AIAA-2018-0190 **Strain-based Aeroelastic Shape Sensing** M. Freydin, M. Rattner, D. Raveh, Technion-Israel Institute of Technology, Haifa, Israel	1100 hrs AIAA-2018-0191 **The Effects of Aeroelastic Tailoring on Flight Dynamic Stability** M. Natella, X. Wang, R. De Breuker, Delft University of Technology, Delft, The Netherlands	1130 hrs AIAA-2018-0192 **Wind tunnel test and gust load alleviation of flexible wing including geometric nonlinearities with servo control** C. An, C. Xie, Y. Meng, C. Yang, Beihang University, Beijing, China		

Monday, 8 January 2018						
49-SEN-1	**Advanced Sensor Data Processing**					**Tallahassee 2**
Chaired by: K. ENGEBRETSON, Lockheed Martin and T. FREY, Lockheed Martin Aeronautics						
0930 hrs AIAA-2018-0193 **Demonstration of Persistent, High Resolution Remote Sensing from an Advanced Stratollite Platform** W. Good, B. Mallare, Z. Payne, J. Wachs, C. Wamsley, J. Fasnacht, Ball Corporation, Broomfield, CO; et al.	1000 hrs AIAA-2018-0194 **Exploiting Low-Cost Compact Sensor Configurations Performance by Redundancy** R. Fontanella, F. Buonavolontà, R. Schiano Lo Moriello, D. Accardo, L. Angrisani, University of Naples "Federico II", Naples, Italy	1030 hrs AIAA-2018-0195 **Rethinking Background Volume Search for an AESA Radar** D. Faulk, T. Frey, Lockheed Martin Corporation, Fort Worth, TX	1100 hrs AIAA-2018-0196 **Distributed RF Interactions Tool for Evaluating Radar Coverage** S. Gordon, E. Inclan, H. Ford, A. Sudol, M. Miller, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1130 hrs AIAA-2018-0197 **Performance of a Diophantine Based Approach to Resolve Angle of Arrival Ambiguities for a Linear Interferometer** T. Frey, K. Engebretson, Lockheed Martin Corporation, Fort Worth, TX	1200 hrs AIAA-2018-0198 **Linear Array Interferometer Ambiguity Resolution** D. deSchweinitz, T. Frey, Lockheed Martin Corporation, Fort Worth, TX	

Monday, 8 January 2018						
50-SFM-1	**Asteroid and Non-Earth Orbiting Missions I**					**Naples 1**
Chaired by: J. MCMAHON, University of Colorado Boulder						
0930 hrs AIAA-2018-0199 **Near Earth Asteroid (NEA) Scout Solar Sail Contingency Trajectory Design and Analysis** J. Pezent, R. Sood, University of Alabama, Tuscaloosa, Tuscaloosa, AL; A. Heaton, NASA Marshall Space Flight Center, Huntsville, AL	1000 hrs AIAA-2018-0200 **Automatic Design of Missions to Small Bodies** J. Roa, A. Chamberlin, R. Park, A. Petropoulos, P. Chodas, D. Landau, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; et al.	1030 hrs AIAA-2018-0201 **Trade Study on Low-Thrust Kinetic Impactor Missions for Planetary Defense** B. Sarli, Catholic University of America, Washington, D.C.	1100 hrs AIAA-2018-0202 **A Robust Mission Tour for NASA's Planned Europa Clipper Mission** T. Lam, B. Buffington, S. Campagnola, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA			

Monday, 8 January 2018						
51-SFM-2	**Attitude Dynamics, Determination, and Control I**					**Osceola 6**
Chaired by: J. DARLING, Air Force Research Laboratory						
0930 hrs AIAA-2018-0203 **Generalized One Step Ahead Control Made Practical by New Stable Inverses** B. Wang, R. Longman, Columbia University, New York, NY	1000 hrs AIAA-2018-0204 **Spacecraft Attitude Control using Path Integral Method via Riemann Manifold Hamiltonian Monte Carlo** B. Doerr, R. Linares, University of Minnesota, Twin Cities, Minneapolis, MN; C. Petersen, Air Force Research Laboratory, Kirtland AFB, NM	1030 hrs AIAA-2018-0205 **On Spacecraft Magnetic Attitude Control** M. Desouky, K. Prabhu, O. Abdelkhalik, Michigan Technological University, Houghton, MI	1100 hrs AIAA-2018-0206 **On Iterative Learing Control of Time Varying Systems** X. Ji, R. Longman, Columbia University, New York, NY			

Monday, 8 January 2018						
52-SFM-3	**Dynamics and Control of Large Space Structures and Tethers**					**Naples 2**
Chaired by: J. HUDSON, Western Michigan University						
0930 hrs AIAA-2018-0207 **A Method to Maintain Argument of Perigee in Polar Orbits using Electrodynamic Tether Propulsion** P. Reed, Space and Naval Warfare Systems Center, North Charleston, SC	1000 hrs AIAA-2018-0208 **Nonovershooting Space Tether Deployment with Explicit Constraint of Positive Deployment Velocity** Z. Zhu, York University, Toronto, Canada; M. Liu, X. Zhan, B. Liu, Shanghai Jiao Tong University, Shanghai, China	1030 hrs AIAA-2018-0209 **Model Verification of a Satellite with Large Flexible Appendages for Control System Design** E. Mooij, D. Gransden, Delft University of Technology, Delft, The Netherlands	1100 hrs AIAA-2018-0210 **Stability Analysis of a Novel On-Orbit Propellant Storage and Transfer System** M. Vairamani, V. Duraisamy, M. Kulkarni, S. Gangadharan, Embry-Riddle Aeronautical University, Daytona Beach, FL; D. Kirk, M. Wilde, Florida Institute of Technology, Melbourne, FL; et al.	1130 hrs AIAA-2018-0211 **Road Map to L4/L5 with a solar sail** A. Farres , NASA Goddard Space Flight Center, Greenbelt, MD; J. Heiligers, Delft University of Technology, Delft, The Netherlands; N. Miguel, University of Barcelona, Barcelona, Spain	1200 hrs AIAA-2018-0212 **Interplanetary Mission Design for Spinning Solar Sails Utilizing Active Shape Control of Sail Membranes** Y. Takao, University of Tokyo, Tokyo, Japan; O. Mori, J. Kawaguchi, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	

Monday, 8 January 2018						
53-SFM-4	**Low-Thrust Trajectory Design and Optimization I**					**Naples 3**
Chaired by: A. DUTTA, Wichita State University						
0930 hrs AIAA-2018-0213 **A New Solution of Rendezvous between Geosynchronous Satellites based on Analytical low-thrust orbit propagation** S. Zhang, X. Sun, C. Han, Beihang University, Beijing, China; S. Li, Aerospace System Engineering Shanghai, Shanghai, China	1000 hrs AIAA-2018-0214 **Performance Comparison of Smoothing Functions for Indirect Optimization of Minimum-Fuel Low-thrust Trajectories** E. Taheri, E. Atkins, I. Kolmanovsky, University of Michigan, Ann Arbor, Ann Arbor, MI	1030 hrs AIAA-2018-0215 **Complex Interplanetary Trajectories Design with Low-Thust Based Motion Primitives** D. Wu, E. Taheri, I. Kolmanovsky, University of Michigan, Ann Arbor, Ann Arbor, MI	1100 hrs AIAA-2018-0216 **Optimal Continuous Maneuvers for Satellite Formation Reconfiguration in J2-perturbed Orbits** G. Di Mauro, University of Florida, Gainesville, Gainesville, FL; D. Spiller, University of Rome "La Sapienza", Rome, Italy; R. Bevilacqua, University of Florida, Gainesville, Gainesville, FL; F. Curti, University of Rome "La Sapienza", Rome, Italy			

Monday, 8 January 2018						
54-SFM-5	**Space Trajectory Design and Optimization I**					**Destin 1**
Chaired by: R. PARK, Jet Propulsion Laboratory						
0930 hrs AIAA-2018-0217 **Optimal Planar Impulsive Transfer Using Transformed Variables** T. Carter, Eastern Connecticut State University, Willimantic, CT; M. Humi, Worcester Polytechnic Institute, Worcester, MA	1000 hrs AIAA-2018-0218 **Multi-Objective Optimal Control of Re-entry and Abort Scenarios** M. Vasile, C. Maddock, L. Ricciardi, University of Strathclyde, Glasgow, United Kingdom	1030 hrs AIAA-2018-0219 **Spacecraft Rendezvous and Pursuit/Evasion Analysis Using Reachable Sets** C. Venigalla, D. Scheeres, University of Colorado, Boulder, Boulder, CO	1100 hrs AIAA-2018-0220 **Validation of Optimal Range Observability Trajectories for Proximity Operations of a Satellite Formation About an Uncooperative RSO** F. Franquiz, B. Udrea, Embry-Riddle Aeronautical University, Daytona Beach, FL			

Monday, 8 January 2018						
55-STR-1	**Structural Joints and Repairs**					**Emerald 5**
Chaired by: B. WILLIS, Jacobs Technology and S. SMELTZER, NASA Langely Research Center						
0930 hrs AIAA-2018-0221 **Numerical Prediction of Failure in Composite T-Joints Using Progressive Damage Modelling** Z. Sápi, R. Butler, A. Rhead, University of Bath, Bath, United Kingdom	1000 hrs AIAA-2018-0222 **Performance of Adhesively-bonded Joints of Laminated Composite Materials under Different Loading Modes** F. Kadioglu, Ankara Yildirim Betazit University, Ankara, Turkey; M. Demiral, Cankaya University, Ankara, Turkey; E. Avil, M. Ercan, T. Aydogan, Ferka Aviation, Ankara, Turkey	1030 hrs AIAA-2018-0223 **An improved damage tolerant concept for composite-metal adhesive joints** L. Liu, H. Tang, Z. Yu, Shanghai Jiao Tong University, Shanghai, China	1100 hrs AIAA-2018-0224 **3-D Woven Preform Joint Experimental Testing Results to Support the D8 Double-Bubble Composite Fuselage Design** J. Chambers, B. Yutko, A. Oonnoonny, D. Hoffman, C. Church, Aurora Flight Sciences, Manassas, VA	1130 hrs AIAA-2018-0225 **Prediction of Damage Tolerance in Metallic Structure Repaired with a Co-Cured Composite Patch** B. Heng, S. TerMaath, University of Tennessee, Knoxville, Knoxville, TN		

Monday, 8 January 2018						
56-STR-2	**Composite Structural Design, Test and Analysis**					**Emerald 6**
Chaired by: A. SELVARATHINAM, Lockheed Martin Corporation and Z. HU, The Boeing Company						
0930 hrs AIAA-2018-0230 **Numerical Investigation of Stringer-Frame Intersections for Stitched Aerospace Structures** B. Horton, Y. Song, J. Bayandor, Virginia Polytechnic Institute and State University, Blacksburg, VA	1000 hrs AIAA-2018-0227 **Aeroelastic Optimization of Composite Wings Subjected to Fatigue Loads** D. Rajpal, C. Kassapoglou, R. De Breuker, Delft University of Technology, Delft, The Netherlands	1030 hrs AIAA-2018-0228 **Mapping Manufacturing Data for Stress Analysis of Automated Fiber Placement Structures** A. Noevere, C. Collier, Collier Research Corporation, Newport News, VA	1100 hrs AIAA-2018-0229 **Designing Desirable Material Distributions with 3D Printing Technology** L. Leben, J. Schwartz, R. D'Mello, A. Waas, University of Washington, Seattle, Seattle, WA	1130 hrs AIAA-2018-0226 **A Novel Method to Measure Dynamic Properties of Composite Materials** F. Kadioglu, Ankara Yildirim Beyazit University, Ankara, Turkey; H. Sekerci, T. Coskun, Ferka Aviation, Ankara, Turkey		

Monday, 8 January 2018						
57-SUR-1	**Survivability I**					**Emerald 3**
Chaired by: A. LINGENFELTER, Air Force Institute of Technology and S. BROUSSARD, The Boeing Company						
0930 hrs AIAA-2018-0231 **Rupture of Composite Pressure Vessels (COPVs) Following a Hypervelocity MMOD Particle Impact** W. Schonberg, Missouri University of Science and Technology, Rolla, MO	1000 hrs AIAA-2018-0232 **Flow Properties through a Ballistically Generated Orifice During a Hydrodynamic Ram Event** L. Tatman, A. Lingenfelter, Air Force Institute of Technology, Wright-Patterson AFB, OH; D. Liu, Air Force Life Cycle Management Center, Eglin AFB, FL	1030 hrs AIAA-2018-0233 **Ultrasonic Testing of Manufactured Voids in Electron Beam Malted Ti-6Al-4V** A. Durkee, A. Lingenfelter, D. Liu, Air Force Institute of Technology, Wright-Patterson AFB, OH	1100 hrs AIAA-2018-0234 **Finite Element Model Correlation of Laser Shock Peening** C. Engebretsen, A. Palazotto, Air Force Institute of Technology, Wright-Patterson AFB, OH; K. Langer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2018-0235 **A Time Reversed Guided Wave Method for Bolt Loosening Detection of Aerospace Thermal Protection System Panels** G. Wu, C. Xu, F. Du, Northwestern Polytechnical University, Xi'an, China; W. Zhu, University of Maryland, Baltimore County, Baltimore, MD	1200 hrs AIAA-2018-0236 **Investigation of Hybrid Material Projectile Impact Against Concrete Targets** A. Patel, A. Palazotto, Air Force Institute of Technology, Wright-Patterson AFB, OH	

Monday, 8 January 2018						
58-TP-1	**Nonequilibrium Flows I**					**Sarasota 2**
Chaired by: D. HASH, NASA - ARC and M. PANESI, University of Illinois at Urbana Champaign						
0930 hrs AIAA-2018-0237 **Quasiclassical Trajectory Analysis of Oxygen Dissociation via O2, O, and N2** R. Chaudhry, M. Grover, University of Minnesota, Twin Cities, Minneapolis, MN; J. Bender, Lawrence Livermore National Laboratory, Livermore, CA; T. Schwartzentruber, G. Candler, University of Minnesota, Twin Cities, Minneapolis, MN	1000 hrs AIAA-2018-0238 **Dynamics of vibrational energy excitation and dissociation in oxygen from direct molecular simulation** M. Grover, T. Schwartzentruber, Z. Varga, D. Truhlar, University of Minnesota, Twin Cities, Minneapolis, MN	1030 hrs AIAA-2018-0239 **State-to-State and Direct Molecular Simulation Study of energy transfer and dissociation in nitrogen mixtures** R. Macdonald, University of Illinois, Urbana-Champaign, Urbana, IL; M. Grover, T. Schwartzentruber, University of Minnesota, Twin Cities, Minneapolis, MN; M. Panesi, University of Illinois, Urbana-Champaign, Urbana, IL	1100 hrs AIAA-2018-0240 **Dissociation of oxygen and nitrogen in a bimolecular reaction at hypersonic temperatures** D. Andrienko, I. Boyd, University of Michigan, Ann Arbor, Ann Arbor, MI	1130 hrs AIAA-2018-0241 **Nonequilibrium radiation from a recombining nitrogen plasma** A. Tibère-Inglesse, Airbus, Châtenay-Malabry, France; S. McGuire, C. Laux, CentraleSupélec, Châtenay-Malabry, France		

Monday, 8 January 2018						
59-TP-2	**Theoretical/Experimental/Computational Energy Transfer**					**Sarasota 3**
Chaired by: S. SHERIF, University of Florida and P. YEE, The Aerospace Corporation						
0930 hrs AIAA-2018-0242 **EHD-Enhanced Natural Convection in an Enclosure by Non-Symmetric Electric Field** F. Lai, University of Oklahoma, Norman, OK	1000 hrs AIAA-2018-0243 **Effects of Curvature on the Performance of Sweeping Jet Impingement Heat Transfer** M. Hossain, L. Agricola, A. Ameri, J. Gregory, J. Bons, Ohio State University, Columbus, OH	1030 hrs AIAA-2018-0244 **Approximate Convective Heat Flux Calculation Methods for Hypersonic Vehicles** H. Kamezawa, S. Ruffin, Georgia Institute of Technology, Atlanta, GA	1100 hrs AIAA-2018-0245 **Model Correlation of Effective Emissivity of Light-weighted Beryllium Mirrors during JWST Cryogenic Thermal Vacuum Testing** R. Schweickart, R. Franck, Ball Corporation, Boulder, CO; S. Park, Smithsonian Institution, Cambridge, MA	1130 hrs AIAA-2018-0246 **Study of Centrifugal Compressor Off-Design Performance Based on CFD Simulations** H. Wan, S. Patnaik, Air Force Research Laboratory, Wright-Patterson AFB, OH; A. Heltzel, PC Krause & Associates, West Lafayette, IN		

Monday, 8 January 2018						
60-UAS-1	**UAS GN&C I**					**Tallahassee 3**
Chaired by: M. LOGAN, NASA Langley Research Center						
0930 hrs AIAA-2018-0247 **Flight Testing Algorithms for Graceful Performance Degradation after a Failure** R. Rocchio, F. Corraro, E. De Lellis, L. Garbarino, N. Genito, Italian Aerospace Research Center (CIRA), Capua, Italy	1000 hrs AIAA-2018-0248 **Design Parameter Tuning in Adaptive Observer-based Flight Control Architectures** K. Wise, The Boeing Company, St. Louis, MO	1030 hrs AIAA-2018-0249 **Sensor bias fault detection and isolation in a large multirotor aerial vehicle using active disturbance rejection control** D. Li, Beihang University, Beijing, China; H. Liu, University of Toronto, Toronto, Canada	1100 hrs AIAA-2018-0250 **Modeling and Control of Quadrotor Formations Carrying a Slung Load** S. Ariyibi, O. Tekinalp, Middle East Technical University, Ankara, Turkey			

Monday, 8 January 2018						
61-WE-1	**Wake Physics, Modeling, and Experimentation I**					**Osceola 5**
Chaired by: A. MITTAL, Convergent Science and M. BLAYLOCK, Sandia National Laboratories						
0930 hrs AIAA-2018-0251 **Verification of a Fast Scale-Adaptive CFD Formulation for Waked Wind Turbines** J. Wang, Y. Liu, F. Campagnolo, C. Bottasso, Technical University of Munich, Munich, Germany	1000 hrs AIAA-2018-0252 **Uncertainties and Wakes for Short-term Power Production of a Wind Farm** T. Göçmen, G. Giebel, Risø Technical University of Denmark, Roskilde, Denmark	1030 hrs AIAA-2018-0253 **Flow Structures in the Turbulent Wake of a Cross Flow Wind Turbine** G. Ramos Casado, V. Beltrán, S. Le Clainche, E. Ferrer, J. Vega, Technical University of Madrid, Madrid, Spain	1100 hrs AIAA-2018-0254 **Multilevel Simulation of Aerodynamic Singularity Elements** J. Saverin, D. Marten, C. Nayeri, G. Pechlivanoglou, C. Paschereit, Technical University of Berlin, Berlin, Germany	1130 hrs AIAA-2018-0255 **Uncertainty Quantification Pertinent to Wind Farm Flow Physics and Modeling** P. Jha, Envision Energy, Houston, TX; A. Jemcov, University of Notre Dame, South Bend, IN; C. Sideroff, Applied CCM, Inc., Ottawa, Canada; G. Wang, Envision Energy, Houston, TX; S. Schmitz, Pennsylvania State University, University Park, PA	1200 hrs AIAA-2018-0256 **Wind Turbine Wake Dynamics Analysis Using a High-Fidelity Simulation Framework with Blade-Resolved Turbine Models** A. Kirby, A. Hassanzadeh, D. Mavriplis, J. Naughton, University of Wyoming, Laramie, Laramie, WY	

Monday, 8 January 2018		
62-LEC-1 **1230 - 1400 hrs**	**Durand Lecture for Public Service and Luncheon** **NAE's Grand Challenges for Engineering and the Scholars Program**	**Osceola CD**
C.D. Mote Jr. President National Academy of Engineering First-come, first-served for lunch (up to 200 people). Lecture is open to all attendees		

Monday, 8 January 2018						
63-AA-2	**Jet Noise I**					**Tampa 1**
Chaired by: C. TINNEY, Applied Research Laboratories and M. SAMIMY, The Ohio State University						
1400 hrs AIAA-2018-0257 **LES of Unheated and Heated Supersonic Jets with Fluidic Injection** M. Coderoni, A. Lyrintzis, Embry-Riddle Aeronautical University, Daytona Beach, FL; G. Blaisdell, Purdue University, West Lafayette, IN	1430 hrs AIAA-2018-0258 **Jet Noise Reduction by Downstream Fluidic Injection: Effect of Injection Pressure Ratio and Number of Injection Ports** P. Rajput, New York University, Brooklyn, NY; S. Kumar, New York University Abu Dhabi, Abu Dhabi, United Arab Emirates	1500 hrs AIAA-2018-0259 **Supersonic Active Noise Reduction in Small- and Moderate-Scale Nozzles** J. Morgan, D. McLaughlin, P. Morris, Pennsylvania State University, University Park, PA	1530 hrs AIAA-2018-0260 **Flow Measurement and Acoustic Investigation of High Temperature Rectangular Jets** A. Karnam, F. Baier, E. Gutmark, University of Cincinnati, Cincinnati, OH; K. Kailasanath, Naval Research Laboratory, Washington, D.C.	1600 hrs AIAA-2018-0261 **Experimental study of impinging jet flow field involving Converging and CD nozzle pair** M. Harmon, V. Bhargav, P. Sellappan, F. Alvi, R. Kumar, Florida State University, Tallahassee, FL	1630 hrs AIAA-2018-0262 **Elimination of Shock Associated Noise in Supersonic Jets by Destructive Wave Interference** D. Cuppoletti, Air Force Research Laboratory, Wright-Patterson AFB, OH; E. Gutmark, University of Cincinnati, Cincinnati, OH; H. Hafsteinsson, L. Eriksson, Chalmers University of Technology, Göteborg, Sweden	

Monday, 8 January 2018						
64-AA-3	**Community and UAV Noise**					**Tampa 2**
Chaired by: S. ARUNAJATESAN, Sandia National Labs and S. RIZZI, NASA Langley Research Center						
1400 hrs AIAA-2018-0263 **REACT: A Rapid Environmental Impact on Airport Community Tradeoff Environment** D. Monteiro, S. Prem, M. Kirby, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1430 hrs AIAA-2018-0264 **System noise assessment of a tube-and-wing aircraft with geared turbofan engines** L. Bertsch, German Aerospace Center (DLR), Göttingen, Germany; F. Wolters, German Aerospace Center (DLR), Cologne, Germany; W. Heinze, Technical University of Braunschweig, Braunschweig, Germany; M. Pott-Pollenske, J. Blinstrub, German Aerospace Center (DLR), Braunschweig, Germany	1500 hrs AIAA-2018-0265 **NASA's Pursuit of Low-Noise Propulsion for Low-Boom Commercial Supersonic Vehicles** J. Bridges, C. Brown, B. Henderson, J. Seidel, NASA Glenn Research Center, Cleveland, OH	1530 hrs AIAA-2018-0266 **Simulation process for perception-based noise optimization of conventional and novel aircraft concepts** R. Pieren, Empa, Dübendorf, Switzerland; L. Bertsch, German Aerospace Center (DLR), Göttingen, Germany; S. Beat, W. Jean Marc, Empa, Dübendorf, Switzerland	1600 hrs AIAA-2018-0267 **A Recording-Based Method for Auralization of Rotorcraft Flyover Noise** N. Pera, Virginia Polytechnic Institute and State University, Blacksburg, VA; S. Rizzi, S. Krishnamurthy, NASA Langley Research Center, Hampton, VA; C. Fuller, Virginia Polytechnic Institute and State University, Blacksburg, VA; A. Christian, NASA Langley Research Center, Hampton, VA	1630 hrs AIAA-2018-0268 **A Comprehensive Approach to Study Aerodynamic and Aeroacoustic Performances of Small Multicopter Unmanned Aerial Systems** Z. Wang, A. Pandey, M. Sutkowy, B. Harter, M. McCrink, J. Gregory, Ohio State University, Columbus, OH; et al.	1700 hrs AIAA-2018-0269 **A Numerical Analysis of the Effects of Wing Kinematics on Flapping Wing Aeroacoustics** K. Nedunchezian, C. Kang, University of Alabama, Huntsville, Huntsville, AL; H. Aono, Tokyo University of Science, Tokyo, Japan

Monday, 8 January 2018						
65-ACD-1	**Methodologies for Aerodynamic Design**					**Tampa 3**
Chaired by: J. WELSTEAD, NASA Langley Research Center and D. CARTER, Air Force Research Laboratory						
1400 hrs AIAA-2018-0270 **Operator and Manufacturer Life Cycle Cost-Benefit Analysis of Aircraft with Natural Laminar Flow Technology** K. Wicke, A. Pohya, German Aerospace Center (DLR), Hamburg, Germany	1430 hrs AIAA-2018-0271 **Vehicle Level System Impact of Boundary Layer Ingestion for the NASA D8 Concept Aircraft** T. Marien, J. Welstead, NASA Langley Research Center, Hampton, VA; S. Jones, NASA Glenn Research Center, Cleveland, OH	1500 hrs AIAA-2018-0272 **Comparison of Aerodynamic Characterization Methods for Design of Unmanned Aerial Vehicles** O. Dantsker, Al Volo, LLC, Urbana, IL; M. Vahora, University of Illinois, Urbana-Champaign, Urbana, IL	1530 hrs AIAA-2018-0273 **Estimating Zero-Lift Drag Coefficients and Maximum L/D in Subsonic Flight** P. Sforza, University of Florida, Gainesville, Gainesville, FL	1600 hrs AIAA-2018-0274 **Dimension Reduction for Shape Design Insight** Z. del Rosario, A. Towne, G. Iaccarino, Stanford University, Stanford, CA		

Monday, 8 January 2018						
66-ACD-2/TFPC-1	**Vehicle/Propulsion System Design**					**Daytona 1**
Chaired by: A. CHAPUT, University of Texas at Austin and D. COTTRELL, Aurora						
1400 hrs AIAA-2018-0275 **Small UAV Motor and Propeller Methods - A Parametric System Engineering Model-Based Approach** A. Chaput, University of Texas, Austin, Austin, TX	1430 hrs AIAA-2018-0276 **Parametric Study of Whirl Flutter Stability of the NASA Aircraft X-57** C. Hoover, J. Shen, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1500 hrs AIAA-2018-0277 **Exploring the Effects of Installation Geometry in High-Lift Propeller Systems** X. Fei, NASA Langley Research Center, Hampton, VA; B. German, Georgia Institute of Technology, Atlanta, GA; M. Patterson, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2018-0278 **Feasibility Study on Shared Design of Hypersonic Transport and Booster of TSTO for Reduction of Development Cost** S. Aso, Y. Tani, T. Hirayama, Kyushu University, Fukuoka, Japan	1600 hrs AIAA-2018-0279 **Improved Design of Waverider Based on Mach Line Cutting of Compression Surfaces** Y. Lyu, C. Jiang, S. Hu, Z. Gao, Beihang University, Beijing, China	1630 hrs AIAA-2018-0280 **Optimization of an Active and Passive Thermal Protection System for a Scramjet-Powered Hypersonic Vehicle** C. Marley, J. Driscoll, University of Michigan, Ann Arbor, Ann Arbor, MI	

Monday, 8 January 2018						
67-ACD-3	**Aircraft Operations and ATM**					**Naples 3**
Chaired by: Z. MIAN, United Technologies Research Center and A. KHAN, Institute of Space Technology, Islamabad						
1400 hrs AIAA-2018-0281 **Impact of Near Term Operational Improvements on Aircraft Fuel Burn** M. Hassan, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1430 hrs AIAA-2018-0282 **Comparison of Direct Operating Cost and Life Cycle Cost-Benefit Methods in Aircraft Technology Assessment** A. Pohya, K. Wicke, J. Hartmann, German Aerospace Center (DLR), Hamburg, Germany	1500 hrs AIAA-2018-0283 **Improvement of the Aircraft Design process for Air Traffic Management evaluations** P. Schmollgruber, N. Bartoli, J. Bedouet, ONERA, Toulouse, France; E. Benard, Y. Gourinat, Higher Institute of Aeronautics and Space, Toulouse, France	1530 hrs AIAA-2018-0284 **The Human Factor: Accounting For "Off Book" Flight Speeds Within Implied Safety Margins** T. Takahashi, J. Beard, D. Wood, Arizona State University, Tempe, AZ	1600 hrs AIAA-2018-0285 **Optimal Piloting Approaches For Obstacle Clearance Limited Standard Instrument Departures** J. Beard, T. Takahashi, Arizona State University, Tempe, AZ	1630 hrs AIAA-2018-0286 **Flight Tests of ADS-B Traffic Advisory System (ATAS) and Performance Comparison with Other Surveillance Systems** G. Corraro, F. Corraro, E. De Lellis, L. Garbarino, Italian Aerospace Research Center (CIRA), Capua, Italy	1700 hrs AIAA-2018-0287 **Adaptive Landing Sequencing using Bipartite Graph** M. Hickson, C. Bil, RMIT University, Bundoora, Australia

Monday, 8 January 2018						
68-AFM-3	**Launch Vehicle, Entry Vehicle, and Projectile Flight Dynamics II**					**Osceola 3**
Chaired by: C. KARLGAARD, Analytical Mechanics Associates Inc and F. FRESCONI, US Army Research Lab						
1400 hrs AIAA-2018-0288 **Separation Process of Spheres in Hypersonic Flows** S. Park, G. Park, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1430 hrs AIAA-2018-0289 **Aerodynamic Heating Prediction of Flare-type Membrane Inflatable Reentry Vehicle from Low Earth Orbit** T. Koike, Y. Takahashi, N. Oshima, Hokkaido University, Sapporo, Japan; K. Yamada, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	1500 hrs AIAA-2018-0290 **Computational Study of Aerodynamic Characteristics on Reentry Capsule Aft-body Shape in Transonic Flow** M. Nomura, K. Fujita, H. Nagai, Tohoku University, Sendai, Japan	1530 hrs AIAA-2018-0291 **Coupling Computational Fluid Dynamics with 6DOF Rigid Body Dynamics for Unsteady, Accelerated Flow Simulations** Z. Ernst, B. Hiller, C. Johnson, B. Robertson, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1600 hrs AIAA-2018-0292 **Comparison of Three Aerodynamic Analysis Software Packages Against the Army Navy Finner Projectile to Determine Fidelity Level** H. Schwartz, B. Hiller, B. Robertson, D. Mavris, Georgia Institute of Technology, Atlanta, GA		

Monday, 8 January 2018						
69-AFM-4	**Small Unmanned Aircraft II**					**Sarasota 1**
Chaired by: T. FIELDS, University of Missouri-Kansas City and C. WOOLSEY, Virginia Tech						
1400 hrs AIAA-2018-0293 **Handling Qualities and Performance Metrics for First-Person-View Racing Quadrotors** M. Abdulrahim, J. Dee, G. Thomas, Prioria Robotics, Inc., Gainesville, FL; G. Qualls, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2018-0294 **Aerodynamic parameter estimation from wind tunnel testing of a small UAS** R. O'Donnell, K. Mohseni, University of Florida, Gainesville, Gainesville, FL	1500 hrs AIAA-2018-0295 **Online Near Real Time System Identification on a Fixed-Wing Small Unmanned Air Vehicle** H. Lu, C. Rogers, V. Goecks, J. Valasek, Texas A&M University, College Station, TX	1530 hrs AIAA-2018-0296 **System Identification and Multi-Objective Longitudinal Control Law Design for a Small Fixed-Wing UAV** F. Sanders, San Jose State University Research Foundation, San Jose, CA; M. Tischler, T. Berger, M. Berrios, Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA; A. Gong, Universities Space Research Association, Moffett Field, CA	1600 hrs AIAA-2018-0297 **Gust Response Evaluation of small UAS via Free-Flight in Gust Wind Tunnel** D. Kubo, Japan Aerospace Exploration Agency (JAXA), Mitaka, Japan	1630 hrs AIAA-2018-0298 **Heteroscedastic Gaussian Process-based System Identification and Predictive Control of a Quadcopter** A. Smith, Oregon State University, Corvallis, OR; M. AlAbsi, T. Fields, University of Missouri, Kansas City, Kansas City, MO	1700 hrs AIAA-2018-0299 **Development of a Process to Define Unmanned Aircraft Systems Handling Qualities** D. Klyde, P. Schulze, Systems Technology, Inc., Hawthorne, CA; D. Mitchell, Mitchell Aerospace Research, Long Beach, CA; N. Alexandrov, NASA Langley Research Center, Hampton, VA

Monday, 8 January 2018						
70-AMT-1/GT-8	**Measurement Applications and Characterization**					**Osceola 1**
Chaired by: D. CHAN, NASA-Langley Research Center and J. MELOY, Boeing Test & Evaluation						
1400 hrs AIAA-2018-0300 **Oil Film Interferometry on the Surface Under a Three-Dimensional Flow Field** A. Baldwin, N. Arora, L. Mears, R. Kumar, F. Alvi, Florida A&M University – Florida State University, Tallahassee, FL; J. Naughton, University of Wyoming, Laramie, Laramie, WY	1430 hrs AIAA-2018-0301 **Characterization of a Fully-Differential Capacitive Wall Shear Stress Sensor for Low-Speed Wind Tunnels** D. Mills, W. Patterson, C. Keane, Interdisciplinary Consulting Corporation, Gainesville, FL; M. Sheplak, University of Florida, Gainesville, Gainesville, FL	1500 hrs AIAA-2018-0302 **Aerodynamic Measurements of AGARD-B Model at High Angles of Attack by 1-m Magnetic Suspension and Balance System** H. Senda, H. Sawada, H. Okuizumi, Y. Konishi, S. Obayashi, Tohoku University, Sendai, Japan	1530 hrs AIAA-2018-0303 **Experimental Defect Detection in a Swirl-Burner Array Through Exhaust Jet Analysis** U. Hartmann, H. von der Haar, F. Dinkelacker, J. Seume, Leibniz University, Hannover, Germany	1600 hrs AIAA-2018-0304 **Development of Magnetic Suspension and Balance System for High-Subsonic Wind Tunnel** D. Kai, Waseda University, Shinjuku, Japan; H. Sugiura, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; A. Tezuka, Waseda University, Shinjuku, Japan		

Monday, 8 January 2018						
71-APA-6	**Special Session: Simulation of Rotor in Hover I**					**Miami 1**
Chaired by: N. HARIHARAN, CREATE-AV and R. NARDUCCI, Boeing Defense, Space & Security						
1400 hrs AIAA-2018-0305 **Effect of Facility Walls and Blade Aeroelasticity on PSP Rotor Hover Performance Predictions** R. Jain, Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA	1430 hrs AIAA-2018-0306 **Numerical Simulations on the PSP Rotor Using HMB3** G. Barakos, A. Jimenez-Garcia, University of Glasgow, Glasgow, United Kingdom	1500 hrs Oral Presentation **Wake Breakdown Investigation on the S-76 Rotor** J. Abras, Naval Air Systems Command, Patuxent River, MD; R. Narducci, The Boeing Company, Philadelphia, PA; N. Hariharan, CREATE AV Team, Lorton, VA	1530 hrs AIAA-2018-0307 **Fundamental Investigation of Grid Resolution on Wake Fidelity Submitted to the APATC Special Session: Simulation of Rotor in Hover** S. Wood, Joint Institute for Computational Science, Oak Ridge, TN; J. Coder, University of Tennessee, Knoxville, Knoxville, TN; N. Hariharan, CREATE AV Team, Lorton, VA	1600 hrs Oral Presentation **Status of NASA/Army Hover Tests** T. Norman, NASA Ames Research Center, Moffett Field, CA	1630 hrs AIAA-2018-0308 **Effect of Laminar-Turbulent Transition Modeling on PSP Rotor Hover Predictions** A. Parwani, J. Coder, University of Tennessee, Knoxville, Knoxville, TN	1700 hrs AIAA-2018-0309 **On the Effect of Rotational Forces on Rotor Blade Boundary-Layer Transition** A. Weiss, A. Gardner, C. Klein, M. Raffel, German Aerospace Center (DLR), Göttingen, Germany

Monday, 8 January 2018						
72-APA-7	**Bio-Inspired Aerodynamics II**					**Sanibel 3**
Chaired by: J. FREEMAN, Air Force Institute of Technology and O. KHAN, Tuskegee Univ						
1400 hrs AIAA-2018-0310 **Design of Bird-Like Airfoils** G. Ananda , M. Selig, University of Illinois, Urbana-Champaign, Urbana, IL	1430 hrs AIAA-2018-0311 **Optimal Tail Kinematics for Fish-Like Locomotion using the Unsteady Vortex Lattice Method** A. Hussein, S. Ragab, Virginia Polytechnic Institute and State University, Blacksburg, VA; H. Taha, University of California, Irvine, Irvine, CA; M. Hajj, Virginia Polytechnic Institute and State University, Blacksburg, VA	1500 hrs AIAA-2018-0312 **An Unsteady Doublet Lattice Method for Studying LEV Development on Low-Re Wings with Leading Edge Compliance with Experimental Comparison** D. Willis, M. Anwar, R. Gowda, University of Massachusetts, Lowell, Lowell, MA; F. Manar, A. Jones, University of Maryland, College Park, College Park, MD	1530 hrs AIAA-2018-0313 **Insect Residue Height for Different Coatings and Conditions** D. Carter, E. Loth, University of Virginia, Charlottesville, Charlottesville, VA			

Monday, 8 January 2018						
73-APA-8	**Airfoil/Wing/Configuration Aerodynamics I**					**Captiva 1**
Chaired by: D. O'BRIEN, US Army RDECOM and J. FARNSWORTH, University of Colorado Boulder						
1400 hrs AIAA-2018-0314 **Improved Delayed Detached Eddy Simulation of Super-Lift Coefficient of Subsonic Co-Flow Jet Flow Control Airfoil** Y. Yang, G. Zha, University of Miami, Coral Gables, FL	1430 hrs AIAA-2018-0315 **Surveys on Skin Design for Morphing Wing Aircraft: Status and Challenges** S. La, W. Joe, M. Akbar, B. Alsaidi, Tennessee State University, Nashville, TN	1500 hrs AIAA-2018-0316 **Part II: Winglet Design and Optimization for a Low-speed Subsonic UAV Wing** Z. Toor, J. Masud, Air University, Islamabad, Pakistan; F. Akram, National University of Sciences and Technology, Islamabad, Pakistan; Z. Abbas, U. Ahsun, King Saud University, Riyadh, Saudi Arabia	1530 hrs AIAA-2018-0317 **A Numerical investigation of the wavy leading edge phenomena at transonic regime** G. Filho, Embraer, São José dos Campos, Brazil; A. Da Costa, A. de Paula, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; G. De Lima, Embraer, São José dos Campos, Brazil	1600 hrs AIAA-2018-0318 **Investigating the Aerodynamic Loads and Frequency Response for a Pitching NACA 0012 Airfoil** M. Othman, M. Ahmed, M. Zakaria, Military Technical College, Cairo, Egypt		

Monday, 8 January 2018						
74-APA-9	**Special Session: Engineered Surfaces, Materials and Coatings (ESMC) for Viscous Drag Reduction**					**Miami 3**
Chaired by: W. FELDER, Stevens Institute of Technology and G. DALE, U.S. Air Force Research Laboratory						
1400 hrs AIAA-2018-0319 **Progress Toward the Application of Practical Drag Reduction Technologies to Legacy Transport Aircraft** W. Felder, Stevens Institute of Technology, Hoboken, NJ	1430 hrs Oral Prsentation Assessment of Drag Reducing Surfaces J. Naughton, E. DeMillard, University of Wyoming, Laramie, Laramie, WY	1500 hrs AIAA-2018-0320 **Conformal Anti-Icing Coatings for Aircraft Components** C. Ellis-Terrell, V. Poenitzsch, R. Wei, K. Coulter, M. Miller, Southwest Research Institute, San Antonio, TX	1530 hrs AIAA-2018-0321 **Maturation of Direct Contactless Microfabrication for Application of Drag Reducing Riblets** H. Bilinsky, MicroTau Pty., Ltd., Sydney, Australia	1600 hrs AIAA-2018-0322 **Flow Control over a Circular Cylinder Using Micro-Fiber Coating at Subcritical Regime** M. Hasegawa, H. Sakaue, University of Notre Dame, Notre Dame, IN	1630 hrs AIAA-2018-0323 **Characteristics of the Turbulent Boundary Layer over Structured Roughness Surfaces** B. Smith, P. Yagle, Lockheed Martin Corporation, Fort Worth, TX	1700 hrs AIAA-2018-0324 **Design and Testing of Conventional and 3-D Riblets** P. McClure, B. Smith, Lockheed Martin Corporation, Bethesda, MD

Monday, 8 January 2018						
75-APA-10/FD-4	**Flow Control I: Applications I**					**Captiva 2**
Chaired by: R. DOWGWILLO, Boeing Engineering Operations & Technology and A. AHMED						
1400 hrs AIAA-2018-0325 **Comparison of Flow Control Actuators on a Diamond Wing Planform** B. Maines, Lockheed Martin Corporation, Fort Worth, TX; T. Ghee, Naval Air Systems Command, Patuxent River, MD; S. Raghu, Advanced Fluidics, LLC, Columbia, MD; M. Boespflug, General Electric Company, Niskayuna, NY	1430 hrs AIAA-2018-0326 **Real-time Roll and Pitching Moment Identification with Distributed Surface Pressure Sensors on a UCAS Wing** M. Le Provost, X. He, D. Williams, Illinois Institute of Technology, Chicago, IL	1500 hrs AIAA-2018-0327 **Dynamic Active Flow Control of the Roll Moment on a Generic UCAS Wing** X. He, M. Le Provost, D. Williams, Illinois Institute of Technology, Chicago, IL	1530 hrs AIAA-2018-0328 **Characterization of Co-Flow Jet Airfoil at Transonic Speeds** R. Kumar, R. Richardson, J. Gustavsson, L. Cattafesta, R. Kumar, Florida State University, Tallahassee, FL; Z. Liu, University of Miami, Miami, FL; et al.	1600 hrs AIAA-2018-0329 **Super Lift Coefficient of Co-Flow Jet Circular Cylinder** Y. Yang, G. Zha, University of Miami, Coral Gables, FL	1630 hrs AIAA-2018-0330 **Simulation of 3D Co-Flow Jet Airfoil with Embedded Micro-Compressor Actuator** Y. Ren, G. Zha, University of Miami, Miami, FL	

Monday, 8 January 2018

76-APA-11	Special Session: Low Boom Activities					Naples 2
Chaired by: A. ELMILIGUI, NASA Langley Research Center						
1400 hrs Oral Presentation **Low-Boom Flight Demonstration (LBFD) Preliminary Design Status and Project Update** D. Richwine, J. Brandon, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2018-0331 **Computational and Experimental Study of Plume and Shock Interaction Effects on Sonic Boom in the NASA Ames 9x7 Supersonic Wind Tunnel** C. Winski, M. Carter, A. Elmiligui, NASA Langley Research Center, Hampton, VA; J. Pearl, University of Vermont, Burlington, Burlington, VT; S. Nayani, Analytical Services & Materials, Inc., Hampton, VA; D. Durston, NASA Ames Research Center, Moffett Field, CA	1500 hrs AIAA-2018-0332 **Lateral Cutoff Analysis of Sonic Boom by Full-Field Simulation** R. Yamashita, K. Suzuki, University of Tokyo, Kashiwa, Japan	1530 hrs AIAA-2018-0333 **Aeroelastic Uncertainty Quantification of a Low-Boom Aircraft Configuration** B. Phillips, T. West, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2018-0334 **Formulation and Implementation of Inflow/Outflow Boundary Conditions to Simulate Propulsive Effects** D. Rodriguez, Science and Technology Corporation, Moffett Field, CA; M. Aftosmis, M. Nemec, NASA Ames Research Center, Moffett Field, CA	1630 hrs Oral Presentation **Impact of Flux Limiters on the Near Field Pressure Signatures and Ground Signatures for SBPW2 C25D Configuration.** A. Elmiligui, T. Lake, S. Rallabhandi, NASA Langley Research Center, Hampton, VA	

Monday, 8 January 2018

77-ASC-2	Smart Materials					Emerald 3
Chaired by: D. HARTL, Texas A&M University and A. HALL, Army Research labs						
1400 hrs AIAA-2018-0335 **A new shape memory alloy wire woven trusses undergoing large deformation** Z. Rao, X. Zhang, D. Huang, M. Qi, X. Yan, Beihang University, Beijing, China	1430 hrs AIAA-2018-0336 **Modelling and Compensation of Hysteresis in Polarization of Piezoelectric Actuators** M. Savoie, J. Shan, York University, Toronto, Canada	1500 hrs AIAA-2018-0337 **Semi-Active Sound Transmission Control of Sandwich Panels Treated with MR Fluid Core Layer** M. Hemmatian, R. Sedaghati, Concordia University, Montréal, Canada	1530 hrs AIAA-2018-0338 **A Continuous State-Switching Model Applied to Systems with Multiple Degrees of Freedom** G. Lopp, J. Kauffman, University of Central Florida, Orlando, FL	1600 hrs AIAA-2018-0339 **Design of elastic phononic waveguides with double-zero effective properties** H. Zhu, University of Notre Dame, Notre Dame, IN; F. Semperlotti, Purdue University, West Lafayette, IN		

Monday, 8 January 2018

78-DE-2 1400 - 1730 hrs	The Impact of Technology on Design Engineering	Sun A

Panelists:

Don Kinard
Senior Fellow, F-35 Production
Lockheed Martin Corporation

Brian Carbery
Technical Lead - Boeing Immersive Development Environment,
Co-Lead – Boeing Enterprise Visualization
The Boeing Company

Josh Mook
Innovation Leader
GE Additive

Ray Kolonay
Director, Multidisciplinary Science and Technology Center
Air Force Research Laboratory

Monday, 8 January 2018

79-F360-2 1400 - 1600 hrs	Digital Transformations Disrupting Aerospace Business Models	Osceola A

Moderator: Darryll Pines, Nariman Farvardin Professor of Aerospace Engineering and Dean of the A. James Clark School of Engineering, University of Maryland

Panelists:

Andreas Bernhard
Chief Engineer, CH-53K
Sikorsky Aircraft Corporation (a Lockheed Martin Company)

LaNetra Tate
Program Executive, Game Changing Development Program,
Space Technology Mission Directorate
NASA

James Dorrell
Vice President, Tactical Systems, Advanced Development Programs
Lockheed Martin Aeronautics Company

Brendan Iribe
Co-Founder and Vice President of PC VR
Occulus

Monday, 8 January 2018						
80-FD-5	**Shear Flows: Wakes**					**Sun 3**
Chaired by: N. TICHENOR, Texas A&M University						
1400 hrs AIAA-2018-0340 **Cluster-based Reduced-Order Modeling to Capture Intermittent Dynamics of Interacting Wakes** T. Dare, Z. Berger, M. Meehan, J. O'Connor, Pennsylvania State University, University Park, PA	1430 hrs AIAA-2018-0341 **Investigating Flow Topology in and around Wing Wake Free Shear Layers** M. Memon, A. Altman, University of Dayton, Dayton, OH	1500 hrs AIAA-2018-0342 **Effect of Flow *Through* a NACA 0012 Wing on Aerodynamic Efficiency** S. Gunasekaran, T. Gerham, University of Dayton, Dayton, OH	1530 hrs AIAA-2018-0343 **Drag Reduction on NACA 0012 Wing Using Trailing Edge Streamers** S. Gunasekaran, D. Curry, University of Dayton, Dayton, OH	1600 hrs AIAA-2018-0344 **Affecting Aerodynamic Efficiency by Influencing Wing Surface-Flow Direction** S. Gunasekaran, N. Thomas, University of Dayton, Dayton, OH	1630 hrs AIAA-2018-0345 **Analysis of Local Roughness Combinations on the Aerodynamic Properties of a Compressor Blade** P. Gilge, J. Seume, Leibniz University, Hannover, Germany; K. Mulleners, Swiss Federal Institute of Technology, Lausanne, Switzerland	1700 hrs AIAA-2018-0346 **Low-Mach number simulations of transcritical flows** P. Lapenna, R. Lamioni, P. Ciottoli, F. Creta, University of Rome "La Sapienza", Rome, Italy

Monday, 8 January 2018						
81-FD-6	**Special Session: NATO AVT-240–Hypersonic Boundary Layer Transition Prediction II**					**Sun B**
Chaired by: S. SCHNEIDER, Purdue University and R. RADESPIEL, Technische Universitaet Braunschweig						
1400 hrs AIAA-2018-0347 **Characterization of Freestream Disturbances in Conventional Hypersonic Wind Tunnels** L. Duan, J. Huang, C. Deegan, Missouri University of Science and Technology, Rolla, MO; M. Choudhari, A. Chou, NASA Langley Research Center, Hampton, VA; R. Radespiel, Technical University of Braunschweig, Braunschweig, Germany; et al.	1430 hrs AIAA-2018-0348 **DNS of Acoustic Receptivity and Breakdown in a Mach 6 Flow over a Generic Forebody** A. Cerminara, University of Southampton, Southampton, United Kingdom; A. Durant, T. André, MBDA, Paris, France; N. Sandham, University of Southampton, Southampton, United Kingdom; N. Taylor, MBDA, Bristol, United Kingdom	1500 hrs AIAA-2018-0349 **Compilation and Analysis of Second Mode Amplitudes on Sharp Cones in Hypersonic Wind Tunnels** E. Marineau, Arnold Engineering Development Complex, Silver Spring, MD; G. Grossir, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium; A. Wagner, German Aerospace Center (DLR), Göttingen, Germany; M. Leinemann, R. Radespiel, Technical University of Braunschweig, Braunschweig, Germany; H. Tanno, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan; et al.	1530 hrs AIAA-2018-0350 **Numerical Investigation of Second Mode Attenuation over Carbon/Carbon Surfaces on a Sharp Slender Cone** V. Sousa, D. Patel, J. Chapelier, Purdue University, West Lafayette, IN; A. Wagner, German Aerospace Center (DLR), Göttingen, Germany; C. Scalo, Purdue University, West Lafayette, IN	1600 hrs AIAA-2018-0351 **Code to code comparison on hypersonic high enthalpy transitional boundary layers** V. Wartemann, German Aerospace Center (DLR), Braunschweig, Germany; A. Wagner, German Aerospace Center (DLR), Göttingen, Germany; R. Wagnild, Sandia National Laboratories, Albuquerque, NM; F. Pinna, F. Miró Miró, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium; H. Tanno, Japan Aerospace Exploration Agency (JAXA), Kimigaya, Japan	1630 hrs AIAA-2018-0352 **Hypersonic Boundary Layer Cross Flow Transition - Characteristics and Control** T. Corke, University of Notre Dame, Notre Dame, IN; R. Bowersox, Texas A&M University, College Station, TX	

Monday, 8 January 2018						
82-FD-7	**Unsteady Flows I**					**Miami 2**
Chaired by: M. VISBAL, USAF AFRL/RQVA and E. DEMAURO, Rutgers University						
1400 hrs AIAA-2018-0353 **Unsteady Aerodynamics of a Transient Plunging Airfoil** S. Bull, N. Chiereghin, I. Gursul, D. Cleaver, University of Bath, Bath, United Kingdom	1430 hrs AIAA-2018-0354 **Investigation of the Effects of Reynolds Number on the Unsteady Flow Physics of Airfoil Dynamic Stall** R. Gupta, P. Ansell, University of Illinois, Urbana-Champaign, Urbana, IL	1500 hrs AIAA-2018-0355 **Desingularized trailing-edge shedding from a flat plate with a point vortex method** A. DeVoria, K. Mohseni, University of Florida, Gainesville, Gainesville, FL	1530 hrs AIAA-2018-0356 **Understanding Abrupt Leading Edge Separation as a Mechanism for the Onset of Dynamic Stall** S. Benton, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2018-0357 **Computational Investigation of the Effect of Sweep on a Pitching Finite-Aspect-Ratio Wing** M. Visbal, D. Garmann, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2018-0358 **Unsteady Heat Flux Measurements of Junction Flow With Reynolds Number and Freestream Turbulence Effects** S. Elahi, Z. Moul, E. Lange, S. Lynch, Pennsylvania State University, University Park, PA	1700 hrs AIAA-2018-0359 **Effects of Cavity Width on Resonance Dynamics using Planform Time-Resolved Particle Image Velocimetry** J. Wagner, S. Beresh, K. Casper, Sandia National Laboratories, Albuquerque, NM; E. DeMauro, Rutgers University, New Brunswick, NJ; K. Lynch, R. Spillers, Sandia National Laboratories, Albuquerque, NM; et al.

Monday, 8 January 2018						
83-FD-8	**Novel CFD Methods**					**Sun 2**
Chaired by: Z. RUSAK, Rensselaer Polytechnic Institute						
1400 hrs AIAA-2018-0360 **Development of a Lagrangian Particle Tracking Method for High-Order Discontinuous Galerkin Schemes** E. Ching, S. Brill, Y. Lv, M. Ihme, Stanford University, Stanford, CA	1430 hrs AIAA-2018-0361 **Well-posed Subsonic Inflow/Outflow Boundary Conditions for the Navier-Stokes Equations** A. Huang, S. Allmaras, M. Galbraith, D. Darmofal, Massachusetts Institute of Technology, Cambridge, MA	1500 hrs AIAA-2018-0362 **Multi-CPU/GPU Parallelization of Structured grid CFD codes using domain decomposition** W. Xue, C. Jackson, C. Roy, Virginia Polytechnic Institute and State University, Blacksburg, VA	1530 hrs AIAA-2018-0363 **A Continuous Shape Sensitivity Equation Method of Arbitrary High Order** Y. Vautrin, D. Pelletier, A. Garon, École Polytechnique de Montréal, Montréal, Canada	1600 hrs AIAA-2018-0364 **Analysis of Hydrogen/Air Turbulent Premixed Flames at Different Karlovitz Numbers Using Computational Singular Perturbation** D. Manias, A. Tingas, F. Hernandez Perez, H. Im, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; R. Galassi, P. Ciottoli, University of Rome "La Sapienza", Rome, Italy; et al.		

Monday, 8 January 2018						
84-FD-9	**CFD Solver Techniques**					**Osceola 2**
Chaired by: S. KARMAN, Pointwise, Inc.						
1400 hrs AIAA-2018-0365 **On Finite Difference Solvers with Minimal Memory Access** R. Lohner, A. Degro, George Mason University, Fairfax, VA	1430 hrs AIAA-2018-0366 **Simple Load Balancing for Chemically Reacting Flows** R. Lohner, George Mason University, Fairfax, VA; F. Togashi, J. Baum, Applied Simulations, Inc., McLean, VA	1500 hrs AIAA-2018-0367 **Adaptive Meshing and Time-Integrators for monolithic Finite Element Solution of the URANS equations** E. Muller, D. Pelletier, A. Garon, École Polytechnique de Montréal, Montréal, Canada	1530 hrs AIAA-2018-0368 **A comparison of refinement indicators for p-adaptive discontinuous Galerkin methods for the Euler and Navier-Stokes equations** F. Naddei, M. de la Llave Plata, V. Couaillier, ONERA, Châtillon, France	1600 hrs AIAA-2018-0369 **Fast Time Integration of Navier-Stokes Equations with an Exponential-Integrator Scheme** S. Li, Beijing Computational Science Research Center, Beijing, China; Z. Wang, University of Kansas, Lawrence, Lawrence, KS; L. Ju, University of South Carolina, Columbia, Columbia, SC; L. Luo, Old Dominion University, Norfolk, VA	1630 hrs AIAA-2018-0370 **A Study on Time Evolution Method for Hyperbolic Navier-Stokes System** T. Nagao, Waseda University, Tokyo, Japan; A. Hashimoto, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan; T. Sato, Waseda University, Tokyo, Japan	

Monday, 8 January 2018						
85-FD-10	**Turbulence Modeling and Simulation**					**Sun 5**
Chaired by: J. LARSSON, University of Maryland						
1400 hrs AIAA-2018-0371 **Grid-adaptation for chaotic multi-scale simulations as a verification-driven inverse problem** J. Larsson, University of Maryland, College Park, College Park, MD	1430 hrs AIAA-2018-0372 **An Overset-Mesh Approach for Wall-Modeled LES of High-Reynolds Number Airfoil Flow** D. Rizzetta, D. Garmann, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2018-0373 **Favre-Averaged Spatiotemporal-Filtered Large Eddy Simulation** S. Walters, S. Guzik, X. Gao, Colorado State University, Fort Collins, CO	1530 hrs AIAA-2018-0374 **Density Effects on the Flow Structure in Multi-fluid Shock-turbulence Interaction** Y. Tian, F. Jaberi, Michigan State University, East Lansing, MI; D. Livescu, Los Alamos National Laboratory, Los Alamos, NM	1600 hrs AIAA-2018-0375 **Adaptive multi-resolution Large-Eddy Simulation with control of modeling and numerical errors** N. Legrand, V. Moureau, G. Lartigue, National Center for Scientific Research (CNRS), Rouen, France	1630 hrs AIAA-2018-0376 **On the k-ω models behavior in the boundary-layer downstream of a short transitional separation bubble** L. Bernardos, F. Richez, V. Gleize, ONERA, Meudon, France; G. Gerolymos, Pierre and Marie Curie University, Paris, France	

Monday, 8 January 2018						
86-FD-11	**High-Speed Flows**					**Sun 4**
Chaired by: J. SMITH, Sandia National Laboratories						
1400 hrs AIAA-2018-0377 **Turbulent Aeroheating Measurements on a 7-deg Half-Angle Sphere-Cone in a High-Enthalpy CO_2 Expansion Tunnel** B. Hollis, NASA Langley Research Center, Hampton, VA; M. Barnhardt, NASA Ames Research Center, Moffett Field, CA; M. MacLean, A. Dufrene, T. Wadhams, CUBRC, Buffalo, NY	1430 hrs AIAA-2018-0378 **Understanding effects of nose-cone bluntness on hypersonic boundary layer transition using input-output analysis** D. Cook, J. Thome, J. Brock, J. Nichols, G. Candler, University of Minnesota, Twin Cities, Minneapolis, MN	1500 hrs AIAA-2018-0379 **Direct Numerical Simulation of Mach 6 Flow over a Cone with a Highly Swept Fin** A. Knutson, S. GS, G. Candler, University of Minnesota, Twin Cities, Minneapolis, MN	1530 hrs AIAA-2018-0380 **The Role of Boundary Layer Thickness on Cylinder-Generated Shock Wave/Turbulent Boundary Layer Interactions, Part I: Computations** S. Lindörfer, C. Combs, R. Bond, J. Schmisseur, University of Tennessee, Tullahoma, Tullahoma, TN	1600 hrs AIAA-2018-0381 **Direct numerical simulation of flow past a sphere at a Reynolds number between 500 and 1000 in compressible flows** T. Nagata, T. Nonomura, Tohoku University, Sendai, Japan; S. Takahashi, Y. Mizuno, K. Fukuda, Tokai University, Hiratsuka, Japan	1630 hrs AIAA-2018-0382 **Prediction of Jet Interaction Heating on a Reentry Capsule** H. Miki, K. Fujii, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan	

Monday, 8 January 2018						
87-FD-12	**Special Session: Surging Airfoils**					**Sun 6**
Chaired by: O. SAHNI, Rensselaer Polytech Inst and K. GRANLUND, North Carolina State University						
1400 hrs Oral Presentation **Surging Airfoil with Active Flow Control** D. Greenblatt, Technion–Israel Institute of Technology, Haifa, Israel	1430 hrs Oral Presentation **Large Eddy Simulation of Surging Airfoils with Large Streamwise Oscillations at High Reynolds Number** O. Sahni, J. Rane, Rensselaer Polytechnic Institute, Troy, NY	1500 hrs Oral Presentation **Unsteady Compressibility Effects on a Surging Airfoil** J. Gregory, W. Zhu, J. Bons, Ohio State University, Columbus, OH	1530 hrs Oral Presentation **On the aerodynamics of surging-airfoil coupling with pitch and plunge** A. Medina, Air Force Research Laboratory, Wright-Patterson AFB, OH; K. Granlund, North Carolina State University, Raleigh, NC	1600 hrs Oral Presentation **Vortex Evolution and Force Production on Surging Wings** A. Jones, University of Maryland, College Park, College Park, MD	1630 hrs Oral Presentation **Numerical Evaluation of Airfoils Undergoing Surge** N. Bern, M. Smith, Georgia Institute of Technology, Atlanta, GA	1700 hrs Oral Presentation **Low-Order Modeling of Surging Airfoils with Vortex Shedding** N. Kakumanu, S. Narsipur, A. Gopalarathnam, North Carolina State University, Raleigh, NC

Monday, 8 January 2018		
88-GNC-1 **1400 - 1500 hrs**	**GN&C Lecture** **Quantum Information Systems and Infinite Dimensional Direct Adaptive Control**	**Naples 1**
Mark Balas Jack D. Whitfield Professor of Dynamical Systems and Director of the Center for Autonomous and Evolving Systems University of Tennessee Space Institute formerly, Distinguished Professor, Embry-Riddle Aeronautical University		

Monday, 8 January 2018					
89-GNC-2	**NASA DLR Flight Control Research–Design, Implementation, and Testing of Flight Control**				**Naples 1**
Chaired by: N. NGUYEN, NASA-Ames Research Center and G. LOOYE, DLR-Oberpfaffenhofen					
1400 hrs **No Presentations**		1530 hrs AIAA-2018-0383 **Piloted Simulator Evaluation Results of Flight Physics Based Stall Recovery Guidance** T. Lombaerts, S. Schuet, V. Stepanyan, J. Kaneshige, G. Hardy, K. Shish, NASA Ames Research Center, Moffett Field, CA; et al.	1600 hrs AIAA-2018-0384 **Design, Implementation and Flight-Tests of Incremental Nonlinear Flight Control Methods** W. van Ekeren, G. Looye, R. Kuchar, German Aerospace Center (DLR), Wessling, Germany; Q. Chu, E. Van Kampen, Delft University of Technology, Delft, The Netherlands	1630 hrs AIAA-2018-0385 **Design and Flight Testing of Incremental Nonlinear Dynamic Inversion-based Control Laws for a Passenger Aircraft** F. Grondman, G. Looye, R. Kuchar, German Aerospace Center (DLR), Wessling, Germany; Q. Chu, E. Van Kampen, Delft University of Technology, Delft, The Netherlands	1700 hrs AIAA-2018-0386 **A Rapid-prototyping process for Flight Control Algorithms for Use in over-all Aircraft Design** R. Kuchar, G. Looye, German Aerospace Center (DLR), Wessling, Germany

Monday, 8 January 2018				
90-GT-1	**Integration of RDT&E Computational and Experimentation Capabilities: Framing a National Path Forward**			**Sun C**
Chaired by: S. DUNN, Jacobs and D. MARREN, USAF/AEDC				
1400 hrs AIAA-2018-0387 **GTTC Future of Ground Testing Meta-Analysis of 20 Documents** S. Dunn, Jacobs, Hampton, VA; J. Micol, NASA Langley Research Center, Hampton, VA; D. Myren, ASE Holdings, St. Paul, MN; R. Paryz, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2018-0388 **A Value-Based Justification Process for Aerospace RDT&E Capability Investments** P. Piscopo, Institute for Defense Analyses, Alexandria, VA; D. Marren, Arnold Engineering Development Complex, Silver Spring, MD; S. Dunn, Jacobs, Hampton, VA	1500 hrs Oral Presentation **Applying a New and Proven Capability Valuation Approach to a Broader Range of RDT&E Capabilities** P. Piscopo, Institution for Defense Analyses, Alexandria, VA; D. Marren, Arnold Engineering and Development Complex, Silver Spring, MD; S. Dunn, Jacobs, Hampton, VA	1600 hrs **Panel** Ensuring the Future: Driving to RDT&E Capabilities 2050 Panelists: Steven Dunn, Paul Piscopo, Dan Marren	

Monday, 8 January 2018						
91-GTE-2	**Turbine Heat Transfer**					**Sanibel 1**
Chaired by: A. SURYANARAYANAN, FMC Technologies						
1400 hrs AIAA-2018-0389 **Preliminary Numerical Investigation on the interaction of an Impinging Jet with Cylinder Wake** K. Krishna, A. Prasad, M. Ricklick, Embry-Riddle Aeronautical University, Daytona Beach, FL	1430 hrs AIAA-2018-0390 **Numerical study of jet impingement heat transfer on a roughened flat plate** A. Alenezi, A. Almutairi, H. Alhajeri, College of Technological Studies, Shuwaikh, Kuwait; J. Amaral-Teixeira, A. Addali, Cranfield University, Cranfield, United Kingdom	1500 hrs AIAA-2018-0391 **The Effect of Particle Size on Deposition in an Effusion Cooling Geometry** T. Wolff, C. Bowen, J. Bons, Ohio State University, Columbus, OH	1530 hrs AIAA-2018-0392 **Internal Cooling of Rotating and Non-Rotating Channels with Rib Turbulators** S. Shrestha, A. Prasad, M. Ricklick, Embry-Riddle Aeronautical University, Daytona Beach, FL			

Monday, 8 January 2018						
92-GTE-3	**Combustor Swirl and Thermoacoustics**					**Sanibel 2**
Chaired by: S. VASU, University of Central Florida						
1400 hrs AIAA-2018-0393 **Flow Temperature Measurement of Lean Premixed Swirl Stablized Combustor Under Reacting Condition** S. Park, S. Gadiraju, S. Ekkad, Virginia Polytechnic Institute and State University, Blacksburg, VA	1430 hrs AIAA-2018-0394 **Synchronization Behaviour During the Dynamical Transition in Swirl-Stabilized Combustor: Temporal and Spatiotemporal Analysis** S. Pawar, S. Mondal, N. George, R. Sujith, Indian Institute of Technology Madras, Chennai, India	1500 hrs AIAA-2018-0395 **Wall Filming and Atomization Inside a Simplified Pre-Filming Coaxial Swirl Injector: Role of Unsteady Aerodynamics** S. Kakkuth Puthenveettil, S. Chakravarthy, Indian Institute of Technology Madras, Chennai, India	1530 hrs AIAA-2018-0396 **Suppression of thermoacoustic instability in a swirl-stabilized combustor by inducing blockage in the inlet flow stream** N. George, V. Unni, M. Raghunathan, R. Sujith, Indian Institute of Technology Madras, Chennai, India			

Monday, 8 January 2018						
93-CPS-1	**Computing Systems**					**Sanibel 2**
Chaired by: R. TUGGLE, PeopleTec						
1400 hrs **No Presentations**				1600 hrs AIAA-2018-0397 **Multi-level Parallelism for HPCMP CREATE™-AV Kestrel COFFE** S. Wood, J. Erwin, R. Glasby, G. Peterson, D. Stefanski, University of Tennessee, Knoxville, Knoxville, TN	1630 hrs AIAA-2018-0398 **Differential Algebra software library with automatic code generation for space embedded applications** M. Massari, P. Di Lizia, F. Cavenago, Technical University of Milan, Milan, Italy; A. Wittig, ESA, Noordwijk, The Netherlands	1700 hrs AIAA-2018-0399 **Parallelization of ANDEE Using the UGLIB MPI Library** R. Rosenberg, Naval Research Laboratory, Washington, D.C.; Y. Khine, K. Vogiatzis, Engility Corporation, Chantilly, VA; E. Josyula, Air Force Research Laboratory, Wright-Patterson AFB, OH

Monday, 8 January 2018						
94-HSABP-1/PGC-2	**Pressure Gain Combustion–Rotating Detonation Engines I**					**Daytona 2**
Chaired by: D. PAXSON, NASA Glenn Research Center and N. JOSHI, GE						
1400 hrs AIAA-2018-0400 **Parameter Impact on Heat Flux in a Rotating Detonation Engine** S. Meyer, M. Polanka, Air Force Institute of Technology, Wright-Patterson AFB, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH	1430 hrs AIAA-2018-0401 **Quasi One Dimensional Modeling of Rotational Detonation Engines** J. Humble, S. Heister, D. Stechmann, S. Sardeshmukh, C. Huang, Purdue University, West Lafayette, IN	1500 hrs AIAA-2018-0402 **How multiple rotating detonation waves are produced** Y. Wang, Southwest University of Science and Technology, Mianyang, China	1530 hrs AIAA-2018-0403 **Investigation of Injection Strategy for Liquid-Fuel Rotating Detonation Engine** J. Li, P. Chang, L. Li, Y. Yang, C. Teo, B. Khoo, National University of Singapore, Singapore, Singapore	1600 hrs AIAA-2018-0404 **Nozzle design of oblique detonation wave engine** R. Kumar, A. Omprakas, D. Wilson, University of Texas, Arlington, Arlington, TX	1630 hrs AIAA-2018-0405 **Development of an optically accessible continuous wave Rotating Detonation Engine** F. Chacon, M. Gamba, University of Michigan, Ann Arbor, Ann Arbor, MI	

Monday, 8 January 2018						
95-INPSI-1	**Inlets, Nozzles, Propulsion Systems Integration I**					**Destin 1**
Chaired by: D. RITTENBERG, Siemens and D. CROWE, Air Force Institute of Technology and J. LITT, NASA Glenn Research Center						
1400 hrs AIAA-2018-0406 **Curved Duct Flow and Heat Transfer in Engine Anti-Icing** K. Chilukuri, United Technologies Corporation, Chula Vista, CA	1430 hrs AIAA-2018-0407 **CFD based Optimization of Vortex Generator Flow Control in a Highly Bent Intake Geometry using Design of Experiments** T. Kächele, R. Rademakers, University of the German Federal Armed Forces, Munich, Germany; M. Stößel, Bundeswehr Technical and Airworthiness Center for Aircraft, Manching, Germany; R. Niehuis, University of the German Federal Armed Forces, Munich, Germany	1500 hrs AIAA-2018-0408 **Extended Design Studies for a Mechanically Driven Propulsive Fuselage Aircraft Concept** J. Bijewitz, A. Seitz, M. Hornung, Bauhaus Luftfahrt e.V., Taufkirchen, Germany	1530 hrs AIAA-2018-0409 **Multi-Objective Optimization of a Supersonic Rocket Based Combined Cycle Inlet Through Differential Evolution** C. Jee, J. Etele, Carleton University, Ottawa, Canada	1600 hrs AIAA-2018-0410 **Structured Light-Field Focusing 3D Density Measurements of A Supersonic Cone** R. Ozawa, T. Cox, J. Reyes, K. Ahmed, University of Central Florida, Orlando, FL	1630 hrs AIAA-2018-0411 **Investigation of Flow Peculiarities in 3D Inlet for Supersonic Business Jet under Throttling Regimes by Rans/Iles Method** I. Kukshinova, V. Vinogradov, D. Lyubimov, Central Institute of Aviation Motors, Moscow, Russia	

Monday, 8 January 2018						
96-MDO-3	**Aerodynamic Shape Optimization I**					**Emerald 1**
Chaired by: J. GRAY, NASA Glenn Research Center						
1400 hrs AIAA-2018-0412 **Aerodynamic Shape Optimisation of Benchmark Problems Using SU2** G. Yang, A. Da Ronch, University of Southampton, Southampton, United Kingdom	1430 hrs AIAA-2018-0413 **RANS-based Aerodynamic Shape Optimization of a Strut-braced Wing with Overset Meshes** N. Secco, J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1500 hrs AIAA-2018-0414 **An Adaptive Constraint Tolerance Method for Optimization Algorithms Based on the Discrete Adjoint Method** D. Brown, S. Nadarajah, McGill University, Montréal, Canada	1530 hrs AIAA-2018-0415 **A comparison study of two multifidelity methods for aerodynamic optimization** S. Kontogiannis, J. Demange, Cranfield University, Bedford, United Kingdom; T. Kipouros, University of Cambridge, Cambridge, United Kingdom; A. Savill, Cranfield University, Bedford, United Kingdom	1600 hrs AIAA-2018-0416 **High-Fidelity Trajectory Based MDO for the Conceptual Design of an Air-launched Spaceplane** J. de Müelenaere, J. Alonso, Stanford University, Stanford, CA	1630 hrs AIAA-2018-0417 **An Examination of Vehicle Design Tradeoffs and Trajectory Optimization for Trimmed Scramjet-Powered Hypersonic Vehicles On Ascent** C. Mbagwu, J. Driscoll, University of Michigan, Ann Arbor, Ann Arbor, MI	

Monday, 8 January 2018						
97-MST-5	**Modeling and Simulation of Air Traffic Management II**					**Gainesville 2**
Chaired by: S. JAFER, Embry-Riddle Aeronautical University and N. MACCHIARELLA, Embry-Riddle Aeronautical University						
1400 hrs AIAA-2018-0418 **Simulation of Integrated Approach for Aircraft Turnaround Process** H. Jin, E. Garcia, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1430 hrs AIAA-2018-0419 **Computational Model for Pedestrian Movement and Infectious Diseases Spread During Air Travel** P. Derjany, S. Namilae, Embry-Riddle Aeronautical University, Daytona Beach, FL					

Monday, 8 January 2018						
98-MST-6	**Multidisciplinary Modeling and Simulation Across Domains I**					**Gainesville 2**
Chaired by: N. MACCHIARELLA, Embry-Riddle Aeronautical University and S. JAFER, Embry-Riddle Aeronautical University						
1400 hrs **No Presentations**		1500 hrs AIAA-2018-0420 **Reduced-Order Modeling of Complex Aerodynamic Geometries Using Canonical Shapes** N. Koukpaizan, A. Wilks, A. Grubb, M. Smith, Georgia Institute of Technology, Atlanta, GA	1530 hrs AIAA-2018-0421 **Structural Analysis Methodology for Space Deployable Structures using Multi-body Dynamic Analysis Solver** F. Montazersadgh, M. Mobrem, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA			

Monday, 8 January 2018						
99-MST-7	**Modeling and Simulation for Intelligent Systems**					**Sun D**
Chaired by: D. CARTMELL, Boeing Engineering Operations & Technology and U. DURAK, DLR-German Aerospace Center						
1400 hrs AIAA-2018-0422 **Classification of Air Transport Passengers' Kinetic Behavior** O. Milbredt, A. Classen, F. Rudolph, E. Grunewald, German Aerospace Center (DLR), Braunschweig, Germany	1430 hrs AIAA-2018-0423 **An Adaptive Model of Flight Time Uncertainty and Its Application to Time-Based Air Traffic Operations** N. Takeichi, Tokyo Metropolitan University, Hino, Japan	1500 hrs AIAA-2018-0424 **Deep-learning based Time Series Forecasting of Go-around Incidents in the National Airspace System** S. Subramanian, Robust Analytics, Inc., Crofton, MD; A. Rao, Ohio State University, Columbus, OH				

Monday, 8 January 2018						
100-MST-8	**Model-Based Development and X-in-the-Loop Simulation**					**Sun D**
Chaired by: U. DURAK, DLR-German Aerospace Center and D. CARTMELL, Boeing Engineering Operations & Technology						
1400 hrs **No Presentations**				1600 hrs AIAA-2018-0425 **Model-in-the-Loop Simulation of Experimental Flight Control Software** A. Zollitsch, S. Schatz, N. Mumm, F. Holzapfel, Technical University of Munich, Munich, Germany	1630 hrs AIAA-2018-0426 **Pilot-In-the-Loop Flight Simulation of Flexible Aircraft in Matlab/ Simulink: Implementation and Coding Peculiarities** G. Lopez Matos, V. Portapas, G. Dussart, M. Lone, Cranfield University, Cranfield, United Kingdom; E. Coetzee, Airbus, Bristol, United Kingdom	

Monday, 8 January 2018						
101-MST-9	**Modeling and Simulation of Air Vehicle Dynamics II, for Defense Applications**					**Osceola 4**
Chaired by: S. KOWALCHUK, Sandia National Laboratories and D. KEATING, The Charles Stark Draper Laboratory, Inc.						
1400 hrs AIAA-2018-0427 **Inverse Simulation of Symmetric Flight of a Guided Gliding Subsonic Flying Body** A. Elsherbiny, Military Technical College, Cairo, Egypt; A. Aly, Modern Sciences and Arts University, Giza, Egypt; A. Elshabka, Military Technical College, Cairo, Egypt; M. Abdelrahman, Cairo University, Cairo, Egypt	1430 hrs AIAA-2018-0428 **Simulation Study for Comparison of 3 & 4 Fin Controlled Air Vehicle** V. Yavuztürk, M. Bent, TUBITAK, Ankara, Turkey	1500 hrs AIAA-2018-0429 **Modeling, Simulation and Hyprid Optimization Method as Design Tools for Range Extension Kit of a Subsonic Flying Body** A. Elsherbiny, Military Technical College, Cairo, Egypt; A. Aly, Modern Sciences and Arts University, Giza, Egypt; A. Elshabka, Military Technical College, Cairo, Egypt; M. Abdelrahman, Cairo University, Cairo, Egypt	1530 hrs AIAA-2018-0430 **Experimental Design and Statistical Modelling Methodology for Wind Tunnel Aerodynamics of an Agile Missile to Improve the Simulation Accuracy and Performance** O. Savas, E. Topbas, K. Unal, H. Karaca, TUBITAK, Ankara, Turkey; A. Kutay, Middle East Technical University, Ankara, Turkey	1600 hrs AIAA-2018-0431 **A Modeling and Simulation Tool for Safe Store Separation Envelope Generation using Monte Carlo Simulations** K. Unal, TUBITAK, Ankara, Turkey; O. Baran, TED University, Ankara, Turkey	1630 hrs AIAA-2018-0432 **Aerial Combat Simulation Environment for One-on-One Engagement** B. Baspinar, E. Koyuncu, Istanbul Technical University, Istanbul, Turkey	1700 hrs AIAA-2018-0433 **Cooperative Navigation for Large Swarms of Munitions in Three-Dimensional Flight** B. Burchett, Rose-Hulman Institute of Technology, Terre Haute, IN

Monday, 8 January 2018						
102-NDA-2	**Reliability Analysis Methods and Applications I**					**Sun 1**
Chaired by: H. BAE, Wright State University and A. CHAUDHURI, Massachusetts Institute of Technology						
1400 hrs AIAA-2018-0434 **An adaptive sampling strategy to minimize uncertainty in reliability analysis using Kriging surrogate model** S. Bae, N. Kim, University of Florida, Gainesville, Gainesville, FL	1430 hrs AIAA-2018-0435 **Adjoint-FORM for efficient reliability analysis of large-scale structural problems** Y. Gao, Y. Liu, Arizona State University, Tempe, AZ	1500 hrs AIAA-2018-0436 **Sensitivity Analysis to Reduce Variability in the Mechanical Properties of Chopped Fiber Reinforced ABS Parts Fabricated with Additive Manufacuring** W. Ferrell, S. TerMaath, University of Tennessee, Knoxville, Knoxville, TN	1530 hrs AIAA-2018-0437 **A Comparison of Response Surface Methods for Reliability Analysis using Directional Simulation** R. Fenrich, J. Alonso, Stanford University, Stanford, CA	1600 hrs AIAA-2018-0438 **Non-probabilistic stability reliability analysis of composite laminated panels in supersonic flow with uncertain-but-bounded parameters** Y. Zheng, Z. Qiu, Beihang University, Beijing, China		

Monday, 8 January 2018						
103-PC-8	**Model Validation for Propulsion II**					**Gainesville 1**
Chaired by: B. RANKIN, Air Force Research Laboratory and V. SANKARAN, US Air Force/AFRL/RQRC						
1400 hrs AIAA-2018-0439 **Effects of Turbulent Combustion Closure on Grid Convergence of Bluff Body Stabilized Premixed Flame Simulations** A. Comer, Air Force Institute of Technology, Wright-Patterson AFB, OH; S. Sardeshmukh, Purdue University, West Lafayette, IN; B. Rankin, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Harvazinski, Air Force Research Laboratory, Edwards AFB, CA	1430 hrs AIAA-2018-0440 **Lyapunov exponent and Wasserstein metric as validation tools for assessing short-time dynamics and quantitative model evaluation of large-eddy simulation** H. Wu, P. Ma, Y. Lv, M. Ihme, Stanford University, Stanford, CA	1500 hrs AIAA-2018-0441 **Explicitly filtered LES of Bluff Body Stabilized Flames** T. Gallagher, Innovative Scientific Solutions, Inc., Dayton, OH; V. Sankaran, United Technologies Corporation, East Hartford, CT	1530 hrs AIAA-2018-0442 **ARC versus two-step chemistry and third-order versus second-order numeric scheme for Large Eddy Simulation of the Volvo burner** B. Rochette, O. Vermorel, L. Gicquel, T. Poinsot, CERFACS, Toulouse, France; D. Veynante, École Centrale Paris, Châtenay-Malabry, France	1600 hrs AIAA-2018-0443 **LES of the Volvo Combustion Experiment with an Ignition-Delay Variable** G. Candler, A. Kartha, University of Minnesota, Twin Cities, Minneapolis, MN; P. Subbareddy, North Carolina State University, Raleigh, NC; P. Dimotakis, California Institute of Technology, Pasadena, CA		

Monday, 8 January 2018						
104-PDL-4	**Plasma Actuators I**					**Destin 2**
Chaired by: S. ROY, University of Florida						
1400 hrs AIAA-2018-0444 **Large Eddy Simulation of Boundary Layer Transition Induced by DBD Plasma Actuators** B. Parent, Pusan National University, Busan, South Korea; M. Shneider, Princeton University, Princeton, NJ; S. Macheret, Purdue University, West Lafayette, IN	1430 hrs AIAA-2018-0445 **Assessing the Performance of a New Phenomenological Model for Dielectric Barrier Discharge Plasma Actuators** J. Laten, R. LeBeau, Saint Louis University, St. Louis, MO	1500 hrs AIAA-2018-0446 **Evaluation of discharge energy and lift recovery of NACA0015 airfoil controlled by nanosecond-pulse-driven plasma actuator** A. Komuro, K. Takashima, K. Suzuki, S. Kanno, S. Bhandari, T. Nonomura, Tohoku University, Sendai, Japan; et al.	1530 hrs AIAA-2018-0447 **Nanosecond DBD actuator: Species production, ultra-fast gas heating mechanism and fluid response** K. Kourtzanidis, L. Raja, University of Texas, Austin, Austin, TX			

Monday, 8 January 2018						
105-SCS-2	**Analysis of Lightweight Spacecraft Structures**					**Emerald 2**
Chaired by: H. SAKAMOTO, Tokyo Institute of Technology and S. BRADFORD, Jet Propulsion Laboratory						
1400 hrs AIAA-2018-0448 **Coupled radiative thermal and nonlinear stress analysis for thermal deformation in large space structures** O. Stohlman, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2018-0449 **Effects of Elasto-Plastic Behavior of Crease on Deployed Shape of Space Membrane** Y. Satou, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; H. Furuya, Tokyo Institute of Technology, Yokohama, Japan	1500 hrs AIAA-2018-0450 **Characterizing the Mechanics of Fold-lines in Thin Kapton Membranes** B. Dharmadasa, University of Colorado, Boulder, Boulder, CO; H. Mallikarachchi, University of Moratuwa, Katubedda, Sri Lanka; F. Lopez Jimenez, University of Colorado, Boulder, Boulder, CO	1530 hrs AIAA-2018-0451 **Structural Characteristics of Self-Extensible boom** M. Fukunaga, Y. Miyazaki, Nihon University, Funabashi, Japan	1600 hrs AIAA-2018-0452 **A Comparison of Uncertainty Quantification Methods on Benchmark Problems for for Space Deployable Structures** L. Peterson, M. Mobrem, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA		

Monday, 8 January 2018						
106-SD-3	**Structural Dynamics**					**Emerald 7**
Chaired by: C. BARNES, AFRL/RQVA and D. GRIFFITH						
1400 hrs AIAA-2018-0453 **Acoustic Boundary Element Analysis of Geostationary Communication Satellite and Test Correlation via Direct Field Acoustic Test** D. Inoyama, T. Mcquigg, J. Francis, T. Stoumbos, Orbital ATK, Dulles, VA	1430 hrs AIAA-2018-0454 **A Preliminary Methodology to Account for Satellites' Structural Dynamics Variability in Microvibrations** S. De Lellis, A. Stabile, G. Aglietti, University of Surrey, Guildford, United Kingdom; G. Richardson, Surrey Satellite Technology Limited (SSTL), Guildford, United Kingdom	1500 hrs AIAA-2018-0455 **Ambient Excitation Based Model Updating for Structural Health Monitoring via Dynamic Strain Measurements** B. Martins, J. Kosmatka, University of California, San Diego, La Jolla, CA	1530 hrs AIAA-2018-0456 **Investigation of Viscous Damping Terms for a Timoshenko Beam** B. McPherson, University of Central Florida, Orlando, FL; G. Lesieutre, Pennsylvania State University, University Park, PA; J. Kauffman, University of Central Florida, Orlando, FL	1600 hrs AIAA-2018-0457 **A multi-mode resonator via self-excited vibration of a metal beam in steady electrostatic fields** X. Yan, Y. Chen, Z. Liu, Y. Zhu, X. Zhang, Beihang University, Beijing, China; M. Qi, University of California, Berkeley, Berkeley, CA	1630 hrs AIAA-2018-0458 **Uncertainty propagation analysis of multilayer plates with frequency-dependent viscoelastic damping layers** T. Wang, C. Xu, Northwestern Polytechnical University, Xi'an, China; H. Mohamed, University of lorraine, Lorraine, France; N. Guo, L. Gu, Northwestern Polytechnical University, Xi'an, China	

Monday, 8 January 2018						
107-SD-4	**Limit Cycle Oscillations and Gust Response**					**Emerald 8**
Chaired by: W. SILVA, NASA-Langley Research Center and D. KUMAR, MSC Software						
1400 hrs AIAA-2018-0459 **High Fidelity Prediction of Flutter/ LCO using Time Spectral Method** R. Prasad, H. Kim, S. Choi, Virginia Polytechnic Institute and State University, Blacksburg, VA; S. Yi, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1430 hrs AIAA-2018-0460 **An Improved One-Shot Approach for Modeling Viscous Transonic Limit Cycle Oscillations** H. Li, K. Ekici, University of Tennessee, Knoxville, Knoxville, TN	1500 hrs AIAA-2018-0461 **Experimental Validation of a Forced Response Analysis Using a Time-Linearized Method** S. Bittner, C. Keller, C. Meinzer, J. Seume, Leibniz University, Hannover, Germany	1530 hrs AIAA-2018-0462 **Modelling of Folding Wing-Tip Devices for Gust Loads Alleviation** R. Cheung, C. Wales, D. Rezgui, J. Cooper, University of Bristol, Bristol, United Kingdom; T. Wilson, Airbus, Bristol, United Kingdom	1600 hrs AIAA-2018-0463 **Energy harvesting from stall-induced oscillations of pitching airfoils at high-subsonic regime** C. Santos, F. Marques, University of São Paulo, São Carlos, Brazil	1630 hrs AIAA-2018-0464 **Structural Nonlinearities Influence on the Energy Harvesting from Stall-Induced Oscillations** C. Santos, University of São Paulo, São Carlos, Brazil; M. Haji, Virginia Polytechnic Institute and State University, Blacksburg, VA; F. Marques, University of São Paulo, São Carlos, Brazil	

Monday, 8 January 2018						
108-SEN-2	**Applications of Sensor Fusion**					**Tallahassee 2**
Chaired by: D. ACCARDO, University of Naples and T. FREY, Lockheed Martin Aeronautics						
1400 hrs AIAA-2018-0465 **Important Considerations for Cooperative Passive Ranging of Aircraft** J. Wadley, Lockheed Martin Corporation, Fort Worth, TX	1430 hrs AIAA-2018-0466 **Low Cost Solution for Pose Estimation of Quadrotor** K. Gaur, H. Parwana, A. Bhatt, G. Pandey, M. Kothari, Indian Institute of Technology Kanpur, Kanpur, India	1500 hrs AIAA-2018-0467 **An Iterative Signal Fusion Method for Reconstruction of In-Plane Strain Maps from Strain Measurements by Hybrid Dense Sensor Networks** M. Sadoughi, A. Downey, C. Hu, S. Laflamme, Iowa State University, Ames, IA	1530 hrs AIAA-2018-0468 **Graph Coarsening for Runtime Improvements in the Maximum Concurrent Flow Problem** F. Vilas, E. Olinick, D. Matula, Southern Methodist University, Dallas, TX	1600 hrs AIAA-2018-0469 **A Data Fusion Method Based on Fine Guidance Senser for SVOM Satellite** S. Liu, G. Qin, D. Li, B. Sun, J. Li, S. Yu, Chinese Academy of Sciences, Shanghai, China		

Monday, 8 January 2018						
109-SFM-6	**Attitude Dynamics, Determination, and Control II**					**Osceola 6**
Chaired by: M. MAJJI, State University of New York at Buffalo						
1400 hrs AIAA-2018-0470 **A Comparison of Linear Attitude Estimators** R. Zanetti, University of Texas, Austin, Austin, TX; K. DeMars, Missouri University of Science and Technology, Rolla, MO	1430 hrs AIAA-2018-0471 **Active attitude control detection of a noncooperative space body** T. Woodbury, J. Hurtado, Texas A&M University, College Station, TX	1500 hrs AIAA-2018-0472 **Minimum-time Attitude Maneuver of Small Satellite Mounted with Communication Antenna** K. Mori, M. Takahashi, Keio University, Yokohama, Japan				

Monday, 8 January 2018						
110-SFM-7	**Orbit Determination and Estimation Theory I**					**Osceola 6**
Chaired by: K. DEMARS, Missouri University of Science and Technology						
1400 hrs **No Presentations**				1600 hrs AIAA-2018-0473 **Smoothing for Nonlinear Multi-target Filters with Gaussian Mixture Approximations** G. Fritsch, K. DeMars, Missouri University of Science and Technology, Rolla, MO	1630 hrs AIAA-2018-0474 **Nonlinear Filtering Using Directional Statistics for the Orbital Tracking Problem with Perturbation Effects** J. Kent, S. Bhattacharjee, University of Leeds, Leeds, United Kingdom; I. Hussein, Applied Defense Solutions, Columbia, MD; M. Jah, University of Texas, Austin, Austin, TX	1700 hrs AIAA-2018-0475 **Angles Only Initial Orbit Determination: Comparison of Relative Dynamics and Inertial Dynamics Approaches with Error Analysis** T. Lovell, A. Sinclair, Air Force Research Laboratory, Kirtland AFB, NM; B. Newman, Old Dominion University, Norfolk, VA

Monday, 8 January 2018						
111-STR-3	**Out-of-Autoclave Composites Wing Box Design**					**Emerald 5**
Chaired by: P. WEAVER and D. NORWOOD, Lockheed Martin Aeronautics						
1400 hrs AIAA-2018-0476 **Design, optimization and manufacturing of a unitized carbon fiber/thermoplastic wingbox structure** V. Oliveri, D. Peeters, G. Clancy, D. Jones, R. O'Higgins, P. Weaver, University of Limerick, Limerick, Ireland	1430 hrs AIAA-2018-0477 **Asymptotic homogenization for modeling of wingbox structures** D. Hadjiloizi, P. Weaver, University of Limerick, Limerick, Ireland	1500 hrs AIAA-2018-0478 **Steering of Carbon Fiber/ Thermoplastic Pre-preg Tapes using Laser-Assisted Tape Placement** G. Clancy, D. Peeters, V. Oliveri, D. Jones, R. O'Higgins, P. Weaver, University of Limerick, Limerick, Ireland	1530 hrs AIAA-2018-0479 **Thermoplastic Composite Stiffener Design with Manufacturing Considerations** D. Peeters, G. Clancy, V. Oliveri, R. O'Higgins, D. Jones, P. Weaver, University of Limerick, Limerick, Ireland	1600 hrs AIAA-2018-0480 **Enhanced Buckling Performance of a Stiffened, Variable Angle Tow Thermoplastic Composite Panel** R. Telford, D. Peeters, V. Oliveri, G. Zucco, D. Jones, R. O'Higgins, University of Limerick, Limerick, Ireland; et al.	1630 hrs AIAA-2018-0481 **Interface Characterization of Thermoplastic Skin-Stiffener Composite Manufactured using Laser-Assisted Tape Placement** A. Bandaru, G. Clancy, D. Peeters, R. O'Higgins, P. Weaver, University of Limerick, Limerick, Ireland	1700 hrs AIAA-2018-0482 **Static Test of a Thermoplastic Composite Wingbox Under Shear and Bending Moment** G. Zucco, V. Oliveri, D. Peeters, R. Telford, R. O'Higgins, T. Young, University of Limerick, Limerick, Ireland; et al.

Monday, 8 January 2018						
112-STR-4	**Impact Damage in Composite Structures**					**Emerald 6**
Chaired by: M. MAHLER ROYBAL, Raytheon and O. ZHUPANSKA, The University of Iowa						
1400 hrs AIAA-2018-0483 **Effect of edge impact on strength of CFRP structure with toughened interlayer** M. Kashiwagi, K. Miura, Y. Sato, Y. Nonaka, Mitsubishi Corporation, Tokyo, Japan; T. Abe, Churyo Engineering Company, Ltd., Nagoya, Japan; K. Takagi, Mitsubishi Corporation, Tokyo, Japan	1430 hrs AIAA-2018-0484 **Rapid Analysis Method for Composite Compression after Impact Strength Prediction** L. Borkowski, R. Kumar, United Technologies Corporation, East Hartford, CT	1500 hrs AIAA-2018-0485 **The Use of High Fidelity Inspection Data to Validate Predictions of Delamination and Residual Strength of Impacted Composite Panels** M. Pankow, North Carolina State University, Raleigh, NC	1530 hrs AIAA-2018-0486 **A two stage finite element modeling approach to mixed mode delamination in through thickness reinforced composite laminates** S. Joglekar, M. Pankow, North Carolina State University, Raleigh, NC; V. Ranatunga, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2018-0487 **Peridynamic Modeling of Damage in Laminated Composites Reinforced with Z-pins due to Low-velocity Impacts** F. Baber, Virginia Commonwealth University, Richmond, VA; V. Ranatunga, Air Force Research Laboratory, Wright-Patterson AFB, OH; I. Guven, Virginia Commonwealth University, Richmond, VA		

Monday, 8 January 2018						
113-SUR-2/MAT-3/STR-5	**Survivability II/Materials/Structures**					**Emerald 4**
Chaired by: S. BROUSSARD, The Boeing Company and M. SCHUCK, SURVICE Engineering Company						
1400 hrs AIAA-2018-0488 **Impact welding of wrought and additively manufactured 15-5 PH stainless steel** B. Liu, A. Palazotto, Air Force Institute of Technology, Wright-Patterson AFB, OH; A. Vivek, G. Daehn, Ohio State University, Columbus, OH	1430 hrs AIAA-2018-0489 **Vibrational Properties of Additively Manufactured Inconel 718** G. Cobb, A. Nesmith, A. Lingenfelter, R. O'Hara, Air Force Institute of Technology, Wright-Patterson AFB, OH	1500 hrs AIAA-2018-0490 **Two-dimensional Particle Tracking Velocimetry and Flame Front Detection** K. Liu, D. Liu, Air Force Institute of Technology, Wright-Patterson AFB, OH; A. Wang, Princeton University, Princeton, NJ	1530 hrs AIAA-2018-0491 **Cable-Driven Four-Bar Link Robotic Landing Gear Mechanism: Rapid Design and Survivability Testing** C. Di Leo, B. Leon, J. Wachlin, M. Kurien, J. Rimoli, M. Costello, Georgia Institute of Technology, Atlanta, GA	1600 hrs AIAA-2018-0492 **The Role of Polymers in Nano-aluminum@polymer Microspheres Fabricated by Electrospray** T. Yan, Y. Sun, H. Ren, Q. Jiao, Beijing Institute of Technology, Beijing, China		

Monday, 8 January 2018						
114-TP-3	**Thermal Protection Systems/Ablation I**					**Sarasota 2**
Chaired by: T. SCHWARTZENTRUBER, University of Minnesota						
1400 hrs AIAA-2018-0493 **Molecular Simulation of Boundary Layer Flow over Thermal Protection System Microstructure** A. Achambath, T. Schwartzentruber, University of Minnesota, Twin Cities, Minneapolis, MN	1430 hrs AIAA-2018-0494 **Development of a Detailed Surface Chemistry Framework in DSMC** K. Swaminathan Gopalan, K. Stephani, University of Illinois, Urbana-Champaign, Urbana, IL	1500 hrs AIAA-2018-0495 **Micro-scale thermal response modeling of Avcoat-like TPS** S. Sawant, P. Rao, A. Harpale, R. Jambunathan, H. Chew, D. Levin, University of Illinois, Urbana-Champaign, Urbana, IL	1530 hrs AIAA-2018-0496 **The Effect of Surface Catalycity on the Predicted Recession of TPS Materials** G. Palmer, Analytical Mechanics Associates, Inc., Moffett Field, CA; S. Coughlin, NASA Johnson Space Center, Houston, TX; S. Chen, University of Michigan, Ann Arbor, Ann Arbor, MI	1600 hrs AIAA-2018-0497 **Prediction of thermal protection system material permeability and tortuosity factor using Direct Simulation Monte Carlo** R. Jambunathan, University of Illinois, Urbana-Champaign, Urbana, IL; A. Borner, J. Ferguson, F. Panerai, NASA Ames Research Center, Moffett Field, CA; D. Levin, University of Illinois, Urbana-Champaign, Urbana, IL	1630 hrs AIAA-2018-0498 **Development of a probe for in-situ radiative heat flux measurements at the surface of an ablator** S. McGuire, G. Bailet, C. Laux, CentraleSupélec, Gif-sur-Yvette, France	1700 hrs AIAA-2018-0499 **Determination of Uncertainties for Analytically Derived Material Properties to be used in Monte Carlo Based Orion Heatshield Sizing** S. Coughlin, NASA Johnson Space Center, Houston, TX; S. William, University of Wisconsin, Madison, Madison, WI; S. Sepka, M. McGuire, NASA Ames Research Center, Moffett Field, CA

Monday, 8 January 2018						
115-TP-4	**Multiphase, Droplets, Jets, and Sprays**					**Sarasota 3**
Chaired by: W. TSAI, California State University, Maritime Academy and P. YEE, The Aerospace Corporation						
1400 hrs AIAA-2018-0500 **LES study of an n-heptane/air turbulent spray jet flame** H. Larabi, G. Lartigue, V. Moureau, National Institute of Applied Sciences (INSA), Rouen, France	1430 hrs AIAA-2018-0501 **Experimental Investigation of Temperature Oscillations in Loop Heat Pipes** D. Zakar, T. Holman, J. Maxwell, T. Hoang, R. Baldauff, Naval Research Laboratory, Washington, D.C.	1500 hrs AIAA-2018-0502 **An Experimental Investigation on the Dynamic Impact of Water Droplets onto Soft Surfaces at High Weber Numbers** L. Ma, Y. Liu, H. Hu, Iowa State University, Ames, IA; W. Wang, A. Kota, Colorado State University, Fort Collins, CO	1530 hrs AIAA-2018-0503 **Prediction of Heat Transfer in a Heat Pipe by Two-phase Flow Simulation based on Conservative Level Set Method** S. Takahashi, T. Inoue, Tokai University, Kanagawa, Japan; S. Okazaki, H. Fuke, Japan Aerospace Exploration Agency (JAXA), Kanagawa, Japan	1600 hrs AIAA-2018-0504 **Influence of non-uniform injection into a transpiration-cooled turbulent channel flow: A numerical study** V. König, M. Rom, S. Müller, RWTH Aachen University, Aachen, Germany		

Monday, 8 January 2018						
116-UAS-2	**UAS GN&C II**					**Tallahassee 3**
Chaired by: V. SCHULTZ, NASA Langley Research Center						
1400 hrs AIAA-2018-0505 **UAS Position Estimation in GPS-Degraded and Denied Environments Via ADS-B and Multilateration Fusion** R. Larson, J. Winde, C. Lum, University of Washington, Seattle, Seattle, WA	1430 hrs AIAA-2018-0506 **Visual Anchoring: Orbiting a Target with a UAS Using Vision as the Primary Sensor Modality** C. Lum, R. Grimes, D. Tsukada, J. Winde, University of Washington, Seattle, Seattle, WA; T. Kosel, University of Ljubljana, Ljubljana, Slovenia	1500 hrs AIAA-2018-0507 **Simultaneous Localization and Mapping with Moving Object Tracking in 3D Range Data using Probability Hypothesis Density (PHD) Filter** P. Siew, R. Linares, University of Minnesota, Twin Cities, Minneapolis, MN; V. Bageshwar, Honeywell International, Inc., Minneapolis, MN	1530 hrs AIAA-2018-0508 **Modeling and Development of Baseline Guidance Navigation and Control System for Medical Delivery UAV** S. Bhattarai, Institute of Engineering, Lalitpur, Nepal; K. Poudel, University of Texas, Arlington, Arlington, TX; N. Bhatta, S. Mahat, S. Bhattarai, Institute of Engineering, Lalitpur, Nepal; K. Thapa Magar, University of Dayton, Dayton, OH	1600 hrs AIAA-2018-0509 **Moving Path Following Control of Constrained Underactuated Vehicles: A Nonlinear Model Predictive Control Approach** R. Jain, A. Aguiar, A. Alessandretti, J. Borges de Sousa, University of Porto, Porto, Portugal		

Monday, 8 January 2018							
117-WE-2	**Wake Physics, Modeling, and Experimentation II**						**Osceola 5**
Chaired by: P. MORIARTY, National Renewable Energy Laboratory and P. JHA, Envision Energy USA Ltd							
1400 hrs AIAA-2018-0510 **Stability of Non-Uniform Helical Vortex Structures Generated by Tip Vortices of a Floating Offshore Wind Turbine** S. Rodriguez, J. Jaworski, Lehigh University, Bethlehem, PA	1430 hrs AIAA-2018-0511 **Uncertainty Quantification Framework for Wind Turbine Wake Measurements with a Scanning Lidar** T. Herges, D. Maniaci, B. Naughton, Sandia National Laboratories, Albuquerque, NM	1500 hrs AIAA-2018-0512 **Optimization-Based Calibration of FAST.Farm Parameters against Large-Eddy Simulations** P. Doubrawa, J. Annoni, J. Jonkman, National Renewable Energy Laboratory, Golden, CO	1530 hrs AIAA-2018-0513 **Three-Dimensional Free-Wake Vortex Simulations of an Actuator Disc in Yaw and Tilt** T. Berdowski, Delft University of Technology, Delft, The Netherlands	1600 hrs AIAA-2018-0514 **Wind Turbine Wake Definition and Identification Using Velocity Deficit and Turbulence Profile** N. Panossian, T. Herges, D. Maniaci, Sandia National Laboratories, Albuquerque, NM	1630 hrs AIAA-2018-0515 **An advanced method for wind turbine wake modeling** H. Ozdemir, E. Bot, Energy Research Center of the Netherlands, Petten, The Netherlands	1700 hrs AIAA-2018-0516 **A double wake model for interacting boundary layer methods** R. Vaithiyanathasamy, H. Ozdemir, G. Bedon, Energy Research Center of the Netherlands, Petten, The Netherlands; A. van Garrel, University of Twente, Enschede, The Netherlands

Monday, 8 January 2018		
118-NW-4 **1530 - 1600 hrs**	**Monday Afternoon Coffee Break**	**Session Room Foyers**

Monday, 8 January 2018		
119-RL-1 **1600 - 1730 hrs**	**Rising Leaders Speed Mentoring**	**Orange Blossom**
Accomplished members of corporations and AIAA will be taking time to meet with the Rising Leaders participants and share their experiences. This event is a great way to get insight from top-level officials and make some great new contacts. And, maybe, they will end up being a mentor for more than just the 15 minutes at this event.		

Monday, 8 January 2018		
120-LEC-2 1730 - 1830 hrs	von Kármán Lecture in Astronautics The Alpha Magnetic Spectrometer on the International Space Station: Unlocking the Secrets of the Cosmos	Osceola A
Samuel C. C. Ting Thomas Dudley Cabot Professor of Physics Massachusetts Institute of Technology		

Monday, 8 January 2018		
121-RL-2 1730 - 1900 hrs	Rising Leaders Reception	Castillo Fort
Continue your conversations and networking from the Speed Mentoring session. Take time to socialize with your fellow young professionals who are also attending the conference. Having just participated in the speed mentoring, you'll definitely have at least one thing in common. Don't miss this rewarding opportunity. Open to all attendees.		

Monday, 8 January 2018						
122-FD-13	Special Session: Starting and Supercharging STEM Programs					Emerald 5
Chaired by: T. EYMANN, CREATE-AV/Kestrel and T. MOELLER, University of Tennessee Space Institute						
1800 hrs Oral Presentation **STEM Outreach in the Florida Panhandle** A. Diggs, Air Force Research Laboratory, Eglin AFB, FL	1830 hrs Oral Presentation **AIAA STEM K-12 Committee: A strategic vision to engage the next generation of STEM professionals** A. Walkowicz, Pratt & Whitney, East Hartford, CT	1900 hrs Oral Presentation **STEM Outreach Using Hands-On Demonstrations: Structural Dynamics for Grade Schoolers** T. Kinney, NASA Kennedy Space Center, Cape Canaveral, FL; S. Wilson, NASA Johnson Space Center, Houston, TX	1930 hrs Oral Presentation **A STEM Program Case Study: Building the UTSI Solar Observatory** T. Moeller, University of Tennessee, Tullahoma, Tullahoma, TN	2000 hrs Oral Presentation **WeissSat-1: NASA's Selection of a Middle School CubeSat to Fly in Space** K. Simmons, Weiss School, Palm Beach Gardens, FL		

Monday, 8 January 2018			
123-GT-2	Aerospace Human Resources in the 21st Century		Sanibel 1
Chaired by: S. DUNN, Jacobs and D. MARREN, USAF/AEDC			
1800 hrs Oral Presentation **Aerospace Human Resources for the 21st Century: Workforce Challenges Facing Research and Development** D. Marren, Arnold Engineering Development Complex, Silver Spring, MD; S. Dunn, Jacobs, Hampton, VA; P. Piscopo, Institute for Defense Analyses, Alexandria, VA	1830 hrs **Panel** Aerospace Human Resources in the 21st Century		

Monday, 8 January 2018		
124-TFPC-2/GEPC-1 1800 - 2100 hrs	Rapid Advances for Electric Aircraft–Lessons from the AVIATION Forum, Transformational Electric Flight Workshop, and Propulsion and Energy Forum	Miami 3

Panelists:

Transformational Electric Flight - Sessions and Systems
Andrew Gibson
President/Aerospace Engineer
Empirical Systems Aerospace, Inc. (ESAero)

Transformational Electric Flight – Markets and Operations
Brian German
Associate Professor
Georgia Institute of Technology

Transformational Electric Flight – Component Technologies
Michael Armstrong
Vision Systems Lead
Rolls-Royce Liberty Works

Certification Efforts for Transformational Flight
Gregory Bowles
Vice President, Global Innovation and Policy
GAMA Engine Company Electric Propulsion Activities

Tuesday

Tuesday, 9 January 2018

125-SB-2 0730 - 0800 hrs	Tuesday Morning Speakers' Briefing	Session Rooms

Tuesday, 9 January 2018

126-PLNRY-2 0800 - 0900 hrs	Data, Data Everywhere… The Power & Potential	Osceola CD

Moderator: Joseph Morrison, Associate Project Manager, Transformational Tools & Technologies, NASA Langley Research Center / Aeronautics Research Directorate

Panelists:

David Keyes
Director, Extreme Computing Research Center
King Abdullah University of Science & Technology

Pamela Kobryn
Principal Aerospace Engineer,
Aerospace Vehicles Division
Air Force Research Laboratory

Dimitri Mavris
Director, Aerospace Systems Design Laboratory
Georgia Institute of Technology

Mark Valentine
DOD Strategic Initiatives Group
Microsoft

Tuesday, 9 January 2018

127-NW-5 0900 - 0930 hrs	Tuesday Morning Coffee Break	Session Room Foyers

Tuesday, 9 January 2018

128-AA-4 — CAA — Tampa 2

Chaired by: R. MANKBADI, Embry-Riddle Aeronautical University and A. LYRINTZIS, Embry Riddle Aeronautical University

0930 hrs AIAA-2018-0517 **Effects of Leading-Edge Separation on the Vibroacoustic Signature of a Heaving Airfoil at Low Mach Number** J. Melo De Sousa, Technical University of Lisbon, Lisbon, Portugal	1000 hrs AIAA-2018-0518 **Hybrid Finite Volume and Discontinuous Galerkin Method with Dynamic Overset Noise Source Identification for Acoustics Prediction** R. Harris, T. Rivord, CFD Research Corporation, Huntsville, AL	1030 hrs AIAA-2018-0519 **Numerical Aspects of Rocket Lift-off Noise with Launch-Pad Aqueous Injection** S. Salehian, Embry-Riddle Aeronautical University, Daytona Beach, FL; K. Kourbatski, ANSYS, Inc., Lebanon, NH; V. Golubev, R. Mankbadi, Embry-Riddle Aeronautical University, Daytona Beach, FL	1100 hrs AIAA-2018-0520 **Aero-Acoustics CFD Prediction for Re-entry Capsule Wake Flows at Subsonic to Supersonic Regine** K. Fujimoto, H. Negishi, R. Nakamuya, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan			

Tuesday, 9 January 2018

129-ACD-4 — Blended/Hybrid Wing Body Design — Tampa 3

Chaired by: M. DRAKE, Boeing Commercial Airplanes and S. KOMADINA, Northrop Grumman Corporation

0930 hrs Oral Presentation **Interior Design Optimization for Commercial Blended-Wing-Body Configurations** B. Kennelly, J. Whitlock, M. Page, E. Smetak, S. Yang, DZYNE Technologies, Inc., Irvine, CA	1000 hrs AIAA-2018-0521 **Achievement of NASA New Aviation Horizons N+2 Goals with a Blended-Wing-Body X-Plane Designed for the Regional Jet and Single-Aisle Jet Markets** S. Yang, M. Page, E. Smetak, DZYNE Technologies, Inc., Irvine, CA	1030 hrs AIAA-2018-0522 **Conceptual Design and Evaluation of Blended-Wing Body Aircraft** M. Brown, R. Vos, Delft University of Technology, Delft, The Netherlands				

Tuesday, 9 January 2018						
130-AFM-5	**Flight Testing and System Identification I**					**Osceola 1**
Chaired by: B. LEONHARDT, Northrop Grumman Corporation						
0930 hrs AIAA-2018-0523 **Identification of Quadrotor Aerodynamic Model from High Speed Flight Data** S. Sun, R. Schilder, C. de Visser, Delft University of Technology, Delft, The Netherlands	1000 hrs AIAA-2018-0524 **Studying the Effect of the Tail on the Dynamics of a Flapping-Wing MAV using Free-Flight Data** F. Rijks, M. Karásek, S. Armanini, C. de Visser, Delft University of Technology, Delft, The Netherlands	1030 hrs AIAA-2018-0525 **Development of a Full Envelope Flight Identified F-16 Simulation Model** M. Knapp, San Jose State University, Moffett Field, CA; T. Berger, M. Tischler, Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA; M. Cotting, U.S. Air Force Test Pilot School, Edwards AFB, CA	1100 hrs AIAA-2018-0526 **Parameter Estimation of Stable and Unstable Aircraft using Extreme Learning Machine** H. Verma, N. Peyada, Indian Institute of Technology Kharagpur, Kharagpur, India	1130 hrs AIAA-2018-0527 **Vision-Based Relative Localization for Airborne Measurements of Ship Air Wake** K. Gamagedara, K. Patil, T. Lee, M. Snyder, George Washington University, Washington, D.C.		

Tuesday, 9 January 2018						
131-AFM-6	**Aircraft Flight Dynamics I**					**Captiva 1**
Chaired by: C. WOOLSEY, Virginia Tech						
0930 hrs AIAA-2018-0528 **Active flight path control for an induced spin flight termination system** P. Shukla, C. Woolsey, Virginia Polytechnic Institute and State University, Blacksburg, VA	1000 hrs AIAA-2018-0529 **Preliminary Test Results for Stability and Control Characteristics of a Generic T-tail Transport Airplane at High Angle of Attack** K. Cunningham, G. Shah, N. Frink, S. McMillin, P. Murphy, NASA Langley Research Center, Hampton, VA; F. Brown, The Boeing Company, Huntington Beach, CA; et al.	1030 hrs AIAA-2018-0530 **Gyroscopic Stabilization of Flying Wing Aircraft** V. Rustagi, M. Kothari, A. Chatterjee, Indian Institute of Technology Kanpur, Kanpur, India	1100 hrs AIAA-2018-0531 **Optimization of the mass ratio for a general multi-rotor aircraft** M. Friedrich, W. Fichter, University of Stuttgart, Stuttgart, Germany	1130 hrs AIAA-2018-0532 **Scalability of Cyclic Control without Blade Pitch Actuators** J. Paulos, M. Yim, University of Pennsylvania, Philadelphia, Philadelphia, PA	1200 hrs AIAA-2018-0533 **Linking the Pilot Structural Model and Pilot Workload** E. Bachelder, San Jose State University, San Jose, CA; R. Hess, University of California, Davis, Davis, CA; M. Godfroy-Cooper, San Jose State University, San Jose, CA; B. Aponso, NASA Ames Research Center, Moffett Field, CA	

Tuesday, 9 January 2018						
132-APA-13	**Special Session: CREATE-AV HPC Multiphysics Applications of Full-Up Air Vehicles II**					**Sun D**
Chaired by: N. HARIHARAN, CREATE-AV and S. MORTON, DoD HPCMP						
0930 hrs AIAA-2018-0534 **High-Fidelity Aeroelastic Simulations with HPCMP CREATE™-AV Kestrel** S. Lamberson, D. McDaniel, S. Morton, CREATE Kestrel Team, Niceville, FL	1000 hrs AIAA-2018-0535 **Computing Aerodynamic Damping of a Generic Missile with CFD** A. Shelton, C. Martin, Air Force Research Laboratory, Eglin AFB, FL; W. Silva, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2018-0536 **Understanding the Flowfield Behind a Tanker Aircraft** M. Jurkovich, C. Hummer, Air Force Life Cycle Management Center, Wright-Patterson AFB, OH				

Tuesday, 9 January 2018						
133-APA-14	**Special Session: CFD Transition Modeling and Predictive Capabilities II**					**Sun D**
Chaired by: J. CODER, University of Tennessee and M. SMITH, Georgia Institute of Technology						
0930 hrs **No Presentations**			1100 hrs AIAA-2018-0537 **Transition Prediction Results for Sickle Wing and NLF(1)-0416 Test Cases** M. Kruse, German Aerospace Center (DLR), Braunschweig, Germany; F. Munoz, R. Radespiel, Technical University of Braunschweig, Braunschweig, Germany; C. Grabe, German Aerospace Center (DLR), Braunschweig, Germany	1130 hrs AIAA-2018-0538 **Transition Aerodynamic Predictions of an S809 Airfoil and a Prolate Spheroid Using RANS Computational Fluid Dynamics** A. Voegele, The Aerospace Corporation, El Segundo, CA	1200 hrs AIAA-2018-0539 **Implementation and Verification of a Transitional Unstructured Hybrid RANS-LES Closure** A. Grubb, M. Smith, Georgia Institute of Technology, Atlanta, GA	

Tuesday, 9 January 2018						
134-APA-15	**Applied CFD and Numerical Correlations with Experimental Data I**					**Sanibel 3**
Chaired by: S. MASSEY, NASA-Langley Research Center and M. PARK, NASA-Langley Research Center						
0930 hrs AIAA-2018-0540 **Supersonic Inlet Design using Bleed Boundary Condition with Porosity Variation and Expansion Wave** Y. Choe, Seoul National University, Seoul, South Korea; K. Kim, Korea Aerospace Industries, Seoul, South Korea; J. Kim, C. Kim, Seoul National University, Seoul, South Korea	1000 hrs AIAA-2018-0541 **Development and Testing of a Low Cost CFD Based Analysis for Surface Mesh Interrogation & Refinement for Applied Aerodynamics Applications** G. Whitehouse, A. Boschitsch, B. Silbaugh, Continuum Dynamics, Inc., Ewing, NJ	1030 hrs AIAA-2018-0542 **Validation and Comparison of RANS Propeller Modeling Methods for Tip-Mounted Applications** T. Stokkermans, N. Arnhem, T. Sinnige, L. Veldhuis, Delft University of Technology, Delft, The Netherlands	1100 hrs AIAA-2018-0543 **Aerodynamic Analysis of NASA Common Research Model by Block-Structured Cartesian Mesh** S. Makino, T. Misaka, T. Kojima, S. Obayashi, Tohoku University, Sendai, Japan; D. Sasaki, Kanazawa Institute of Technology, Kanazawa, Japan	1130 hrs AIAA-2018-0544 **CFD Modeling of US Army Shadow UAV Wind Tunnel Testing for OVERFLOW CFD Transition Model Validation** Z. Hall, Army Aviation and Missile Research Development and Engineering Center, Redstone Arsenal, AL	1200 hrs AIAA-2018-0545 **Wavelet-based adaptive unsteady Reynolds-averaged Navier-Stokes computations of wall-bounded internal and external compressible turbulent flows** X. Ge, Florida State University, Tallahassee, FL; O. Vasilyev, Skolkovo Institute of Science and Technology, Moscow, Russia; G. De Stefano, Università della Campania, Aversa, Italy; M. Hussaini, Florida State University, Tallahassee, FL	

Tuesday, 9 January 2018						
135-APA-16	**Unsteady Aerodynamics II**					**Sanibel 2**
Chaired by: L. UKEILEY, University of Florida and C. TILMANN, AFRL/RQV						
0930 hrs AIAA-2018-0546 **Influence of Aspect Ratio on Dynamic Stall of a Finite Wing** I. Andreu Angulo, P. Ansell, University of Illinois, Urbana-Champaign, Urbana, IL	1000 hrs AIAA-2018-0547 **Can Flapping Propulsion Boost Airplane Technology? The Flapping-Tail Concept Airplane** H. Taha, University of California, Irvine, Irvine, CA	1030 hrs AIAA-2018-0548 **Aerodynamic force and Lamb vector field in compressible unsteady flows** M. Ostieri, R. Tognaccini, University of Naples "Federico II", Naples, Italy; D. Bailly, D. Destarac, ONERA, Meudon, France	1100 hrs AIAA-2018-0549 **Unsteadiness of Large-Scale Axisymmetric Step Shock/Boundary-Layer Interaction at Mach 2.0 – 3.9** G. Chandola, X. Huang, D. Estruch-Samper, National University of Singapore, Singapore, Singapore	1130 hrs Oral Presentation **Experimental Investigation of the Vortex Interaction of Slanted-base Afterbody** S. Qin, Y. Wang, H. Liu, Shanghai Jiao Tong University, Shanghai, China	1200 hrs AIAA-2018-0550 **Vortex Drag Generated by Aircraft Afterbody Vorticity-loop System** Y. Wang, S. Qin, H. Liu, Shanghai Jiao Tong University, Shanghai, China	

Tuesday, 9 January 2018						
136-APA-17	**Aerodynamic Design: Analysis, Methodologies, and Optimization Techniques II**					**Sun 2**
Chaired by: J. DOYLE, US Army AMRDEC and K. CASPER, Sandia National Laboratories						
0930 hrs AIAA-2018-0551 **Waverider Vehicle Optimization with Volumetric Constraints for Sonic Boom** P. Rodi, Lockheed Martin Corporation, Houston, TX	1000 hrs AIAA-2018-0552 **Characteristics of Adjoint-Based Shape Optimization on Hierarchical Cartesian Mesh with Immersed Boundary Method** G. Okubo, T. Imamura, University of Tokyo, Bunkyo, Japan	1030 hrs AIAA-2018-0553 **Investigation of the Impact of Turbulence Models on Robust Aerodynamic Shape Optimization** A. Vuruskan, S. Hosder, Missouri University of Science and Technology, Rolla, MO	1100 hrs AIAA-2018-0554 **On Using Upper Surface Shaping to Improve Waverider Performance** P. Rodi, Lockheed Martin Corporation, Houston, TX	1130 hrs AIAA-2018-0555 **Efficient Global Optimization using Multiple Infill Sampling Criteria and Surrogate Models** Y. Wang, Z. Han, Y. Zhang, W. Song, Northwestern Polytechnical University, Xi'an, China		

Tuesday, 9 January 2018						
137-APA-18	**Flow Control II: Applications II**					**Captiva 2**
Chaired by: B. OSBORNE, The Boeing Company and H. BABINSKY, University of Cambridge						
0930 hrs AIAA-2018-0556 **The Drag Reducing Effort of Vortex Generators on Tractor-Trailer Vehicles** B. Kuwik, C. Tabacjar, S. Lee, Alfred University, Alfred, NY	1000 hrs AIAA-2018-0557 **Flow Topology of a Ground Vehicle Wake and Its response to Flow Control** P. Sellappan, J. McNally, F. Alvi, Florida State University, Tallahassee, FL	1030 hrs AIAA-2018-0558 **NASCAR Race Vehicle Wake Modification via Passive Blown Ducts and its Effect on Trailing Vehicle Drag** E. Jacuzzi, NASCAR Research and Development Center, Concord, NC; A. Barrier, K. Granlund, North Carolina State University, Raleigh, NC	1100 hrs AIAA-2018-0559 **Computational Investigation of Nominally-Orthogonal Pneumatic Active Flow Control for High-Lift Systems** S. Hosseini, C. Van Dam, University of California, Davis, Davis, CA; S. A. Pandya, NASA Ames Research Center, Moffett Field, CA	1130 hrs AIAA-2018-0560 **Flow Separation Control Computational Model for Optimization of Future Naval Air Vehicles** B. Maines, M. Davis, E. Bender, W. Baker, Lockheed Martin Corporation, Fort Worth, TX; M. Boespflug, General Electric Company, Niskayuna, NY	1200 hrs AIAA-2018-0561 **A Stake in the Ground: How Boundary Layer Control was Implemented on a Production Tactical Aircraft** R. Dowgwillo, The Boeing Company, St. Louis, MO	

Tuesday, 9 January 2018						
138-ASC-3	**Smart Assemblies/Systems**					**Emerald 4**
Chaired by: R. DE BREUKER, TU Delft						
0930 hrs AIAA-2018-0562 **Reviews of Structural Health Monitoring Technologies in Airplane Fuselage Maintenance Perspective** T. Dong, N. Kim, University of Florida, Gainesville, Gainesville, FL	1000 hrs AIAA-2018-0563 **Structural Health Monitoring of Bonded Joints using Modified Time Reversal Method** N. Jayakody, A. Khalili, R. Jha, Mississippi State University, Starkville, MS	1030 hrs AIAA-2018-0564 **The Spacecraft SHM Experiment, Part 3:On-Orbit Data and System Performance Metrics** D. Doyle, Air Force Research Laboratory, Kirtland AFB, NM; S. Kessler, Metis Design Corporation, Boston, MA	1100 hrs AIAA-2018-0565 **Self-assembling Space Structures: Buckminsterfullerene Sensor Nodes** A. Ekblaw, J. Paradiso, Massachusetts Institute of Technology, Cambridge, MA			

Tuesday, 9 January 2018						
139-DE-3	**Additive Manufacturing And Design with the Cloud or Digital Threads**					**Emerald 3**
Chaired by: N. HINES, The Boeing Company						
0930 hrs AIAA-2018-0566 **Demonstration and Characterization of Novel Additive Manufacturing Approaches for Aerospace RF Applications** D. Waller, D. French, E. Valentin-Hernandez, Ball Corporation, Broomfield, CO	1000 hrs AIAA-2018-0567 **Design, Development, and Range Optimization of Flying Wing UAV** Z. Standridge, K. Kochersberger, Virginia Polytechnic Institute and State University, Blacksburg, VA	1030 hrs AIAA-2018-0568 **Towards Cross-Language and Distributed Coupled-Model Design Optimization with Discrete Adjoints** D. Makhija, Lateral Unbounded Software, LLC, Beavercreek, OH; R. Snyder, P. Beran, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2018-0569 **Engineering Design with Digital Thread** V. Singh, K. Willcox, Massachusetts Institute of Technology, Cambridge, MA	1130 hrs AIAA-2018-0570 **Analysis and Visualization of Failure Modes on the Wing Rib** E. Kallou, A. Gharbi, S. Briceno, D. Mavris, Georgia Institute of Technology, Atlanta, GA		

Tuesday, 9 January 2018		
140-F360-3 **0930 - 1130 hrs**	**Data, Data Everywhere… the Devil in the Details**	**Osceola A**

Moderator: Joseph Morrison, Associate Project Manager, Transformational Tools & Technologies, NASA Langley Research Center / Aeronautics Research Directorate

Panelists:

David Keyes
Director, Extreme Computing Research Center
King Abdullah University of Science & Technology

Pamela Kobryn
Principal Aerospace Engineer,
Aerospace Vehicles Division
Air Force Research Laboratory

Dimitri Mavris
Director, Aerospace Systems Design Laboratory
Georgia Institute of Technology

Mark Valentine
DOD Strategic Initiatives Group
Microsoft

Tuesday, 9 January 2018						
141-FD-14	**Special Session: Massively Separated Flows I**					**Miami 1**
Chaired by: M. GREEN, Syracuse University and K. MULLENERS, EPFL						
0930 hrs AIAA-2018-0571 **Experimental and computational investigation of transverse gust encounters** H. Biler, C. Badrya, A. Jones, University of Maryland, College Park, College Park, MD	1000 hrs AIAA-2018-0572 **A Smooth Body, Large-Scale Flow Separation Experiment** D. Simmons, F. Thomas, T. Corke, University of Notre Dame, Notre Dame, IN	1030 hrs AIAA-2018-0573 **Micro Air Vehicle Scale Gust-Wing Interaction in a Wind Tunnel** Z. Smith, A. Jones, University of Maryland, College Park, College Park, MD; J. Hrynuk, Army Research Laboratory, Aberdeen Proving Ground, MD	1100 hrs AIAA-2018-0574 **Separated Flow Response to Rapid Flap Deflection** A. Medina, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Hemati, University of Minnesota, Twin Cities, Minneapolis, MN	1130 hrs AIAA-2018-0575 **An Investigation of the Aerodynamics of a Harmonically-Pitching Airfoil in Uniform-Shear Approach Flow** P. Hammer, D. Olson, M. Albrecht, Michigan State University, East Lansing, MI; M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH; A. Naguib, M. Koochesfahani, Michigan State University, East Lansing, MI		

Tuesday, 9 January 2018						
142-FD-15	**Fluid-Structure Interaction I**					**Sun 3**
Chaired by: J. SEIDEL, USAF Academy						
0930 hrs AIAA-2018-0576 **Investigation of Cyber-Physical Fluid Dynamic Parachute Suspension Line Fluid-Structure Interaction** B. Olson, R. Gowda, University of Massachusetts, Lowell, Lowell, MA; K. Bergeron, Army Research, Development and Engineering Command, Natick, MA; J. Sherwood, D. Willis, University of Massachusetts, Lowell, Lowell, MA	1000 hrs AIAA-2018-0577 **Thermal Control of Vortex-induced Vibration of Two Tandem Cylinders** H. Wan, S. Patnaik, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2018-0578 **High-Fidelity Fluid-Structure Interaction Modeling of Bird Vocalization in Syrinx** W. Jiang, Q. Xue, X. Zheng, University of Maine, Orono, Orono, ME; J. Rasmussen, C. Elemans, University of Southern Denmark, Odense, Denmark	1100 hrs AIAA-2018-0579 **Dynamic Characteristics of Underwater Objects after Shock Wave loading** H. Imaeda, M. Sun, Tohoku University, Sendai, Japan	1130 hrs AIAA-2018-0580 **Development of Valveless Resonant Micropumps for Liquid Applications** A. Mohamed, W. Crowther, M. Nabawy, University of Manchester, Manchester, United Kingdom	1200 hrs AIAA-2018-0581 **Energy Analysis of Water Impact of an Elastic Cylindrical Shell** Q. Qu, B. Wang, P. Liu, X. Wen, Beihang University, Beijing, China; R. Agarwal, Washington University in St. Louis, St. Louis, MO	

Tuesday, 9 January 2018						
143-FD-16	**Wall-Bounded Flows I**					**Sun 6**
Chaired by: J. SCHAEFER, The Boeing Company						
0930 hrs AIAA-2018-0582 **Direct numerical simulations of turbulent channel flow under transcritical conditions** P. Ma, X. Yang, M. Ihme, Stanford University, Stanford, CA	1000 hrs AIAA-2018-0583 **Structure of Secondary Motion in a Mach 2 Boundary Layer** S. Peltier, B. Rice, Air Force Research Laboratory, Arnold AFB, TN; N. Bisek, Air Force Research Laboratory, Wright-Patterson AFB, OH; C. McKenna, J. Hofferth, Air Force Research Laboratory, Arnold AFB, TN	1030 hrs AIAA-2018-0584 **Time-resolved PIV Measurements of the Effect of Freestream Turbulence on Horseshoe Vortex Dynamics** E. Lange, S. Elahi, S. Lynch, Pennsylvania State University, University Park, PA	1100 hrs AIAA-2018-0585 **Experimental Investigation of the Influence of Anisotropic Surface Structures on the Boundary Layer Flow** S. Kurth, C. Hamann, J. Seume, Leibniz University, Hannover, Germany; K. Mulleners, Swiss Federal Institute of Technology, Lausanne, Switzerland			

Tuesday, 9 January 2018						
144-FD-17	**Stability and Transition I: Shear Flows I**					**Miami 2**
Chaired by: S. LAURENCE, University of Maryland, College Park						
0930 hrs AIAA-2018-0586 **Numerical Investigation of Hydrodynamic Stability of Inward Radial Rayleigh-Bènard-Poiseuille Flow** M. Hasan, A. Gross, New Mexico State University, Las Cruces, NM	1000 hrs AIAA-2018-0587 **Hydrodynamic receptivity predictions and measurements of an acoustically forced multi-nozzle swirl combustor** C. Douglas, T. Smith, B. Emerson, Georgia Institute of Technology, Atlanta, GA; K. Manoharan, S. Hemchandra, Indian Institute of Science, Bengaluru, India; T. Lieuwen, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2018-0588 **Resolvent Analysis of Compressible Flow over a Long Rectangular Cavity** Q. Liu, Y. Sun, L. Cattafesta, Florida State University, Tallahassee, FL; L. Ukeiley, University of Florida, Gainesville, Gainesville, FL; K. Taira, Florida State University, Tallahassee, FL	1100 hrs AIAA-2018-0589 **Spatial transition point from laminar flow to turbulence in a pipe with injection revealed by solving a weakly-stochastic Navier-Stokes equation** K. Naruse, K. Naitoh, Waseda University, Shinjuku, Japan	1130 hrs AIAA-2018-0590 **Experimental Study on the Stability Characteristics of a Rotation Flow in a Finite-length Pipe** J. Li, X. Meng, Northwestern Polytechnical University, Xi'an, China; D. Zhang, Commercial Aircraft Corporation of China, Ltd. (COMAC), Shanghai, China; S. Wang, University of Auckland, Auckland, New Zealand; F. Liu, University of California, Irvine, Irvine, CA		

Tuesday, 9 January 2018						
145-FD-18	**RANS/Hybrid/LES Modeling I**					**Sun 4**
Chaired by: A. SESCU, Mississippi State University and H. DONG, University of Virginia						
0930 hrs AIAA-2018-0591 **Development of Various Rotation and Curvature Corrections for Eddy-Viscosity Turbulence Models** X. Zhang, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1000 hrs AIAA-2018-0592 **Wavelet-based delayed detached eddy simulation method for compressible wall bounded turbulent flow modeling** X. Ge, Florida State University, Tallahassee, FL; O. Vasilyev, Skolkovo Institute of Science and Technology, Moscow, Russia; M. Hussaini, Florida State University, Tallahassee, FL	1030 hrs AIAA-2018-0593 **Development and Application of Wall-Distance-Free Wray-Agarwal Turbulence Model (WA2018)** X. Han, Washington University in St. Louis, St. Louis, MO; M. Rahman, Aalto University, Helsinki, Finland; R. Agarwal, Washington University in St. Louis, St. Louis, MO	1100 hrs AIAA-2018-0594 **Autonomic Closure for Turbulent Flows Using Approximate Bayesian Computation** O. Doronina, J. Christopher, P. Hamlington, University of Colorado, Boulder, Boulder, CO			

Tuesday, 9 January 2018						
146-FD-19	**CFD Methods for Compressible Flows I**					**Sun 5**
Chaired by: A. HADID, Northrop Grumman Aerospace Systems						
0930 hrs AIAA-2018-0595 **A Reconstructed Discontinuous Galerkin Method for Compressible Multiphase Flows in Lagrangian Formulation** A. Pandare, C. Wang, H. Luo, North Carolina State University, Raleigh, NC; M. Shashkov, Los Alamos National Laboratory, Los Alamos, NM	1000 hrs AIAA-2018-0596 **Reconstructed Discontinuous Galerkin Methods for Compressible Flows in ALE Formulation** C. Wang, H. Luo, North Carolina State University, Raleigh, NC; A. Kashi, McGill University, Montréal, Canada	1030 hrs AIAA-2018-0597 **A Stable and Consevative Coupling of the Unsteady Compressible Navier-Stokes Equations at Interfaces Using Finite Difference and Finite Volume methods** P. Eliasson, Saab Group, Linköping, Sweden; J. Nordstrom, Linköping University, Linköping, Sweden	1100 hrs AIAA-2018-0598 **An ALE-based Meshless Method for 3-D Compressible Flow around Moving Bodies** J. Huh, S. Kim, J. Park, K. Kim, Seoul National University, Seoul, South Korea; S. Jung, Agency for Defense Development, Daejeon, South Korea	1130 hrs AIAA-2018-0599 **High-Order Large Eddy Simulation and Immersed Boundary Method on Dynamic Meshes: Application to Rotorcraft Aerodynamics** Y. Delorme, S. Frankel, Technion–Israel Institute of Technology, Haifa, Israel; R. Jain, R. Strawn, NASA Ames Research Center, Moffett Field, CA	1200 hrs AIAA-2018-0600 **DNS of Hypersonic Flow over Porous Surfaces with a Hybrid Method** A. Cerminara, R. Deiterding, N. Sandham, University of Southampton, Southampton, United Kingdom	

Tuesday, 9 January 2018						
147-GNC-3	**Self-Aware Vehicles to Enable Urban Air Mobility**					**St. George #114**
Chaired by: I. GREGORY, NASA Langley Research Center						
0930 hrs Oral Presentation **Self-Aware Vehicles for Urban Air Mobility: Challenges and Opportunities** I. Gregory, S. Rizzi, E. Siochi, R. Wincheski, N. Neogi, NASA Langley Research Center, Hampton, VA	1000 hrs Oral Presentation **Acoustically Aware Vehicles for Urban Air Mobility** S. Rizzi, K. Pascioni, K. Ackerman, M. Galles, N. Schiller, I. Gregory, NASA Langley Research Center, Hampton, VA	1030 hrs Oral Presentation **Advanced Sensors for Structural Health Monitoring of Self-Aware Vehicles** R. Wincheski, E. Siochi, G. Sauti, E. Cramer, NASA Langley Research Center, Hampton, VA	1100 hrs Oral Presentation **Prognostics for Electronics Health Awareness and Energy Management** K. Goebel, C. Kulkarni, M. Khasin, G. Gorospe, M. O'Connor, NASA Ames Research Center, Mountain View, CA	1130 hrs Oral Presentation **Assurance Challenges for UAM Platforms and Concepts: A Way Forward** N. Neogi, NASA Langley Research Center, Hampton, VA	1200 hrs **Panel Questions & Answers**	

Tuesday, 9 January 2018						
148-GNC-4	**Robust and Adaptive Control Theory**					**Gainesville 1**
Chaired by: M. BALAS, Embry-Riddle Aeronautical University and T. YUCELEN, University of South Florida						
0930 hrs AIAA-2018-0601 **Zero Shaping of Nonminimum Phase Aircraft Dynamics** R. Caverly, University of Michigan, Ann Arbor, Ann Arbor, MI; J. Forbes, McGill University, Montréal, Canada	1000 hrs AIAA-2018-0602 **Morse-Lyapunov-Based Control of Rigid Body Motion on TSE(3) via Backstepping** M. Nazari, Embry-Riddle Aeronautical University, Daytona Beach, FL; M. Maadani, E. Butcher, University of Arizona, Tucson, Tucson, AZ; T. Yucelen, University of South Florida, Tampa, FL	1030 hrs AIAA-2018-0603 **Nonlinear Aeroservoelastic Control Design and Validation** I. Isnardi, Technical University of Turin, Turin, Italy; P. Paoletti, University of Liverpool, Liverpool, United Kingdom; D. Miranda, G. Innocenti, University of Florence, Florence, Italy; S. Fichera, University of Liverpool, Liverpool, United Kingdom	1100 hrs AIAA-2018-0604 **Robustness Analysis of a Stability Augmentation System of a Highly Flexible Aircraft** F. Carpentieri Rona, P. González Ramirez, F. Silvestre, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; C. Cesnik, Z. Yang Pang, University of Michigan, Ann Arbor, Ann Arbor, MI	1130 hrs AIAA-2018-0605 **A Robust Coordination Protocol for Safe Multi-Agent Motion Planning** K. Garg, D. Panagou, University of Michigan, Ann Arbor, Ann Arbor, MI	1200 hrs AIAA-2018-0606 **Robust Hybrid Global Asymptotic Stabilization of Rigid Body Dynamics using Dual Quaternions** B. Malladi, E. Butcher, University of Arizona, Tucson, Tucson, AZ; R. Sanfelice, University of California, Santa Cruz, Santa Cruz, CA	

Tuesday, 9 January 2018						
149-GNC-5	**Control System Methodologies I**					**Destin 1**
Chaired by: E. JOHNSON, Georgia Institute of Technology and P. TSIOTRAS, Georgia Institute of Technology						
0930 hrs AIAA-2018-0607 **Determination of Limit Cycle Oscillation Frequency in Linear Systems with Relay Feedback** Y. Yoon, E. Johnson, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2018-0608 **Demonstration of the Space Launch System Augmenting Adaptive Control Algorithm on Pole-Cart Platform** J. Pei, P. Rothhaar, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2018-0609 **Demonstration of the Space Launch System Augmenting Adaptive Control Algorithm on a Quad-Rotor** L. Miller, J. Pei, P. Rothhaar, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2018-0610 **Dynamics Mutation and Tracking Control of Quadrotors under Multiple Operating Conditions** Y. Sheng, G. Tao, University of Virginia, Charlottesville, Charlottesville, VA	1130 hrs AIAA-2018-0611 **Uncertainty Quantication and Control During Mars Powered Descent and Landing using Covariance Steering** J. Ridderhof, P. Tsiotras, Georgia Institute of Technology, Atlanta, GA	1200 hrs AIAA-2018-0612 **Aircraft Thermal Endurance Enhancement Using A Dual Tank Configuration And Temperature Regulation** D. Sigthorsson, M. Oppenheimer, D. Doman, Air Force Research Laboratory, Wright-Patterson AFB, OH	

Tuesday, 9 January 2018						
150-GNC-6	**EDL_GN&C: Entry, Descent, and Landing GN&C Technology I**					**Osceola 3**
Chaired by: J. CARSON, NASA Jet Propulsion Laboratory and R. SOSTARIC, NASA-Johnson Space Center						
0930 hrs AIAA-2018-0613 **Open-Loop Performance of COBALT Precision Landing Payload on a Commercial Sub-Orbital Rocket** C. Restrepo, NASA Johnson Space Center, Houston, TX; J. Carson, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; F. Amzajerdian, NASA Langley Research Center, Hampton, VA; C. Seubert, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; R. Lovelace, M. McCarthy, NASA Johnson Space Center, Houston, TX; et al.	1000 hrs AIAA-2018-0614 **Navigation Doppler Lidar Integrated Testing Aboard Autonomous Rocket Powered Vehicles** D. Pierrottet, Coherent Applications, Inc., Hampton, VA; G. Hines, B. Barnes, F. Amzajerdian, L. Petway, NASA Langley Research Center, Hampton, VA; J. Carson, NASA Johnson Space Center, Houston, TX	1030 hrs AIAA-2018-0615 **Mid-Lift-to-Drag Ratio Rigid Vehicle Control System Design and Simulation for Human Mars Entry** B. Johnson, C. Cerimele, S. Stachowiak, R. Sostaric, D. Matz, NASA Johnson Space Center, Houston, TX; P. Lu, San Diego State University, San Diego, CA	1100 hrs AIAA-2018-0616 **Adaptive Powered Descent Initiation and Fuel-Optimal Guidance for Mars Applications** P. Lu, San Diego State University, San Diego, CA; R. Sostaric, G. Mendeck, NASA Johnson Space Center, Houston, TX	1130 hrs AIAA-2018-0617 **Successive Convexification for 6-DoF Mars Rocket Powered Landing with Free-Final-Time** M. Szmuk, B. Acikmese, University of Washington, Seattle, Seattle, WA		

Tuesday, 9 January 2018						
151-GNC-7	**NASA DLR Flight Control Research—Aeroelastic Aircraft Flight Control**					**Osceola 6**
Chaired by: N. NGUYEN, NASA-Ames Research Center and G. LOOYE, DLR-Oberpfaffenhofen						
0930 hrs AIAA-2018-0618 **Aeroelastic Mode Control using H_2-optimal Blends for Inputs and Outputs** M. Pusch, German Aerospace Center (DLR), Oberpfaffenhofen, Germany	1000 hrs AIAA-2018-0619 **Adaptive Maneuver Load Alleviation for Flexible Wing Aircraft with Nonminimum Phase Zeros** K. Hashemi, N. Nguyen, NASA Ames Research Center, Moffett Field, CA	1030 hrs AIAA-2018-0620 **Active Gust Load Alleviation of High-Aspect Ratio Flexible Wing Aircraft** Y. Ferrier, Delft University of Technology, Delft, The Netherlands; N. Nguyen, E. Ting, D. Chaparro, NASA Ames Research Center, Moffett Field, CA; X. Wang, C. de Visser, Delft University of Technology, Delft, The Netherlands; et al.	1100 hrs AIAA-2018-0621 **An Analysis of the Optimal Control Modification Method Applied to Flutter Suppression** M. Drew, N. Nguyen, K. Hashemi, E. Ting, D. Chaparro, NASA Ames Research Center, Moffett Field, CA	1130 hrs AIAA-2018-0622 **Multi-Objective Adaptive Control for Load Alleviation and Drag Minimization of Flexible Aircraft** N. Nguyen, NASA Ames Research Center, Moffett Field, CA; K. Hashemi, Universities Space Research Association, Moffett Field, CA; E. Ting, NASA Ames Research Center, Moffett Field, CA	1200 hrs AIAA-2018-0623 **Performance Optimizing Gust Load Alleviation Control of Flexible Wing Aircraft** K. Hashemi, N. Nguyen, M. Drew, D. Chaparro, E. Ting, NASA Ames Research Center, Moffett Field, CA	

Tuesday, 9 January 2018						
152-GT-3	**Wind Tunnel Hardware, Controls and Modelling**					**Sun C**
Chaired by: M. RHODE, NASA-Langley Research Center and C. JORGENS, The Boeing Company						
0930 hrs AIAA-2018-0624 **Calibration Development for an Unsteady Two-Strut Store Balance** R. Schmit, I. Maatz, R. Johnson, J. Grove, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2018-0625 **A Semi-Captive Trajectory System for the FSU Polysonic Wind tunnel** G. Robertson, R. Kumar, Florida State University, Tallahassee, FL	1030 hrs AIAA-2018-0626 **Towards the industrialisation of a transonic gust rig for simulation of gusts on half-models** A. Gomariz-Sancha, A. Peace, D. Roberts, T. Davidson, Aircraft Research Association, Ltd., Bedford, United Kingdom	1100 hrs AIAA-2018-0627 **Model Predictive Control of Wind-Tunnel Wind Speed for Low-Re Unsteady Aerodynamic Testing** B. Catron, M. Rennie, University of Notre Dame, Notre Dame, IN; Z. Feroz, D. Williams, Illinois Institute of Technology, Chicago, IL	1130 hrs AIAA-2018-0628 **Dynamic Depletion and Test Section Conditions Model for Blow-Down Supersonic Wind Tunnel** J. Maxwell, Naval Research Laboratory, Washington, D.C.		

Tuesday, 9 January 2018						
153-GTE-4	**Gas Turbine Performance**					**Sanibel 1**
Chaired by: G. PANIAGUA, Purdue University						
0930 hrs AIAA-2018-0629 **Analytical Modelling and Validation of RD-93 Turbofan Engine at Design Conditions** I. Arif, National University of Sciences and Technology, Islamabad, Pakistan; J. Masud, Z. Toor, Air University, Islamabad, Pakistan; S. Salamat, A. Javed, National University of Sciences and Technology, Islamabad, Pakistan	1000 hrs AIAA-2018-0630 **Power, Thermal, and Controls Interaction within an Adaptive Turbine Engine** A. DeSomma, R. Roberts, M. Wolff, Wright State University, Dayton, OH; A. Behbahani, Air Force Research Laboratory, Wright-Patterson AFB, OH					

Tuesday, 9 January 2018						
154-HSABP-2/PGC-3	**Pressure Gain Combustion–Rotating Detonation Engines II**					**Daytona 2**
Chaired by: S. CLAFLIN, Aerojet Rocketdyne and D. FERGUSON, National Energy Technology Laboratory						
0930 hrs AIAA-2018-0631 **Study of the Effects of Various Injection Geometries on the Operation of a Rotating Detonation Engine** J. Duvall, F. Chacon, C. Harvey, M. Gamba, University of Michigan, Ann Arbor, Ann Arbor, MI	1000 hrs AIAA-2018-0632 **Transient Response of a Liquid Injector to a Transverse Detonation Wave at Elevated Initial Pressure** D. Lim, S. Heister, Purdue University, West Lafayette, IN	1030 hrs AIAA-2018-0633 **A Disk Rotating Detonation Engine Part 1:Design and Buildup** R. Huff, M. Polanka, Air Force Institute of Technology, Wright-Patterson AFB, OH; M. McClearn, F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Fotia, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH	1100 hrs AIAA-2018-0634 **Experimental Study of the Response of Capillary Tube Attenuated Pressure Measurements to High Amplitude, Non-Linear Forcing** M. Fotia, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2018-0635 **Response of a Liquid Jet in a Multiple Detonation Driven Crossflow** W. Anderson, S. Heister, Purdue University, West Lafayette, IN		

Tuesday, 9 January 2018						
155-HSABP-3	**Scramjet Engine Design and Optimization**					**Daytona 1**
Chaired by: B. SARACOGLU, von Karman Institute for Fluid Dynamics and T. SMITH, Boeing Engineering Operations & Technology						
0930 hrs AIAA-2018-0636 **Low fidelity models applied to the numerical investigation of hypersonic propulsion** P. Goncalves, Technical University of Lisbon, Lisbon, Portugal; C. Silva, Embraer, São Paulo, Brazil; M. Silva, Technical University of Lisbon, Lisbon, Portugal; R. Reis, Embraer, São Paulo, Brazil	1000 hrs AIAA-2018-0637 **An Aerodynamic Analysis of the Generic Hypersonic Vehicle** F. Ferguson, N. Dasque, M. Dhanasar, L. Uitenham, North Carolina A&T State University, Greensboro, NC	1030 hrs AIAA-2018-0638 **An Aero Thermodynamic Analysis of Inversely Derived Scramjet Configurations** F. Ferguson, M. Atkinson, M. Dhanasar, North Carolina A&T State University, Greensboro, NC	1100 hrs AIAA-2018-0639 **Mixing Characteristics of Shear Layers in Supersonic-Subsonic Flow** K. Ma, J. Li, Northwestern Polytechnical University, Xi'an, China			

Tuesday, 9 January 2018						
156-IS-3	**Multi-Agent Coordination and Control I**					**Tallahassee 1**
Chaired by: D. CASBEER, Air Force Reseach Laboratory and S. MANYAM						
0930 hrs AIAA-2018-0640 **UAV Coalition Formation with Increased Decision-Making Autonomy** S. P B, Indrapastha Institute of Information Technology Delhi, New Delhi, India	1000 hrs AIAA-2018-0641 **Achieving Variable Formation Shapes for Sweep Operations using Rendezvous Cones** A. Chakravarthy, Wichita State University, Wichita, KS; D. Ghose, Indian Institute of Science, Bengaluru, India	1030 hrs AIAA-2018-0642 **Target-Centric Formation Control in GPS-denied Environments** A. Chakraborty, R. Sharma, University of Cincinnati, Cincinnati, OH; K. Brink, Air Force Research Laboratory, Eglin AFB, FL	1100 hrs AIAA-2018-0643 **Multiple UAV Assignment Problem for Minimum Risk Paths** S. Manyam, D. Casbeer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2018-0644 **A Decision-Making Framework for Robust Multi-Agent Systems in Risky Communication Scenarios** A. Samiei, B. Hu, New Mexico State University, Las Cruces, NM; S. Zhao, University of Sheffield, Sheffield, United Kingdom; L. Sun, New Mexico State University, Las Cruces, NM	1200 hrs AIAA-2018-0645 **Tactics Games for Multiple UCAVs Within-Visual-Range Air Combat** H. Chae, H. Choi, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	

Tuesday, 9 January 2018						
157-MAT-4	**Fatigue and Fracture I**					**Sun A**
Chaired by: E. PINEDA, NASA Glenn Research Ctr and S. WICKS, Lockheed Martin Corporation						
0930 hrs AIAA-2018-0646 **Energy-based multiaxial fatigue damage modelling** H. Wei, Y. Liu, Arizona State University, Tempe, AZ	1000 hrs AIAA-2018-0647 **Erosion of Optical Glass Substrates Due to Sand and Sphere Microparticles** R. Waxman, Z. Ratliff, I. Guven, Virginia Commonwealth University, Richmond, VA	1030 hrs AIAA-2018-0648 **A Reduced Order Constitutive Modeling Approach for a Material Subjected to Combined Cycle Fatigue** T. Bouchenot, C. Cole, A. Gordon, University of Central Florida, Orlando, FL	1100 hrs AIAA-2018-0649 **A New Complex-valued Thermal Fracture Approach for Evaluating the Structural Integrity of Aircraft Structures** D. Ramirez Tamayo, A. Montoya, H. Millwater, University of Texas, San Antonio, San Antonio, TX	1130 hrs AIAA-2018-0650 **Evaluating the effect of matrix voids and interface flaws on the mechanical behaviour of fiber composites** S. Anusuya Ponnusami, M. Pathan, B. Erice, N. Petrinic, University of Oxford, Oxford, United Kingdom	1200 hrs AIAA-2018-0651 **A Peridynamics-FEM Approach for Crack Path Prediction in Fiber-Reinforced Composites** S. Rokkam, Q. Truong, Advanced Cooling Technologies, Inc., Lancaster, PA; M. Gunzburger, Florida State University, Tallahassee, FL; K. Goel, Naval Air Systems Command, Patuxent River, MD	

Tuesday, 9 January 2018						
158-MDO-4	**Emerging Methods, Algorithms and Software Development in MAO I**					**Emerald 1**
Chaired by: G. KENNEDY, Georgia Institute of Technology and B. MESMER, University of Alabama						
0930 hrs AIAA-2018-0652 **Model Uncertainty: A Challenge in Nonlinear Coupled Multidisciplinary System Design** A. Feldstein, Massachusetts Institute of Technology, Cambridge, MA; D. Lazzara, N. Princen, The Boeing Company, Huntington Beach, CA; K. Willcox, Massachusetts Institute of Technology, Cambridge, MA	1000 hrs AIAA-2018-0653 **Implementation of topology optimization using openMDAO** H. Chung, University of California, San Diego, San Diego, CA; J. Hwang, J. Gray, NASA Glenn Research Center, Cleveland, OH; H. Kim, University of California, San Diego, San Diego, CA	1030 hrs AIAA-2018-0654 **How to select MDAO workflows** S. Sanchez Perez Moreno, M. Zaaijer, Delft University of Technology, Delft, The Netherlands	1100 hrs AIAA-2018-0655 **The Power of Log Transformation: A Comparison of Geometric and Signomial Programming with General Nonlinear Programming Techniques for Aircraft Design Optimization** P. Kirschen, W. Hoburg, Massachusetts Institute of Technology, Cambridge, MA	1130 hrs AIAA-2018-0656 **Transients in Early Aircraft Multidisciplinary Design** D. Allison, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Boyd, K. McCarthy, PC Krause & Associates, West Lafayette, IN	1200 hrs AIAA-2018-0657 **GEMS: A Python Library for Automation of Multidisciplinary Design Optimization Process Generation** F. Gallard, C. Vanaret, D. Guenot, V. Gachelin, R. Lafage, B. Pauwels, Institute for Technological Research (IRT), Toulouse, France; et al.	

Tuesday, 9 January 2018						
159-MVC-2	**Mesh Generation for the High Lift CRM for GMGW-1 (Special)**					**Miami 3**
Chaired by: K. VOGIATZIS, ENGILITY and J. MASTERS, National Aerospace Solutions						
0930 hrs AIAA-2018-0658 **Generation of Anisotropic Adaptive Meshes for the First AIAA Geometry and Mesh Generation Workshop** T. Michal, D. Kamenetskiy, J. Krakos, The Boeing Company, St. Louis, MO	1000 hrs AIAA-2018-0659 **High Lift CRM Locally Structured Grid Generation with GridPro** V. Anbumani, S. James, P. Eiseman, PDC/GridPro, Bangalore, India	1030 hrs AIAA-2018-0660 **Development of high-quality hybrid unstructured meshes for the GMGW-1 workshop using ANSA** V. Skaperdas, BETA CAE Systems, Thessaloniki, Greece; N. Ashton, University of Oxford, Oxford, United Kingdom	1100 hrs AIAA-2018-0661 **High Order Meshes for the Geometry and Mesh Generation Workshop I** S. Karman, Pointwise, Inc., Fort Worth, TX; J. Erwin, University of Tennessee, Knoxville, Oak Ridge, TN			

Tuesday, 9 January 2018						
160-NDA-3	**Optimization Under Uncertainty Methods I**					**Sun 1**
Chaired by: T. KRISHNAMURTHY, NASA-Langley Research Center and S. MULANI, The University of Alabama						
0930 hrs AIAA-2018-0662 **Constraint Analysis for Aircraft Initial Sizing Using Reliability-Based Design Optimization** S. Kim, K. Lee, Pusan National University, Busan, South Korea	1000 hrs AIAA-2018-0663 **Reliability-Based Topology Optimization with Analytic Sensitivities** P. Clark, M. Patil, Virginia Polytechnic Institute and State University, Blacksburg, VA	1030 hrs AIAA-2018-0664 **Reliability Based Aerodynamic Shape Optimization of a Quadcopter** D. Papadimitriou, V. Rosu, V. Naidu, D. Cruz, J. Skarakis, BETA CAE Systems, Farmington Hills, MI; D. Panagiotopoulos, Oakland University, Rochester, MI; et al.	1100 hrs AIAA-2018-0665 **Using Stochastic Dominance in Multi-Objective Optimizers for Aerospace Design Under Uncertainty** L. Cook, J. Jarrett, University of Cambridge, Cambridge, United Kingdom	1130 hrs AIAA-2018-0666 **A Distributionally Robust Approach to Black-Box Optimization** M. Kapteyn, K. Willcox, Massachusetts Institute of Technology, Cambridge, MA; A. Philpott, University of Auckland, Auckland, New Zealand	1200 hrs AIAA-2018-0667 **Non-Deterministic Metamodeling for Correlated and Uncorrelated Random Variables** D. Clark, H. Bae, Wright State University, Dayton, OH; E. Forster, Air Force Research Laboratory, Wright-Patterson AFB, OH	

Tuesday, 9 January 2018		
161-PC-9 **0930 - 1230 hrs**	**Model Validation for Propulsion III**	**Osceola 2**

This is a special invited and discussion session in support of the Model Validation for Propulsion (MVP).

Panelists:

0930-1000 hrs
Summary of MVP-II
Adam Comer
University of Michigan, Ann Arbor

1000-1030 hrs
Recent Findings in the Physics of Reactive Turbulence
Adam Steinberg
University of Toronto

1030-1100 hrs
Interactions Between Experiments and Computations for Turbulent Combustion Research in Relevant Regimes
Brent Rankin
Air Force Research Laboratory

1100-1130 hrs
Challenges Facing Embedded DNS of Turbulent Combustion and Strategies for Addressing Them
Alan Kerstein
Sandia National Laboratories (Retired)

1130-1200 hrs
Model Validation for Propulsion Workshop: Looking Ahead
Venke Sankaran
Air Force Research Laboratory

1200-1230 hrs
Open Discussion

Tuesday, 9 January 2018						
162-PC-10	**Rocket and Air-Breathing Propulsion I**					**Sarasota 3**
Chaired by: G. CASTIGLIONI and L. SCIACOVELLI, California Institute of Technology						
0930 hrs AIAA-2018-0668 **Computations for Improving the Performance of a New Hydrogen-Oxygen Rocket Engine Based on Supermulti-jets Colliding with Pulse** S. Kawaguchi, R. Konagaya, K. Tsuru, K. Naitoh, Waseda University, Tokyo, Japan	1000 hrs AIAA-2018-0669 **Screening of Nano-Aluminum Based Solid Fuels for Hybrid Rocket Applications** S. Hashim, S. Kangle, S. Karmakar, A. Roy, Indian Institute of Technology Kharagpur, Kharagpur, India	1030 hrs AIAA-2018-0670 **Numerical Investigation of a Supersonic Cavity Flameholder using a Multiscale Adaptive Reduced Chemistry Solver (MARCS)** L. Wang, W. Sun, Y. Ju, Princeton University, Princeton, NJ				

Tuesday, 9 January 2018						
163-PC-11	**Spray and Droplet Combustion I**					**Sarasota 1**
Chaired by: K. MCMANUS, GE Global Research Center and T. OMBRELLO, Air Force Research Laboratory						
0930 hrs AIAA-2018-0671 **Qualitative Study of Near-Field and Cross-Sectional Structures of Liquid Jets in Supersonic Crossflow** K. Lin, Taitech, Inc., Beavercreek, OH; T. Ombrello, C. Carter, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2018-0672 **Systematic Measurement of Hydrocarbon Fuel Droplet Burning Rate Constants and Ignition Delays** J. Bennewitz, A. Badakhshan, ERC, Inc., Edwards, CA; D. Talley, Air Force Research Laboratory, Edwards AFB, CA	1030 hrs AIAA-2018-0673 **Exploring the Role of Physical and Chemical Properties on the Ignition and Flame Stability of Liquid Fuels with a Spray Burner and Fuel Ignition Tester (FIT)** R. Alsulami, B. Windell, Colorado State University, Fort Collins, CO; D. Bartholet, University of Florida, Gainesville, Gainesville, FL; B. Windom, Colorado State University, Fort Collins, CO	1100 hrs AIAA-2018-0674 **Development and Validation of Turbulent Spray Combustion Algorithm Using Flamelet Model in a Rule-Based Framework** C. Neal, S. Thakur, J. Wright, Streamline Numerics, Inc., Gainesville, FL			

Tuesday, 9 January 2018						
164-PC-12	**Turbulent Combustion III**					**Tampa 1**
Chaired by: E. MASTORAKOS, University of Cambridge and J. O'CONNOR, Pennsylvania State University						
0930 hrs AIAA-2018-0675 **Large Eddy Simulation of Turbulent Premixed Flame Structure with CO_2 addition** V. Hasti, J. Gore, Purdue University, West Lafayette, IN; G. Kumar, S. Drennan, Convergent Science, Inc., New Braunfels, TX	1000 hrs AIAA-2018-0676 **Initial Growth and Development of Thermoacoustic Instabilities in a Gas Turbine Combustor** T. Wabel, S. Kheirkhah, J. Cirtwill, A. Steinberg, University of Toronto, Toronto, Canada; K. Venkatesan, General Electric Company, Niskayuna, NY	1030 hrs AIAA-2018-0677 **Vortex Dynamic Mechanisms in Coaxial Hydrogen/LOX Jet Flames** M. Roa, Sierra Lobo, Inc., Edwards AFB, CA; D. Talley, Air Force Research Laboratory, Edwards AFB, CA	1100 hrs AIAA-2018-0678 **Experimental Investigation of the Stabilization and Structure of Turbulent Cool Diffusion Flames** C. Reuter, O. Yehia, Princeton University, Princeton, NJ; S. Won, University of South Carolina, Columbia, Columbia, SC; M. Fu, K. Kokmanian, M. Hultmark, Princeton University, Princeton, NJ; et al.			

Tuesday, 9 January 2018						
165-PDL-5	**Plasma Aerodynamics II**					**Gainesville 2**
Chaired by: D. ASHPIS, NASA Glenn Research Center						
0930 hrs AIAA-2018-0679 **Effect of Plasma Leading Edge Tubercles on Wing Performance** A. Abbasi, S. Yin, Y. Qin, H. Hu, H. Li, X. Meng, Northwestern Polytechnical University, Xi'an, China	1000 hrs AIAA-2018-0680 **Characterization of Fluid Motion Induced by Nanosecond Spark Plasmas: Using Particle Image Velocimetry and Background Oriented Schlieren** B. Singh, L. Rajendran, S. Bane, P. Vlachos, Purdue University, West Lafayette, IN	1030 hrs AIAA-2018-0681 **Dynamic Stall Control by NS SDBD Actuator** A. Starikovskiy, K. Meehan, R. Miles, Princeton University, Princeton, NJ	1100 hrs AIAA-2018-0682 **Numerical Simulation of Laser-Induced Spark by Single and Double Pulse in Quiescent Air** U. Padhi, A. Singh, R. Joarder, Indian Institute of Technology Kharagpur, Kharagpur, India	1130 hrs AIAA-2018-0683 **Control of Amplitude and Position of Reflected Shock Wave by Stripwise Plasma** S. Leonov, University of Notre Dame, Notre Dame, IN; C. Carter, Air Force Research Laboratory, Wright-Patterson AFB, OH; B. Hedlund, A. Houpt, University of Notre Dame, Notre Dame, IN; T. Ombrello, Air Force Research Laboratory, Wright-Patterson AFB, OH		

Tuesday, 9 January 2018						
166-PDL-6	**Plasma Assisted Combustion and Ignition I**					**Destin 2**
Chaired by: C. LAUX, Ecole Centrale Paris						
0930 hrs AIAA-2018-0684 **Laser ignition of methane jets in homogenous and isotropic turbulence** G. Charalampous, C. Chen, Y. Hardalupas, Imperial College London, London, United Kingdom	1000 hrs AIAA-2018-0685 **Supersonic Plasma-Assisted Combustion Mode Identification via Optical Spectra Observation** S. Elliott, A. Houpt, S. Leonov, University of Notre Dame, Notre Dame, IN	1030 hrs AIAA-2018-0686 **Multi-point nanosecond surface discharge at high pressures for plasma assisted ignition: spectroscopy study of the filamentary phase** S. Shcherbanev, École Polytechnique, Paris, France; N. Popov, Moscow State University, Moscow, Russia; S. Starikovskaia, École Polytechnique, Paris, France	1100 hrs AIAA-2018-0687 **Measurements of Radical Species and Excited Electronic States in Nonequilibrium Plasmas by Cavity Ring Down Spectroscopy** K. Frederickson, E. Jans, M. Huang, I. Gulko, T. Miller, I. Adamovich, Ohio State University, Columbus, OH	1130 hrs AIAA-2018-0688 **Effect of Fuel Oxidation on Plasma Decay in Combustible Mixtures Excited by High-Voltage Nanosecond Repetitively Pulsed Discharge** A. Starikovskiy, Princeton University, Princeton, NJ	1200 hrs AIAA-2018-0689 **Numerical Modeling of Laser Spark Hydrodynamics** C. Dumitrache, A. Yalin, Colorado State University, Fort Collins, CO	

Tuesday, 9 January 2018						
167-SCS-3	**Deployable Booms and Trusses**					**Emerald 2**
Chaired by: O. STOHLMAN, NASA Langley Research Center and J. FERNANDEZ, NASA Langley Research Center						
0930 hrs AIAA-2018-0690 **Stress Concentration and Material Failure During Coiling of Ultra-Thin TRAC Booms** C. Leclerc, A. Pedivellano, S. Pellegrino, California Institute of Technology, Pasadena, CA	1000 hrs AIAA-2018-0691 **Advanced Dual-Pull Mechanism for Deployable Spacecraft Booms** J. Firth, M. Pankow, North Carolina State University, Raleigh, NC	1030 hrs AIAA-2018-0692 **Effective Stiffness Properties of Cylindrical Tensegrity Towers** K. Yildiz, G. Lesieutre, Pennsylvania State University, University Park, PA	1100 hrs AIAA-2018-0693 **A Novel Deployment Strategy for Tensegrity Towers** K. Yildiz, G. Lesieutre, Pennsylvania State University, University Park, PA	1130 hrs AIAA-2018-0694 **Self-Deployable Joints for Ultra-Light Space Structures** S. Ferraro, S. Pellegrino, California Institute of Technology, Pasadena, CA	1200 hrs AIAA-2018-0695 **Undesired Equilibrium Configurations of Boom-Membrane Integrated Structure during Deploying Motion** T. Chubachi, H. Furuya, Tokyo Institute of Technology, Yokohama, Japan; H. Sakamoto, Tokyo Institute of Technology, Tokyo, Japan	

Tuesday, 9 January 2018						
168-SD-5	**Dewey70: Asymptotic Analysis**					**Emerald 7**
Chaired by: D. HARURSAMPATH, Indian Institute of Science and W. YU, Purdue University						
0930 hrs AIAA-2018-0696 **Why is classical thermodynamics insufficient for solids?** V. Berdichevsky, Wayne State University, Detroit, MI	1000 hrs AIAA-2018-0697 **A Tale of Multiscale Constitutive Modeling: Odyssey from VABS to Mechanics of Structure Genome** W. Yu, Purdue University, West Lafayette, IN	1030 hrs AIAA-2018-0698 **Dimensional Reduction Technique for Analysis of Aperiodic Inhomogeneous Structures** M. Gupta, D. Sarojini, A. Shah, D. Hodges, Georgia Institute of Technology, Atlanta, GA	1100 hrs AIAA-2018-0699 **Nonlinear Bending and Buckling Behavior of Carbon Nanotubes and Their Composites- Continuum Modelling using Variational Asymptotic Method** S. Anusuya Ponnusami, University of Oxford, Oxford, United Kingdom; M. Gupta, Georgia Institute of Technology, Atlanta, GA; D. Harursampath, Indian Institute of Science, Bengaluru, India			

Tuesday, 9 January 2018						
169-SD-6	**Flutter Test and Prediction**					**Emerald 8**
Chaired by: E. BLADES, ATA Engineering, Inc. and H. KIM, Boeing Defense, Space & Security						
0930 hrs AIAA-2018-0700 **Flutter Prediction Based on Dynamic Eigen Decomposition of Flight Data with Limited Actuators and Sensors** T. Kim, Pegase Avtech, Bothell, WA; E. Dowell, Duke University, Durham, NC	1000 hrs AIAA-2018-0701 **Safe Flutter Tests Using Parametric Flutter Margins** F. Roizner, D. Raveh, M. Karpel, Technion–Israel Institute of Technology, Haifa, Israel	1030 hrs AIAA-2018-0702 **Wind-Tunnel Study of the ARMA Flutter Prediction Method** D. Raveh, Technion–Israel Institute of Technology, Haifa, Israel; M. Iovnovich, Israeli Air Force, Tel Aviv, Israel; T. Nahom, Technion–Israel Institute of Technology, Haifa, Israel	1100 hrs AIAA-2018-0703 **Flight Flutter Test of an Aircraft Equipped with Active Winglets** M. Castellani, Tamarack Aerospace Group, Sandpoint, ID; J. Cooper, University of Bristol, Bristol, United Kingdom	1130 hrs AIAA-2018-0704 **Parametric Flutter Margin Analysis with CFD-Based Aerodynamics** F. Roizner, M. Karpel, Technion–Israel Institute of Technology, Haifa, Israel; R. Carrese, N. Joseph, P. Marzocca, RMIT University, Bundoora, Australia		

Tuesday, 9 January 2018						
170-SE-1	**Systems Engineering I**					**Osceola 4**
Chaired by: J. EILER, Stellar Solutions, Inc. and D. DRESS, NASA Langley Research Center						
0930 hrs AIAA-2018-0705 **Applying Quantitative Scenario Planning in Early Conceptual Aircraft Design** G. Tay, V. Herzog, J. Braatz, M. Hornung, Technical University of Munich, Munich, Germany	1000 hrs AIAA-2018-0706 **Sustainment Organizations: People and Teams** C. Vono, Self, Ogden, UT	1030 hrs AIAA-2018-0707 **Model-based Data Integration and Process Standardization Techniques for Fault Management – A Feasibility Study** D. Haste, S. Ghoshal, Qualtech Systems, Inc., Rocky Hill, CT; S. Johnson, Dependable System Technologies, LLC, Westminster, CO; C. Moore, NASA Marshall Space Flight Center, Huntsville, AL	1100 hrs AIAA-2018-0708 **Mathematical Representation of Stakeholder Preferences for the SPORT Small Satellite Project** G. Bhatia, B. Mesmer, K. Weger, University of Alabama, Huntsville, Huntsville, AL	1130 hrs AIAA-2018-0709 **A Preliminary Content Analysis of NASA's Nextstep-2 Habitat Documentation for Preference Representation** G. Palma, B. Mesmer, University of Alabama, Huntsville, Huntsville, AL		

Tuesday, 9 January 2018						
171-SEN-3	**Fusion of Networked Sensors or Systems**					**Tallahassee 2**
Chaired by: D. FAULK, Lockheed Martin Aeronautics and T. FREY, Lockheed Martin Aeronautics						
0930 hrs AIAA-2018-0710 **Information Exchange Considerations for Effective Fusion among Heterogeneous Network Participants** R. Rasmussen, T. Frey, K. Engebretson, Lockheed Martin Corporation, Colorado Springs, CO	1000 hrs AIAA-2018-0711 **Decentralized Information Filter with Non-Common States, and Application to Sensor Bias Estimation** V. Saini, Indian Institute of Technology Bombay, Mumbai, India; A. Paranjape, Imperial College London, London, United Kingdom; A. Maity, Indian Institute of Technology Bombay, Mumbai, India	1030 hrs AIAA-2018-0712 **Airborne Visual Tracking for Cooperative UAV Swarms** R. Opromolla, A. Vetrella, G. Fasano, D. Accardo, University of Naples "Federico II", Naples, Italy	1100 hrs AIAA-2018-0713 **Cooperative estimation in pursuit evasion games with bearing-only measurements** T. Woodbury, J. Hurtado, Texas A&M University, College Station, TX	1130 hrs AIAA-2018-0714 **Integrated Fiber-Optic Sensor Network System Reliability Modeling and Analysis for Aerospace Applications** R. Black, B. Moslehi, W. Price, V. Sotoudeh, Intelligent Fiber Optic Systems Corporation (IFOS), Santa Clara, CA; M. Osterman, D. Das, University of Maryland, College Park, College Park, MD; et al.	1200 hrs AIAA-2018-0715 **High-Bandwidth Fiber-Optic Pressure Sensors for High-Temperature Aerospace Applications** B. Moslehi, W. Price, R. Black, Intelligent Fiber Optic Systems Corporation (IFOS), Santa Clara, CA; M. Han, University of Nebraska, Lincoln, Lincoln, NE; A. Behbahani, A. Von Moll, Air Force Research Laboratory, Wright-Patterson AFB, OH; et al.	

Tuesday, 9 January 2018						
172-SFM-8	**Asteroid and Non-Earth Orbiting Missions II**					**Naples 1**
Chaired by: J. PARKER, Advanced Space						
0930 hrs AIAA-2018-0716 **Design of realistic trajectories for the exploration of Phobos** E. Canalias, L. Lorda, J. Laurent-Varin, French Space Agency (CNES), Toulouse, France	1000 hrs AIAA-2018-0717 **Study of the Stability of Quasi-Satellite Orbits around Phobos in Planar Circular Restricted Three-Body Problem** X. Wu, Y. Qi, S. Xu, Y. Wang, S. Zhang, Beihang University, Beijing, China	1030 hrs AIAA-2018-0718 **The *n*-dimensional *k*-vector with Applications** D. Mortari, Texas A&M University, College Station, TX	1100 hrs AIAA-2018-0719 **Co-Orbital Orbits Around the Asteroid 65803 Didymos (1996 GT)** J. Silva Neto, D. Sanchez, A. Prado, National Institute for Space Research (INPE), São José dos Campos, Brazil	1130 hrs AIAA-2018-0720 **Strategies to Find Orbits around the Triple Asteroid 2001_{263}** M. Cavalca, A. Prado, National Institute for Space Research (INPE), São José dos Campos, Brazil; J. Formiga, São Paulo State University, São José dos Campos, Brazil; V. Gomes, São Paulo State University, Guaratinguetá, Brazil		

Tuesday, 9 January 2018						
173-SFM-9	**Low-Thrust Trajectory Design and Optimization II**					**Naples 3**
Chaired by: A. RAO, University of Florida						
0930 hrs AIAA-2018-0721 **Robust Optimization of Mars Entry Trajectory under Uncertainty** X. Jiang, Nanjing University of Aeronautics and Astronautics, Nanjing, China	1000 hrs AIAA-2018-0722 **Mission Scenario Analysis for All-Electric Satellites** S. Sreesawet, A. Dutta, Wichita State University, Wichita, KS	1030 hrs AIAA-2018-0723 **System-Trajectory Optimization of Hybrid Transfers to the Geostationary Orbit** S. Ceccherini, F. Topputo, Technical University of Milan, Milan, Italy	1100 hrs AIAA-2018-0724 **Exploiting Sparsity in Direct Collocation Pseudospectral Methods for Solving Multiple-Phase Optimal Control Problems** Y. Agamawi, A. Rao, University of Florida, Gainesville, Gainesville, FL			

Tuesday, 9 January 2018						
174-SFM-10	**Orbit Determination and Estimation Theory II**					**Naples 2**
Chaired by: T. ELGOHARY, University of Central Florida						
0930 hrs AIAA-2018-0725 **Information-Theoretic Target Search for Space Situational Awareness** M. Patel, University of Illinois, Urbana-Champaign, Urbana, IL; A. Sinclair, Air Force Research Laboratory, Kirtland AFB, NM; K. Ho, University of Illinois, Urbana-Champaign, Urbana, IL	1000 hrs AIAA-2018-0726 **Analysis of Angles-Only Hybrid Space-Based/Ground-Based Approach for Geosynchronous Orbit Catalog Maintenance** B. Andrews, D. Geller, Utah State University, Logan, UT	1030 hrs AIAA-2018-0727 **The Information Content of Data Arcs for Multi-Step Sensor Tasking** M. Gualdoni, K. DeMars, Missouri University of Science and Technology, Rolla, MO	1100 hrs AIAA-2018-0728 **Uncertainty in KS Space with Arbitrary Forces** L. Weis, Applied Defense Solutions, Columbia, MD	1130 hrs AIAA-2018-0729 **Orbit Determination of Resident Space Objects with the Multibeam Radar Sensor BIRALES** M. Losacco, P. Di Lizia, M. Massari, Technical University of Milan, Milan, Italy; A. Mattana, F. Perini, M. Schiaffino, National Institute for Astrophysics, Bologna, Italy; et al.		

Tuesday, 9 January 2018						
175-STR-6	**Failure Analysis and Prediction I**					**Emerald 5**
Chaired by: B. WARDLE, Massachusettes Institute of Technology and C. BISAGNI, TU Delft						
0930 hrs AIAA-2018-0730 **A study on the influence of fatigue damage initiation laws for cohesive zone models in propagation-driven load cases** M. May, Fraunhofer, Freiburg, Germany; P. Harper, S. Hallett, University of Bristol, Bristol, United Kingdom	1000 hrs AIAA-2018-0731 **Using the Continuum Decohesive Finite Element for Crack Growth Analysis in Fiber Reinforced Composites** S. Lin, A. Waas, University of Washington, Seattle, Seattle, WA	1030 hrs AIAA-2018-0732 **Compressive Failure of Fiber Composites: A Homogenized, Mesh Independent Model** A. Hasanyan, University of Michigan, Ann Arbor, Ann Arbor, MI; A. Waas, University of Washington, Seattle, Seattle, WA	1100 hrs AIAA-2018-0733 **Stress Redistribution in Cellular Lattice Structures with Cell Wall Damage** M. DiPalma, F. Gandhi, Rensselaer Polytechnic Institute, Troy, NY	1130 hrs AIAA-2018-0734 **Composite Laminate Progressive Damage Failure Analysis Benchmarking using High Fidelity Inspection Damage Maps** M. Pike, J. Schaefer, B. Justusson, S. Liguore, The Boeing Company, St. Louis, MO	1200 hrs AIAA-2018-0735 **Progressive Failure Analysis of Stiffened Composite Panels Using a Two-Way Loose Coupling Approach Including Intralaminar Failure and Debonding** M. Akterskaia, E. Jansen, R. Rolfes, Leibniz University, Hannover, Germany	

Tuesday, 9 January 2018						
176-STR-7	**AFRL Developments in DADT Methods for Sustainment of Bolted Composite Structures I**					**Emerald 6**
Chaired by: S. CLAY, Air Force Research Laboratory and S. ENGELSTAD, Lockheed Martin Aeronautics						
0930 hrs AIAA-2018-0736 **Data Requirements for Progressive Damage Analysis of Double-Shear Bearing in Composites** C. Rouseau, Lockheed Martin Corporation, Fort Worth, TX; S. Engelstad, Lockheed Martin Corporation, Marietta, GA; S. Clay, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2018-0737 **Validation Testing for Progressive Double-Shear Bearing Damage Analysis of Composites** C. Rouseau, Lockheed Martin Corporation, Fort Worth, TX; S. Engelstad, Lockheed Martin Corporation, Marietta, GA; S. Clay, P. Knoth, Air Force Research Laboratory, Wright-Patterson AFB, OH; A. Makeev, Y. Nikishkov, University of Texas, Arlington, Arlington, TX	1030 hrs AIAA-2018-0738 **Discrete Damage Modeling and Input Data Requirements for Static Bearing Failure in Laminated Composites** K. Hoos, University of Texas, Arlington, Fort Worth, TX; E. Iarve, University of Texas, Arlington, Arlington, TX	1100 hrs AIAA-2018-0739 **Bearing Strength and Fatigue Analysis of Tape Composites Based on Continuum Damage Mechanics Methodology** G. Seon, Y. Nikishkov, A. Makeev, University of Texas, Arlington, Arlington, TX	1130 hrs AIAA-2018-0740 **Multi Scale Progressive Damage and Failure Analysis of Bolted Joints** P. Davidson, A. Joseph, A. Waas, University of Washington, Seattle, Seattle, WA		

Tuesday, 9 January 2018						
177-TP-5	**Nonequilibrium Flows II**					**Sarasota 2**
Chaired by: M. EWING, Orbital ATK and J. RABINOVITCH, Jet Propulsion Laboratory						
0930 hrs AIAA-2018-0741 **Shock-tube Investigation on Precursor Electron ahead of Hypersonic Shock Wave** S. Nomura, A. Lemal, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; T. Kawakami, Shizuoka University, Hamamatsu, Japan; K. Fujita, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan	1000 hrs AIAA-2018-0742 **Efforts in Predicting Precursor Electrons Density in a Shocked Air Mixture** A. Lemal, S. Nomura, H. Takayanagi, K. Fujita, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	1030 hrs AIAA-2018-0743 **Three-Temperature Models for Thermochemical Non-Equilibrium in Compression and Expansion** M. Clarey, R. Greendyke, Air Force Institute of Technology, WPAFB, OH	1100 hrs AIAA-2018-0744 **Investigation of the Thermochemical Non-Equilibrium Phenomena in the Wake of a Hypersonic Vehicle using Three-Temperature Models** M. Clarey, R. Greendyke, Air Force Institute of Technology, Wright-Patterson AFB, OH			

Tuesday, 9 January 2018						
178-UAS-3	**Unmanned Aircraft Design I**					**Tallahassee 3**
Chaired by: Z. MIAN, United Technologies Research Center						
0930 hrs AIAA-2018-0745 **Contra-rotating Ducted Fan Aerothermodynamic Design Procedure for Unmanned Applications** A. Nemnem, M. Zakaria, Military Technical College, Cairo, Egypt; A. Elzahaby, Tanta University, Tanta, Egypt	1000 hrs AIAA-2018-0746 **Parametric study of aerodynamic integration issues in highly coupled Blended Wing Body configurations implemented in UAVs** E. Valencia, J. Saa, V. Alulema, V. Hidalgo, National Polytechnic University, Quito, Ecuador	1030 hrs AIAA-2018-0747 **Development of a Ground Effect BEMT Analysis Method for Multirotor sUAS** J. Wilhelm, G. Eberhart, Ohio University, Athens, OH	1100 hrs AIAA-2018-0748 **A Plasma Flow Control Concept for Propeller Boundary Layer Separation Suppression** T. Zimbelman, K. Rouser, Oklahoma State University, Stillwater, OK	1130 hrs AIAA-2018-0749 **Design of Vortex Generator Jets for Small UAS Propellers at Low Reynolds Number Operation** A. Bellcock, K. Rouser, Oklahoma State University, Stillwater, OK	1200 hrs AIAA-2018-0750 **Design and Development of a High-Speed UAS for Beyond Line-of-Sight Operation** M. McCrink, J. Gregory, Ohio State University, Columbus, OH	

Tuesday, 9 January 2018						
179-WE-3	**Atmospheric Physics, Inflow, and Wake Modeling**					**Osceola 5**
Chaired by: T. HERGES, Sandia National Laboratories and G. IUNGO						
0930 hrs AIAA-2018-0751 **Effect of oncoming flow turbulence on the kinetic energy transport in the flow around a model wind turbine** W. Tian, Shanghai Jiao Tong University, Shanghai, China; H. Hu, Iowa State University, Ames, IA	1000 hrs AIAA-2018-0752 **Wind Farm Optimization Using a Free Vortex Wake Model** K. Shaler, K. Kecskemety, A. Gogulapati, J. McNamara, Ohio State University, Columbus, OH	1030 hrs AIAA-2018-0753 **Interaction of small scale Homogenenous Isotropic Turbulence with an Actuator Disk** A. Ghate, N. Ghaisas, S. Lele, A. Towne, Stanford University, Stanford, CA	1100 hrs AIAA-2018-0754 **An experimental study on the turbulent flow over two-dimensional plateaus** K. Zheng, W. Tian, Shanghai Jiao Tong University, Shanghai, China; J. Qin, Harbin Institute of Technology, Harbin, China; H. Hu, Iowa State University, Ames, IA	1130 hrs AIAA-2018-0755 **On the Effects of Wind Turbine Wake Skew Caused by Wind Veer** M. Churchfield, S. Simivas, National Renewable Energy Laboratory, Golden, CO		

Tuesday, 9 January 2018		
180-LUNCH-1 **1230 - 1400 hrs**	**Recognition Luncheon: Celebrating Achievements in Aerospace Sciences and Information Systems**	**Osceola CD**
Ticket is required.		

Tuesday, 9 January 2018		
181-RL-3 1230 - 1400 hrs	Lunch Panel: Moving Us Forward: Growing Diversity in the Aerospace Sector	St. George #108

Moderator: Jandria Alexander, Booz Allen Hamilton, Inc.

Panelists:

Melissa Sampson
United Launch Alliance, LLC

Janet Nickloy
Harris Corporation

Michael Vinje
NASA Kennedy Space Center

Despite making major advances in recent years, the aerospace sector still struggles with diversity, as many groups which comprise a large portion of the U.S. labor force only account for a small fraction of the aerospace workforce. This panel will provide perspectives on the role of diversity in STEM fields and how creating a diverse workforce can propel technological innovation. Panelists will also discuss efforts and best practices for closing the gap in STEM fields for minorities and women. Panelists will share their personal commitment, experiences, and activities related to growing diversity in the workforce as well as the efforts of their associated organizations.

Boxed lunches will be available for the first 80 young professionals who attend.

Tuesday, 9 January 2018						
182-AA-5	Airframe Noise					Tampa 2
Chaired by: S. GLEGG, Florida Atlantic University						
1430 hrs AIAA-2018-0756 **Effect of Subgrid Length Scale in DDES on Aeroacoustic Simulation around Three-Element Airfoil** R. Sakai, T. Ishida, M. Murayama, Y. Ito, K. Yamamoto, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan	1500 hrs AIAA-2018-0757 **Computational Study of Sound Generation by Airfoil Interaction with a Turbulent Shear Layer** A. Tufts, K. Wang, M. Wang, University of Notre Dame, Notre Dame, IN	1530 hrs AIAA-2018-0758 **Experimental Slat Noise Assessment Through Phased Array and Hot-Film Anemometry Measurements** L. Lima Pereira, L. Rego, F. Catalano, University of São Paulo, São Carlos, Brazil; D. Cafaldo Reis, E. Lobão Capucho Coelho, Embraer, São José dos Campos, Brazil	1600 hrs AIAA-2018-0759 **Aerodynamic and Aeroacoustic Experimental Investigation of a Simplified Nose Landing Gear** L. Rego, L. Lima Pereira, F. Catalano, University of São Paulo, Sao Carlos, Brazil; R. Speth, P. Bent, The Boeing Company, St. Louis, MO; J. Fregnani, The Boeing Company, São Paulo, Brazil	1630 hrs AIAA-2018-0760 **Measurements of Unsteady Force Response on Airfoils with Arbitrarily Shaped Thickness due to Incident Large-Scale Turbulence** E. Kawashima, J. Forest, Z. Kaler, Naval Surface Warfare Center, West Bethesda, MD; J. Joiner, Advanced Technology and Research Corporation, Columbia, MD; M. Catlett, J. Anderson, Naval Surface Warfare Center, West Bethesda, MD	1700 hrs AIAA-2018-0761 **Noise Source Location and Scaling for Subsonic Upper-Surface Blowing Configurations** T. Jennette, K. Ahuja, Georgia Institute of Technology, Atlanta, GA	

Tuesday, 9 January 2018						
183-ACD-5	Flight Load Prediction and Certification					Tampa 3
Chaired by: D. WELLS, Lockheed Martin Aeronautics						
1430 hrs AIAA-2018-0762 **Flight Testing of the Free-to-Pitch Variable Pitch Propeller** S. Heinzen, Naval Research Laboratory, Washington, D.C.	1500 hrs AIAA-2018-0763 **Wheels Up Landing Certification By Analysis of Regional Jet Aircraft** F. Abdi, AlphaSTAR Corporation, Long Beach, CA; Q. Li, X. Zhu, G. Zhu, Y. Chen, Commercial Aircraft Corporation of China, Ltd. (COMAC), Shanghai, China; H. Baid, AlphaSTAR Corporation, Long Beach, CA; et al.	1530 hrs AIAA-2018-0764 **Combined Active and Passive Loads Alleviation through Aeroelastic Tailoring and Control Surface/ Control System Optimization** R. De Breuker, Delft University of Technology, Delft, The Netherlands; S. Binder, A. Wildschek, Airbus, Ottobrunn, Germany	1600 hrs AIAA-2018-0765 **Flight Control through Vectored Propulsion** R. Romeu, Alluvionic, Inc., Melbourne, FL	1630 hrs AIAA-2018-0766 **Bird Strike Certification by Analysis of ARJ21 Multi-Functional Vertical Stabilizer** F. Abdi, AlphaSTAR Corporation, Long Beach, CA; C. Song, L. Kong, N. Li, Z. Wu, Commercial Aircraft Corporation of China, Ltd. (COMAC), Shanghai, China; H. Baid, AlphaSTAR Corporation, Long Beach, CA; et al.	1700 hrs AIAA-2018-0767 **Effects of Epistemic Uncertainty on Empennage Loads During Dynamic Maneuvers** R. Duca, D. Sarojini, Georgia Institute of Technology, Atlanta, GA; S. Bloemer, RWTH Aachen University, Aachen, Germany; I. Chakraborty, S. Briceno, D. Mavris, Georgia Institute of Technology, Atlanta, GA	

Tuesday, 9 January 2018						
184-AFM-7	**Flight Testing and System Identification II**					**Osceola 1**
Chaired by: T. BERGER, US Army Aviation Development Directorate-AFDD						
1430 hrs AIAA-2018-0768 **Data-Driven Method based Aerodynamic Parameter Estimation from Flight Data** A. Kumar, A. Ghosh, Indian Institute of Technology Kanpur, Kanpur, India	1500 hrs AIAA-2018-0769 **Experimental Flight Characterization of Spin-Stabilized Projectiles at High Angle of Attack** F. Fresconi, I. Celmins, Army Research Laboratory, Aberdeen Proving Ground, MD	1530 hrs AIAA-2018-0770 **Multisine Inputs for Simultaneous Identification of Multiple Control Loops** B. Martos, Embry-Riddle Aeronautical University, Daytona Beach, FL; M. Snyder, Heurobotics Corporation, Daytona Beach, FL; R. Anderson, Embry-Riddle Aeronautical University, Daytona Beach, FL; Z. Kern, Heurobotics Corporation, Daytona Beach, FL	1600 hrs AIAA-2018-0771 **Robust Air Data Reconstruction: On the Use Of Robust Cost Functions For Flight Path Reconstruction Applications** G. Moszczynski, V. Peretroukhin, P. Grant, University of Toronto, Toronto, Canada			

Tuesday, 9 January 2018						
185-AFM-8	**Aircraft Flight Dynamics II**					**Osceola 2**
Chaired by: M. COTTING, US Air Force Test Pilot School						
1430 hrs AIAA-2018-0772 **High Angle of Attack Aerodynamic Model Identification for Spin Recovery Simulation Using Non-Parametric Smoothing Functions** R. Bunge, Airbus, Santa Clara, CA; I. Kroo, Stanford University, Stanford, CA	1500 hrs AIAA-2018-0773 **Comparison of reduced order aerodynamic models and RANS simulations for whole aircraft aerodynamics** M. Carrizales, V. Portapas, G. Dussart, M. Lone, Cranfield University, Cranfield, United Kingdom	1530 hrs AIAA-2018-0774 **Flexible Aircraft Gust Load Alleviation with Incremental Nonlinear Dynamic Inversion** X. Wang, E. Van Kampen, R. De Breuker, Q. Chu, Delft University of Technology, Delft, The Netherlands	1600 hrs AIAA-2018-0775 **Flight Performance and Stability Analysis of Impaired Aircraft Using Constrained Bifurcation and Continuation Method** F. Cen, Q. Li, Tsinghua University, Beijing, China; M. Lowenberg, S. Neild, University of Bristol, Bristol, United Kingdom; Y. Kong, China Aerodynamics Research and Development Center (CARDC), Mianyang, China	1630 hrs AIAA-2018-0776 **Contribution of a Running Propeller in the Longitudinal Stability of an Airplane by an Analytical-Empirical Analysis** I. Taboada, P. Boschetti, Simón Bolívar University, Caracas, Venezuela; P. González, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil		

Tuesday, 9 January 2018						
186-APA-19	**Special Session: CREATE-AV HPC Multiphysics Applications of Full-Up Air Vehicles III**					**Sun D**
Chaired by: N. HARIHARAN, CREATE-AV and A. WISSINK, US Army Aeroflightdynamics Directorate						
1430 hrs AIAA-2018-0777 **Full Vehicle Simulations for a Coaxial Rotorcraft Using High-Fidelity CFD/CSD Coupling** P. Anusonti-Inthra, Army Research Laboratory, Aberdeen Proving Ground, MD	1500 hrs AIAA-2018-0778 **Computational Study of Propeller Wing Aerodynamic Interaction** P. Aref, M. Ghoreyshi, A. Jirasek, M. Satchell, U.S. Air Force Academy, Colorado Springs, CO; K. Bergeron, Army Research, Development and Engineering Command, Natick, MA	1530 hrs AIAA-2018-0779 **Quasi-static and Prescribed Motion Simulations for Helicopter Sling Loads** K. Bergeron, Army Research, Development and Engineering Command, Natick, MA; A. Grubb, Georgia Institute of Technology, Atlanta, GA; G. Noetscher, Army Research, Development and Engineering Command, Natick, MA; M. Smith, Georgia Institute of Technology, Atlanta, GA	1600 hrs AIAA-2018-0780 **Unsteady CFD Analysis of an Isolated Jammer Pod with CREATE-AV Kestrel** D. Prosser, Naval Air Systems Command, Patuxent River, MD	1630 hrs AIAA-2018-0781 **High-Order Large Eddy Simulation Validation in HPCMP CREATE(TM)-AV Kestrel Component COFFE** K. Holst, Arnold Engineering Development Complex, Arnold AFB, TN; R. Glasby, J. Erwin, D. Stefanski, University of Tennessee, Knoxville, Knoxville, TN		

Tuesday, 9 January 2018						
187-APA-20	**Special Session NASA's Revolutionary Computational Aerosciences Session on Numerical Methods and Turbulence Modeling/Simulations**					**Sun B**
Chaired by: M. MALIK, NASA-Langley Research Center and M. ROGERS, NASA-Ames Research Center						
1430 hrs Oral Presentation **Unstructured Grid Algorithms on Many-Core Architectures** A. Walden, E. Nielsen, NASA Langley Research Center, Hampton, VA; M. Zubair, Old Dominion University, Norfolk, VA; J. Luitjens, NVIDIA Corporation, Salt Lake City, UT; J. Linford, ParaTools, Inc., Baltimore, MD; J. Wohlbier, Engility Corporation, Washington, D.C.; et al.	1500 hrs Oral Presentation **Recent Developments for the eddy Solver** S. Murman, L. Diosady, A. Garai, C. Carton de Wiart, N. Burgess, P. Blonigan, NASA Ames Research Center, Moffett Field, CA; et al.	1530 hrs Oral Presentation **Wall-Resolved Large Eddy Simulations of Transonic Shock-Induced Flow Separation** A. Uzun, National Institute of Aerospace, Hampton, VA; M. Malik, NASA Langley Research Center, Hampton, VA	1600 hrs Oral Presentation **Wall Modeled Lattice Boltzmann and Navier-Stokes Computations for Selected RCA Cases** C. Kiris, NASA Ames Research Center, Moffett Field, CA; G. Stich, Science and Technology Corporation, Moffett Field, CA; J. Housman, NASA Ames Research Center, Moffett Field, CA; J. Kocheemoolayil, Science and Technology Corporation, Moffett Field, CA; M. Barad, NASA Ames Research Center, Moffett Field, CA; F. Cadieux, Science and Technology Corporation, Moffett Field, CA	1630 hrs Oral Presentation **Entropy stability for the compressible Navier-Stokes equations: operator generalizations and the non-conforming interface** M. Carpenter, NASA Langley Research Center, Hampton, VA; D. Del Rey Fernández, National Institute of Aerospace, Hampton, VA; M. Parsani, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; T. Fisher, Sandia National Laboratories, Albuquerque, NM	1700 hrs Oral Presentation **Linear, NonLinear and Full Reynolds Stress Turbulence Models Based on kL Formulation** K. Abdol-Hamid, NASA Langley Research Center, Hampton, VA	

Tuesday, 9 January 2018						
188-APA-21	**Applied CFD and Numerical Correlations with Experimental Data II**					**Sun 2**
Chaired by: M. PARK, NASA-Langley Research Center and E. FARES, Exa Corporation						
1430 hrs AIAA-2018-0782 **Advanced Prediction of Iced Airfoil Aerodynamics** M. Costes, F. Moens, ONERA, Meudon, France	1500 hrs AIAA-2018-0783 **Simulation of Water Spray Generated by Pneumatic Aircraft Tire on Flooded Runway** Q. Qu, T. Liu, P. Liu, Beihang University, Beijing, China; R. Agarwal, Washington University in St. Louis, St. Louis, MO	1530 hrs AIAA-2018-0784 **Ship Air Wake Detection Using Small Fixed Wing Unmanned Aerial Vehicle** D. Phelps, K. Gamagedara, J. Waldron, K. Patil, M. Snyder, George Washington University, Washington, D.C.	1600 hrs AIAA-2018-0785 **Validation of Liquid Water Content Simulation using the Film Thickness at Stagnation Point** F. Petrosino, D. de Rosa, G. Mingione, Italian Aerospace Research Center (CIRA), Capua, Italy; A. Sgueglia, A. De Marco, University of Naples "Federico II", Naples, Italy			

Tuesday, 9 January 2018						
189-APA-22	**Airfoil/Wing/Configuration Aerodynamics II**					**Sun 3**
Chaired by: T. CHYCZEWSKI, Northrop Grumman Aerospace Systems and B. MCGRATH, The Johns Hopkins University Applied Physics Laboratory						
1430 hrs AIAA-2018-0786 **A Novel 3D Viscous - Inviscid Interactive Method for Arbitrary Wings** Z. Zhao, University of Michigan, Ann Arbor, Ann Arbor, MI	1500 hrs AIAA-2018-0787 **Turbulent Drag Reduction on an Aircraft wing using wall jets at flight scale Reynolds Number** M. Varshney, M. Baig, N. Hasan, Aligarh Muslim University, Aligarh, India	1530 hrs AIAA-2018-0788 **Current Progress in Unsteady Transonic Buffet Simulation with Unstructured Grid CFD Code** A. Hashimoto, T. Ishida, T. Aoyama, Y. Ohmichi, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; T. Yamamoto, K. Hayashi, Ryoyu Systems Company, Ltd., Nagoya, Japan	1600 hrs AIAA-2018-0789 **Application of an Adaptive Shock Control Bump for Drag Reduction on a Variable Camber NLF Wing** M. Werner, German Aerospace Center (DLR), Göttingen, Germany	1630 hrs AIAA-2018-0790 **Flap upward deflection and rearward bump combination to alleviate transonic buffet of supercritical wing** G. Shiqi, Y. Tian, P. Liu, Q. Qu, Beihang University, Beijing, China		

Tuesday, 9 January 2018						
190-APA-23/FD-20	**Flow Control III: Aerodynamics**					**Captiva 2**
Chaired by: J. FREEMAN, Air Force Institute of Technology and D. BRZOZOWSKI, The Boeing Company						
1430 hrs AIAA-2018-0791 **Active Control of Flow Over a Three-Element Airfoil in Unbounded Flow and Ground Effect** G. Tang, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1500 hrs AIAA-2018-0792 **Computations of Active Flow Control Via Steady Blowing Over a NACA-0018 Airfoil: Implicit LES and RANS Validated Against Experimental Data** K. Puri, M. Laufer, Technion–Israel Institute of Technology, Haifa, Israel; H. Müller-Vahl, Bertrandt Ingenieurburo Munchen, Munich, Germany; D. Greenblatt, S. Frankel, Technion–Israel Institute of Technology, Haifa, Israel	1530 hrs AIAA-2018-0793 **The Effect of Passive and Active Boundary-Layer Fences on Swept-Wing Performance at Low Reynolds Number** M. Walker, J. Bons, Ohio State University, Columbus, OH	1600 hrs AIAA-2018-0794 **Modulated High-Frequency Distributed Forcing of the Wake of a Blunt Trailing Edge Profiled Body** R. Cruikshank, P. Lavoie, University of Toronto, Toronto, Canada			

Tuesday, 9 January 2018						
191-ASC-4	**Adaptive Aerospace Structures I**					**Emerald 3**
Chaired by: D. MCGOWAN, NASA Langley Research Center						
1430 hrs AIAA-2018-0795 **Antagonistic shape memory alloy wire as an actuator in a morphing wing** J. Driesen, University of Twente, Enschede, The Netherlands; O. Santos, R. Annes da Silva, L. Goes, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil	1500 hrs AIAA-2018-0796 **Aerodynamic analysis of a morphing drone with spanning and sweeping in transition modes** A. Quintana, M. Hassanalian, A. Abdelkefi, New Mexico State University, Las Cruces, NM	1530 hrs AIAA-2018-0797 **Aerodynamic Evaluation and Design Improvement of an Airfoil with Continuous Trailing-Edge Flap** L. Ding, J. Shen, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1600 hrs AIAA-2018-0798 **Chord Extension Morphing for Active Rotor Track and Balance** J. Krishnamurthi, F. Gandhi, Rensselaer Polytechnic Institute, Troy, NY	1630 hrs AIAA-2018-0799 **Skin-based camber morphing utilizing shape memory alloy composite actuators in a wind tunnel environment** P. Leal, H. Stroud, E. Sheahan, M. Cabral, D. Hartl, Texas A&M University, College Station, TX	1700 hrs AIAA-2018-0800 **Experimental and computational assessment of a shape memory alloy based morphing wing incorporating linear and non-linear control** P. Leal, T. White, V. Goecks, J. Valasek, D. Hartl, Texas A&M University, College Station, TX	

Tuesday, 9 January 2018						
192-DE-4	**Innovative Design**					**Emerald 4**
Chaired by: K. BENSON, Cobham						
1430 hrs AIAA-2018-0801 **An Efficient Method of Aerodynamic Shape Optimization Assisted by Aerodynamic Database** M. Liu, C. Fu, Z. Han, W. Song, Northwestern Polytechnical University, Xi'an, China	1500 hrs AIAA-2018-0802 **Cost-Effective and Readily Manufactured Attitude Determination and Control System for NanoSatellites** M. Choueiri, M. Bell, M. Peck, Cornell University, Ithaca, NY	1530 hrs AIAA-2018-0803 **Venice II – Considerations for a Permanent Human Outpost in Space** S. Bianco, University of Houston, Houston, TX	1600 hrs AIAA-2018-0804 **An Indirect Design Representation for Topology Optimization Using Variational Autoencoder and Style Transfer** T. Guo, D. Lohan, University of Illinois, Urbana-Champaign, Urbana, IL; R. Cang, M. Ren, Arizona State University, Tempe, AZ; J. Allison, University of Illinois, Urbana-Champaign, Urbana, IL	1630 hrs AIAA-2018-0805 **Analysis and optimization of a tilt rotor unmanned air vehicle for long distances delivery and payload transportation** M. Hassanalian, R. Salazar, A. Abdelkefi, New Mexico State University, Las Cruces, NM		

Tuesday, 9 January 2018						
193-EDU-2	**Advances in Aerospace Education I**					**Sanibel 1**
Chaired by: T. FIELDS, University of Missouri-Kansas City and S. GURURAJAN						
1430 hrs AIAA-2018-0806 **Flipping Space Mechanics: Comparing a Traditional and Less Traditional Classroom** K. Martin, J. Gallimore, Embry-Riddle Aeronautical University, Prescott, AZ	1500 hrs AIAA-2018-0807 **Senior Capstone Design Research Project on Combustion of Bio-Derived Fuels in Hybrid Propellant Rocket Engine** V. Naoumov, N. Al Masoud, Central Connecticut State University, New Britain, CT	1530 hrs AIAA-2018-0808 **A New Approach to the Integration of Computational Fluid Dynamics Tools to Promote Learning and Innovation in Aerospace Engineering** G. Whitehouse, A. Boschitsch, Continuum Dynamics, Inc., Ewing, NJ; M. Smith, Georgia Institute of Technology, Atlanta, GA	1600 hrs AIAA-2018-0809 **Aeronautical and Astronautical Engineering and Mechanical Engineering Major Movement to Graduation** K. Kecskemety, R. Kajfez, Ohio State University, Columbus, OH	1630 hrs AIAA-2018-0810 **A paradigm shift in teaching Aerospace Engineering: from campus learners to professional learners – a case study on online courses in Smart Structures and Air Safety Investigation** G. Saunders, R. De Breuker, C. Rans, M. Schuurman, J. van Staalduinen, Delft University of Technology, Delft, The Netherlands		

Tuesday, 9 January 2018

194-F360-4 1430 - 1630 hrs	Prizes & Challenges: How Crowdsourcing can Help Solve Technology Gaps	Osceola A

Moderator: Jenn Gustetic, Program Executive for Small Business Innovation Research, NASA

Panelists:

Monsi Roman
Program Manager, Centennial Challenges
NASA

Jason Crusan
Director, Advanced Exploration Systems Division, Human Exploration and Operations Mission Directorate
NASA

Zoe Szajnfarber
Associate Professor, Engineering Management and Systems Engineering and Space Policy
George Washington University

Chris Frangione
Open Innovation Advisor

Dustin Fraze
Program Manager, Information Innovation Office
DARPA

Tuesday, 9 January 2018

195-FD-21	Special Session: Massively Separated Flows II					Miami 1
Chaired by: M. GREEN, Syracuse University and K. MULLENERS, EPFL						
1430 hrs AIAA-2018-0811 **EnKF-based Dynamic Estimation of Separated Flows with a Low-Order Vortex Model** D. Darakananda, J. Eldredge, University of California, Los Angeles, Los Angeles, CA; A. da Silva, T. Colonius, California Institute of Technology, Pasadena, CA; D. Williams, Illinois Institute of Technology, Chicago, IL	1500 hrs AIAA-2018-0812 **Effects of flapping waveforms on the performance of intermittent swimming in viscous flows** X. Deng, J. Wang, H. Dong, University of Virginia, Charlottesville, Charlottesville, VA; E. Akoz, K. Moored, Lehigh University, Bethlehem, PA	1530 hrs AIAA-2018-0813 **Low-Order Modeling of Airfoils with Massively Separated Flow and Leading-Edge Vortex Shedding** S. Narsipur, A. Gopalarathnam, J. Edwards, North Carolina State University, Raleigh, NC	1600 hrs AIAA-2018-0814 **Computational Study of the Three-Dimensional Wake and Performance of a Trapezoidal Pitching Panel** A. Bode-Oke, H. Dong, University of Virginia, Charlottesville, Charlottesville, VA; J. King, R. Kumar, M. Green, Syracuse University, Syracuse, NY	1630 hrs AIAA-2018-0815 **A Quasi-Continuous Vortex Lattice Method for Unsteady Aerodynamics Analysis** B. Epps, Dartmouth College, Hanover, NH; D. Greeley, Applied Physical Sciences Corporation, Lexington, MA	1700 hrs AIAA-2018-0816 **Force Production Mechanisms for a Flat Plate Wing at Low Reynolds Numbers (Invited)** S. Corkery, H. Babinsky, University of Cambridge, Cambridge, United Kingdom	

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196-FD-22	Stability and Transition II: Shear Flows II					Miami 2
Chaired by: R. GOSSE, AFRL/RQH and J. EPPINK, NASA Langley Research Center						
1430 hrs AIAA-2018-0817 **The Effect of Forward-Facing Steps on Stationary Crossflow Instability Growth and Breakfown** J. Eppink, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2018-0818 **Determination of the Critical Reynolds Number for Flow over Symmetric NACA Airfoils** K. Yousefi, University of Delaware, Newark, Newark, DE; A. Razeghi, Özyeğin University, Istanbul, Turkey	1530 hrs AIAA-2018-0819 **Transition Prediction in a RANS Solver based on Linear Stability Theory for Complex Three-Dimensional Configurations** Y. Shi, R. Gross, J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1600 hrs AIAA-2018-0820 **Numerical Simulation of Flow past a Circular Arc and a Truncated Circular Cylinder in Transitional Flow** L. Zhang, R. Agarwal, Washington University in St. Louis, St. Louis, MO			

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197-FD-23	Unsteady Flows II					Gainesville 1
Chaired by: S. BENTON, Air Force Research Laboratory						
1430 hrs AIAA-2018-0821 **POD Analyses on Vortex Structure in Late-stage Transition** Y. Yang, S. Tian, C. Liu, University of Texas, Arlington, Arlington, TX	1500 hrs AIAA-2018-0822 **Mechanisms Influencing Surface Pressure Unsteadiness on the Aft-Deck of a Rectangular Multistream Supersonic Nozzle** C. Stack, D. Gaitonde, Ohio State University, Columbus, OH	1530 hrs AIAA-2018-0823 **Further Investigations of Vortical Gust/Airfoil Interactions at a Transitional Reynolds Number** C. Barnes, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2018-0824 **The Role of Boundary-Layer Thickness on Cylinder-Generated Shock-Wave/Turbulent Boundary-Layer Interactions, Part II: Experiments** C. Combs, S. Lindörfer, P. Kreth, J. Schmisseur, University of Tennessee, Tullahoma, Tullahoma, TN	1630 hrs AIAA-2018-0825 **Characterization of the Wake past a Two-dimensional Multi-body Cylinder Arrangement** V. Beltrán, S. Le Clainche, J. Vega, Technical University of Madrid, Madrid, Spain		

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198-FD-24	**CFD Error Estimation and Solver Evaluation**					**Sun 4**
Chaired by: D. MOTT, Naval Research Laboratory and M. YU, University of Maryland, Baltimore County						
1430 hrs AIAA-2018-0826 **Output-Based Error Estimation for Chaotic Flows Using Reduced-Order Modeling** Y. Shimizu, K. Fidkowski, University of Michigan, Ann Arbor, Ann Arbor, MI	1500 hrs AIAA-2018-0827 **An Evaluation of a Commercial and a High Order FR/CPR Flow Solvers for Industrial Large Eddy Simulation** F. Jia, J. Ims, Z. Wang, University of Kansas, Lawrence, Lawrence, KS; J. Kopriva, G. Laskowski, General Electric Company, Lynn, MA	1530 hrs AIAA-2018-0828 **Assessment of Interpolation Strategies and Conservative Discretizations on Unstructured Overset Grids in OpenFOAM** D. Chandar, V. Nguyen, Institute of High Performance Computing, Singapore, Singapore	1600 hrs AIAA-2018-0829 **Comparison of *h*- and *p*-Derived Output-Based Error Estimates for Directing Anisotropic Adaptive Mesh Refinement in Three-Dimensional Inviscid Flows** C. Ngigi, L. Freret, C. Groth, University of Toronto, Toronto, Canada	1630 hrs AIAA-2018-0830 **A Priori Stability Analysis of Finite Volume Methods On Unstructured Meshes** R. Zangeneh, C. Ollivier Gooch, University of British Columbia, Vancouver, Canada		

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199-FD-25	**CFD Methods for Compressible Flows II**					**Sun 5**
Chaired by: K. FIDKOWSKI, University of Michigan and H. LUO, North Carolina State University						
1430 hrs AIAA-2018-0831 **A Discontinuous Galerkin Method Based on Variational Reconstruction for Compressible Flows on Arbitrary Grids** L. Li, X. Liu, J. Lou, H. Luo, North Carolina State University, Raleigh, NC; H. Nishikawa, National Institute of Aerospace, Hampton, VA; Y. Ren, Tsinghua University, Beijing, China	1500 hrs AIAA-2018-0832 **Comparison of Three Riemann-solver-free Cell-Vertex Schemes for Conservation Laws** S. Tu, Jackson State University, Jackson, MS	1530 hrs AIAA-2018-0833 **The Compressible Harmonic Balance Method for Turbomachinery** G. Cvijetic, H. Jasak, University of Zagreb, Zagreb, Croatia	1600 hrs AIAA-2018-0834 **The Performance Evaluation of an Improved Finite Volume Method that Solves the Fluid Dynamic Equations** F. Ferguson, J. Mendez, D. Dodoo-Amoo, M. Dhanasar, North Carolina A&T State University, Greensboro, NC	1630 hrs AIAA-2018-0835 **Large-Eddy Simulation of Compressible Flows with an Analytic Non-Equilibrium Wall Model** D. Gonzalez, Naval Surface Warfare Center, Indian Head, MD; M. Adler, D. Gaitonde, Ohio State University, Columbus, OH	1700 hrs AIAA-2018-0836 **Comparing Active Flux and Discontinuous Galerkin Methods for Compressble Flow** P. Roe, J. Maeng, D. Fan, University of Michigan, Ann Arbor, Ann Arbor, MI	

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200-FD-26	**Wall-Bounded Flows II**					**Sun 6**
Chaired by: B. MAINES, Lockheed Martin Aeronautics						
1430 hrs AIAA-2018-0837 **Towards a More Realistic Triple Hill's Vortex Synthetic Eddy Method for LES of Wall-Bounded Flows** J. Haywood, A. Sescu, S. Bhushan, Mississippi State University, Mississippi State, MS; J. Foster, M. Farthing, Army Corps of Engineers, Vicksburg, MS	1500 hrs AIAA-2018-0838 **Wall-Modeled Large Eddy Simulation of Flow around Oscillating Wind Turbines Dedicated Airfoils** F. Barnaud, P. Bénard, G. Lartigue, V. Moureau, National Institute of Applied Sciences (INSA), Saint-Etienne-du-Rouvray, France; P. Deglaire, Adwen, Puteaux, France	1530 hrs AIAA-2018-0839 **Evaluation of Skin Friction Drag Reduction in Turbulent Boundary Layer Using Riblets** H. Takahashi, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan; M. Kurita, S. Koga, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; S. Endo, Tokyo University of Agriculture and Technology, Fuchu, Japan	1600 hrs AIAA-2018-0840 **Revisiting LESFOIL: Wall-resolved LES of Flow Around an Airfoil at Re_c = 2.1 × 10^6** K. Asada, Tokyo University of Science, Katsushika, Japan; S. Kawai, Tohoku University, Sendai, Japan	1630 hrs AIAA-2018-0841 **DNS study on large vortex ring formation in late flow transition** S. Tian, Nanjing University of Aeronautics and Astronautics, Nanjing, China; Y. Yang, Y. Gao, C. Liu, University of Texas, Arlington, Arlington, TX		

Tuesday, 9 January 2018						
201-GNC-8/IS-4	**V&V of Adaptive Systems I**					**Naples 2**
Chaired by: J. MUSE, AFRL/RQQA and T. YUCELEN						
1430 hrs AIAA-2018-0842 **A Sparse Neural Network Approach to Model Reference Adaptive Control with Hypersonic Flight Applications** S. Nivison, University of Florida, Gainesville, Gainesville, FL; P. Khargonekar, University of California, Irvine, Irvine, CA	1500 hrs AIAA-2018-0843 **Adaptive Control of Hypersonic Vehicles Using Observer-Based Nonlinear Dynamic Inversion** D. Famularo, J. Valasek, Texas A&M University, College Station, TX; J. Muse, M. Bolender, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2018-0844 **Computing the Stability Limits of Pole-Zero Actuator Dynamics on Adaptive Control Laws for Aerospace Applications** B. Gruenwald, T. Yucelen, K. Dogan, University of South Florida, Tampa, FL; J. Muse, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2018-0845 **A New Adaptive Control Architecture for Uncertain Dynamical Systems with Actuator Dynamics: Beyond Pseudo-Control Hedging** B. Gruenwald, T. Yucelen, K. Dogan, University of South Florida, Tampa, FL; J. Muse, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2018-0846 **Adaptive Control of Hypersonic Vehicles in the Presence of Rate Limits** J. Gaudio, A. Annaswamy, Massachusetts Institute of Technology, Cambridge, MA; E. Lavretsky, The Boeing Company, Huntington Beach, CA	1700 hrs AIAA-2018-0847 **State-constrained Robust Adaptive Cruise Control Design for Air-breathing Hypersonic Vehicles** K. Sachan, R. Padhi, Indian Institute of Science, Bengaluru, India	

Tuesday, 9 January 2018						
202-GNC-9	**Optimal Control Theory**					**Sanibel 2**
Chaired by: M. BALAS, Embry-Riddle Aeronautical University and A. RAO, University of Florida						
1430 hrs AIAA-2018-0848 **Mesh-Generation Method for Real-Time Optimal Control Using Adaptive Gaussian Quadrature Collocation** A. Rao, W. Hager, University of Florida, Gainesville, Gainesville, FL	1500 hrs AIAA-2018-0849 **Stochastic Optimal Trajectory Generation via Multivariate Polynomial Chaos** L. Whittle, M. Sagliano, German Aerospace Center (DLR), Bremen, Germany	1530 hrs AIAA-2018-0850 **Optimal Control Framework for Gust Load Alleviation using Real time Aerodynamic Force Prediction from Artificial Hair Sensor Array** K. Thapa Magar, University of Dayton, Dayton, OH; A. Pankonien, G. Reich, Air Force Research Laboratory, Wright-Patterson AFB, OH; R. Beblo, University of Dayton, Dayton, OH	1600 hrs AIAA-2018-0851 **The Geometric Adjoining of Optimal Information in Indirect Trajectory Optimization** M. Sparapany, M. Grant, Purdue University, West Lafayette, IN	1630 hrs AIAA-2018-0852 **A Preliminary Analysis of Mesh Refinement for Optimal Control Using Discontinuity Detection via Jump Function Approximations** A. Miller, W. Hager, A. Rao, University of Florida, Gainesville, Gainesville, FL		

Tuesday, 9 January 2018						
203-GNC-10	**Control System Design**					**Sanibel 3**
Chaired by: E. GAMBONE, NASA - JSC Int Guid, Navig & Control Analysis Br and C. DAMAREN, University of Toronto						
1430 hrs AIAA-2018-0853 **Heading Hold Autopilot Design for Fixed Wing Aircraft** S. Akyurek, C. Kasnakoglu, U. Kaynak, TOBB University of Economics and Technology, Ankara, Turkey	1500 hrs AIAA-2018-0854 **Control of Longitudinal Aircraft Motion with Loadcase Robustness using LPV-Control with Partly-Measurable Parameters** F. Gossmann, F. Svaricek, University of the German Federal Armed Forces, Neubiberg, Germany; A. Gabrys, Technical University of Munich, Garching, Germany	1530 hrs AIAA-2018-0855 **Pattern Recognition Control Design** E. Gambone, NASA Johnson Space Center, Houston, TX	1600 hrs AIAA-2018-0856 **Extending Aircraft Thermal Endurance by Fuel Pump Sizing** M. Oppenheimer, D. Sigthorsson, D. Doman, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2018-0857 **Design Principle of Non-Switching Integral Sliding Mode Controller and Applications to Aerospace Vehicles** Y. Kawai, K. Uchiyama, Nihon University, Funabashi, Japan; C. McInnes, University of Glasgow, Glasgow, United Kingdom	1700 hrs AIAA-2018-0858 **Gain-Scheduled Control for an Antenna with Multiple Collocated Sensors and Actuators** X. Lang, Harbin Institute of Technology, Harbin, China; C. Damaren, University of Toronto, Toronto, Canada	

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204-GNC-11	**Control System Methodologies II**					**Sarasota 1**
Chaired by: R. LIND, University of Florida and M. GRANT, Purdue University						
1430 hrs AIAA-2018-0859 **Reinforcement Learning Based Continuous-Time On-line Spacecraft Dynamics Control: Case Study of NASA SPHERES Spacecraft** K. Turkoglu, F. Sun, San Jose State University, San Jose, CA	1500 hrs AIAA-2018-0860 **Fractional Control of Rigid Body Attitude Dynamics Using Exponential Coordinates** M. Nazari, Embry-Riddle Aeronautical University, Daytona Beach, FL; E. Butcher, University of Arizona, Tucson, Tucson, AZ; A. Sanyal, Syracuse University, Syracuse, NY	1530 hrs AIAA-2018-0861 **Tube Stochastic Differential Dynamic Programming for Robust Low-Thrust Trajectory Optimization Problems** N. Ozaki, R. Funase, University of Tokyo, Tokyo, Japan	1600 hrs AIAA-2018-0862 **Analytic Solution of Continuous-Time Algebraic Riccati Equation for Two-Dimensional Systems and Its Application to Wing-Rock Regulation** N. Cho, J. Lee, Y. Kim, Seoul National University, Seoul, South Korea	1630 hrs AIAA-2018-0863 **Efficient Numerical Analysis of Stability of High-Order Systems With a Time Delay** G. Armanious, R. Lind, University of Florida, Gainesville, Gainesville, FL	1700 hrs AIAA-2018-0864 **The use of Homotopy Analysis Method for indirect trajectory optimization** S. Singh, M. Grant, Purdue University, West Lafayette, IN	

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205-GNC-12	**Spacecraft Formation Control and RPO**					**Sarasota 3**
Chaired by: L. MASSOTTI, European Space Agency (ESA) and K. BOLLINO, U.S. Air Force						
1430 hrs AIAA-2018-0865 **Attractive Manifold-Based Noncertainty-Equivalence Adaptive Spacecraft Formation Flying Using Output Feedback** K. Lee, Catholic Kwandong University, Gangneung, South Korea; S. Singh, University of Nevada, Las Vegas, Las Vegas, NV	1500 hrs AIAA-2018-0866 **Attitude Control of a Two-CubeSat Virtual Telescope in Highly Elliptical Orbits** R. Pirayesh, A. Naseri, University of New Mexico, Albuquerque, Albuquerque, NM; S. Stochaj, New Mexico State University, Las Cruces, NM; N. Shah, NASA Goddard Space Flight Center, Greenbelt, MD; J. Krizmanic, University of Maryland, Baltimore County, Baltimore, MD	1530 hrs AIAA-2018-0867 **Optimal Guidance for Relative Teardrops with Lighting and Collision Constraints** E. Prince, R. Cobb, Air Force Institute of Technology, Wright-Patterson AFB, OH	1600 hrs AIAA-2018-0868 **Constructive Nonlinear Approach to Coulomb Formation Control** A. Tahir, A. Narang-Siddarth, University of Washington, Seattle, Seattle, WA	1630 hrs AIAA-2018-0869 **System and AOCS Challenges for the Design Consolidation of the Next Generation Gravity Mission** S. Dionisio, A. Anselmi, S. Cesare, Thales Group, Turin, Italy; C. Novara, L. Colangelo, Technical University of Turin, Turin, Italy; L. Massotti, ESA, Noordwijk, The Netherlands; et al.	1700 hrs AIAA-2018-0870 **A Method for General Autonomous Orbit Matching** M. Walsh, M. Peck, Cornell University, Ithaca, NY	

Tuesday, 9 January 2018						
206-GNC-13	**Intelligent Adaptive Control Applications I**					**Naples 1**
Chaired by: N. NGUYEN, NASA-Ames Research Center and K. HASHEMI, NASA Ames Research Center						
1430 hrs AIAA-2018-0871 **Adaptive Control for Fault Tolerant Autonomous Carrier Recovery** S. Reed, Naval Air Systems Command, Patuxent River, MD; J. Steck, Wichita State University, Wichita, KS	1500 hrs AIAA-2018-0872 **Adaptive Control for Hybrid PDE Models Inspired from Morphing Aircraft** A. Menon, A. Chakravarthy, Wichita State University, Wichita, KS; N. Nguyen, NASA Ames Research Center, Moffett Field, CA	1530 hrs AIAA-2018-0873 **Adaptive Output Feedback Control of Elastically Shaped Aircraft** J. Boskovic, J. Jackson, R. Wise, Scientific Systems Company, Inc., Woburn, MA; N. Nguyen, NASA Ames Research Center, Moffett Field, CA	1600 hrs AIAA-2018-0874 **Adaptive Set-Theoretic Emulator Reference Architecture (ASTERA): Control of Uncertain Dynamical Systems with Performance Guarantees and Smooth Transients** T. Yucelen, University of South Florida, Tampa, FL; S. Balakrishnan, Missouri University of Science and Technology, Rolla, MO; E. Arabi, University of South Florida, Tampa, FL			

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207-GNC-14	**Air Vehicle Design and Control**					**Osceola 3**
Chaired by: J. STECK, Wichita State University and M. RAFI, Wichita State University						
1430 hrs AIAA-2018-0875 **Precision UAV Collision Avoidance Using Computationally Efficient Avoidance Maps** L. Tony, D. Ghose, Indian Institute of Science, Bengaluru, India; A. Chakravarthy, Wichita State University, Wichita, KS	1500 hrs AIAA-2018-0876 **Modelling and Control of a miniature, low-aspect-ratio, fixed-delta-wing, rudderless aircraft** Y. Mitikiri, K. Mohseni, University of Florida, Gainesville, Gainesville, FL	1530 hrs AIAA-2018-0877 **The Generic Wide Body Aircraft Model** J. Quenzer, B. Barzgaran, M. Mesbahi, K. Morgansen, University of Washington, Seattle, Seattle, WA	1600 hrs AIAA-2018-0878 **A Bank Angle Protection Method Based on Exponential Potential Functions** D. Sun, N. Hovakimyan, University of Illinois, Urbana-Champaign, Urbana, IL	1630 hrs AIAA-2018-0879 **Numerical Investigation of Aircraft High-speed Runway Exit Using Generalized Optimal Control** Z. Huang, M. Best, J. Knowles, Loughborough University, Loughborough, United Kingdom		

Tuesday, 9 January 2018						
208-GT-4	**Recent Advances in Force Measurement Technology (Invited)**					**Miami 3**
Chaired by: R. RHEW, NASA Langley Research Center and K. BUTLER, AEDC - Arnold Engineering Development Complex						
1430 hrs Oral Presentation **AIAA Internal Balance Recommended Practices Guide - Update on New Version** R. Rhew, NASA Langley Research Center, Hampton, VA; D. Cahill, Cahill Engineering, Tullahoma, TN	1500 hrs Oral Presentation **Unique Booster Force Measurement on NASA's Space Launch System (SLS)** K. Toro, NASA Langley Research Center, Hampton, VA	1530 hrs Oral Presentation **Recent Advances in Additively Manufactured Wind Tunnel Balances** D. Burns, NASA Langley Research Center, Hampton, VA	1600 hrs Oral Presentation **Recently Developed Rotating Balance with Telemetered Data System** S. Commo, NASA Langley Research Center, Hampton, VA	1630 hrs Oral Presentation **Wind Tunnel Balance - Demand Model Update** P. Parker, NASA Langley Research Center, Hampton, VA		

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209-HSABP-4/PGC-4	**Pressure Gain Combustion–Rotating Detonation Engines III**					**Daytona 2**
Chaired by: M. GAMBA, University of Michigan and G. MEHOLIC, The Aerospace Corporation						
1430 hrs AIAA-2018-0880 **Shock Propagation through a Stratified Gas** F. Chacon, M. Gamba, University of Michigan, Ann Arbor, Ann Arbor, MI	1500 hrs AIAA-2018-0881 **Quasi-2D Simulations of Nozzled Rotating Detonation Engines with the Method of Characteristics** R. Fievisohn, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2018-0882 **Numerical Investigation of Rotating Detonation Rocket Engines** C. Lietz, Sierra Lobo, Inc., Edwards AFB, CA; N. Mundis, ERC, Inc., Edwards AFB, CA; S. Schumaker, V. Sankaran, Air Force Research Laboratory, Edwards AFB, CA	1600 hrs AIAA-2018-0883 **A Novel Open Source Conjugate Heat Transfer Solver for Detonation Engine Simulations** B. Olcucuoglu, Istanbul Technical University, Istanbul, Turkey; O. Temel, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium; O. Tuncer, Istanbul Technical University, Istanbul, Turkey; B. Saracoglu, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	1630 hrs AIAA-2018-0884 **Thrusting Pressure and Supersonic Exhaust Velocity in a Rotating Detonation Engine** C. Knowlen, E. Wheeler, D. Mendez, M. Kurosaka, University of Washington, Seattle, Seattle, WA	1700 hrs AIAA-2018-0885 **On the Response of Annular Inlets Feeding a Rotating Detonation Combustor** K. Mikoshiba, S. Sardeshmukh, D. Stechmann, S. Heister, Purdue University, West Lafayette, IN	

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210-HSABP-5	**Numerical analysis of Scramjet combustors**					**Daytona 1**
Chaired by: A. DRAKE, Orbital Sciences Corporation and J. HERMANSON, University of Washington						
1430 hrs AIAA-2018-0886 **Numerical investigation of an RBCC combustor during Ramjet/Scramjet mode transition** J. Salloum, M. Candon, A. Ridings, H. Ogawa, RMIT University, Melbourne, Australia; M. Kodera, S. Ueda, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan	1500 hrs AIAA-2018-0887 **Simulation and Design of A Scramjet Combustor Enhanced by A Porous Cylinder Burner** Y. Cheng, K. Pan, National Taiwan University, Taipei, Taiwan	1530 hrs AIAA-2018-0888 **Transient Thermomechanical Response of Actively Cooled Metal Sandwich Panel for Scramjet Combustor** G. N.K., M. D. R, Indian Institute of Science, Bengaluru, India	1600 hrs AIAA-2018-0889 **Trial for Improvement in Scramjet Engine Performance** S. Sato, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan; M. Fukui, Space Service, Kakuda, Japan; T. Watanabe, M. Takahashi, T. Munakata, Hitachi, Sendai, Japan			

Tuesday, 9 January 2018						
211-ICC-1	**Information and Command and Control Systems**					**Tallahassee 2**
Chaired by: M. SOTAK and J. MCEVER, Johns Hopkins University Applied Physics Laboratory						
1430 hrs AIAA-2018-0890 **An Autonomous Sensor Management Strategy for Monitoring a Dynamic Space Domain with Diverse Sensors** K. Nastasi, J. Black, Virginia Polytechnic Institute and State University, Blacksburg, VA	1500 hrs AIAA-2018-0891 **A Novel Aircraft and Missile Accurate Positioning and Tracking System for Military and Intelligence Using Global Satellite Networks** H. Chyad, Ministry of Science and Technology, Baghdad, Iraq; F. Al-Saedi, Al-Nahrain University, Baghdad, Iraq	1530 hrs AIAA-2018-0892 **Determination of Optimal Wing Twist Pattern for a Composite Digital Wing** N. Cramer, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; S. Swei, K. Cheung, NASA Ames Research Center, Moffett Field, CA; M. Teodorescu, University of California, Santa Cruz, Santa Cruz, CA	1600 hrs AIAA-2018-0893 **ElbowQuad: Thrust Vectoring Quadcopter** T. Devlin, R. Dickerhoff, K. Durney, A. Forrest, P. Pansodtee, A. Adabi, University of California, Santa Cruz, Santa Cruz, CA; et al.			

Tuesday, 9 January 2018						
212-IS-5	**Multi-Agent Coordination and Control II**					**Tallahassee 1**
Chaired by: D. CASBEER, Air Force Reseach Laboratory and R. SHARMA						
1430 hrs AIAA-2018-0894 **Heterogeneous, Multiple Depot Multi-UAV Path Planning for Remote Sensing Tasks** D. Cho, D. Jang, H. Choi, Korea Advanced Institute of Science and Technology, Yuseong-gu, South Korea	1500 hrs AIAA-2018-0895 **Cooperative Load Control and Transportation** K. Dhiman, A. Abhishek, M. Kothari, Indian Institute of Technology Kanpur, Kanpur, India	1530 hrs AIAA-2018-0896 **Cooperative Formation Control Strategy to Maximize Target Information** A. Sen, S. Ranjan Sahoo, M. Kothari, Indian Institute of Technology Kanpur, Kanpur, India	1600 hrs AIAA-2018-0897 **Routing Multiple Unmanned Vehicles in GPS Denied Environments** B. Wang, Texas A&M University, College Station, TX; S. Misra, University of Cincinnati, Cincinnati, OH; K. Sundar, Los Alamos National Laboratory, Los Alamos, NM; S. Rathinam, Texas A&M University, College Station, TX; R. Sharma, University of Cincinnati, Cincinnati, OH	1630 hrs AIAA-2018-0898 **Tammes Problem Inspired Multi-Agent Formation Control Over a Manifold** P. Anjaly , A. Ratnoo, Indian Institute of Science, Bengaluru, India		

Tuesday, 9 January 2018						
213-MAT-5	**Multiscale Modeling**					**Sun A**
Chaired by: G. SEIDEL, Virginia Polytechnic Institute and State Universit and G. ODEGARD						
1430 hrs AIAA-2018-0899 **Multiscale Modeling of Viscoelastic Behaviors of Textile Composites Using Mechanics of Structure Genome** X. Liu, W. Yu, Purdue University, West Lafayette, IN	1500 hrs AIAA-2018-0900 **Temperature-accelerated molecular dynamics simulations of quasi-static yield stress of epoxy polymers** H. Park, J. Choi, B. Kim, M. Cho, Seoul National University, Seoul, South Korea	1530 hrs AIAA-2018-0901 **A Multi-Physics Processing Model for Predicting Residual Stress Development in Unidirectional Fiber-Reinforced Composites** W. Chen, D. Zhang, University of Connecticut, Storrs, Storrs, CT	1600 hrs AIAA-2018-0902 **Nano-Micro Multiscale Modeling for Graphene-Reinforced Nanocomposites** S. Jeong, H. Lim, F. Zhu, C. Park, Y. Kim, G. Yun, Seoul National University, Seoul, South Korea	1630 hrs AIAA-2018-0903 **Multiscale Modeling of Effective Piezoresistivity and Implementation of Non-Local Damage Formulation in Nanocomposite Bonded Explosives** K. Talamadupula, G. Seidel, Virginia Polytechnic Institute and State University, Blacksburg, VA	1700 hrs AIAA-2018-0904 **Investigation on load transfer and deformation behavior of epoxy nanocomposites** B. Kim, H. Shin, J. Choi, H. Park, M. Cho, Seoul National University, Seoul, South Korea	

Tuesday, 9 January 2018						
214-MAT-6	**Nanostructured Materials I**					**Sun 1**
Chaired by: B. WARDLE, Massachusettes Institute of Technology						
1430 hrs AIAA-2018-0905 **Length-Scale Based Fracture Toughness Enhancement Mechanism in Polymer Composites** S. Roy, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1500 hrs AIAA-2018-0906 **Electrical, Thermal, and Tensile Properties of Cycloaliphatic Epoxy/Carbon Black and Cycloaliphatic Epoxy/Fumed Silica Nanocomposites** J. Tomasi, J. King, D. Klimek-McDonald, N. Herline, A. Krieg, G. Odegard, Michigan Technological University, Houghton, MI; et al.	1530 hrs AIAA-2018-0907 **Interlaminar Shear Reinforcement of Aerospace Laminates with Radially-aligned Carbon Nanotubes** R. Li, H. Cornwell, E. Antunes, A. Liotta, C. Parschau, B. Wardle, Massachusetts Institute of Technology, Cambridge, MA	1600 hrs AIAA-2018-0908 **Comparison of 3D and 2D Monte Carlo Models for Piezoresistive Behavior of Hybrid Nanocomposites** A. Gbaguidi, S. Namilae, D. Kim, Embry-Riddle Aeronautical University, Daytona Beach, FL	1630 hrs AIAA-2018-0909 **An efficient multiscale homogenization of elastic properties for polymer nanocomposites with nanoparticulate clusters** K. Baek, Seoul National University, Seoul, South Korea; H. Shin, Korea Electronics Technology Institute, Seongnam-si, South Korea; J. Han, M. Cho, Seoul National University, Seoul, South Korea	1700 hrs AIAA-2018-0910 **Fire Behavior of Hybrid Nano-Modified Composites for Airplane Interiors** E. Monteriro, S. Leao, M. Norton, M. Martins, A. Avila, Federal University of Minas Gerais, Belo Hroizonte, Brazil	

Tuesday, 9 January 2018						
215-MDO-5	**Metamodeling and Approximation Methods**					**Emerald 1**
Chaired by: A. NAJAFI, ANSYS, Inc. and J. GRAY, NASA Glenn Research Center						
1430 hrs AIAA-2018-0911 **Analysis of a Polynomial Chaos-Kriging Metamodel for Uncertainty Quantification in Aerospace Applications** J. Weinmeister, N. Xie, X. Gao, A. Krishna Prasad, S. Roy, Colorado State University, Fort Collins, CO	1500 hrs AIAA-2018-0912 **An intelligent sampling framework for multi-objective optimization in high dimensional design space** Y. Ling, S. Ghosh, I. Asher, J. Kristensen, K. Ryan, L. Wang, General Electric Company, Niskayuna, NY	1530 hrs AIAA-2018-0913 **On The Accuracy of Kriging Model in Active Subspaces** P. Palar, K. Shimoyama, Tohoku University, Sendai, Japan	1600 hrs AIAA-2018-0914 **Benchmarking Multi-Objective Bayesian Global Optimization Strategies for Aerodynamic Design** L. Zuhal, C. Amalinadhi, Y. Dwianto, Bandung Institute of Technology, Bandung, Indonesia; P. Palar, K. Shimoyama, Tohoku University, Sendai, Japan	1630 hrs AIAA-2018-0915 **Including ρ in Multi-Fidelity Surrogate Prediction Can Make Discrepancy Extrapolation Accurate by Reducing Bumpiness** C. Park, N. Kim, R. Haftka, University of Florida, Gainesville, Gainesville, FL	1700 hrs AIAA-2018-0916 **Towards Real-time Vehicle Aerodynamic Design via Multi-fidelity Data-driven Reduced Order Modeling** A. Bertram, Technical University of Braunschweig, Braunschweig, Germany; C. Othmer, Volkswagen, Wolfsburg, Germany; R. Zimmermann, University of Southern Denmark, Odense, Denmark	

Tuesday, 9 January 2018						
216-MVC-3	**Solution Adaptive/Deforming Meshing**					**Tampa 1**
Chaired by: W. JONES, NASA-Langley Research Center and J. DESPIRITO, US Army Research Laboratory						
1430 hrs AIAA-2018-0917 **A linear elasticity mesh mover with adaptive mesh element stiffening for multi-element unstructured grids** D. Brown, S. Nadarajah, McGill University, Montréal, Canada; H. Yang, P. Castonguay, H. Raiesi, K. Sermeus, Bombardier Aerospace, Montréal, Canada; et al.	1500 hrs AIAA-2018-0918 **Combined Entropy and Output-based Adjoint Approach for Mesh Refinement and Error Estimation** K. Doetsch, K. Fidkowski, University of Michigan, Ann Arbor, Ann Arbor, MI	1530 hrs AIAA-2018-0919 **A linear-elasticity solver for higher-order space-time mesh deformation** L. Diosady, Science and Technology Corporation, Mountain View, CA; S. Murman, NASA Ames Research Center, Moffett Field, CA	1600 hrs AIAA-2018-0920 **Comparing Anisotropic Error Estimates for the Onera M6 Wing RANS Simulations** T. Michal, The Boeing Company, St. Louis, MO; F. Alauzet, A. Loseille, L. Frazza, French National Institute for Research in Computer Science and Control (INRIA), Saclay, France; D. Marcum, Mississippi State University, Starkville, MS; D. Kamenetskiy, The Boeing Company, Seattle, WA	1630 hrs AIAA-2018-0921 **Relative Rotation On Cartesian Grids** A. Boschitsch, T. Quackenbush, Continuum Dynamics, Inc., Ewing, NJ	1700 hrs AIAA-2018-0922 **Recent Improvements on Cavity-Based Operators for RANS Mesh Adaptation** A. Loseille, French National Institute for Research in Computer Science and Control (INRIA), Saclay, France	

Tuesday, 9 January 2018						
217-NDA-4	**Special Session: Validation and Uncertainty Quantification of ICME Models**					**Sun C**
Chaired by: B. BICHON, Southwest Research Institute and M. SANGID, Purdue University						
1430 hrs AIAA-2018-0923 **Modeling and Uncertainty Quantification of Material Properties in Additive Manufacturing** P. Nath, Z. Hu, S. Mahadevan, Vanderbilt University, Nashville, TN	1500 hrs AIAA-2018-0924 **Ensemble Predictions of Material Behavior for ICMSE** D. Ricciardi, O. Chkrebtii, H. Fraser, S. Niezgoda, Ohio State University, Columbus, OH	1530 hrs AIAA-2018-0925 **Replacing Microstructural Experiments with Reconstruction Algorithms: Do Epistemic Uncertainties Allow?** P. Acar, V. Sundararaghavan, University of Michigan, Ann Arbor, Ann Arbor, MI	1600 hrs AIAA-2018-0926 **Validation and Uncertainty Quantification for Manufacturing Design Accounting for Material Variability** M. Yuan, N. Galbincea, Ohio State University, Columbus, OH; A. Salem, Materials Resources, LLC, Dayton, OH; S. Niezgoda, Ohio State University, Columbus, OH	1630 hrs AIAA-2018-0927 **The role of data analysis in uncertainty quantification: case studies for materials modeling** P. Patrone, A. Kearsley, National Institute of Standards and Technology, Gaithersburg, MD; A. Dienstfrey, National Institute of Standards and Technology, Boulder, CO		

Tuesday, 9 January 2018						
218-PDL-7	**Plasma Assisted Combustion and Ignition II**					**Destin 2**
Chaired by: I. ADAMOVICH, Ohio State University						
1430 hrs AIAA-2018-0928 **Modeling of ignition enhancement of CH_4/O_2 mixtures by non-equilibrium excitation of reactants using hybrid nanosecond-pulsed discharge and DC discharge** X. Mao, A. Rousso, Princeton University, Princeton, NJ; Q. Chen, Beijing Jiaotong University, Beijing, China; Y. Ju, Princeton University, Princeton, NJ	1500 hrs AIAA-2018-0929 **Effect of Nanosecond Repetitively Pulsed Plasma Discharges on Premixed Methane-Air Flames with Pin-Annular electrode geometry** N. Numa, R. Jagannath, P. Stockett, S. Bane, Purdue University, West Lafayette, IN	1530 hrs AIAA-2018-0930 **Hydrodynamic effects induced by nanosecond repetitive pulsed discharges** S. Stepanyan, N. Minesi, G. Stancu, C. Laux, CentraleSupélec, Paris, France	1600 hrs AIAA-2018-0931 **Plasma Assisted Ignition of Hydrogen-Air and Ethylene-Air Lean and Stoichiometric Mixtures by NS discharge at High Temperatures** A. Starikovskiy, Princeton University, Princeton, NJ			

Tuesday, 9 January 2018						
219-PDL-8	**Diagnostics and Experimental Techniques**					**Captiva 1**
Chaired by: A. YALIN, Colorado State University						
1430 hrs AIAA-2018-0932 **Modal Analysis of the Surface Pressure Field Around a Hemispherical Turret using Pressure Sensitive Paint** N. De Lucca, S. Gordeyev, J. Morrida, E. Jumper, University of Notre Dame, Notre Dame, IN; D. Wittich, Air Force Research Laboratory, Kirtland AFB, NM	1500 hrs AIAA-2018-0933 **Investigations on a DBD Burner: Corrected Filtered Rayleigh Scattering by means of Spontaneous Raman Scattering** J. Retter, G. Elliott, University of Illinois, Urbana-Champaign, Urbana, IL	1530 hrs AIAA-2018-0934 **Radiation and Signal Analysis of the Falcon Solid-state Energetic Electron Detector (FalconSEED)** C. Maldonado, U.S. Air Force Academy, Colorado Springs, CO				

Tuesday, 9 January 2018						
220-PDL-9	**Plasma Actuators II**					**Gainesville 2**
Chaired by: S. LEONOV, University of Notre Dame						
1430 hrs AIAA-2018-0935 **Modeling and Physical Analysis of Rail Plasma Actuator Arc** M. Gray, J. Sirohi, L. Raja, University of Texas, Austin, Austin, TX	1500 hrs AIAA-2018-0936 **Helicopter Lift Force Increase in Hover Mode by NS-SDBD Plasma Actuators** A. Starikovskiy, R. Miles, Princeton University, Princeton, NJ	1530 hrs AIAA-2018-0937 **Validation Study of Three-fluid Plasma Modeling of Dielectric Barrier Discharge for Plasma Actuator** K. Nakai, A. Nakano, H. Nishida, Tokyo University of Agriculture and Technology, Tokyo, Japan				

Tuesday, 9 January 2018						
221-SCS-4	**High Strain Composite Materials and Structures**					**Emerald 2**
Chaired by: B. DAVIS, Roccor LLC and M. SANTER, Imperial College London						
1430 hrs AIAA-2018-0938 **Mechanics of Bistable Two-Shelled Composite Booms** A. Lee, University of Michigan, Ann Arbor, Ann Arbor, MI; J. Fernandez, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2018-0939 **Recent Developments in Precision High Strain Composite Hinges for Deployable Space Telescopes** M. Echter, M. Silver, Lincoln Laboratory, Massachusetts Institute of Technology, Lexington, MA; E. D'Elia, Northeastern University, Boston, MA; M. Peterson, Air Force Research Laboratory, Kirtland AFB, NM	1530 hrs AIAA-2018-0940 **Viscoelastic Analysis of Stowage and Quasi-Static Deployment of Composite Tape Springs** K. Kwok, University of Central Florida, Orlando, FL	1600 hrs AIAA-2018-0941 **High Strain Composite Folding Truss Structures** T. Murphey, Opterus R&D, Inc., Fort Collins, CO; W. Davidson, L'Garde, Inc., Tustin, CA	1630 hrs AIAA-2018-0942 **A Simple Test Method for Large Deformation Bending of Thin High Strain Composite Flexures** J. Fernandez, NASA Langley Research Center, Hampton, VA; T. Murphey, Opterus R&D, Inc., Fort Collins, CO		

Tuesday, 9 January 2018						
222-SD-7	**Dewey70: Dynamics**					**Emerald 7**
Chaired by: D. HARURSAMPATH, Indian Institute of Science and C. CESNIK, University of Michigan						
1430 hrs AIAA-2018-0943 **Rotorcraft Research in the 1970s - A New Frontier in Structural Dynamics and Aeroelasticity** R. Ormiston, Army Research, Development and Engineering Command, Moffett Field, CA	1500 hrs AIAA-2018-0944 **Spectral Elements Formulation for Geometrically Exact Beam** S. Han, O. Bauchau, University of Maryland, College Park, College Park, MD	1530 hrs AIAA-2018-0945 **Generalized Inversion Form of Kane's Equations of Motion for Constrained Dynamical Systems** A. Bajodah, King Abdulaziz University, Jeddah, Saudi Arabia	1600 hrs AIAA-2018-0946 **Hybrid Energy Transformation to Generalized Reissner-Mindlin Model for Composite Plates** C. Lee, Pukyong National University, Busan, South Korea	1630 hrs AIAA-2018-0947 **Contributions of Spherical Harmonics to Gravitational Moment** C. Roithmayr, NASA Langley Research Center, Hampton, VA		

Tuesday, 9 January 2018						
223-SD-8	**Aeroelastic Analysis I**					**Emerald 8**
Chaired by: S. RAGHAVAN, University of Central Florida and R. RUSOVICI, Florida Institute of Technology						
1430 hrs AIAA-2018-0948 **Influence of Transonic Flutter on the Conceptual Design of Next-Generation Transport Aircraft** M. Opgenoord, M. Drela, K. Willcox, Massachusetts Institute of Technology, Cambridge, MA	1500 hrs AIAA-2018-0949 **Nonlinear Geometric Effects on Aero-viscoelasticity** E. Kocsis, C. Merrett, Clarkson University, Potsdam, NY	1530 hrs AIAA-2018-0950 **Aeroelastic Stability Analysis of the FLEXOP Demonstrator using the Continuous Time Unsteady Vortex Lattice Method** S. Binder, A. Wildschek, Airbus, Munich, Germany; R. De Breuker, Delft University of Technology, Delft, The Netherlands	1600 hrs AIAA-2018-0951 **Wing Flutter Prediction by a Small-Disturbance Euler (SD-Euler) Method on Body-fitted Curvilinear Grid** J. Pan, Peking University, Beijing, China; F. Liu, University of California, Irvine, Irvine, CA	1630 hrs AIAA-2018-0952 **Blade Vibration Measurements in a Multi-Stage Axial Turbine with Geometric Variations** T. Hauptmann, J. Seume, Leibniz University, Hannover, Germany	1700 hrs AIAA-2018-0953 **Substructure-based Analysis of Flutter for a Wing-Flap System with Freeplay** X. Wang, Z. Wu, C. Yang, Beihang University, Beijing, China; X. He, Fudan University, Shanghai, China	

Tuesday, 9 January 2018						
224-SFM-11	**Asteroid and Non-Earth Orbiting Missions III**					**Naples 3**
Chaired by: D. DAVIS						
1430 hrs AIAA-2018-0954 **Dynamical Behavior of an Asteroid Undergoing Material Removal** D. Brack, J. McMahon, University of Colorado, Boulder, Boulder, CO	1500 hrs AIAA-2018-0955 **Hybrid Gravity Model from Asteroid Surface Topology** J. Pearl, W. Louisos, D. Hitt, University of Vermont, Burlington, Burlington, VT	1530 hrs AIAA-2018-0956 **Orbital Dynamics of a Spacecraft in the Vicinity of a Binary Asteroid System: Impact of Solar Radiation Pressure on Orbital Motion** I. Jean, A. Misra, McGill University, Montréal, Canada; A. Ng, Canadian Space Agency, Saint-Hubert, Canada; S. Dutta, McGill University, Montréal, Canada	1600 hrs AIAA-2018-0957 **Preliminary Design of Transfer Trajectories for Asteroid Exploration Missions** J. Choi, K. Lee, S. Lee, C. Park, Yonsei University, Seoul, South Korea	1630 hrs AIAA-2018-0958 **Application of ZEM/ZEV guidance for closed-loop transfer in the Earth-Moon System** K. Drozd, R. Furfaro, University of Arizona, Tucson, Tucson, AZ; F. Topputo, Technical University of Milan, Milan, Italy	1700 hrs AIAA-2018-0959 **Least-Squares Solutions of Nonlinear Differential Equations** D. Mortari, Texas A&M University, College Station, TX; L. Smith, Blinn College, College Station, TX	

Tuesday, 9 January 2018						
225-SFM-12	**Attitude Dynamics, Determination, and Control III**					**Osceola 6**
Chaired by: C. PETERSEN						
1430 hrs AIAA-2018-0960 **A TFC Approach to Low-Thrust Trajectory Optimization in STK** D. Kolosa, J. Hudson, Western Michigan University, Kalamazoo, MI	1500 hrs AIAA-2018-0961 **Spacecraft Attitude Motion Planning using GRAFS** F. Celani, University of Rome "La Sapienza", Rome, Italy; D. Lucarelli, Johns Hopkins University Applied Physics Laboratory, Laurel, MD	1530 hrs AIAA-2018-0962 **Linear Coupled Attitude-Orbit Control Through Aerodynamic Forces** A. Harris, University of Colorado, Boulder, Boulder, CO; C. Petersen, Air Force Research Laboratory, Kirtland AFB, NM; H. Schaub, University of Colorado, Boulder, Boulder, CO	1600 hrs AIAA-2018-0963 **Optimized Thruster Distribution Matrix for Precision 6DOF Control Utilizing Dual Quaternions Dynamics** A. Smith, D. Seo, Embry-Riddle Aeronautical University, Daytona Beach, FL	1630 hrs AIAA-2018-0964 **Liquid Crystal Device with Microstructure for Attitude Control of Spacecraft by Solar Radiation Pressure** T. Chujo, Japan Aerospace Exploration Agency (JAXA), Kanagawa, Japan; H. Ishida, University of Tokyo, Tokyo, Japan; O. Mori, J. Kawaguchi, Japan Aerospace Exploration Agency (JAXA), Kanagawa, Japan	1700 hrs AIAA-2018-0965 **A Hypothetical Mechanical Design for Vibrating Mass Control Moment Gyroscopes** O. Tekinalp, K. Azgin, B. Akbulut, F. Arberkli, Middle East Technical University, Ankara, Turkey	

Tuesday, 9 January 2018						
226-SFM-13	**Space Trajectory Design and Optimization II**					**Destin 1**
Chaired by: R. SOOD						
1430 hrs AIAA-2018-0966 **A Monte Carlo Approach to Measuring Trajectory Performance Subject to Missed Thrust** F. Laipert, T. Imken, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1500 hrs AIAA-2018-0967 **Minimum-Fuel Low-Earth Orbit Aeroglide and Aerothrust Aeroassisted Orbital Transfer Subject to Heating Constraints** R. Fuhr, A. Rao, University of Florida, Gainesville, Gainesville, FL	1530 hrs AIAA-2018-0968 **Trajectory Design Considerations for Exploration Mission 1** T. Dawn, J. Gutkowski, A. Batcha, J. Williams, S. Pedrotty, NASA Johnson Space Center, Houston, TX				

Tuesday, 9 January 2018						
227-STR-8	**Failure Analysis and Prediction II**					**Emerald 5**
Chaired by: S. RUSSELL, Triumph Aerostructures and A. PALAZOTTO, AFIT						
1430 hrs AIAA-2018-0969 **Stochastic Fiber Failure Prediction of Composite Open-Hole Tension Coupons under Fatigue Loading using a Physics-Based Methodology** F. Bhuiyan, R. Fertig, University of Wyoming, Laramie, Laramie, WY	1500 hrs AIAA-2018-0970 **Progressive Tensile Failure Analysis of Hybrid 3D Woven Textile Composites At Macro-Meso-Micro Scale** D. Patel, University of Michigan, Ann Arbor, Ann Arbor, MI; A. Waas, University of Washington, Seattle, Seattle, WA	1530 hrs AIAA-2018-0971 **Simulating the Clamped Tapered Beam Specimen under Quasi-Static and Fatigue Loading using Floating Node Method** B. Seshadri, N. Vieira De Carvalho, National Institute of Aerospace, Hampton, VA; J. Ratcliffe, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2018-0972 **Effective property estimation of CMC minicomposites considering porosity** A. Nagaraj, S. Gururaja, Indian Institute of Science, Bengaluru, India			

Tuesday, 9 January 2018						
228-STR-9	**AFRL Developments in DADT Methods for Sustainment of Bolted Composite Structures II**					**Emerald 6**
Chaired by: V. RANATUNGA, Air Force Research Laboratory and J. BARTLEY-CHO, Northrop Grumman Corporation						
1430 hrs AIAA-2018-0973 **Overview of Composite Airframe Life Extension Program Project 2: Tools For Assessing The Durability And Damage Tolerance Of Fastened Composite Joints** J. Bartley-Cho, T. Palm, Northrop Grumman Corporation, Redondo Beach, CA; V. Ranatunga, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2018-0974 **Composite Bolted Joint-Related Testing in Project 2 of Composite Airframe Life Extension Program** J. Bartley-Cho, Northrop Grumman Corporation, Dayton, OH; B. Smyers, P. Knoth, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2018-0975 **A Hybrid Approach for Static Progressive Damage Assessment of a Countersunk Bolted Composite Component** J. Xiao, X. Cui, J. Lua, Global Engineering and Materials, Inc., Princeton, NJ	1600 hrs AIAA-2018-0976 **Prediction of the Behavior of Composite Bolted Joints Using the Eigendeformation-based Reduced Order Homogenization** W. Paulson, C. Oskay, Vanderbilt University, Nashville, TN	1630 hrs AIAA-2018-0977 **Failure Analysis of Composite Multi-bolt Joints using Intra-inter Crack Band Model (I2CBM)** A. Joseph, P. Davidson, A. Waas, University of Washington, Seattle, Seattle, WA	1700 hrs AIAA-2018-0978 **Bearing Failure Predictions of Composite Bolted Joints using Continuum Damage Models** A. Fontanelli, P. Diaz Montiel, S. Venkataraman, San Diego State University, San Diego, CA	

Tuesday, 9 January 2018						
229-TP-6	**Aerothermodynamics I**					**Sarasota 2**
Chaired by: R. BOND, University of Tennessee Space Institute						
1430 hrs AIAA-2018-0979 **Decoupled Finite-Element Approach for High-Mach Flows with Finite-Rate Chemistry** J. Seguin, W. Habashi, McGill University, Montréal, Canada; D. Isola, G. Baruzzi, ANSYS, Inc., Montréal, Canada; M. Fossati, University of Strathclyde, Glasgow, United Kingdom	1500 hrs AIAA-2018-0980 **Numerical Simulation of Hypersonic Turbulent Flows using High Order Methods** R. Ranjan, P. Vedula, University of Oklahoma, Norman, Norman, OK; K. Vogiatzis, E. Josyula, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2018-0981 **Experimental Investigations of Film Cooling Behavior under Rocket-Engine-Like Flow Conditions** S. Ludescher, H. Olivier, RWTH Aachen University, Aachen, Germany	1600 hrs AIAA-2018-0982 **Radiative Gas Dynamics of Exomars at Angle of Attack in view of Turbulent Heating** D. Yatsukhno, S. Surzhikov, O. Bessonov, Russian Academy of Sciences, Moscow, Russia; D. Andrienko, Texas A&M University, College Station, TX; J. Annaloro, P. Hebert, French Space Agency (CNES), Tolouse, France; et al.	1630 hrs AIAA-2018-0983 **Rigorous Characterization of an Advanced Instrumented Aluminum Nitride (AlN) Electrical Heater for High-Heat Flux and High-Temperature Aerospace Applications** J. Frankel, H. Chen, K. Mathew, D. Bottländer, University of Tennessee, Knoxville, Knoxville, TN		

Tuesday, 9 January 2018						
230-UAS-4	**Unmanned Aircraft Design II**					**Tallahassee 3**
Chaired by: R. CHRISTIANSEN, Sierra Lobo, Inc.						
1430 hrs AIAA-2018-0984 **SkyEye : Deployable Rotary Wings for Hybrid Munitions** J. Tan, Imperial College London, London, United Kingdom; P. Marzocca, RMIT University, Melbourne, Australia	1500 hrs AIAA-2018-0985 **Turbojet Ejector and Propeller Aft Assembly for Small Unmanned Aircraft Systems** M. Durkee, K. Rouser, T. Zimbelman, D. Bellcock, S. Chary, Oklahoma State University, Stillwater, OK	1530 hrs AIAA-2018-0986 **Implementation Implications of Hybrid-Electric Power Systems on Multi-Rotor UAS** K. McKinney, J. Feight, R. Gaeta, J. Jacob, Oklahoma State University, Stillwater, OK	1600 hrs AIAA-2018-0987 **Design and Experiment of String-based Flapping Mechanism and Modulized Trailing Edge Control System for Insect-like FWMAV** D. Gong, D. Lee, S. Shin, Seoul National University, Seoul, South Korea; S. Kim, Agency for Defense Development, Daejeon, South Korea	1630 hrs AIAA-2018-0988 **Parametric modelling for aerodynamic assessment of a fixed wing UAV implemented for Site Specific Management** E. Valencia, V. Hidalgo, D. Rodriguez, National Polytechnic University, Quito, Ecuador	1700 hrs AIAA-2018-0989 **Unlinking of Multiple Autonomous, Unmanned, Aerial Vehicles Mid-Flight** A. Puetz, South Dakota State University, Brookings, SD; A. Fares, University of Minnesota, Twin Cities, Minneapolis, MN; J. Goldsberry, Worcester Polytechnic Institute, Worcester, MA; C. Navia, University of Alaska, Fairbanks, Fairbanks, AK; B. Kaiser, Bethel University, Saint Paul, MN; T. Bender, Worcester Polytechnic Institute, Worcester, MA; et al.	

Tuesday, 9 January 2018						
231-WE-4	**Blade Aerodynamics and Aeroacoustics I**					**Osceola 4**
Chaired by: J. NAUGHTON, University of Wyoming and P. DOUBRAWA, National Renewable Energy Laboratory						
1430 hrs AIAA-2018-0990 **Validation of High-Order Wall-Resolved Large-Eddy Simulation of Vertical-Axis Wind Turbines** S. Kanner, Principle Power, Inc., Emeryville, CA; P. Persson, University of California, Berkeley, Berkeley, CA	1500 hrs AIAA-2018-0991 **Wind Turbine Aerodynamics from an Aerospace Perspective** A. van Garrel, S. ten Pas, K. Venner, University of Twente, Enschede, The Netherlands; J. van Muijden, Netherlands Aerospace Centre (NLR), Amsterdam, The Netherlands	1530 hrs AIAA-2018-0992 **VAWT in double-rotor configuration: the effect on airfoil design** D. De Tavernier, C. Simao Ferreira, Delft University of Technology, Delft, The Netherlands; A. Li, U. Paulsen, H. Madsen, Risø Technical University of Denmark, Roskilde, Denmark	1600 hrs AIAA-2018-0993 **Flow Transition Based Passive Loads Reduction Using Tripping Strips** Y. Sun, Envision Energy, Houston, TX	1630 hrs AIAA-2018-0994 **Aerodynamic Design of a 13.2 MW Segmented Ultralight Morphing Rotor** G. Ananda , S. Bansal, M. Selig, University of Illinois, Urbana-Champaign, Urbana, IL	1700 hrs AIAA-2018-0995 **Wind Tunnel Testing Airfoil with Screens at Low Reynolds Number** J. Tang, G. van Bussel, Delft University of Technology, Delft, The Netherlands	

Tuesday, 9 January 2018						
232-WE-5	**Wind Turbine/Wind Plant Optimization I**					**Osceola 5**
Chaired by: A. NING, BYU and M. LENNIE, Technische Universität Berlin						
1430 hrs AIAA-2018-0996 **Optimization Study of Shrouded Horizontal Axis Wind Turbine** T. Khamlaj, M. Rumpfkeil, University of Dayton, Dayton, OH	1500 hrs AIAA-2018-0997 **On the effects of the shape of the duct for ducted wind turbines** V. Dighe, G. de Oliveira, F. Avallone, G. van Bussel, Delft University of Technology, Delft, The Netherlands	1530 hrs AIAA-2018-0998 **Optimization of morphing flaps based on fluid structure interaction modeling** A. Barlas, Technical University of Denmark, Roskilde, Denmark; B. Akay, Siemens, Brande, Denmark	1600 hrs AIAA-2018-0999 **Analysis of Ideal Towers for Tall Wind Applications** K. Dykes, R. Damiani, O. Roberts, E. Lantz, National Renewable Energy Laboratory, Golden, CO	1630 hrs AIAA-2018-1000 **Exploring Optimization Opportunities in Four-Point Suspension Wind Turbine Drivetrains through Integrated Design Approaches** L. Sethuraman, J. Quick, Y. Guo, K. Dykes, National Renewable Energy Laboratory, Golden, CO		

Tuesday, 9 January 2018		
233-NW-6 **1530 - 1600 hrs**	**Tuesday Afternoon Coffee Break**	**Florida Hall CD**

Tuesday, 9 January 2018		
234-LEC-3 **1730 - 1830 hrs**	**Dryden Lecture for Research** **Advances in the Simulation of High-Speed Combustion Flows**	**Osceola A**
Graham V. Candler McKnight Presidential Professor, Distinguished McKnight University Professor, and Russell J. Penrose Professor, Associate Department Head, Aerospace Engineering and Mechanics University of Minnesota		

Tuesday, 9 January 2018		
235-NW-7 1830 - 2000 hrs	Opening Reception in the Exposition Hall	Florida Hall CD
Ticket is required.		

Wednesday

Wednesday, 10 January 2018		
236-SB-3 0730 - 0800 hrs	Wednesday Morning Speakers' Briefing	Session Rooms

Wednesday, 10 January 2018		
237-PLNRY-3 0800 - 0900 hrs	Dude, Where's My Flying Car?	Osceola CD

Moderator: Bruce Holmes, Vice President, Digital Aviation, SmartSky Networks, LLC

Panelists:

Mark Moore	Diana Siegel	Carl Dietrich	Mark Cousin
Director of Engineering	Program Manager, eVTOL Aircraft	CTO/Co-Founder	Senior Vice President, Flight Demonstrators
Uber Elevate	Aurora Flight Sciences	Terrafugia	Airbus

Wednesday, 10 January 2018		
238-NW-8 0900 - 0930 hrs	Wednesday Morning Coffee Break	Florida Hall CD

Wednesday, 10 January 2018		
239-AA-6	Propeller, Fan and Duct Acoustics	Tampa 2

Chaired by: J. MENDOZA, United Technologies Research Center and J. ANDERSON, Naval Surface Warfare Center

0930 hrs	1000 hrs	1030 hrs	1100 hrs	1130 hrs		
AIAA-2018-1001 **Numerical Study on Acoustic Impedance Variation along Uniformly Distributed Multi-Slit Resonators** X. Li, C. Chen, Beihang University, Beijing, China; F. Hu, Old Dominion University, Norfolk, VA	AIAA-2018-1002 **An Experimental Study of the Nonlinear Acoustic Response of Sense-lines with Steady Mean Flow** T. Teasley, D. Scarborough, Auburn University, Auburn, AL	AIAA-2018-1003 **Aeroacoustic testing for sound propagation through turbine vanes** A. Mumcu, Leibniz University, Hannover, Germany; N. Thouault, MTU Aero Engines, Munich, Germany; J. Seume, Leibniz University, Hannover, Germany	AIAA-2018-1004 **Aeroacoustic Analysis of a Counter Rotating Open Rotor based on the Harmonic Balance Method** D. Lindblad, G. Montero Villar, N. Andersson, A. Capitao Patrao, Chalmers University of Technology, Göteborg, Sweden; S. Courty-Audren, G. Napias, Higher Institute of Aeronautics and Space, Toulouse, France	AIAA-2018-1005 **Benchmarking of a Broadband Rotor Noise Prediction Method** S. Glegg, J. Pectol, Florida Atlantic University, Boca Raton, FL; W. Devenport, W. Alexander, Virginia Polytechnic Institute and State University, Blacksburg, VA		

Wednesday, 10 January 2018		
240-ACD-6	UAV and Micro UAV Design	Tampa 3

Chaired by: P. MARZOCCA and M. LOGAN, NASA Langley Research Center

0930 hrs	1000 hrs	1030 hrs	1100 hrs	1130 hrs	1200 hrs	
AIAA-2018-1006 **Development of a Preliminary Design Methodology for Transitional UAV** A. Kamal, A. Ramirez-Serrano, University of Calgary, Calgary, Canada	AIAA-2018-1007 **An integrated design process for mission optimized design of unmanned aerial vehicles** J. Feger, E. Fokina, M. Hornung, Technical University of Munich, Munich, Germany	AIAA-2018-1008 **CICADA Flying Circuit Board Unmanned Aerial Vehicle** D. Edwards, A. Kahn, S. Heinzen, T. Young, N. Arnold, D. Newton, Naval Research Laboratory, Washington, D.C.; et al.	AIAA-2018-1009 **CFD Investigation of Vortex Generator Additions to the General Atomics MQ-9 Reaper** B. Kuwik, C. Tabacjar, S. Lee, Alfred University, Alfred, NY	AIAA-2018-1010 **Design and Manufacturing of a Coaxial-Rotor Fixed-Wing VTOL UAV** Z. Fisher, R. Gautier, C. Wilson, M. Steffens, D. Mavris, Georgia Institute of Technology, Atlanta, GA	AIAA-2018-1011 **Hybrid Propulsion Strategies for a Multi-Modal UAV** J. Ye, Imperial College London, London, United Kingdom; P. Marzocca, RMIT University, Bundoora, Australia	

Wednesday, 10 January 2018						
241-AFM-9	**Aeroelasticity and Flight Dynamics**					**Osceola 2**
Chaired by: A. DA RONCH, University of Southampton and B. JOLLY, USAF						
0930 hrs AIAA-2018-1012 **Fly-by-Feel Control of an Aeroelastic Aircraft using Distributed Multi-Rate Kalman Filtering** G. Armanious, R. Lind, University of Florida, Gainesville, Gainesville, FL	1000 hrs AIAA-2018-1013 **Aeroservoelastic Control of UAV Wings Using a Distributed Sensing, Computing, and Actuation Architecture** M. Abdulrahim, N. Weibley, D. Lee, Prioria Robotics, Inc., Gainesville, FL; R. Lind, G. Armanious, University of Florida, Gainesville, Gainesville, FL; P. Suh, NASA Armstrong Flight Research Center, Edwards, CA	1030 hrs AIAA-2018-1014 **Flexible High Aspect Ratio Wing: Low Cost Experimental Model and Computational Framework** A. Pontillo, D. Hayes, G. Dussart, G. Lopez Matos, M. Carrizales, S. Yusuf, Cranfield University, Bedford, United Kingdom; et al.	1100 hrs AIAA-2018-1015 **Method to assess lateral handling qualities of aircraft with wingtip morphing** G. Dussart, S. Yusuf, V. Portapas, G. Lopez Matos, M. Lone, Cranfield University, Cranfield, United Kingdom	1130 hrs AIAA-2018-1016 **Evaluation of Aeroelastic Effects on Pilot-Induced Oscillations via Pilot-in-the-Loop Simulations** D. Drewiacki, F. Silvestre, A. Guimaraes Neto, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil	1200 hrs AIAA-2018-1017 **Further Assessment of a Scalogram-Based PIO Metric using University of Liverpool Tilt Rotor Simulation Data** N. Cameron, M. White, C. Cunliffe, University of Liverpool, Liverpool, United Kingdom; D. Klyde, Systems Technology, Inc., Hawthorne, CA	

Wednesday, 10 January 2018						
242-AFM-10	**Aircraft Flying and Handling Qualities**					**Osceola 1**
Chaired by: K. SHWEYK, Boeing Engineering Operations & Technology						
0930 hrs AIAA-2018-1018 **Touchdown Point Detection for Operational Flight Data Using Quality Measures and a Model Based Approach** P. Koppitz, J. Siegel, N. Romanow, L. Höhndorf, F. Holzapfel, Technical University of Munich, Munich, Germany	1000 hrs AIAA-2018-1019 **Evaluating the Autonomous Flying Qualities of a Simulated Variable Stability Aircraft** A. Hamidani, D. Kunz, Air Force Institute of Technology, Wright-Patterson AFB, OH	1030 hrs AIAA-2018-1020 **Online Aircraft Damage Case Identification and Classification for Database Information Retrieval** Y. Zhang, C. de Visser, Q. Chu, Delft University of Technology, Delft, The Netherlands	1100 hrs AIAA-2018-1021 **High Angle of Attack Static and Dynamic Modeling Methods for Flight Dynamics Loss of Control Research** F. Brown, K. Shweyk, The Boeing Company, Huntington Beach, CA; G. Shah, K. Cunningham, NASA Langley Research Center, Hampton, VA			

Wednesday, 10 January 2018						
243-AMT-2	**Spectroscopic Techniques**					**Flagler**
Chaired by: S. KEARNEY, Sandia National Laboratories and Z. ZHANG, University of Tennessee						
0930 hrs AIAA-2018-1022 **Development of Two-Color 3D Tomographic VLIF Measurements** B. Halls, J. Gord, Air Force Research Laboratory, Wright-Patterson AFB, OH; P. Hsu, S. Roy, Spectral Energies, LLC, Dayton, OH; T. Meyer, Purdue University, West Lafayette, IN	1000 hrs AIAA-2018-1023 **Development of MIR TLAS System with Applications to Reacting Hot Gas Flows** K. Sweetland, C. Combs, J. Schmisseur, R. Rhodes, F. Zhang, T. Moeller, University of Tennessee, Tullahoma, Tullahoma, TN; et al.	1030 hrs AIAA-2018-1024 **Effects of moderate pump and Stokes chirp on chirped-probe pulse femtosecond coherent anti-Stokes Raman scattering thermometry** M. Gu, A. Satija, R. Lucht, Purdue University, West Lafayette, IN	1100 hrs AIAA-2018-1025 **Evaluation of vibrational excitation in a microwave plasma enhanced flame using hybrid fs/ps CARS** C. Dedic, J. Michael, Iowa State University, Ames, IA	1130 hrs AIAA-2018-1026 **Acoustic Measurements of O_2 REMPI in Air** M. Gragston, Y. Wu, Z. Zhang, University of Tennessee, Knoxville, Knoxville, TN	1200 hrs AIAA-2018-1027 **Femtosecond laser tagging in 1,1,1,2-Tetrafluoroethane with trace quantities of air** Y. Zhang, Princeton University, Princeton, NJ; P. Danehy, NASA Langley Research Center, Hampton, VA; R. Miles, Princeton University, Princeton, NJ	

Wednesday, 10 January 2018						
244-AMT-3	**Pressure Sensitive Paint**					**Osceola 4**
Chaired by: C. KLEIN, DLR - German Aerospace Center and N. ROOZEBOOM, NASA Ames Research Center						
0930 hrs AIAA-2018-1028 **Two-Color Polymer-Ceramic Pressure-Sensitive Paint for Transient Plasma in M=2 Airflow** T. Hayashi, A. Houpt, B. Hedlund, S. Leonov, H. Sakaue, University of Notre Dame, Notre Dame, IN	1000 hrs AIAA-2018-1029 **Comparison of LED and LASER based Lifetime Pressure-Sensitive Paint Measurement Techniques** C. Klein, D. Yorita, U. Henne, A. Weiss, R. Geisler, German Aerospace Center (DLR), Göttingen, Germany	1030 hrs AIAA-2018-1030 **First Results of Lifetime-Based Unsteady PSP Measurement on a Pitching Airfoil in Transonic Flow** Y. Sugioka, Tohoku University, Sendai, Japan; K. Nakakita, K. Saitoh, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; T. Nonomura, K. Asai, Tohoku University, Sendai, Japan	1100 hrs AIAA-2018-1031 **Data Processing Methods for Unsteady Pressure-Sensitive Paint Application** N. Roozeboom, C. Ngo, NASA Ames Research Center, Moffett Field, CA; J. Baerny, Jacobs, Moffett Field, CA; D. Murakami, J. Ross, S. Murman, NASA Ames Research Center, Moffett Field, CA	1130 hrs AIAA-2018-1032 **Development of Polymer/Ceramic Pressure-Sensitive Paint with the same response time as Anodized-Aluminum PSP** Y. Egami, Y. Sato, S. Konishi, Aichi Institute of Technology, Toyota, Japan	1200 hrs AIAA-2018-1033 **Fast-PSP Based Investigation of Dynamic Shockwave Formation** H. Leite, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; A. Avelar, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil; H. Sakaue, University of Notre Dame, Notre Dame, IN; C. Francisco, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil	

Wednesday, 10 January 2018						
245-APA-24	**Special Session: 3rd High Lift Prediction Workshop (HiLiftPW-3) I**					**Miami 3**
Chaired by: C. RUMSEY, NASA-Langley Research Center and N. ASHTON, University of Oxford						
0930 hrs AIAA-2018-1034 **Japan Aerospace Exploration Agency's and Kawasaki Heavy Industries' Contribution to the Third High Lift Prediction Workshop** Y. Ito, M. Murayama, Y. Yokokawa, K. Yamamoto, Japan Aerospace Exploration Agency (JAXA), Mitaka, Japan; K. Tanaka, T. Hirai, Ryoyu Systems Company, Ltd., Minato, Japan; et al.	1000 hrs AIAA-2018-1035 **TAU-SOLAR Contributions to the 3rd High Lift Prediction Workshop** R. Rudnik, S. Melber-Wilkending, German Aerospace Center (DLR), Braunschweig, Germany; P. Risley-Settle, Aircraft Research Association, Ltd., Bedford, United Kingdom	1030 hrs AIAA-2018-1036 **EMBRAER Contribution to HiLiftPW-3** L. Scalabrin, P. Giloni, A. Antunes, G. Becker, M. Souza, R. Granzoto, Embraer, São José dos Campos, Brazil	1100 hrs AIAA-2018-1037 **Current practice unstructured grid CFD results for 3rd AIAA High Lift Prediction Workshop** A. Cary, The Boeing Company, St. Louis, MO; M. Yousuf, The Boeing Company, Bengaluru, India; P. Li, The Boeing Company, Harbor Pointe, WA; M. Mani, The Boeing Company, St. Louis, MO	1130 hrs AIAA-2018-1038 **Bombardier Contribution to the 3rd AIAA High-Lift Workshop** M. Langlois, H. Yang, K. Sermeus, Bombardier Aerospace, Montréal, Canada	1200 hrs AIAA-2018-1039 **Contributions to HiLiftPW-3 Using Structured, Overset Grid Methods** J. Coder, University of Tennessee, Knoxville, Knoxville, TN; T. Pulliam, J. Jensen, NASA Ames Research Center, Moffett Field, CA	

Wednesday, 10 January 2018						
246-APA-25	**Special Session: CFD Transition Modeling and Predictive Capabilities III**					**Sun B**
Chaired by: J. CODER, University of Tennessee and D. STEFANSKI, University of Tennessee						
0930 hrs AIAA-2018-1040 **γ–$Re_{\theta t}$–SA with Crossflow Transition Model using Hamiltonian-Strand Approach** Y. Jung, J. Baeder, University of Maryland, College Park, College Park, MD	1000 hrs AIAA-2018-1041 **Development of a Predictive Capability for Laminar-Turbulent Transition in HPCMP CREATE™-AV Kestrel Component COFFE using the Amplification Factor Transport Model** D. Stefanski, R. Glasby, J. Erwin, J. Coder, University of Tennessee, Knoxville, Knoxville, TN	1030 hrs AIAA-2018-1042 **Transition Modeling and Prediction Using an Unstructured Grid RANS CFD Code** C. Sheng, R. Schindler, S. Baugher, Q. Zhao, University of Toledo, Toledo, OH	1100 hrs AIAA-2018-1043 **Validation of Intermittency Model for Transition Prediction in a RANS Flow Solver** D. de Rosa, P. Catalano, Italian Aerospace Research Center (CIRA), Capua, Italy			

Wednesday, 10 January 2018						
247-APA-26	**Unsteady Aerodynamics III**					**Sanibel 2**
Chaired by: A. ELMILIGUI, NASA Langley Research Center and M. SCHOENENBERGER, NASA Langley Research Center						
0930 hrs AIAA-2018-1044 **Fast Computational Aeroelastic Analysis of Helicopter Rotor Blades** D. Fleischmann, S. Weber, M. Lone, Cranfield University, Cranfield, United Kingdom	1000 hrs AIAA-2018-1045 **Aerodynamic Simulations around Complex Geometries by Lattice Boltzmann Method with Block-Structured Cartesian Grid** T. Ishida, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan	1030 hrs AIAA-2018-1046 **An Implicit BDF2 Time-Parallel Algorithm for Solving Convection Diffusion Equations** S. Morton, CREATE Kestrel Team, Vicksburg, MS	1100 hrs AIAA-2018-1047 **Studying Fluid Breakup and Dispersion To Predict Aerial Firefighting Ground Drop Patterns** S. Qureshi, A. Altman, University of Dayton, Dayton, OH			

Wednesday, 10 January 2018						
248-APA-27	**Aerodynamic Design: Analysis, Methodologies, and Optimization Techniques III**					**Sanibel 1**
Chaired by: B. MARPLES, Johns Hopkins University Applied Physics Laboratory and R. KREEGER, NASA Glenn Research Center						
0930 hrs AIAA-2018-1048 **Waverider Vehicle Optimization with Volumetric Constraints for Wave Drag Minimization** P. Rodi, Lockheed Martin Corporation, Houston, TX	1000 hrs AIAA-2018-1049 **VLM Coupled with 2.5D RANS Sectional Data for High-Lift Design** M. Parenteau, École Polytechnique de Montréal, Montréal, Canada; K. Sermeus, Bombardier Aerospace, Montréal, Canada; E. Laurendeau, École Polytechnique de Montréal, Montréal, Canada	1030 hrs AIAA-2018-1050 **Numerical Algorithm for Wing-Structure Design** J. Taylor, D. Hunsaker, Utah State University, Logan, UT; J. Joo, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2018-1051 **Efficient Inverse Design of Transonic Airfoils Using Variable-Fidelity Models and Manifold Mapping** X. Du, L. Leifsson, Iowa State University, Ames, IA; S. Koziel, Reykjavik University, Reykjavik, Iceland			

Wednesday, 10 January 2018						
249-APA-28/FD-27	**Flow Control IV: Methods**					**Captiva 2**
Chaired by: D. BRZOZOWSKI, The Boeing Company and E. FARES, Exa Corporation						
0930 hrs AIAA-2018-1052 **Experimental Implementation of Modal Approaches for Autonomous Reattachment of Separated Flows** E. Deem, L. Cattafesta, Florida State University, Tallahassee, FL; H. Yao, M. Hemati, University of Minnesota, Minneapolis, Minneapolis, MN; H. Zhang, C. Rowley, Princeton University, Princeton, NJ	1000 hrs AIAA-2018-1053 **A Statistical Insight into the Onset of Deep Dynamic Stall using Multivariate Empirical Mode Decomposition** A. Mohan, Ohio State University, Columbus, OH; L. Agostini, Imperial College London, London, United Kingdom; D. Gaitonde, Ohio State University, Columbus, OH	1030 hrs AIAA-2018-1054 **Sparse Modeling of the Lift Gains of a High-Lift Configuration with Periodic Coanda Blowing** Y. El Sayed M., R. Semaan, R. Radespiel, Technical University of Braunschweig, Braunschweig, Germany	1100 hrs AIAA-2018-1055 **Development of a Robust, Multi-Level, Flow-Control Actuator Part 1: Experimental Studies** B. Binkley, A. Vakili, University of Tennessee, Tullahoma, Tullahoma, TN	1130 hrs AIAA-2018-1056 **Development of a Robust, Multi-Level, Flow-Control Actuator Part 2: Computational Studies** B. Binkley, A. Vakili, University of Tennessee, Tullahoma, Tullahoma, TN	1200 hrs AIAA-2018-1057 **Transition Delay by Oblique Roughness Elements in a Blasius Boundary-Layer Flow** J. Ost, C. Klein, U. Henne, German Aerospace Center (DLR), Göttingen, Germany; D. Puckert, U. Rist, University of Stuttgart, Stuttgart, Germany	

Wednesday, 10 January 2018						
250-APA-29/FD-28/PDL-10	**Plasma Flow Control I**					**Gainesville 2**
Chaired by: M. SAMIMY, The Ohio State University and A. VANDERWYST, Leidos						
0930 hrs AIAA-2018-1058 **Active flow control by means of MHD plasma actuator in the curvilinear channel** P. Kazanskii, I. Moralev, A. Firsov, Russian Academy of Sciences, Moscow, Russia	1000 hrs AIAA-2018-1059 **Feed-back Control of Stall Separation with DBD Plasma Actuator by Detecting Vortex Passing over an Airfoil** T. Ogawa, K. Asada, S. Sekimoto, T. Tatsukawa, K. Fujii, Tokyo University of Science, Tokyo, Japan	1030 hrs AIAA-2018-1060 **Morphology of a Q-DC Discharge within a Fuel Injection Jet in a Supersonic Cross-Flow** B. Leonov, Purdue University, West Lafayette, IN; B. Hedlund, A. Houpt, University of Notre Dame, Notre Dame, IN	1100 hrs AIAA-2018-1061 **A comparative flow physics study of Ns-DBD vs Ac-DBD plasma actuator on a NACA 0012 airfoil** C. Durasiewicz, A. Singh, J. Little, University of Arizona, Tucson, Tucson, AZ	1130 hrs AIAA-2018-1062 **Influence of Burst-Modulated Frequency on Sawtooth DBD Plasma Actuator for Flow Separation Control** L. Wang, C. Wong, X. Fu, Y. Zhou, Harbin Institute of Technology, Shenzhen, China		

Wednesday, 10 January 2018						
251-ASC-5	**Adaptive Aerospace Structures II**					**Emerald 4**
Chaired by: J. KAUFFMAN, University of Central Florida						
0930 hrs AIAA-2018-1063 **Design of a Leading Edge Morphing Based on Compliant Structures for a Twin-Prop Regional Aircraft** S. Ricci, A. De Gaspari, A. Gilardelli, A. Airoldi, Technical University of Milan, Milan, Italy	1000 hrs AIAA-2018-1064 **Design of Monolithic Selectively Compliant Morphing Structures with Locally Bi-stable Elements** D. Boston, A. Arrieta, Purdue University, West Lafayette, IN	1030 hrs AIAA-2018-1065 **Airfoil Thickness Effects on Morphing Wings** G. Caselato de Sousa, A. Rocha dos Santos, A. Sanches, O. Santos, D. Rade, A. de Paula, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil	1100 hrs AIAA-2018-1066 **Designing and testing a flexible trailing edge for wind energy turbine blades** M. Pohl, J. Riemenschneider, German Aerospace Center (DLR), Braunschweig, Germany			

Wednesday, 10 January 2018						
252-DE-5	**Model Based Design and Knowledge Based Engineering**					**Emerald 3**
Chaired by: G. CREARY, NASA-Langley Research Center and K. BENSON, Cobham						
0930 hrs AIAA-2018-1067 **Towards Automating the Sizing Process in Conceptual (Airframe) Systems Architecting** Y. Bile, A. Riaz, M. Guenov, A. Molina-Cristobal, Cranfield University, Cranfield, United Kingdom	1000 hrs AIAA-2018-1068 **Tolerance Aware Product Development Using an Enriched Hybrid Digital Mock Up (DMU)** I. Friel, J. Butterfield, T. Robinson, A. Marzano, Queen's University Belfast, Belfast, United Kingdom					

Wednesday, 10 January 2018						
253-EDU-3	**Advances in Aerospace Education II**					**Gainesville 1**
Chaired by: R. LEBEAU, Saint Louis University and S. GURURAJAN						
0930 hrs AIAA-2018-1069 **Undergraduate Contribution to Dynamically Scaled General Aviation Research at the University of Illinois at Urbana-Champaign** M. Qadri, M. Vahora, R. Hascaryo, S. Finlon, O. Dantsker, G. Ananda , University of Illinois, Urbana-Champaign, Urbana, IL; et al.	1000 hrs AIAA-2018-1070 **Effective Geographically Dispersed Student Teams - a Teleoperated Systems Design Case Study** T. Fields, University of Missouri, Kansas City, Kansas City, MO; A. Sobester, University of Southampton, Southampton, United Kingdom	1030 hrs AIAA-2018-1071 **Student Learning Experience from Participation in AUVSI Student Unmanned Aerial Systems (SUAS) Competitions** S. Gururajan, M. Dreyer, F. Garcia Lorca, A. Hoelscher, J. O'Neill, R. Clabots, Saint Louis University, St. Louis, MO; et al.				

Wednesday, 10 January 2018		
254-F360-5 **0930 - 1130 hrs**	**On Demand Mobility – Enabling Technologies and Capabilities**	**Osceola A**

Moderator: Michael Patterson, Aerospace Technologist, NASA Langley Research Center

Panelists:

Danette Allen	**Brian J. German**	**Andrew Gibson**	**Ken Goodrich**	**Stephen Rizzi**
Senior Technologist, Intelligent Flight Systems NASA Langley Research Center	Langley Associate Professor, School of Aerospace Engineering Georgia Institute of Technology	President Empirical Systems Aerospace	Senior Research Engineer NASA Langley Research Center	Senior Researcher, Aeroacoustics NASA Langley Research Center

Wednesday, 10 January 2018						
255-FD-29	**Fluid-Structure Interaction II**					**Sun 3**
Chaired by: D. WILLIS, University of Massachusetts Lowell						
0930 hrs AIAA-2018-1072 **An Adaptive Mesh Refinement Concept for Viscous Fluid-Structure Computations Using Eulerian Vertex-Based Finite Volume Methods** R. Borker, S. Grimberg, P. Avery, C. Farhat, Stanford University, Stanford, CA; J. Rabinovitch, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1000 hrs AIAA-2018-1073 **Numerical Investigation of Aeroelastic Forces and Pressures on Joukowski Foils of Variable Thickness due to Heaving Motion** M. Catlett, J. Anderson, Naval Surface Warfare Center, West Bethesda, MD; J. Baeder, University of Maryland, College Park, College Park, MD	1030 hrs AIAA-2018-1074 **Deflection and Flutter of Hanging Flexible Plates in Normal Flow** T. Siefers, J. Seidel, U.S. Air Force Academy, Colorado Springs, CO; K. Bergeron, Army Research, Development and Engineering Command, Natick, MA				

Wednesday, 10 January 2018						
256-FD-30	**Stability and Transition III: Receptivity and Control**					**Miami 1**
Chaired by: A. SESCU, Mississippi State University and A. MOYES, Texas A&M University/Aerospace Engineering						
0930 hrs AIAA-2018-1075 **Receptivity to Kinetic Fluctuations: A Multiple Scales Approach** L. Edwards, A. Tumin, University of Arizona, Tucson, Tucson, AZ	1000 hrs AIAA-2018-1076 **Plasma-Actuated Flow Control of Hypersonic Crossflow-Induced Boundary-Layer Transition in a Mach-6 Quiet Tunnel** H. Yates, T. Juliano, E. Matlis, University of Notre Dame, Notre Dame, IN; M. Tufts, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2018-1077 **Effect of Discrete Roughness on Cross-flow Transition at Mach 6** E. Matlis, A. Arndt, T. Corke, University of Notre Dame, Notre Dame, IN; M. Semper, U.S. Air Force Academy, Colorado Springs, CO	1100 hrs AIAA-2018-1078 **Control of Gortler Vortices in High-speed Boundary Layers** A. Sescu, R. Alaziz, Mississippi State University, Mississippi State, MS; M. Afsar, Strathclyde University, Glasgow, United Kingdom	1130 hrs AIAA-2018-1079 **Stability Analysis of the Boundary Layer Developing on a Flat Plate with Discrete Roughness Elements in Hypersonic Flow** I. Padilla Montero, F. Pinna, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium		

Wednesday, 10 January 2018						
257-FD-31	**Low Reynolds Number Flows I**					**Sun 5**
Chaired by: K. TAIRA, Florida State University						
0930 hrs AIAA-2018-1080 **Numerical Investigation of Effects of Experimental Environment on Vortex Formation in Low Reynolds Number Flows** M. Sridhar, C. Kang, D. Landrum, University of Alabama, Huntsville, Huntsville, AL; R. Wahidi, University of Texas of the Permian Basin, Odessa, TX; A. Lang, J. Wilroy, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1000 hrs AIAA-2018-1081 **Leading-Edge Flow Reattachment and the Reduction of Lateral Stability at High Angles of Attack for Low-Aspect-Ratio Rectangular Wings** T. Linehan, K. Mohseni, University of Florida, Gainesville, Gainesville, FL	1030 hrs AIAA-2018-1082 **Response of a Flat Plate Wing to a Transverse Gust at Low Reynolds Numbers** S. Corkery, H. Babinsky, J. Harvey, University of Cambridge, Cambridge, United Kingdom	1100 hrs AIAA-2018-1083 **A Fully Lagrangian Approach to Study the Flow Past Heaving Airfoils Placed in a Freestream** J. Melo De Sousa, S. Khorasanizade, Technical University of Lisbon, Lisbon, Portugal	1130 hrs AIAA-2018-1084 **Vortex Shedding from Laminar Separation Bubble Undergoing Oscillating Behavior near Airfoil Stall** G. Fujiwara, Y. Sunada, K. Rinoie, University of Tokyo, Tokyo, Japan	1200 hrs AIAA-2018-1085 **A Study on Development of Airfoil Shape Toward Low Reynolds-Number Dependence of Aerodynamic Characteristics Under Low-Reynolds-Number-Flow Conditions** H. Aono, Tokyo University of Science, Tokyo, Japan; M. Anyoji, D. Hamada, S. Wakui, Kyushu University, Kasuga, Japan; T. Tatsukawa, Tokyo University of Science, Tokyo, Japan	

Wednesday, 10 January 2018						
258-FD-32	**RANS/Hybrid/LES Applications**					**Sun 4**
Chaired by: C. SCALO						
0930 hrs AIAA-2018-1086 **Application of a New IDDES Model Based on Wray-Agarwal Turbulence Model for Simulation of Wall-Bounded Flows with Separation** X. Han, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1000 hrs AIAA-2018-1087 **Realizable Dynamic Hybrid LES Model Developments** R. Mokhtarpoor, M. Stoellinger, S. Heinz, University of Wyoming, Laramie, Laramie, WY	1030 hrs AIAA-2018-1088 **Large-Eddy Simulation of Combined Ingress for Different Rim Seal Geometries** A. Pogorelov, M. Meinke, W. Schroeder, RWTH Aachen University, Aachen, Germany	1100 hrs AIAA-2018-1089 **Reacting Dynamic Hybrid RANS/LES Computations of a Supersonic Cavity** E. Hassan, D. Peterson, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2018-1090 **Effects of Inflow Turbulence on Cavity Flow Simulation with Embedded-LES method** Y. Kojima, Tokyo University of Agriculture and Technology, Koganei, Japan; A. Hashimoto, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; M. Kameda, Tokyo University of Agriculture and Technology, Koganei, Japan		

Wednesday, 10 January 2018						
259-FD-33	**High-Order CFD Methods I**					**Sun 2**
Chaired by: B. ZHANG, George Washington University						
0930 hrs AIAA-2018-1091 **A Compact Discontinuous Galerkin Method for Advection-Diffusion Problems** E. Johnsen, P. Johnson, University of Michigan, Ann Arbor, Ann Arbor, MI	1000 hrs AIAA-2018-1092 **A Lagrangian discontinuous Galerkin hydrodynamic method for higher-order elements** N. Morgan, X. Liu, D. Burton, Los Alamos National Laboratory, Los Alamos, NM	1030 hrs AIAA-2018-1093 **Interior penalty tensor-product preconditioners for high-order discontinuous Galerkin discretizations** W. Pazner, Brown University, Providence, RI; P. Persson, University of California, Berkeley, Berkeley, CA	1100 hrs AIAA-2018-1094 **A Flux Reconstruction Method with Nonuniform Sliding-mesh Interfaces for Simulating Rotating Flows** B. Zhang, George Washington University, Washington, D.C.; Z. Qiu, Northwestern Polytechnical University, Xi'an, China; C. Liang, George Washington University, Washington, D.C.	1130 hrs AIAA-2018-1095 **On the parallel implementation and performance study of high-order Rosenbrock-type implicit Runge-Kutta methods for the FR/CPR solutions of the Navier-Stokes equations** L. Wang, M. Yu, University of Maryland, Baltimore County, Baltimore, MD	1200 hrs AIAA-2018-1096 **A Stable, High Order Accurate and Efficient Hybrid Method for Flow Calculations in Complex Geometries** O. Ålund, J. Nordstrom, Linköping University, Linköping, Sweden	

Wednesday, 10 January 2018						
260-FD-34	**Compressible Boundary Layers**					**Sun 6**
Chaired by: J. KOMIVES, Air Force Institute of Technology and N. BISEK, Air Force Reseach Laboratory						
0930 hrs AIAA-2018-1097 **High-Fidelity Simulations of the UTSI Mach 2 Test Section** N. Bisek, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2018-1098 **Numerical Study of Trip Spacing in Hypersonic Boundary Layer Transition** P. Shrestha, G. Candler, University of Minnesota, Twin Cities, Minneapolis, MN	1030 hrs AIAA-2018-1099 **CFD Analysis on Single Expansion Ramp Nozzle Performance** J. Holder, B. Malla, E. Gutmark, University of Cincinnati, Cincinnati, OH	1100 hrs AIAA-2018-1100 **Laser Differential Interferometry and Schlieren as an Approach to Characterizing Freestream Disturbance Levels** A. Harris, P. Kreth, C. Combs, J. Schmisseur, University of Tennessee, Tullahoma, Tullahoma, TN			

Wednesday, 10 January 2018						
261-FD-35	**Special Session: RANS Solutions for Benchmark Configurations I**					**Miami 2**
Chaired by: B. DISKIN, National Institute of Aerospace and W. ANDERSON, NASA Langley Research Center						
0930 hrs AIAA-2018-1101 **Customized Grid Generation Codes for Benchmark Three-Dimensional Flows** H. Nishikawa, B. Diskin, National Institute of Aerospace, Hampton, VA	1000 hrs AIAA-2018-1102 **Grid Convergence for Three Dimensional Benchmark Turbulent Flows** B. Diskin, National Institute of Aerospace, Hampton, VA; W. Anderson, M. Pandya, C. Rumsey, J. Thomas, NASA Langley Research Center, Hampton, VA; Y. Liu, National Institute of Aerospace, Hampton, VA; et al.	1030 hrs AIAA-2018-1103 **Unstructured Grid Adaptation and Solver Technology for Turbulent Flows** M. Park, NASA Langley Research Center, Hampton, VA; N. Barral, Imperial College London, London, United Kingdom; D. Ibanez, Sandia National Laboratories, Albuquerque, NM; D. Kamenetskiy, J. Krakos, T. Michal, The Boeing Company, St. Louis, MO; et al.	1100 hrs AIAA-2018-1104 **Three-Dimensional Benchmark RANS Computations Using Discontinuous Finite Elements on Solution-Adapted Meshes** K. Fidkowski, University of Michigan, Ann Arbor, Ann Arbor, MI			

Wednesday, 10 January 2018						
262-GNC-15/IS-6	**V&V of Adaptive Systems II**					**Naples 2**
Chaired by: T. YUCELEN and J. MUSE, AFRL/RQQA						
0930 hrs AIAA-2018-1105 **Adaptive Neural Network Control of Spacecraft Rendezvous using Nonlinear Dynamical Models in the presence of J2 perturbations** K. Zhang, M. Demetriou, Worcester Polytechnic Institute, Worcester, MA	1000 hrs AIAA-2018-1106 **Adaptive Control of a Rigid Body Vehicle on Exponential Coordinates with Guaranteed Performance** E. Arabi, S. Sarsilmaz, T. Yucelen, University of South Florida, Tampa, FL; M. Maadani, E. Butcher, University of Arizona, Tucson, Tucson, AZ; M. Nazari, Embry-Riddle Aeronautical University, Daytona Beach, FL	1030 hrs AIAA-2018-1107 **Active Sampling-Based Binary Verification of Dynamical Systems** J. Quindlen, Massachusetts Institute of Technology, Cambridge, MA; U. Topcu, University of Texas, Austin, Austin, TX; G. Chowdhary, University of Illinois, Urbana-Champaign, Urbana, IL; J. How, Massachusetts Institute of Technology, Cambridge, MA	1100 hrs AIAA-2018-1108 **A Distributed Adaptive Control Approach for Heterogeneous Uncertain Multiagent Systems** S. Sarsilmaz, T. Yucelen, University of South Florida, Tampa, FL	1130 hrs AIAA-2018-1109 **An Adaptive Actuator Failure Compensation Scheme for a Hexarotor System** Y. Sheng, G. Tao, University of Virginia, Charlottesville, Charlottesville, VA	1200 hrs AIAA-2018-1110 **Network-Lyapunov Technique For Spacecraft Formation Control** C. Petersen, Air Force Research Laboratory, Kirtland AFB, NM; R. Fierro, University of New Mexico, Albuquerque, Albuquerque, NM	

Wednesday, 10 January 2018						
263-GNC-16	**Control System Methodologies III**					**Sarasota 1**
Chaired by: M. CLARK and C. DE VISSER, Delft University of Technology						
0930 hrs AIAA-2018-1111 **Investigation of a Verification and Validation Tool with a Turbofan Aircraft Engine Application** P. Uth, A. Narang-Siddarth, University of Washington, Seattle, Seattle, WA; E. Wong, NASA Glenn Research Center, Cleveland, OH	1000 hrs AIAA-2018-1112 **Runtime Assurance Protection for Advanced Turbofan Engine Control** J. Schierman, D. Neal, Barron Associates, Inc., Charlottesville, VA; E. Wong, NASA Glenn Research Center, Cleveland, OH; A. Chicatelli, Vantage Partners, LLC, Brook Park, OH	1030 hrs AIAA-2018-1113 **Construction of Stability-Based Hybrid Automata for Safety Verification Using Continuation Methods** P. Uth, A. Narang-Siddarth, University of Washington, Seattle, Seattle, WA; M. Clark, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2018-1114 **Piece-wise Identification and Analysis of the Aerodynamic Coefficients, Trim Conditions, and Safe Sets of the Generic Transport Model** T. Cunis, L. Burlion, ONERA, Toulouse, France; J. Condomines, French Civil Aviation University, Toulouse, France	1130 hrs AIAA-2018-1115 **Stability Analysis for Incremental Nonlinear Dynamic Inversion Control** X. Wang, E. Van Kampen, Q. Chu, Delft University of Technology, Delft, The Netherlands; P. Lu, Swiss Federal Institute of Technology, Zürich, Switzerland	1200 hrs AIAA-2018-1116 **Incremental Nonlinear Control Allocation for a Tailless Aircraft with Innovative Control Effectors** I. Matamoros, C. de Visser, Delft University of Technology, Delft, The Netherlands	

Wednesday, 10 January 2018						
264-GNC-17	**Missile Guidance and Control**					**Sanibel 3**
Chaired by: S. WELLS, Raytheon Missile Systems and S. KOWALCHUK, Sandia National Laboratories						
0930 hrs AIAA-2018-1117 **Flight System Requirements** R. Morgan, M. Karashin, Raytheon Company, Tucson, AZ	1000 hrs AIAA-2018-1118 **Using Multiple Sensing to Overcome Structural Bending Modes in Flight Control** A. Bitanski, G. Hexner, J. Ben-Asher, Technion–Israel Institute of Technology, Haifa, Israel	1030 hrs AIAA-2018-1119 **Passivity-based Nonlinear Attitude Control Design for Fin-Controlled Missiles** S. Lee, Y. Kim, Seoul National University, Seoul, South Korea	1100 hrs AIAA-2018-1120 **Robust Integrated Guidance and Control Design for Tactical Missiles** B. Panchal, K. Subramanian, S. Talole, Defence Institute of Advanced Technology, Pune, India	1130 hrs AIAA-2018-1121 **Integrated Guidance Navigation and Control Using High-Order Sliding Mode Control for a Missile Interceptor** M. Cross, Y. Shtessel, University of Alabama, Huntsville, Huntsville, AL	1200 hrs AIAA-2018-1122 **Impact of Mode Decision Delay on Estimation Error for Maneuvering Target Interception in Continuous-Time Controlled System** X. Shengwen, H. Fan, Z. Song, National University of Defense Technology, Changsha, China	

Wednesday, 10 January 2018						
265-GNC-18	**Intelligent Adaptive Control Applications II**					**Naples 1**
Chaired by: K. HASHEMI, NASA Ames Research Center						
0930 hrs AIAA-2018-1123 **Approaches to Real-time Adaptive Prediction of Loss-of-Control Margins with Visual Cue Feedback** M. Rafi, J. Steck, A. Chakravarthy, Wichita State University, Wichita, KS	1000 hrs AIAA-2018-1124 **Fault Detection and Adaptive Parameter Estimation with Quantum Inspired Techniques and Multiple-Model Filters** Q. Zhang, S. Balakrishnan, Missouri University of Science and Technology, Rolla, MO; J. Busemeyer, Indiana University, Bloomington, Bloomington, IN	1030 hrs AIAA-2018-1125 **Retrospective Cost Adaptive Control of the Generic Transport Model under Abrupt Faults** A. Ansari, D. Bernstein, University of Michigan, Ann Arbor, Ann Arbor, MI	1100 hrs AIAA-2018-1126 **Set-Theoretic Model Reference Adaptive Control of a Generic Transport Model** E. Arabi, T. Yucelen, University of South Florida, Tampa, FL; N. Nguyen, NASA Ames Research Center, Moffett Field, CA			

Wednesday, 10 January 2018						
266-GNC-19	**Aircraft Flight Control Design**					**Osceola 3**
Chaired by: G. CHOWDHARY, Oklahoma State University and S. REED, NAVAIR/NAWCAD - Flight Control Branch						
0930 hrs AIAA-2018-1127 **Stability and Robustness Analysis and Improvements for Incremental Nonlinear Dynamic Inversion Control** R. van 't Veld, E. Van Kampen, Q. Chu, Delft University of Technology, Delft, The Netherlands	1000 hrs AIAA-2018-1128 **Robust Incremental Nonlinear Dynamic Inversion Control Using Angular Accelerometer Feedback** C. Cakiroglu, E. Van Kampen, Q. Chu, Delft University of Technology, Delft, The Netherlands	1030 hrs AIAA-2018-1129 **Design of Adaptive Sliding Mode Control for Uncertain Thrust Vectored Airship** A. Mishra, N. Sinha, Indian Institute of Technology Madras, Chennai, India	1100 hrs AIAA-2018-1130 **Gain-Scheduled Multivariable Flight Control under Uncertain Trim Conditions** J. Stephan, W. Fichter, University of Stuttgart, Stuttgart, Germany	1130 hrs AIAA-2018-1131 **A Sampled-Data Approach to Nonlinear Dynamic Inversion Adaptive Control** D. Famularo, J. Valasek, Texas A&M University, College Station, TX		

Wednesday, 10 January 2018						
267-GNC-20	**Tracking and Data Association**					**Destin 1**
Chaired by: W. WHITACRE, Draper Laboratory and N. AHMED, University of Colorado Boulder						
0930 hrs AIAA-2018-1132 **Multi-target Identity Tracking and Management Using Multiple Sensors** C. Zhang, I. Hwang, Purdue University, West Lafayette, IN	1000 hrs AIAA-2018-1133 **Lost at Sea Skymark Positioning using Multiple Hypothesis Tracking** P. O'Shea, Massachusetts Institute of Technology, Cambridge, MA; W. Whitacre, Draper Laboratory, Cambridge, MA; J. Hoffman, Massachusetts Institute of Technology, Cambridge, MA	1030 hrs AIAA-2018-1134 **A Tensor Decomposition Approach to Data Association** S. Krishnaswamy, M. Kumar, Ohio State University, Columbus, OH	1100 hrs AIAA-2018-1135 **Rapid Clustering for Optimal Sensor Selection in Heterogeneous Wireless Sensor Networks** A. Soderlund, M. Kumar, Ohio State University, Columbus, OH; D. Kim, Mississippi State University, Starkville, MS			

Wednesday, 10 January 2018						
268-GT-5	**High Reynolds Number Aerodynamics and Testing (Invited)**					**Captiva 1**
Chaired by: R. PARYZ, NASA Langley Research Center and M. WRIGHT, European Transonic Windtunnel						
0930 hrs AIAA-2018-1136 **Successful Application of Cryogenic Pressure Sensitive Paint Technique at ETW** D. Yorita, C. Klein, U. Henne, German Aerospace Center (DLR), Göttingen, Germany; V. Ondrus, U. Beifuss, University of Hohenheim, Stuttgart, Germany; A. Hensch, European Transonic Windtunnel (ETW), Cologne, Germany; et al.	1000 hrs AIAA-2018-1137 **Summary of the 2012 Boeing 787 Half Span Model High Speed Test at the European Transonic Windtunnel** M. Sleppy, The Boeing Company, Seattle, WA	1030 hrs AIAA-2018-1138 **A Discrete and Distributed Steady Blowing Application on a High Reynolds Number Semispan Supercritical Wing Configuration (Invited)** G. Jones, W. Milholen, D. Chan, NASA Langley Research Center, Hampton, VA; S. Goodliff, Jacobs, Hampton, VA; C. Cagle, J. Fell, NASA Langley Research Center, Hampton, VA	1100 hrs Oral Presentation **High Speed Cryogenic Testing of a Wind Tunnel Model with Remote Control Actuation (RCA) Spoiler** F. Calkins, The Boeing Company, Seattle, WA			

Wednesday, 10 January 2018						
269-HSABP-6	**Experimental Analysis of Scramjet Combustors I**					**Daytona 2**
Chaired by: O. POWELL and G. JOHNSTON, Texas A&M University						
0930 hrs AIAA-2018-1139 **Experimental Study of Heat Release Induced Unstart in a Supersonic Circular Combustor** D. Baccarella, Q. Liu, B. McGann, T. Lee, University of Illinois, Urbana-Champaign, Urbana, IL	1000 hrs AIAA-2018-1140 **Cavity-Based Flow Control in A Supersonic Duct Utilizing a Q-DC Plasma Shock Wave Generator** A. Houpt, B. Hedlund, S. Leonov, University of Notre Dame, Notre Dame, IN; T. Ombrello, C. Carter, R. Leiweke, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2018-1141 **An Investigation of Modified Cavity Flow Generated Supersonic Mixing** M. Boudaghi, T. Fetterhoff, A. Vakili, A. Meganathan, University of Tennessee, Knoxville, Tullahoma, TN	1100 hrs AIAA-2018-1142 **Computational Investigation of the Flow Distortions in a Mach 6 Converging-Diverging Facility Nozzle** R. Shenoy, Analytical Mechanics Associates, Inc., Hampton, VA; T. Drozda, NASA Langley Research Center, Hampton, VA; B. Passe, Analytical Mechanics Associates, Inc., Hampton, VA; K. Cabell, R. Baurle, NASA Langley Research Center, Hampton, VA	1130 hrs AIAA-2018-1143 **Influence of the Facility Nozzle Design in the Unsteady Response of Direct-Connect Scramjet Combustors** E. Degregori, M. Ferlauto, Technical University of Turin, Turin, Italy		

Wednesday, 10 January 2018						
270-HSABP-7	**High Fidelity Combustion Modeling For High Speed Propulsion**					**Daytona 1**
Chaired by: X. WANG and J. ETELE						
0930 hrs AIAA-2018-1144 **Hybrid RANS/LES of Combustion in a Supersonic Cavity Flameholder at Mach 2 and Mach 3** D. Peterson, E. Hassan, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2018-1145 **Hybrid LES/RANS Simulation of Supersonic Premixed Ethylene Combustion** T. Nielsen, J. Edwards, North Carolina State University, Raleigh, NC; H. Chelliah, D. Lieber, C. Goyne, R. Rockwell, University of Virginia, Charlottesville, Charlottesville, VA; et al.	1030 hrs AIAA-2018-1146 **A Computational Study of Ramjet, Scramjet and Dual-mode Ramjet Combustion in Combustor with a Cavity Flameholder** N. Zettervall, C. Fureby, Swedish Defense Research Agency (FOI), Stockholm, Sweden	1100 hrs AIAA-2018-1147 **Implementation of Two-Phase Supersonic Combustion Simulation in VULCAN** F. Ladeinde, Stony Brook University, Stony Brook, NY	1130 hrs AIAA-2018-1148 **Differential Turbulent Supersonic Combustion of Hydrogen, Methane, and Ethylene, without Assisted Ignition** F. Ladeinde, Stony Brook University, Stony Brook, NY; W. Li, TTC Technologies, Inc., Centereach, NY		

Wednesday, 10 January 2018		
271-ICME-1 **0930 - 1230 hrs**	**ICME Prize Competition**	**Sun 1**
Three presentations will be given, followed by the panel deliberation.		

Wednesday, 10 January 2018						
272-IS-7	**Integrated Systems Health Management (ISHM) I**					**Tallahassee 1**
Chaired by: W. MAUL						
0930 hrs AIAA-2018-1149 **Current State of solid propulsion integrated system health management** R. Hyde, D. DeVries, I. Davis, Orbital ATK, Promontory, UT	1000 hrs AIAA-2018-1150 **A System Health Aware POMDP Framework for Planetary Rover Traverse Evaluation and Refinement** E. Balaban, T. Arnon, M. Shirley, NASA Ames Research Center, Moffett Field, CA; S. Brisson, Stanford University, Stanford, CA; A. Gao, NASA Ames Research Center, Moffett Field, CA	1030 hrs AIAA-2018-1151 **Leverage Points for System Health Management of Autonomous Systems** A. Bajwa, NASA Ames Research Center, Moffett Field, CA	1100 hrs AIAA-2018-1152 **Integrated System Health Management (ISHM) and Autonomy** J. Figueroa, NASA Stennis Space Center, Stennis Space Center, MS; M. Walker, D2K Technologies, Ocean Side, CA			

Wednesday, 10 January 2018						
273-MAT-7	**Nanostructured Materials II**					**Sun C**
Chaired by: N. YAMAMOTO, Penn State University and S. ROY, The University of Alabama						
0930 hrs AIAA-2018-1153 **Predicting the enhancement in the compressive strength of Carbon Fiber Reinforced Polymer Composites by overwrapping Multiwalled Carbon Nanotubes using a Multiscale Approach** P. Kokkada Ravindranath, S. Roy, V. Unnikrishnan, University of Alabama, Tuscaloosa, Tuscaloosa, AL; H. Lu, University of Texas, Dallas, Richardson, TX	1000 hrs AIAA-2018-1154 **Multifunctional skin materials based on tailorable, carbon-nanotube-polyurethane composite sheets** M. Jakubinek, B. Ashrafi, Y. Martinez-Rubi, K. Laqua, M. Palardy-Sim, S. Roy, National Research Council Canada, Ottawa, Canada; et al.	1030 hrs AIAA-2018-1155 **Evaluation of Novel Solutions for Lightning Strike Protection of Composites Using Current Carrying Capacity** B. Ashrafi, J. Crodua, M. Jakubinek, Q. Yang, V. Pankov, Y. Martinez-Rubi, National Research Council Canada, Montréal, Canada; et al.	1100 hrs AIAA-2018-1156 **Scalable Manufacturing of Thermoset Nanocomposites Consisting of Ferrimagnetic Nanoparticles using Static Magnetic Fields** M. Spencer, D. Gao, N. Yamamoto, Pennsylvania State University, University Park, PA	1130 hrs AIAA-2018-1157 **Multi-Scale Optimization of Nanocomposites with Probabilistic Feature Descriptors** P. Acar, V. Sundararaghavan, University of Michigan, Ann Arbor, Ann Arbor, MI; N. Fasanella, Northrop Grumman Corporation, Baltimore, MD	1200 hrs AIAA-2018-1158 **Interface Shock viscosity in Energetic material using Cohesive Finite Element Method** C. Prakash, I. Gunduz, V. Tomar, Purdue University, West Lafayette, IN	

Wednesday, 10 January 2018						
274-MDO-6	**Nondeterministic Optimization Methods and Applications**					**Emerald 1**
Chaired by: K. WILLCOX, Massachusetts Institute of Technology						
0930 hrs AIAA-2018-1159 **A Fusion-Based Multi-Information Source Optimization Approach using Knowledge Gradient Policies** S. Ghoreishi, D. Allaire, Texas A&M University, College Station, TX	1000 hrs AIAA-2018-1160 **Interval-Based Multiobjective Optimization of Aircraft Wings Under Gust Loads** S. Rao, University of Miami, Coral Gables, FL	1030 hrs AIAA-2018-1161 **Quantification and Multi-point Optimization of Natural Laminar Flow Airfoil Robustness to Transition Amplification Factor** J. Hollom, N. Qin, University of Sheffield, Sheffield, United Kingdom	1100 hrs AIAA-2018-1162 **Evolutionary Optimization of Satellite Formation Topology for Ground Targeting Applications** D. Hinckley, J. Pearl, D. Hitt, University of Vermont, Burlington, Burlington, VT	1130 hrs AIAA-2018-1163 **Effect of Varying Test Cost on Design of Experiments** Y. Zhang, N. Kim, C. Park, R. Haftka, University of Florida, Gainesville, Gainesville, FL	1200 hrs AIAA-2018-1164 **A Machine Learning Approach to Aircraft Sensor Error Detection and Correction** R. Swischuk, D. Allaire, Texas A&M University, College Station, TX	

Wednesday, 10 January 2018						
275-MST-10	**Modeling and Simulation of Air Vehicle Dynamics I**					**Sun D**
Chaired by: B. APONSO, NASA Ames Research Center and P. ZAAL, NASA Ames Research Center						
0930 hrs AIAA-2018-1165 **An Introduction to the Navy's Physics Based Model of the Hose and Drogue Refueling System - Design and Validation** K. Boothe, R. Vess, E. Koehler, Coherent Technical Services, Inc., Lexington Park, MD; E. Knoblauch, Naval Air Systems Command, Lexington Park, MD; S. McLaughlin, Naval Air Systems Command, Lakehurst, NJ	1000 hrs AIAA-2018-1166 **Modeling of the Aircraft Landing Behavior for Runway Excursion and Abnormal Runway Contact Analysis** C. Wang, F. Holzapfel, Technical University of Munich, Garching, Germany	1030 hrs AIAA-2018-1167 **Aerodynamic Stall and Buffet Modeling for the Cessna Citation II Based on Flight Test Data** L. van Horssen, C. de Visser, D. Pool, Delft University of Technology, Delft, The Netherlands	1100 hrs AIAA-2018-1168 **A Generic T-tail Transport Airplane Simulation for High-Angle-of-Attack Dynamics Modeling Investigations** K. Cunningham, G. Shah, NASA Langley Research Center, Hampton, VA; M. Hill, B. Pickering, Unisys Corporation, Hampton, VA; J. Litt, NASA Glenn Research Center, Cleveland, OH; S. Norin, Vantage Partners, LLC, Cleveland, OH	1130 hrs AIAA-2018-1169 **Modeling and Inverse Simulation of Generic Helicopter Maneuvers** H. Shahat, Cairo University, Cairo, Egypt; A. Aly, Modern Sciences and Arts University, Giza, Egypt; G. Elbayoumi, M. Abdelrahman, Cairo University, Cairo, Egypt		

Wednesday, 10 January 2018						
276-MVC-4	**Visualization**					**Tampa 1**
Chaired by: D. KAO, NASA Ames Research Center and E. DUQUE, Intelligent Light						
0930 hrs AIAA-2018-1170 **Change-point Detection between Two Unsteady CFD Simulation Results by Sparse Structure Learning** N. Isoshima, Hitachi, Hitachinaka, Japan; K. Shimoyama, S. Obayashi, Tohoku University, Sendai, Japan	1000 hrs AIAA-2018-1171 **Visualization and Data Analytics Challenges of Large-Scale High-Fidelity Numerical Simulations of Wind Energy Applications** A. Kirby, Z. Yang, D. Mavriplis, University of Wyoming, Laramie, Laramie, WY; E. Duque, B. Whitlock, Intelligent Light, Rutherford, NJ	1030 hrs AIAA-2018-1172 **A Subzone-Based Client-Server Technique for I/O Efficient Analysis and Visualization of Large Remote Datasets** S. Imlay, D. Taflin, C. Mackey, Tecplot, Inc., Bellevue, WA	1100 hrs AIAA-2018-1173 **dbslice - Flexible, Web-Based, Database-Driven Visualization** G. Pullan, X. Li, University of Cambridge, Cambridge, United Kingdom	1130 hrs AIAA-2018-1174 **Vizir: High-order mesh and solution visualization using OpenGL 4.0 graphic pipeline** A. Loseille, French National Institute for Research in Computer Science and Control (INRIA), Saclay, France	1200 hrs AIAA-2018-1175 **Tracking Blade Tip Vortices for Numerical Flow Simulations of Hovering Rotorcraft** D. Kao, NASA Ames Research Center, Moffett Field, CA; K. Smith, Z. Liu, Old Dominion University, Norfolk, VA	

Wednesday, 10 January 2018						
277-NDA-5	**Special Session: DARPA Efficient Quantification of Uncertainty in Physical Systems (EQUiPS) Program**					**Sun A**
Chaired by: F. FAHROO and M. RUMPFKEIL, University of Dayton						
0930 hrs AIAA-2018-1176 **Characterizing Subspaces of Engineering Shapes using Differential Geometry** Z. Grey, P. Constantine, University of Colorado, Boulder, Boulder, CO	1000 hrs AIAA-2018-1177 **Multi-Disciplinary Risk-Adaptive Design of Super-Cavitating Hydrofoil** L. Bonfiglio, Massachusetts Institute of Technology, Cambridge, MA; J. Royset, Naval Postgraduate School, Monterey, CA; G. Karniadakis, Brown University, Providence, RI	1030 hrs AIAA-2018-1178 **A Finite Volume Error Estimator Inspired by the Variational Multiscale Approach** O. Colomes, G. Scovazzi, I. Sraj, O. Knio, Duke University, Durham, NC; O. Le Maître, University of Paris-Saclay, Orsay, France	1100 hrs AIAA-2018-1179 **Multilevel-Multidelity Approaches for Forward UQ in the DARPA SEQUOIA project** M. Eldred, G. Geraci, A. Gorodetsky, J. Jakeman, Sandia National Laboratories, Albuquerque, NM	1130 hrs AIAA-2018-1180 **Multifidelity Statistical Analysis of Large Eddy Simulations in Scramjet Computations** X. Huan, Sandia National Laboratories, Livermore, CA; G. Geraci, Sandia National Laboratories, Albuquerque, NM; C. Safta, Sandia National Laboratories, Livermore, CA; M. Eldred, Sandia National Laboratories, Albuquerque, NM; K. Sargsyan, Z. Vane, Sandia National Laboratories, Livermore, CA; et al.	1200 hrs AIAA-2018-1181 **Rare Event Simulation of a Rotorcraft System** B. Zhang, Y. Marzouk, Massachusetts Institute of Technology, Cambridge, MA; B. Min, United Technologies Research Center, East Hartford, CT; T. Sahai, United Technologies Research Center, Berkeley, CA	

Wednesday, 10 January 2018						
278-PC-13	**Rocket and Air-Breathing Propulsion II**					**Osceola 5**
Chaired by: J. BELLAN, Jet Propulsion Laboratory and Q. LIU						
0930 hrs AIAA-2018-1182 **Modeling Premixed Flame Response to Transverse Acoustic Modes** V. Acharya, T. Lieuwen, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2018-1183 **Exploration of Reduced-Order Models for Rocket Combustion Applications** C. Huang, J. Xu, K. Duraisamy, University of Michigan, Ann Arbor, Ann Arbor, MI; C. Merkle, Purdue University, West Lafayette, IN	1030 hrs AIAA-2018-1184 **Investigating Heat Release Dynamics in a Self-Excited Unstable Combustor Using High Fidelity Chemiluminescence Measurements and Modeling** S. Sardeshmukh, M. Bedard, A. Pons Lorente, W. Anderson, Purdue University, West Lafayette, IN	1100 hrs AIAA-2018-1185 **Measurement of Linear Growth of Self-Excited Instabilities in an Idealized Rocket Combustor** M. Orth, C. Vodney, T. Liu, W. Hallum, T. Pourpoint, W. Anderson, Purdue University, West Lafayette, IN	1130 hrs AIAA-2018-1186 **Detailed Measurement of ORSC Main Chamber Injector Dynamics in a Model Rocket Combustor** M. Bedard, Purdue University, West Lafayette, IN; B. Austin, IN Space, LLC, West Lafayette, IN; W. Anderson, Purdue University, West Lafayette, IN	1200 hrs AIAA-2018-1187 **Uncertainty Quantification of Flame Transfer Function under a Bayesian Framework** Y. Li, X. Wang, S. Mak, C. Sung, J. Wu, V. Yang, Georgia Institute of Technology, Atlanta, GA	

Wednesday, 10 January 2018						
279-PC-14	**Turbulent Combustion IV**					**Sarasota 3**
Chaired by: P. PALIES, CFD Research Corporation and R. BAURLE, NASA-Langley Research Center						
0930 hrs AIAA-2018-1188 **The Thermodynamic Regime During Mixing under High-Pressure Conditions** G. Castiglioni, California Institute of Technology, Pasadena, CA; J. Bellan, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1000 hrs AIAA-2018-1189 **Mixing in high-pressure flows: the influence of the number of species** L. Sciacovelli, California Institute of Technology, Pasadena, CA; J. Bellan, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1030 hrs AIAA-2018-1190 **The Structure and Dynamics of a Bluff-Body Stabilized Premixed Reacting Flow** C. Fugger, T. Yi, Spectral Energies, LLC, Dayton, OH; J. Sykes, Innovative Scientific Solutions, Inc., Dayton, OH; A. Caswell, B. Rankin, J. Miller, Air Force Research Laboratory, Wright-Patterson AFB, OH; et al.				

Wednesday, 10 January 2018						
280-PDL-11	**Plasma Assisted Combustion and Ignition III**					**Destin 2**
Chaired by: A. STARIKOVSKIY, Princeton University						
0930 hrs AIAA-2018-1191 **Ionization Front Initiation and Propagation by Nanosecond Discharges During Plasma Assisted Ignition** L. Massa, Virginia Polytechnic Institute and State University, Blacksburg, VA; J. Freund, University of Illinois, Urbana-Champaign, Urbana, IL	1000 hrs AIAA-2018-1192 **Inhibition of Plasma-Assisted Ignition in Hydrogen-Oxygen Mixtures by Hydrocarbons** A. Starikovskiy, Princeton University, Princeton, NJ	1030 hrs AIAA-2018-1193 **In-situ Laser Diagnostics of Pentane Oxidation and Pyrolysis in Nanosecond-pulsed Plasma Discharges** A. Rousso, X. Mao, Y. Ju, Princeton University, Princeton, NJ	1100 hrs AIAA-2018-1194 **Measurements and Kinetic Modeling of Radical Species in Diluted Fuel-Oxidizer Mixtures Excited by a Repetitive Nanosecond Pulse Discharge** C. Winters, Z. Eckert, Ohio State University, Columbus, OH; Z. Yin, German Aerospace Center (DLR), Stuttgart, Germany; K. Frederickson, I. Adamovich, Ohio State University, Columbus, OH	1130 hrs AIAA-2018-1195 **Mixing enhancement by electrical discharge in supersonic airflow** A. Firsov, E. Dolgov, R. Rakhimov, M. Shurupov, Joint Institute for High Temperatures of the Russian Academy of Sciences, Moscow, Russia; S. Leonov, University of Notre Dame, Notre Dame, IN	1200 hrs AIAA-2018-1196 **Combustion Dynamics of Microwave Enhanced Flame** A. Tropina, R. Miles, Texas A&M University, College Station, TX	

Wednesday, 10 January 2018						
281-SCS-5	**Deployable Spacecraft Apertures**					**Emerald 2**
Chaired by: J. HEALD, Canadian Space Agnecy and J. BLACK, Virginia Tech						
0930 hrs AIAA-2018-1197 **Shape Control of A CFRC Reflector with PZT and MFC Actuators** K. Wu, H. Fang, L. Lan, Y. Zhou, S. Jiang, Shanghai YS Information Technology Coporation, Shanghai, China	1000 hrs AIAA-2018-1198 **Form-Finding of Large Deployable Mesh Reflectors with Elastic Deformations of Supporting Structures** S. Yuan, B. Yang, University of Southern California, Los Angeles, CA; H. Fang, Shanghai YS Information Technology Company, Ltd., Shanghai, China	1030 hrs AIAA-2018-1199 **Athermalization of Deformable Reflector's Actuators for Radio Astronomy Satellites** R. Kashiyama, H. Sakamoto, M. Okuma, Tokyo Institute of Technology, Tokyo, Japan; H. Tanaka, National Defense Academy, Kanagawa, Japan; K. Ishimura, Japan Aerospace Exploration Agency (JAXA), Kanagawa, Japan	1100 hrs AIAA-2018-1200 **Ultralight Ladder-type Coilable Space Structures** F. Royer, S. Pellegrino, California Institute of Technology, Pasadena, CA	1130 hrs AIAA-2018-1201 **Membrane Structure Supported by Self-Deployable Truss for Space Applications** Y. Miyazaki, M. Fukunaga, D. Kousaka, Nihon University, Funabashi, Japan		

Wednesday, 10 January 2018						
282-SD-9	**Dewey70: Aeroelasticity**					**Emerald 7**
Chaired by: D. HARURSAMPATH, Indian Institute of Science and Z. SOTOUDEH, Cal Poly Pomona						
0930 hrs Oral Presentation **Experimental Aeroelastic Models: Design and Wind Tunnel Testing for Correlation with New Theory** E. Dowell, Duke University, Durham, NC	1000 hrs AIAA-2018-1202 **Propeller Effects on the Dynamic Response of HALE Aircraft** P. Teixeira, C. Cesnik, University of Michigan, Ann Arbor, Ann Arbor, MI	1030 hrs AIAA-2018-1203 **Comprehensive Aeroelastic Analysis of a Smart Composite Wing** Z. Sotoudeh, California State Polytechnic University, Pomona, CA; N. Hosking, The Aerospace Corporation, El Segundo, CA	1100 hrs AIAA-2018-1204 **A Mode Tracking Method in Aeroelastic Stability Analysis Using Left Eigenvectors** X. Hang, Q. Fei, Southeast University, Nanjing, China; W. Su, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1130 hrs AIAA-2018-1205 **Flutter Suppression For Finite Element Modeling of Damaged HALE Aircraft Wings** H. Hoseini, D. Hodges, Georgia Institute of Technology, Atlanta, GA	1200 hrs AIAA-2018-1206 **Continuum Shape Sensitivity Analysis for Aeroelastic Gust using an Arbitrary Lagrangian-Eulerian Reference Frame** R. Canfield, D. Sandler, Virginia Polytechnic Institute and State University, Blacksburg, VA	

Wednesday, 10 January 2018						
283-SD-10	**Computational Aeroelasticity I, Reduced Order Modeling**					**Emerald 8**
Chaired by: A. DATTA, University of Maryland, College Park and A. GREWAL, National Research Council Canada						
0930 hrs AIAA-2018-1207 **Towards Characterization of Relevant Fidelity Modeling of Loads for Maneuvering Hypersonic Vehicles** E. Dreyer, B. Grier, J. McNamara, Ohio State University, Columbus, OH	1000 hrs AIAA-2018-1208 **Multidisciplinary Effects on High-Speed Vehicle Performance and Stability** R. Kitson, C. Cesnik, University of Michigan, Ann Arbor, Ann Arbor, MI	1030 hrs AIAA-2018-1209 **Volterra Kernels Assessment via Time-Delay Neural Networks for Nonlinear Unsteady Aerodynamic Loading Identification** N. Paula, F. Marques, University of São Paulo, São Carlos, Brazil; W. Silva, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2018-1210 **Greedy Sampling and Incremental Surrogate Model-based Tailoring of Aeroservoelastic Model Database for Flexible Aircraft** Y. Wang, K. Pant, CFD Research Corporation, Huntsville, AL; M. Brenner, J. Ouellette, NASA Armstrong Flight Research Center, Edwards, CA	1130 hrs AIAA-2018-1211 **Nonlinear Gust Reduced Order Modeling Based On FUN3D And Volterra Theory** Z. Wang, S. Yang, P. Chen, ZONA Technology, Inc., Scottsdale, AZ	1200 hrs AIAA-2018-1212 **Fast Flutter Uncertainty Calculation Based on Arbitrary Modal Shapes and Reduced - Order Modeling** G. Huang, Y. Dai, C. Yang, S. Zhu, Beihang University, Beijing, China	

Wednesday, 10 January 2018						
284-SE-2	**Systems Engineering II**					**Naples 3**
Chaired by: M. FRENCH, Rolls-Royce Corp and J. MATLIK, Rolls-Royce Corp						
0930 hrs AIAA-2018-1213 **Developing Model-Based Systems Engineering Artifacts for Legacy Systems** A. Maheshwari, N. Davendralingam, A. Raz, D. DeLaurentis, Purdue University, West Lafayette, IN	1000 hrs AIAA-2018-1214 **Constraint-driven Design Specification for Small Unmanned Aircraft Systems** L. Petnga, Army Research Laboratory, Aberdeen Proving Ground, MD	1030 hrs AIAA-2018-1215 **Resilient Autonomous Systems: Life-Cycle Design, Metrics and Simulation-based Assessment** M. Balchanos, Georgia Institute of Technology, Atlanta, GA; A. Kashani-Pour, A. Thakker, H. Kwan, S. Vivanco, Global Technology Connection, Inc., Atlanta, GA	1100 hrs AIAA-2018-1216 **The Behavior, Constraint, and Scenario (BeCoS) Tool: A Web-Based Software Application for Modeling Behaviors and Scenarios** J. Kaderka, M. Rozek, J. Arballo, D. Wagner, M. Ingham, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1130 hrs AIAA-2018-1217 **MBSE Based Digital Thread and Digital System Model for AF DCGS** V. Sundaram, L. Brownlow, Booz Allen Hamilton, McLean, VA		

Wednesday, 10 January 2018						
285-SOF-2/IS-8/UAS-5	**Interaction of Software Assurance and Risk Assessment Based Operation of Unmanned Aircraft I**					**Tallahassee 2**
Chaired by: F. ADOLF, DLR - German Aerospace Center and C. TORENS, DLR - German Aerospace Center						
0930 hrs Oral Presentation **ALAADy - Automated Low Altitude Air DeliverY** J. Dauer, J. Dittrich, F. Adolf, C. Torens, German Aerospace Center (DLR), Braunschweig, Germany	1000 hrs Oral Presentation **An ASTM Standard for Bounding Behavior of Complex Algorithms for Unmanned Aircraft Operations** S. Cook, Northrop Grumman Corporation, Raleigh, NC	1030 hrs AIAA-2018-1218 **UAS Hazard Mitigation through Assured Compliance with Conformance Criteria** E. Dill, K. Hayhurst, S. Young, A. Narkawicz, NASA Langley Research Center, Hampton, VA	1100 hrs Oral Presentation **Verification and Validation Challenges for Adaptive Flight Control of Complex Autonomous Systems** N. Nguyen, NASA Ames Research Center, Moffett Field, CA	1130 hrs Oral Presentation **Influence Factors for a Risk Based Certification Approach to Unmanned Aircraft Systems: A Study of Operational Concepts for Urban Air Mobility (UAM)** N. Neogi, NASA Langley Research Center, Hampton, VA	1200 hrs Oral Presentation **From Formal Requirements to Highly Assured Software for UAS: The DAIDALUS/ICAROUS Story** C. Munoz, NASA Langley Research Center, Hampton, VA	

Wednesday, 10 January 2018						
286-STR-10	**Advanced Computational Models for Composite Structures I**					**Emerald 5**
Chaired by: W. YU, Purdue University and A. PAGANI, Politecnico di Torino						
0930 hrs AIAA-2018-1219 **Analyzing impact induced delamination in laminated composite materials with peridynamic modeling** W. Zhou, D. Liu, Michigan State University, East Lansing, MI	1000 hrs AIAA-2018-1220 **Exact Micromechanical Analysis of Composites with Closely Packed Fibers** E. Honein, T. Honein, H. Rai, M. Najjar, University of Balamand, Balamand, Lebanon	1030 hrs AIAA-2018-1221 **Development of a Mesoscale Finite Element Constitutive Model for Fiber Kinking** A. Bergan, NASA Langley Research Center, Hampton, VA; M. Herráez, C. González, C. Lopes, Madrid Institute of Advanced Studies (IMDEA), Madrid, Spain	1100 hrs AIAA-2018-1222 **A continuum damage description for a discrete crack modeling approach for delamination migration in composite laminates** D. Pham, J. Lua, Global Engineering and Materials, Inc., Princeton, NJ; D. Zhang, University of Connecticut, Storrs, Storrs, CT	1130 hrs AIAA-2018-1223 **Weak form of peridynamics** E. Madenci, M. Dorduncu, A. Barut, University of Arizona, Tucson, Tucson, AZ; N. Phan, Naval Air Systems Command, Patuxent River, MD		

Wednesday, 10 January 2018						
287-STR-11	**Buckling, Fatigue and Fracture of Structures**					**Emerald 6**
Chaired by: H. HILTON, University of Illinois at Urbana-Champaign and I. RAJU, NASA-Langley Research Center						
0930 hrs AIAA-2018-1224 **Thermal buckling analysis of periodically supported composite beams using Isogeometric analysis** J. Miglani, B. Devarajan, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA	1000 hrs AIAA-2018-1225 **On the Use of Classical Jacobi Orthogonal Polynomials in the Ritz Method** B. Alanbay, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA	1030 hrs AIAA-2018-1226 **Vibration fatigue of turbine blade for liquid rocket engine** Y. Li, B. Sun, J. Fang, T. Liang, Beihang University, Beijing, China	1100 hrs AIAA-2018-1227 **Comparative Study of Post-Buckling Load Redistribution in Stiffened Aircraft Panel With and Without Material Nonlinearity** E. Aydin, Turkish Aerospace Industries, Inc., Ankara, Turkey; A. Kayran, Middle East Technical University, Ankara, Turkey	1130 hrs AIAA-2018-1228 **Validation of a Discrete Damage Mechanics Methodology Using the Static and Fatigue Behavior of Carbon/Epoxy Tapered Specimens** P. Rao, M. Mordasky, M. Gurvich, United Technologies Corporation, East Hartford, CT; N. Vieira De Carvalho, B. Seshadri, National Institute of Aerospace, Hampton, VA; J. Ratcliffe, NASA Langley Research Center, Hampton, VA	1200 hrs AIAA-2018-1229 **A Dual Spring Modeling Approach for Static and Fatigue Failure Assessments of Carbon/Epoxy Composite Sub-Elements** X. Cui, X. Ren, P. Liu, J. Lua, Global Engineering and Materials, Inc., Princeton, NJ; P. Rao, M. Mordasky, United Technologies Corporation, East Hartford, CT; et al.	

Wednesday, 10 January 2018						
288-TP-7	**Nonequilibrium Flows III**					**Sarasota 2**
Chaired by: D. KUNTZ, Sandia National Laboratories and T. SCHWARTZENTRUBER, University of Minnesota						
0930 hrs AIAA-2018-1230 **Coarse Grain Model for Energy Transfer and Dissociation** R. Macdonald, M. Panesi, University of Illinois, Urbana-Champaign, Urbana, IL	1000 hrs AIAA-2018-1231 **Redistribution of Vibrational Energy : Mechanisms and Transition Probabilities** M. Grover, T. Schwartzentruber, University of Minnesota, Twin Cities, Minneapolis, MN	1030 hrs AIAA-2018-1232 **Investigating CO Dissociation by means of Coarse Grained Ab-Initio Rate Constants** S. Venturi, M. Panesi, University of Illinois, Urbana-Champaign, Urbana, IL	1100 hrs AIAA-2018-1233 **State-resolved characterization of nitric oxide formation in shock flows** D. Andrienko, I. Boyd, University of Michigan, Ann Arbor, Ann Arbor, MI	1130 hrs AIAA-2018-1234 **Prediction of Flight Measurements of High-Enthalpy Nonequilibrium Flow from a CubeSat-Class Atmospheric Probe** J. Morgan, N. Nuwal, J. Williams, Z. Putnam, D. Levin, University of Illinois, Urbana-Champaign, Urbana, IL; A. Pikus, Purdue University, West Lafayette, IN; et al.	1200 hrs AIAA-2018-1235 **Slip effects in near continuum hypersonic flow over canonical geometries** P. Bhide, N. Singh, T. Schwartzentruber, I. Nompelis, G. Candler, University of Minnesota, Twin Cities, Minneapolis, MN	

Wednesday, 10 January 2018						
289-UAS-6	**UAS Missions and Applications I**					**Tallahassee 3**
Chaired by: R. STANSBURY, Embry-Riddle Aeronautical University						
0930 hrs AIAA-2018-1236 **Generating Multi-Purpose Rendered Environments from Unmanned Aerial System Data** S. Xu, C. Lum, University of Washington, Seattle, Seattle, WA	1000 hrs AIAA-2018-1237 **Modeling Trajectory Performance of Quadrotors Under Wind Disturbances** S. Allison, H. Bai, B. Jayaraman, Oklahoma State University, Stillwater, OK	1030 hrs AIAA-2018-1238 **Increasing the Accuracy of 3-D Maps Created using a UAV-Based LIDAR** C. Carreon Limones, M. Asher, V. Ruiz, S. Bhandari, California State Polytechnic University, Pomona, Pomona, CA; R. Lauf, California State University, Long Beach, Long Beach, CA	1100 hrs AIAA-2018-1239 **MicaSense Aerial Pointing and Stabilization System: Dampening In-Flight Vibrations for Improved Agricultural Imaging** Z. Caratao, K. Gabel, A. Arun, B. Myers, University of Washington, Seattle, Seattle, WA; D. Swartzendruber, MicaSense, Seattle, WA; C. Lum, University of Washington, Seattle, Seattle, WA	1130 hrs AIAA-2018-1240 **Mission Performance Evaluation of Low-speed Small Unmanned Aerial Systems Using Virtual Range and Stereo Camera Sensors** M. Scott, K. Jerath, Washington State University, Pullman, WA		

Wednesday, 10 January 2018						
290-WE-6	**Aeroelasticity, Structural Dynamics, and Loads Prediction I**					**Osceola 6**
Chaired by: J. WHITE, Sandia National Laboratories and S. KANNER						
0930 hrs AIAA-2018-1241 **Adjoint-Based High-Fidelity Aeroelastic Optimization of Wind Turbine Blade for Load Stress Minimization** D. Mavriplis, E. Anderson, University of Wyoming, Laramie, Laramie, WY	1000 hrs AIAA-2018-1242 **Structural Performance and Power Production of Wind Turbine Systems with Bend-Twist Coupled Blades in Underrated Wind Conditions** O. Sener, A. Kayran, Middle East Technical University, Ankara, Turkey	1030 hrs AIAA-2018-1243 **Overview and Design of PitchVAWT: Vertical Axis Wind Turbine with Active Variable Pitch for Experimental and Numerical Comparison** B. LeBlanc, C. Simao Ferreira, Delft University of Technology, Delft, The Netherlands	1100 hrs AIAA-2018-1244 **Measurements of Wind Turbine Tower Shadow and Fairing Effects** C. Noyes, C. Qin, E. Loth, University of Virginia, Charlottesville, Charlottesville, VA	1130 hrs AIAA-2018-1245 **Towards Active Flow Control on a Research Scale Wind Turbine Using PID controlled Trailing Edge Flaps** S. Bartholomay, Technical University of Berlin, Berlin, Germany; G. Michos, Technological Education Institute of Piraeus, Athens, Greece; S. Perez-Becker, G. Pechlivanoglou, C. Nayeri, Technical University of Berlin, Berlin, Germany; G. Nikolaouk, Technological Education Institute of Piraeus, Athens, Greece; et al.	1200 hrs AIAA-2018-1246 **Numerical and Experimental Investigation of Trailing Edge Flap Performance on a Model Wind Turbine** D. Marten, S. Bartholomay, G. Pechlivanoglou, C. Nayeri, C. Paschereit, Technical University of Berlin, Berlin, Germany; A. Fischer, University of Stuttgart, Stuttgart, Germany; et al.	

Wednesday, 10 January 2018		
291-LUNCH-2 **1230 - 1400 hrs**	**Luncheon in Exposition Hall**	**Florida Hall CD**
Ticket is required.		

Wednesday, 10 January 2018						
292-AA-7	**Jet Noise II**					**Tampa 2**
Chaired by: P. MORRIS, Pennsylvania State University and J. LIU, Naval Research Laboratory						
1430 hrs AIAA-2018-1247 **Jet Noise Simulation using a Higher-Order Discontinuous Galerkin Method** A. Corrigan, A. Kercher, J. Liu, K. Kailasanath, Naval Research Laboratory, Washington, D.C.	1500 hrs AIAA-2018-1248 **A Coupled LES/Stochastic Modeling Approach to Jet Noise Prediction** J. Blake, A. Sescu, D. Thompson, Mississippi State University, Starkville, MS; Y. Hattori, Tohoku University, Sendai, Japan	1530 hrs AIAA-2018-1249 **Supersonic Jet Noise Prediction Using Optimized Compact Scheme with Modified Monotonicity Preserving Limiter** M. Ahn, D. Lee, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1600 hrs AIAA-2018-1250 **Quantitative Evaluation of Effect of Jet Temperature on Acoustic Waves from Supersonic Jets at Mach 2.0 by Large Eddy Simulations** H. Nakano, Tokyo University of Science, Tokyo, Japan; T. Nonomura, Tohoku University, Miyagi, Japan; A. Oyama, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; H. Mamori, Tokyo University of Science, Tokyo, Japan; N. Fukushima, Tokai University, Hiratsuka, Japan; M. Yamamoto, Tokyo University of Science, Tokyo, Japan	1630 hrs AIAA-2018-1251 **On the Connection Between Near and Far Pressure Fields of a Turbulent Jet** D. Papamoschou, University of California, Irvine, Irvine, CA	1700 hrs AIAA-2018-1252 **Noise Characteristics of a Supersonic High Aspect Ratio Rectangular Nozzle for Ideally Expanded Jet Flow** K. Viswanath, R. Johnson, A. Corrigan, K. Kailasanath, Naval Research Laboratory, Washington, D.C.; B. Malla, E. Gutmark, University of Cincinnati, Cincinnati, OH	

Wednesday, 10 January 2018						
293-AMT-4	**Pressure Sensitive Paint Workshop (Invited)**					**Osceola 3**
Chaired by: K. NAKAKITA, JAXA - Japan Aerospace Exploration Agency and C. KLEIN, DLR - German Aerospace Center and N. ROOZEBOOM, NASA Ames Research Center and H. SAKAUE, University of Notre Dame						
1430 hrs Oral Presentation **Basics of Steady-State PSP and HIstory of PSP at AEDC (Invited)** M. Sellers, Aerospace Testing Alliance, Tullahoma, TN	1500 hrs **Open Discussion**	1530 hrs Oral Presentation **Unsteady Pressure-Sensitive Paint: A Review and Recent Developments** K. Asai, Tohoku University, Sendai, Japan	1600 hrs **Open Discussion**	1630 hrs Oral Presentation **Image Sensors and Camera Systems for Pressure Sensitive Paint (PSP) and Temperature Sensitive Paint (TSP) Applications - Past, Present & Future (Invited)** G. Holst, PCO, Kelheim, Germany	1700 hrs **Open Discussion**	

Wednesday, 10 January 2018						
294-APA-30	**Special Session: 3rd High Lift Prediction Workshop (HiLiftPW-3) II**					**Miami 3**
Chaired by: J. SLOTNICK, Boeing Commercial Airplanes and D. MAVRIPLIS, University of Wyoming						
1430 hrs AIAA-2018-1253 **3rd High-Lift Workshop Summary Paper - OpenFOAM, STAR-CCM+ & LAVA simulations on Unstructured Grids** N. Ashton, University of Oxford, Oxford, United Kingdom; M. Denison, NASA Ames Research Center, Moffett Field, CA; M. Zastawny, Siemens, London, United Kingdom	1500 hrs AIAA-2018-1254 **A Comparison of RANS, URANS, and DDES for High Lift Systems from HiLiftPW-3** R. Balin, K. Jansen, University of Colorado, Boulder, Boulder, CO	1530 hrs AIAA-2018-1255 **PowerFLOW Simulations for the Third AIAA High-Lift Prediction Workshop** B. Konig, E. Fares, Exa GmbH, Stuttgart, Germany; M. Murayama, Y. Ito, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	1600 hrs AIAA-2018-1256 **HPCMP CREATE™-AV Kestrel Results for the Third High Lift Prediction Workshop** J. Erwin, R. Glasby, D. Stefanski, University of Tennessee, Knoxville, Oak Ridge, TN	1630 hrs AIAA-2018-1257 **Anisotropic Adaptive Mesh Results for the Third High Lift Prediction Workshop (HiLiftPW-3)** T. Michal, D. Kamenetskiy, J. Krakos, The Boeing Company, St. Louis, MO	1700 hrs AIAA-2018-1258 **Overview and Summary of the Third AIAA High Lift Prediction Workshop** C. Rumsey, NASA Langley Research Center, Hampton, VA; J. Slotnick, The Boeing Company, Seattle, WA; A. Sclafani, The Boeing Company, Huntington Beach, CA	

Wednesday, 10 January 2018						
295-APA-31	**Applied CFD and Numerical Correlations with Experimental Data III**					**Sun 4**
Chaired by: P. MORGAN, Ohio Aerospace Institute and S. MASSEY, NASA-Langley Research Center						
1430 hrs AIAA-2018-1259 **Investigation of the Static Longitudinal Characteristics of a Full-Scale Light Single-Engine Airplane using a Surface Vorticity Solver** S. Johnson, DARcorporation, Lawrence, KS; R. Hartfield, Research in Flight, Auburn, AL; D. van Dommelen, DARcorporation, Lawrence, KS; V. Ahuja, Research in Flight, Auburn, AL	1500 hrs AIAA-2018-1260 **Effects of riblets on the performances of a regional aircraft configuration in NLF conditions** P. Catalano, D. de Rosa, Italian Aerospace Research Center (CIRA), Capua, Italy; B. Mele, R. Tognaccini, University of Naples "Federico II", Naples, Italy; F. Moens, ONERA, Paris, France	1530 hrs AIAA-2018-1261 **Computation of Flow Field of a Wing with Gurney Flap in Ground Effect** X. Zhang, Washington University in St. Louis, St. Louis, MO; Q. Qu, Beihang University, Beijing, China; R. Agarwal, Washington University in St. Louis, St. Louis, MO	1600 hrs AIAA-2018-1262 **Comparison of Computational Predictions with Experimental Data for Supersonic Cavity Geometries** R. Graves, R. Schmit, R. Johnson, C. Tyler, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2018-1263 **Structure of a Ship Airwake at Model and Full Scale** J. Buchholz, J. Martin, A. Krebill, G. Dooley, P. Carrica, University of Iowa, Iowa City, Iowa City, IA		

Wednesday, 10 January 2018						
296-APA-32	**Propeller/Rotorcraft/Wind Turbine Aerodynamics I**					**Miami 2**
Chaired by: J. RAULEDER, Technical University of Munich and G. GATLIN, NASA Langley Research Center						
1430 hrs AIAA-2018-1264 **A Propeller Model Based on a Modern Numerical Lifting-Line Algorithm with an Iterative Semi-Free Wake Solver** Z. Montgomery, D. Hunsaker, Utah State University, Logan, UT	1500 hrs AIAA-2018-1265 **Validation of uRANS-Simulations of Contra-Rotating Open Rotor-Powered Aircraft at Take-Off Conditions** A. Stuermer, German Aerospace Center (DLR), Braunschweig, Germany	1530 hrs AIAA-2018-1266 **High-Fidelity Computational Aerodynamics of Multi-Rotor Unmanned Aerial Vehicles** P. Ventura Diaz, S. Yoon, NASA Ames Research Center, Moffett Field, CA	1600 hrs AIAA-2018-1267 **An Experimental Evaluation of Cycle-to-Cycle Variations of Dynamic Stall** T. Harms, P. Nikoueeyan, J. Naughton, University of Wyoming, Laramie, Laramie, WY	1630 hrs AIAA-2018-1268 **Preliminary Experimental Investigation of Small Scale Propellers at High Incidence Angle** M. Bronz, French Civil Aviation University, Toulouse, France; S. Karaman, Massachusetts Institute of Technology, Cambridge, MA		

Wednesday, 10 January 2018						
297-APA-33	**Weapons Aerodynamics: Missile/Projectile/Guided-Munitions, Carriage and Store Separation I**					**Sun 3**
Chaired by: C. PASILIAO, AFRL/RW and V. BHAGWANDIN, US Army Research Laboratory						
1430 hrs AIAA-2018-1269 **Influence of Bending Locations and Angles on the Aerodynamic Performance of a Bent Body Projectile** J. Paul, S. Silton, Army Research Laboratory, Aberdeen Proving Ground, MD	1500 hrs AIAA-2018-1270 **Numerical Study on Jet Interaction of Flight Vehicle with Multi-Species Jet** J. Huh, S. Lee, Inha University, Incheon, South Korea	1530 hrs AIAA-2018-1271 **Roll Derivatives of Cruciform and Triform Tailed Rockets** J. Morote, G. Liaño, J. Jimenez, National Institute of Aerospace Technology (INTA), Madrid, Spain	1600 hrs AIAA-2018-1272 **Numerical Simulation of Store Separation Trajectories for EGLIN Test Case using Overset Mesh** A. Khaware, A. Shivanandham, V. Gupta, ANSYS, Inc., Pune, India; S. Ramakrishnan, ANSYS, Inc., Lebanon, NH	1630 hrs AIAA-2018-1273 **Trajectory Simulation of a Standard Store and Generic Wing Pylon using CFD** O. Mahmood, J. Masud, Z. Toor, Air University, Islamabad, Pakistan		

Wednesday, 10 January 2018						
298-APA-34	**Airfoil/Wing/Configuration Aerodynamics III**					**Sun 6**
Chaired by: A. VOEGELE, The Aerospace Corporation and M. ZAKARIA						
1430 hrs AIAA-2018-1274 **Low-Order Prediction of Wing Wakes in the Vicinity of Tail Surfaces** P. Hosangadi, A. Gopalarathnam, North Carolina State University, Raleigh, NC	1500 hrs AIAA-2018-1275 **Computational Component Build-up for the X-57 Maxwell Distributed Electric Propulsion Aircraft** K. Deere, S. Viken, M. Carter, J. Viken, D. Cox, NASA Langley Research Center, Hampton, VA; M. Wiese, Craig Technologies, Inc., Hampton, VA; et al.	1530 hrs AIAA-2018-1276 **Aerodynamic Centers of Arbitrary Airfoils** D. Hunsaker, O. Pope, J. Hodson, J. Rosqvist, Utah State University, Logan, UT	1600 hrs AIAA-2018-1277 **Design Methodology for Aerodynamically Scaling of a General Aviation Aircraft Airfoil** M. Vahora, G. Ananda, M. Selig, University of Illinois, Urbana-Champaign, Urbana, IL	1630 hrs AIAA-2018-1278 **Geometry and Aerodynamic Performance of Parabolic Trailing-Edge Flaps** D. Hunsaker, J. Reid, B. Moorthamers, Utah State University, Logan, UT; J. Joo, Air Force Research Laboratory, Wright-Patterson AFB, OH	1700 hrs AIAA-2018-1279 **High-Fidelity Simulations of Terminal-Zone Heterogeneous Terrain Effects On Aircraft Wake Vortex Evolution** P. Kazarin, M. Kazarina, V. Golubev, Embry-Riddle Aeronautical University, Daytona Beach, FL	

Wednesday, 10 January 2018

299-APA-35/FD-36 — **Flow Control V: NASA Hump and Internal Flows** — **Captiva 2**

Chaired by: A. AHMED and B. VUKASINOVIC, Georgia Institute of Technology

1430 hrs AIAA-2018-1280 **A Numerical and Experimental Investigation of Flow Separation Control over a Wall-Mounted Hump Model** M. Koklu, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2018-1281 **Comparison of Fluidic Oscillators and Steady Jets for Separation Control on a Wall-Mounted Hump** C. Otto, P. Tewes, J. Little, University of Arizona, Tucson, Tucson, AZ; R. Woszidlo, The Boeing Company, Hazelwood, MO	1530 hrs AIAA-2018-1282 **Controlled Separation of Branched Flows** C. Peterson, B. Vukasinovic, A. Glezer, Georgia Institute of Technology, Atlanta, GA	1600 hrs AIAA-2018-1283 **Numerical Investigation of Dynamic Distortion and Flow Control in a Serpentine Diffuser** M. Lakebrink, M. Mani, The Boeing Company, St. Louis, MO			

Wednesday, 10 January 2018

300-ASC-6 — **Modeling Approaches for Adaptive Materials/Structures** — **Emerald 3**

Chaired by: T. TURNER, NASA-Langley Research Center

1430 hrs AIAA-2018-1284 **Molecular Dynamics Simulations for the Analysis of Nano-engineered Fuzzy Fiber Composites** N. Subramanian, A. Chattopadhyay, Arizona State University, Tempe, AZ	1500 hrs AIAA-2018-1285 **The Mach 5 to 3.5 Morphing Waverider Optimal Actuation Location Selection** A. Phoenix, J. Maxwell, Naval Research Laboratory, Washington, D.C.	1530 hrs AIAA-2018-1286 **Wing Camber Variation of an Autonomous Underwater Glider** A. Angilella, F. Gandhi, Rensselaer Polytechnic Institute, Troy, NY; M. Lear, Pennsylvania State University, University Park, PA	1600 hrs AIAA-2018-1287 **Wing Frame Design and Strain Tuning for Optimum Endurance of Flexible Fixed-Wing Micro Air Vehicles** H. Yu, M. Seger, A. Malik, University of Texas, Dallas, Richardson, TX			

Wednesday, 10 January 2018

301-F360-6 — **On Demand Mobility – Regulatory and Operational Issues** — **Osceola A**

1430 - 1630 hrs

Moderator: Tom Gunnarson, Regulatory Affairs Lead, Zee Aero

Panelists:

Gregory J. Bowles Vice President, Global Innovation and Policy General Aviation Manufacturers Association	**Eric Mueller** Aerospace Engineer NASA Ames Research Center	**Carl Dietrich** CTO/Co-Founder Terrafugia	**Sasha G. Rao** Chair, Intellectual Property Practice Maynard Cooper & Gale	**Wes Ryan** Unmanned Systems Certification Lead FAA

Wednesday, 10 January 2018

302-FD-37 — **Low Reynolds Number Flows II** — **Sun 5**

Chaired by: M. HEMATI, University of Minnesota

1430 hrs AIAA-2018-1288 ***Kwasu* Function: A Closed-Form Analytical Solution to the Complete Three-Dimensional Unsteady Compressible Navier-Stokes Equation** T. Amoloye, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2018-1289 **Classifying Exotic Wakes with a Flow Speed Sensor** M. Wang, M. Hemati, University of Minnesota, Twin Cities, Minneapolis, MN	1530 hrs AIAA-2018-1290 **Flapping tandem-wing aerodynamics: dragonflies in steady forward flight** N. Shumway, M. Gabryszuk, S. Laurence, University of Maryland, College Park, College Park, MD	1600 hrs AIAA-2018-1291 **Simulation of the Station-Keeping Behavior of a Prototype Biomimetic UUV Under Regular Waves in Shallow Water** R. Smith, Naval Surface Warfare Center, Panama City, FL; J. Wright, Streamline Numerics, Inc., Gainesville, FL	1630 hrs AIAA-2018-1292 **Characterization of Vorticity Transport in the Leading-Edge Vortex of a Rolling Wing using Plenoptic PIV** K. Wabick, J. Buchholz, University of Iowa, Iowa City, Iowa City, IA; K. Johnson, B. Thurow, Auburn University, Auburn, AL		

Wednesday, 10 January 2018						
303-FD-38/PDL-12	**Plasma Actuators III**					**Gainesville 2**
Chaired by: S. GORDEYEV, University of Notre Dame						
1430 hrs AIAA-2018-1293 **Induced Flow Simulation with Detailed Discharge Modeling in Dielectric-Barrier-Discharge Plasma Actuator** S. Sato, M. Takahashi, N. Ohnishi, Tohoku University, Sendai, Japan	1500 hrs AIAA-2018-1294 **Study of Surface Dielectric Barrier Discharge Plasma Actuator in supersonic flow** A. Murzionak, J. Etele, Carleton University, Ottawa, Canada; R. Pimentel, Defense Research and Development Canada, Québec, Canada	1530 hrs AIAA-2018-1295 **Simulation of DBD Plasma Actuation Compared with PIV and Pressure Measurement** W. Zhang, G. Chao, L. Wu, T. Yao, Northwestern Polytechnical University, Xi'an, China; F. Liu, L. Shijun, University of California, Irvine, Irvine, CA	1600 hrs AIAA-2018-1296 **Vortex of Duty-cycled Flow Induced by Dielectric-Barrier-Discharge Plasma in Quiescent Air** X. Ming, G. Chao, Northwestern Polytechnical University, Xi'an, China; F. Liu, L. Shijun, University of California, Irvine, Irvine, CA	1630 hrs AIAA-2018-1297 **Multi-GPU PIC-DSMC solver for modeling ion thruster plasma plume and neutralization** R. Jambunathan, D. Levin, University of Illinois, Urbana-Champaign, Urbana, IL		

Wednesday, 10 January 2018						
304-FD-39	**RANS/Hybrid/LES for High-Speed Flows**					**Miami 1**
Chaired by: K. DURAISAMY, University of Michigan, Ann Arbor						
1430 hrs AIAA-2018-1298 **Wall-Modeled Large Eddy Simulation of a Three-Dimensional Shock-Boundary Layer Interaction** N. Marco, J. Komives, Air Force Institute of Technology, Wright-Patterson AFB, OH	1500 hrs AIAA-2018-1299 **Reynolds-stress Budgets in an Impinging Shock Wave/Boundary-layer Interaction** M. Vyas, D. Yoder, NASA Glenn Research Center, Cleveland, OH; D. Gaitonde, Ohio State University, Columbus, OH	1530 hrs AIAA-2018-1300 **Investigation of Shock-Boundary Layer Interaction Around Wall-Mounted Hemisphere using DDES and ILES** D. Weston, S. Sherer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2018-1301 **High-Order Large Eddy Simulations of Swept Compression Ramp Shock/Boundary Layer Interactions using HPCMP CREATE(TM)-AV Kestrel Component COFFE** K. Holst, J. Schmisseur, University of Tennessee, Tullahoma, Tullahoma, TN; R. Glasby, J. Erwin, D. Stefanski, University of Tennessee, Knoxville, Knoxville, TN	1630 hrs AIAA-2018-1302 **Implicit Large Eddy Simulation for High-Speed Turbulent Boundary Layers** T. Houba, SurfPlasma, Inc., Gainesville, FL; A. das Gupta, S. Roy, University of Florida, Gainesville, Gainesville, FL; R. Gosse, Air Force Research Laboratory, Wright-Patterson AFB, OH		

Wednesday, 10 January 2018						
305-FD-40	**High-Order CFD Methods II**					**Sun 2**
Chaired by: W. ANDERSON, NASA Langley Research Center and S. KARMAN, Pointwise, Inc.						
1430 hrs AIAA-2018-1303 **Large Eddy Simulation of Transition Flow Using High-Order Vertex-Centered U-MUSCL Schemes Implemented in FUN3D** H. Yang, R. Harris, S. Yang, CFD Research Corporation, Huntsville, AL	1500 hrs AIAA-2018-1304 **A Fourth-Order Finite-Volume Method with Adaptive Mesh Refinement for Large-Eddy Simulation: Wall-Layer Models** S. Yin, S. Guzik, X. Gao, Colorado State University, Fort Collins, CO	1530 hrs AIAA-2018-1305 **Higher Order Cell Centered Finite Volume Schemes for Unstructured Cartesian Grids** D. Dement, S. Ruffin, Georgia Institute of Technology, Atlanta, GA	1600 hrs AIAA-2018-1306 **A Higher-Order Unstructured Finite Volume Solver for Three-Dimensional Compressible Flows** S. Hoshyari, C. Ollivier Gooch, University of British Columbia, Vancouver, Canada	1630 hrs AIAA-2018-1307 **High-Order Stabilized Finite Elements on Dynamic Meshes** W. Anderson, NASA Langley Research Center, Hampton, VA; J. Newman, University of Tennessee, Chattanooga, Chattanooga, TN		

Wednesday, 10 January 2018						
306-GNC-21/IS-9	**V&V of Adaptive Systems III**					**Naples 2**
Chaired by: T. YUCELEN and J. MUSE, AFRL/RQQA						
1430 hrs AIAA-2018-1308 **Stabilization of Fixed Gain Controlled Infinite Dimensional Systems With Actuator Dynamics by Augmentation with Direct Adaptive Control** M. Balas, Embry-Riddle Aeronautical University, Daytona Beach, FL	1500 hrs AIAA-2018-1309 **A Generalization of Fundamental Stability Limits of Model Reference Adaptive Controllers in the Presence of a Class of Nonlinear Unmodeled Dynamics** K. Dogan, B. Gruenwald, T. Yucelen, University of South Florida, Tampa, FL; J. Muse, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2018-1310 **Analytical Derivation of the Sinusoidal Input Describing Function for Adaptive Augmenting Control Algorithms** J. Angelov, Technical University of Munich, Munich, Germany; Y. Yoon, E. Johnson, Georgia Institute of Technology, Atlanta, GA; F. Holzapfel, Technical University of Munich, Munich, Germany	1600 hrs AIAA-2018-1311 **System Modeling and Control of a Heliogyro Solar Sail** A. Pimienta-Penalver, State University of New York, Amherst, NY; L. Tsai, Iowa State University, Ames, IA; J. Juang, National Cheng Kung University, Tainan, Taiwan; J. Crassidis, State University of New York, Amherst, NY	1630 hrs AIAA-2018-1312 **A Structural Condition for Model Reference Adaptive Control Systems to Enforce Partial Performance Constraints** T. Yucelen, E. Arabi, University of South Florida, Tampa, FL; S. Balakrishnan, Missouri University of Science and Technology, Rolla, MO	1700 hrs AIAA-2018-1313 **Robust Flight Control via Minimum H∞ Entropy Principle** B. Fu, S. Ferrari, Cornell University, Ithaca, NY	

Wednesday, 10 January 2018						
307-GNC-22	**Reentry Guidance and Control**					**Osceola 2**
Chaired by: K. BOLLINO, U.S. Air Force and M. MCFARLAND, Orbital ATK						
1430 hrs AIAA-2018-1314 **Simple Adaptive Re-entry Control with Actuator Assignment** E. Mooij, Delft University of Technology, Delft, The Netherlands	1500 hrs AIAA-2018-1315 **Optimal Drag-Energy Entry Guidance via Pseudospectral Convex Optimization** M. Sagliano, German Aerospace Center (DLR), Bremen, Germany; E. Mooij, Delft University of Technology, Delft, The Netherlands	1530 hrs AIAA-2018-1316 **Reachability Analysis to Design Zero-Wait Entry Guidance** A. Gonzalez-Puerta, E. Mooij, Delft University of Technology, Delft, The Netherlands; C. Yabar Valles, ESA, Noordwijk, The Netherlands	1600 hrs AIAA-2018-1317 **Uncertainty Quantification for Mars Atmospheric Entry using Polynomial Chaos and Spectral Decomposition** X. Jiang, Nanjing University of Aeronautics and Astronautics, Nanjing, China	1630 hrs AIAA-2018-1318 **Simple Adaptive Re-entry Guidance for Path-Constraint Tracking** E. Mooij, Delft University of Technology, Delft, The Netherlands	1700 hrs AIAA-2018-1319 **Minimum Radiative Heat-load Aerocapture Guidance with Attitude-Kinematics Constraints** E. Zucchelli, E. Mooij, Delft University of Technology, Delft, The Netherlands	

Wednesday, 10 January 2018						
308-GNC-23	**Missile Guidance I**					**Sanibel 3**
Chaired by: M. CRIBB, Sandia National Laboratories and A. RATNOO						
1430 hrs AIAA-2018-1320 **Minimum Drag Optimal Guidance With Final Flight Path Angle Constraint Against Re-entry Targets** P. Kumar, A. Bhattacharya, Defence Research and Development Organisation, Hyderabad, India; R. Padhi, Indian Institute of Science, Bengaluru, India	1500 hrs AIAA-2018-1321 **Impact Angle Guidance Law via Controlling Line-of-Sight Dynamics** U. Ates, ROKETSAN Missile Industries, Inc., Ankara, Turkey	1530 hrs AIAA-2018-1322 **Impact Time and Angle Control Guidance with Rendezvous Concept** J. Lee, H. Kim, Seoul National University, Seoul, South Korea	1600 hrs AIAA-2018-1323 **Design of Three-Dimensional Guidance Law for Tactical Missiles** S. Pandit, B. Panchal, S. Talole, Defence Institute of Advanced Technology, Pune, India	1630 hrs AIAA-2018-1324 **Three-Stage switched PN Guidance Law for Air-launched Dual-Seeker Interceptor with Physical Constraints** V. Hirwani, A. Ratnoo, Indian Institute of Science, Bengaluru, India	1700 hrs AIAA-2018-1325 **Field-of-View Constrained Polynomial Guidance Law for Dual-Seeker Interceptors** V. Hirwani, A. Ratnoo, Indian Institute of Science, Bengaluru, India	

Wednesday, 10 January 2018						
309-GNC-24	**Aerospace Robotics I**					**Captiva 1**
Chaired by: R. BEVILACQUA, University of Florida and M. CIARCIA						
1430 hrs AIAA-2018-1326 **Solar Torque Management for the Near Earth Asteroid Scout CubeSat Using Center of Mass Position Control** J. Orphee, NASA Marshall Space Flight Center, Huntsville, AL; B. Diedrich, B. Stiltner, Jacobs, Huntsville, AL; A. Heaton, NASA Marshall Space Flight Center, Huntsville, AL	1500 hrs AIAA-2018-1327 **Novel Method for Control Moment Gyroscope Singularity Avoidance Using Constraints** D. Elliott, M. Peck, Cornell University, Ithaca, NY; I. Nesnas, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1530 hrs AIAA-2018-1328 **Predictor-Corrector Strategy Based Energy Suboptimal Obstacle Avoidance for Landing on Small Bodies** J. Long, Y. Liu, P. Cui, A. Gao, Beijing Institute of Technology, Beijing, China	1600 hrs AIAA-2018-1329 **Disturbance Observer-based Impedance Control for a Compliance Capture of an Object in Space** A. Flores-Abad, University of Texas, El Paso, El Paso, TX; A. Crain, Carleton University, Ottawa, Canada; M. Nandayapa, Autonomous University of Ciudad Juarez, Ciudad Juarez, Mexico; M. Garcia-Teran, Technological University of Ciudad Juárez, Ciudad Juarez, Mexico; S. Ulrich, Carleton University, Ottawa, Canada			

Wednesday, 10 January 2018						
310-GNC-25	**EDL_GN&C: Entry, Descent, and Landing GN&C Technology II**					**Osceola 4**
Chaired by: J. CARSON, NASA Jet Propulsion Laboratory and C. RESTREPO, NASA/JSC						
1430 hrs AIAA-2018-1330 **Guidance, Navigation, and Control for Exploration of Titan with the Dragonfly Rotorcraft Lander** T. McGee, D. Adams, K. Hibbard, E. Turtle, R. Lorenz, Johns Hopkins University Applied Physics Laboratory, Laurel, MD; F. Amzajerdian, NASA Langley Research Center, Hampton, VA; et al.	1500 hrs AIAA-2018-1331 **Sensor Model and Filter Considerations for Terrain Relative Navigation** T. McGee, U. Shankar, Johns Hopkins University Applied Physics Laboratory, Laurel, MD	1530 hrs AIAA-2018-1332 **Robust, Terrain-Aided Landing Navigation Through Decentralized Fusion and Random Finite Sets** J. McCabe, K. DeMars, Missouri University of Science and Technology, Rolla, MO	1600 hrs AIAA-2018-1333 **Including Topographical Effects in Slant-Range Modeling** K. Ward, K. DeMars, Missouri University of Science and Technology, Rolla, MO	1630 hrs AIAA-2018-1334 **Impact of Sensor Model Fidelity and Scheduling on Navigation Performance** K. Kratzer, J. Helmuth, K. Ward, K. DeMars, Missouri University of Science and Technology, Rolla, MO		

Wednesday, 10 January 2018						
311-GNC-26	**Aircraft Guidance I**					**Naples 1**
Chaired by: M. NIESTROY, Lockheed Martin Corporation and J. STECK, Wichita State University						
1430 hrs AIAA-2018-1335 **Combined Longitudinal and Lateral/ Directional Maneuvers of a Generic F-16A Using Multiple-Time-Scale Control** D. Saha, J. Valasek, D. Famularo, M. Reza, Texas A&M University, College Station, TX	1500 hrs AIAA-2018-1336 **An Optimal-Stochastic Aircraft Defense Strategy for the Active Target Defense Scenario** I. Weintraub, E. Garcia, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Pachter, Air Force Institute of Technology, Wright-Patterson AFB, OH	1530 hrs AIAA-2018-1337 **A Reduced Element 3D Map Representation for Path Planning** J. Park, Auburn University, Auburn, AL; A. Sinclair, Air Force Research Laboratory, Kirtland AFB, NM	1600 hrs AIAA-2018-1338 **Target Interception in Cluttered Environments Using a Reduced Element Map Representation** J. Park, Auburn University, Auburn, AL; A. Sinclair, Air Force Research Laboratory, Kirtland AFB, NM	1630 hrs AIAA-2018-1339 **Minimal Altitude Loss Pullout Maneuvers** R. Bunge, Airbus, Santa Clara, CA; M. Pavone, I. Kroo, Stanford University, Stanford, CA	1700 hrs AIAA-2018-1340 **Comparing Interval Management Control Laws for Steady-State Errors and String Stability** L. Weitz, MITRE Corporation, McLean, VA; K. Swieringa, NASA Langley Research Center, Hampton, VA	

Wednesday, 10 January 2018						
312-GNC-27	**Morphing Aircraft and Rotocraft Control**					**Osceola 1**
Chaired by: A. CHAKRAVARTHY, Wichita State University and S. REED, NAVAIR/NAWCAD - Flight Control Branch						
1430 hrs AIAA-2018-1341 **Robust Higher-Order Super-Twisting Control of Aeroelastic System with Unsteady Aerodynamics** K. Lee, Catholic Kwandong University, Gangneung, South Korea; S. Singh, University of Nevada, Las Vegas, Las Vegas, NV	1500 hrs AIAA-2018-1342 **LPV Modeling and Control for Active Flutter Suppression of a Smart Airfoil** A. Alhajjar, A. Al-jiboory, Michigan State University, East Lansing, MI; S. Swei, NASA Ames Research Center, Moffett Field, CA; G. Zhu, Michigan State University, East Lansing, MI	1530 hrs AIAA-2018-1343 **Rotorcraft Guidance Laws and Flight Control Design for Automatic Tracking of Constrained Trajectories.** O. Halbe, C. Spieß, M. Hajek, Technical University of Munich, Garching, Germany	1600 hrs AIAA-2018-1344 **Control Laws with Direct Flight Path Control for Helicopters** U. Butter, C. Spieß, M. Hajek, Technical University of Munich, Munich, Germany	1630 hrs AIAA-2018-1345 **Incremental Dynamic Inversion based Velocity Tracking Controller for a Multicopter System** V. Akkinapalli, F. Holzapfel, Technical University of Munich, Munich, Germany		

Wednesday, 10 January 2018						
313-GNC-28	**Navigation and Estimation I**					**Destin 1**
Chaired by: D. CHOUKROUN, Ben Gurion University of the Negev and J. GROSS, West Virginia University						
1430 hrs AIAA-2018-1346 **Vision Augmented Localization using Vector-maps of Waterways** A. Ye, H. Baker, H. Jones, W. Whittaker, Carnegie Mellon University, Pittsburgh, PA	1500 hrs AIAA-2018-1347 **Dual Quaternion Kalman Filters for Spacecraft Relative Navigation** Y. Zivan, D. Choukroun, Ben-Gurion University of the Negev, Beer Sheva, Israel	1530 hrs AIAA-2018-1348 **Partial Aircraft State Recovery from Visual Motion in Unstructured Environments** J. Keshavan, S. Humbert, University of Colorado, Boulder, Boulder, CO	1600 hrs AIAA-2018-1349 **Estimation of air velocity for a high velocity spinning projectile using transerse accelerometers** A. Fiot, S. Changey, French-German Research Institute of Saint-Louis (ISL), Saint-Louis, France; N. Petit, Paris Institute of Technology, Paris, France	1630 hrs AIAA-2018-1350 **A Hypersonic Application of the Fully Sensor-Less Virtual Air Data Algorithm** F. Nebula, Italian Aerospace Research Center (CIRA), Capua, Italy; M. Ariola, University of Naples "Parthenope", Naples, Italy	1700 hrs AIAA-2018-1351 **Hardware-in-the-Loop Demonstration of a Virtual Redundancy Approach for Safety Assurance in the Presence of Sensor Failures** A. Bateman, M. DeVore, A. Reed, C. Wiles, Barron Associates, Inc., Charlottesville, VA; J. Elston, M. Stachura, Black Swift Technologies, Boulder, CO	

Wednesday, 10 January 2018						
314-GTE-5	**Inlets and Compressor Operability**					**Sanibel 2**
Chaired by: S. GORRELL, Brigham Young University						
1430 hrs AIAA-2018-1352 **Prevention of Compressor Stall on Rolls Royce M250 Engines C20 Series Using Trend Monitoring Analysis** J. Vega, University of San Buenaventura, Bogota, Colombia; E. Torres Garcia, O. Verdugo, Liberators University, Bogota, Colombia; L. Monico Muñoz, University of San Buenaventura, Bogota, Colombia	1500 hrs AIAA-2018-1353 **Experimental Investigations on a Bent Engine Inlet Duct Coupled with a Turbofan Engine** R. Rademakers, H. Probst, University of the German Federal Armed Forces, Neubiberg, Germany; T. Schneider, MTU Aero Engines, Munich, Germany; R. Niehuis, University of the German Federal Armed Forces, Neubiberg, Germany	1530 hrs AIAA-2018-1354 **Analysis of Distortion Transfer and Generation through a Compressor Using the Harmonic Balance Approach** D. Soderquist, S. Gorrell, Brigham Young University, Provo, UT; C. Custer, Siemens Product Lifecycle Management Software, Inc., Livonia, MI	1600 hrs AIAA-2018-1355 **Sensitivity study of the SA-DDES shielding function** E. Siggeirsson, N. Andersson, Chalmers University of Technology, Göteborg, Sweden; F. Wallin, GKN Aerospace Engine Systems, Trollhättan, Sweden	1630 hrs AIAA-2018-1356 **Analysis of Compressor Characteristics Curve on Surge Phenomena in Axial Compressors** A. Maqsood, M. Khan Tareen, National University of Sciences and Technology, Islamabad, Pakistan; O. Khan, Auburn University, Auburn, AL; L. Dala, Northumbria University, Newcastle, United Kingdom	1700 hrs AIAA-2018-1357 **Pulsed-DC Plasma Actuation for Stall Control in an Axial Fan** R. McGowan, T. Corke, E. Matlis, University of Notre Dame, Notre Dame, IN; R. Kaszeta, C. Gold, Creare, LLC, Hanover, NH	

Wednesday, 10 January 2018						
315-HSABP-8	**Experimental Analysis of Scramjet Combustors II**					**Daytona 2**
Chaired by: R. SPRINGER, The Johns Hopkins University Applied Physics Laboratory and J. CASTRO, Aerojet Rocketdyne						
1430 hrs AIAA-2018-1358 **Cavity Ignition Dependence on Pulse Detonation Impulse Parameters** D. Cuppoletti, T. Ombrello, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2018-1359 **Multi-Spectral Infrared Imaging of a Scramjet Flame Holder with Kilohertz Acquisition Rates** S. Okhovat, Innovative Scientific Solutions, Inc., Dayton, OH; T. Ombrello, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2018-1360 **Measurements of Scramjet Fueling Conditions** T. Ombrello, Air Force Research Laboratory, Wright-Patterson AFB, OH; N. Okhovat, M. Rhoby, Innovative Scientific Solutions, Inc., Dayton, OH	1600 hrs AIAA-2018-1361 **Implementation of Model-Based Iterative Reconstruction Approach to Tomographic Tunable Diode Laser Absorption Spectroscopy** K. Busa-Rice, M. Brown, Air Force Research Laboratory, Arnold AFB, TN; Z. Nadir, C. Bouman, M. Comer, Purdue University, West Lafayette, IN	1630 hrs AIAA-2018-1362 **Global Droplet Size in Liquid Jet in a High Temperature and High Pressure Cross Flow** N. Ashgriz, A. Amighi, University of Toronto, Toronto, Canada	1700 hrs AIAA-2018-1363 **Experimental Investigation of Single Jet and Dual Jet Injection in a Supersonic Combustor** Q. Liu, D. Baccarella, B. McGann, T. Lee, University of Illinois, Urbana-Champaign, Urbana, IL; H. Do, Seoul National University, Seoul, South Korea	

Wednesday, 10 January 2018						
316-IS-10	**Integrated Systems Health Management (ISHM) II**					**Tallahassee 1**
Chaired by: W. MAUL and C. KULKARNI, NASA Ames Research Center						
1430 hrs AIAA-2018-1364 **Flexible Integrated System Health Management for Sustainable Habitats** D. Haste, S. Ghoshal, K. Pattipati, Qualtech Systems, Inc., Rocky Hill, CT; C. Moore, NASA Marshall Space Flight Center, Huntsville, AL; R. Martin, NASA Ames Research Center, Moffett Field, CA; L. Zhang, Qualtech Systems, Inc., Rocky Hill, CT; et al.	1500 hrs AIAA-2018-1365 **Operation-Aware ISHM for Environmental Control and Life Support in Deep Space Habitants** S. Tang, B. Zhang, W. Yan, University of South Carolina, Columbia, Columbia, SC; A. Thakker, S. Vivanco, Global Technology Connection, Inc., Atlanta, GA; R. Martin, NASA Ames Research Center, Moffett Field, CA; et al.					

Wednesday, 10 January 2018						
317-IS-11	**Intelligent Systems in Engineering Design**					**Tallahassee 1**
Chaired by: D. SELVA, Cornell University and C. KULKARNI, NASA Ames Research Center						
1430 hrs **No Presentations**		1530 hrs AIAA-2018-1366 **Daphne: An Intelligent Assistant for Architecting Earth Observing Satellite Systems** H. Bang, A. Virós Martin, A. Prat, D. Selva, Cornell University, Ithaca, NY	1600 hrs AIAA-2018-1367 **Towards a Digital Thread-enabled Framework for the Analysis and Design of Intelligent Systems** D. Mavris, M. Balchanos, O. Pinon-Fischer, W. Sung, Georgia Institute of Technology, Atlanta, GA	1630 hrs AIAA-2018-1368 **Formal Methods for Intelligent Systems Design and Control** A. Madni, University of Southern California, Los Angeles, CA	1700 hrs AIAA-2018-1369 **Characterizing the Use of Heuristic Optimization Methods for Renewable Energy Systems Design** C. Sharp, A. Miller, V. Ferrero, M. Bentivoglio, M. Ebrahimi, B. DuPont, Oregon State University, Corvallis, OR	

Wednesday, 10 January 2018						
318-MAT-8	**Testing and Characterization**					**Sun A**
Chaired by: J. RANSOM, NASA-Langley Research Center and R. NAIK, Pratt & Whitney						
1430 hrs AIAA-2018-1370 **In Situ Observation Of Multiple Failure Modes in a Cross-Ply Laminated Composite Structure Using 3D Micro-Computed Tomography with a DVC technique** E. Jo, S. Lee, W. Ji, Ulsan National Institute of Science and Technology, Ulsan, South Korea	1500 hrs AIAA-2018-1371 **Experimental Analysis and CHAR Modeling of Ablative Carbon Phenolic Composite** M. Gist, J. Priest, S. O'Brien, B. Poteet, J. Langston, J. Koo, University of Texas, Austin, Austin, TX; et al.	1530 hrs AIAA-2018-1372 **ISO/CD 21746 standard procedures of galvanic corrosion tests for CFRP-metal assemblies** T. Morimoto, H. Katoh, E. Hara, Y. Iwahori, Japan Aerospace Exploration Agency (JAXA), Mitaka, Japan	1600 hrs AIAA-2018-1373 **Cure Monitoring of CFRP Composites using Embedded Optical Fibers** D. Drake, R. Sullivan, Mississippi State University, Mississippi State, MS; J. Spowart, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2018-1374 **Testing and analysis of pretensioned knitted interlock carbon fiber textile panels** D. Singer, University of Michigan, Ann Arbor, Ann Arbor, MI; A. Waas, University of Washington, Seattle, Seattle, WA	1700 hrs AIAA-2018-1375 **Method for Conducting in situ High Temperature DIC with Simultaneous Synchrotron Measurements under Thermomechanical Load** L. Rossmann, B. Sarley, J. Hernandez, University of Central Florida, Orlando, FL; P. Kenesei, J. Almer, Argonne National Laboratory, Chicago, IL; J. Wischek, German Aerospace Center (DLR), Cologne, Germany; et al.	

Wednesday, 10 January 2018						
319-MAT-9	**Advanced or Hybrid Composites for Lightweight Structures**					**Sun 1**
Chaired by: R. FERTIG, University of Wyoming and J. MATLIK, Rolls-Royce Corp						
1430 hrs AIAA-2018-1376 **Fabrication of a Composite Tow-Steered Structure for Air-Launch Vehicle Applications** R. Grenoble, T. Nguyen, M. McKenney, A. Przekop, P. Juarez, E. Gregory, NASA Langley Research Center, Hampton, VA; et al.	1500 hrs AIAA-2018-1377 **Optimization of Cylinders with Holes under Bending using Nonconventional Laminates** M. Albazzan, R. Harik, B. Tatting, Z. Gurdal, University of South Carolina, Columbia, Columbia, SC; A. Blom-Schieber, M. Rassaian, The Boeing Company, Seattle, WA; et al.	1530 hrs AIAA-2018-1378 **Effect of Functionalization on Mechanical Properties of Hybrid Carbon Fiber Reinforced Polymer (HCFRP) Composites Using Piezopectroscopy** S. Jahan, M. Abdelgader, E. Barker, J. Hernandez, R. Hoover, H. Pan, University of Central Florida, Orlando, FL; et al.	1600 hrs AIAA-2018-1379 **Effect of Templating Graphitization of Functionalized SWNTs on Mechanical Properties of Hot-drawn Carbon Nanofibers** J. Cai, M. Naraghi, Texas A&M University, College Station, TX	1630 hrs AIAA-2018-1380 **Simulating the Response of a Multi-Directional Composite Material Using the Enhanced Binary Model** A. Gokce, S. Flores, J. Buck, ATA Engineering, Inc., San Diego, CA; P. Follansbee, S. Violette, Fiber Materials, Inc., Biddeford, ME; J. Radjavitch, Energy Materials Testing Laboratory, Biddeford, ME		

Wednesday, 10 January 2018						
320-MDO-7	**Emerging Trends in MAO**					**Emerald 1**
Chaired by: H. KIM, University of California, San Diego and M. BHATIA, Mississippi State University						
1430 hrs AIAA-2018-1381 **Efficient Large-Scale Thermoelastic Topology Optimization of CAD Geometry with Automated Adaptive Mesh Generation** T. Chin, G. Kennedy, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2018-1382 **Design and Trajectory Optimization of a Morphing Wing Aircraft** J. Jasa, University of Michigan, Ann Arbor, Ann Arbor, MI; J. Hwang, NASA Glenn Research Center, Cleveland, OH; J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1530 hrs AIAA-2018-1383 **A data-based approach for fast airfoil analysis and optimization** J. Li, M. Bouhlel, J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1600 hrs AIAA-2018-1384 **Large-scale multidisciplinary optimization of an electric aircraft for on-demand mobility** J. Hwang, NASA Glenn Research Center, Cleveland, OH; A. Ning, Brigham Young University, Provo, UT	1630 hrs AIAA-2018-1385 **Multiscale Design Considering Microstructure Connectivity** Z. Du, H. Kim, University of California, San Diego, San Diego, CA		

Wednesday, 10 January 2018						
321-MDO-8	**Shape and Topology Optimization**					**Emerald 4**
Chaired by: J. DEATON, Adjoint Technologies and B. STANFORD, NASA Langley Research Center						
1430 hrs AIAA-2018-1386 **Optimal Design of a Hexakis Icosahedron Vacuum Based Lighter than Air Vehicle** J. Schwemmer, Self, Fort Walton Beach, FL; A. Palazotto, J. Chrissis, Air Force Institute of Technology, Wright-Patterson AFB, OH	1500 hrs AIAA-2018-1387 **Level-set based cellular division method for structural shape and topology optimization** H. Li, R. Grandhi, Wright State University, Dayton, OH; M. Kobayashi, University of Hawaii, Manoa, Honolulu, HI	1530 hrs AIAA-2018-1388 **Original Pylon Architecture Design Using 3D HPC Topology Optimization** S. Coniglio, Airbus, Toulouse, France; J. Morlier, Higher Institute of Aeronautics and Space, Toulouse, France; C. Gogu, University of Toulouse, Toulouse, France; R. Amargier, Airbus, Toulouse, France	1600 hrs AIAA-2018-1389 **A Continuous Adjoint Framework for Shape and Topology Optimization and their Synergistic Use** E. Papoutsis-Kiachagias, J. Koch, K. Gkaragounis, K. Giannakoglou, National Technical University of Athens, Athens, Greece	1630 hrs AIAA-2018-1390 **Topology Optimisation of Multi-Element Wingtip Devices** E. Bontoft, V. Toropov, Queen Mary University of London, London, United Kingdom		

Wednesday, 10 January 2018						
322-MST-11	**Modeling and Simulation for Spacecraft**					**Sun D**
Chaired by: C. REYNERSON and A. ELMILIGUI, NASA Langley Research Center						
1430 hrs AIAA-2018-1391 **CubeSat Attitude Control Simulator Design** D. Thomas, A. Wolosik, J. Black, Virginia Polytechnic Institute and State University, Blacksburg, VA	1500 hrs AIAA-2018-1392 **Space Object Trajectory Simulation Validation and Computational Efficiency Analysis for Adaptive Algorithm Execution** C. Reynerson, Raytheon Company, Aurora, CO	1530 hrs AIAA-2018-1393 **Precise Orbit Determination Using Duty Cycled GPS Observations** S. Lantto, J. Gross, West Virginia University, Morgantown, WV	1600 hrs AIAA-2018-1394 **Tuning of Spacecraft Attitude Control System with Active Wheel Nutation Damping Using Simulated Annealing Algorithm** K. Turkoglu, P. Chadalavada, San Jose State University, San Jose, CA			

Wednesday, 10 January 2018						
323-MST-12	**Simulation Scenario Development**					**Sanibel 1**
Chaired by: U. DURAK, DLR-German Aerospace Center and S. JAFER, Embry-Riddle Aeronautical University						
1430 hrs AIAA-2018-1395 **Towards a Standardization for Simulation Scenario Development in Aviation - Panel Discussion** U. Durak, German Aerospace Center (DLR), Braunschweig, Germany; S. Jafer, Embry-Riddle Aeronautical University, Daytona Beach, FL; S. Beard, S. Reardon, J. Murphy, NASA Ames Research Center, Moffett Field, CA; D. Crider, National Transportation Safety Board, Washington, D.C.; et al.	1500 hrs AIAA-2018-1396 **Scenario Specification Challenges for Next Generation Aviation Technology Demonstrations** M. Moallemi, S. Jafer, B. Chhaya, Embry-Riddle Aeronautical University, Daytona Beach, FL	1530 hrs AIAA-2018-1397 **Simulating the Unexpected: Challenge-Centric Simulator Scenario Design for Advanced Flight Crew Training** D. Niedermeier, J. Buch, German Aerospace Center (DLR), Braunschweig, Germany; F. Mohrmann, Netherlands Aerospace Centre (NLR), Amsterdam, The Netherlands; U. Durak, German Aerospace Center (DLR), Braunschweig, Germany	1600 hrs AIAA-2018-1398 **Computational Representation for a Simulation Scenario Definition Language** U. Durak, German Aerospace Center (DLR), Braunschweig, Germany; S. Jafer, Embry-Riddle Aeronautical University, Daytona Beach, FL; R. Wittman, S. Mittal, MITRE Corporation, McLean, VA; S. Hartmann, Clausthal University of Technology, Clausthal-Zellerfeld, Germany; B. Zeigler, Arizona State University, Tuscon, AZ	1630 hrs AIAA-2018-1399 **Enhancing Scenario-Centric Air Traffic Control Training** B. Chhaya, S. Jafer, W. Coyne, Embry-Riddle Aeronautical University, Daytona Beach, FL; N. Thigpen, Federal Aviation Administration, Oklahoma City, OK; U. Durak, German Aerospace Center (DLR), Braunschweig, Germany		

Wednesday, 10 January 2018						
324-MVC-5	**Geometry and Higher-Order Meshing Techniques**					**Tampa 1**
Chaired by: C. WOEBER, Pointwise, Inc. and J. DANNENHOFFER, Syracuse University						
1430 hrs AIAA-2018-1400 **Design of a modular monolithic implicit solver for multi-physics applications** C. Carton de Wiart, NASA Ames Research Center, Moffett Field, CA; L. Diosady, A. Garai, N. Burgess, Science and Technology Corporation, Mountain View, CA; P. Blonigan, D. Ekelschot, NASA Ames Research Center, Moffett Field, CA; et al.	1500 hrs AIAA-2018-1401 **EGADSlite: A Lightweight Geometry Kernel for HPC** R. Haimes, Massachusetts Institute of Technology, Cambridge, MA; J. Dannenhoffer, Syracuse University, Syracuse, NY	1530 hrs AIAA-2018-1402 **A review of common geometry issues affecting mesh generation** M. Gammon, International TechneGroup, Inc., Cambridge, United Kingdom	1600 hrs AIAA-2018-1403 **High-order curvilinear hybrid mesh generation for CFD simulations** J. Peiro, S. Sherwin, J. Marcon, M. Turner, Imperial College London, London, United Kingdom; D. Moxey, University of Exeter, Exeter, United Kingdom; M. Gammon, International TechneGroup, Inc., Cambridge, United Kingdom; et al.	1630 hrs AIAA-2018-1404 **Parametric Domain Representation of Multi-Block Structured Meshes for Strong-Shock Flow Simulations** R. Gosse, Air Force Research Laboratory, Wright-Patterson AFB, OH; C. Mackintosh, Carnegie Mellon University, Pittsburgh, PA; K. Vogiatzis, C. Williams, Engility Corporation, Dayton, OH	1700 hrs AIAA-2018-1405 **Automatic Partitioning of Structured Overset Grids for Use with High-Order Algorithms** S. Sherer, D. Garmann, Air Force Research Laboratory, Wright-Patterson AFB, OH	

Wednesday, 10 January 2018						
325-NDA-6	**Uncertainty Quantification and Management I**					**Sun C**
Chaired by: G. BARTRAM, Universal Technology Corporation						
1430 hrs AIAA-2018-1406 **Improving SIR with Constrained Resampling for Dynamic Bayesian Network Applications** I. Asher, Y. Ling, L. Wang, General Electric Company, Niskayuna, NY	1500 hrs AIAA-2018-1407 **A Novel Bayesian Entropy Network for Probabilistic Damage Detection and Classification** Y. Wang, Y. Liu, Arizona State University, Tempe, AZ	1530 hrs AIAA-2018-1408 **Adaptive Higher Order Integration Method and its Applications in Uncertainty Quantification** M. Fister, M. Thapa, S. Mulani, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1600 hrs AIAA-2018-1409 **Quantification of Time Distribution to Initial Long Crack by Reduced Order Modeling and Sequential Monte Carlo Simulations on Microstructurally Short Fatigue Crack Growth Model** H. Yuan, W. Zhang, University of Connecticut, Storrs, Storrs, CT; Y. Liu, Arizona State University, Tempe, AZ	1630 hrs AIAA-2018-1410 **A Stochastic Projection-Based Hyperreduced Order Model for Model-Form Uncertainties in Vibration Analysis** C. Farhat, A. Bos, R. Tezaur, P. Avery, Stanford University, Stanford, CA; C. Soize, University of Paris-Est, Marne-la-Vella, France		

Wednesday, 10 January 2018						
326-PC-15	**Advanced Combustion Concepts II**					**Tampa 3**
Chaired by: S. VASU, University of Central Florida and L. SMITH, United Technologies Research Center						
1430 hrs AIAA-2018-1411 **Experimental Observations of a Small-Scale Pressure Wave Supercharger Coupled to a Compression Ignition Engine** J. Reinhart, Innovative Scientific Solutions, Inc., Dayton, OH; B. Beasley, Air Force Institute of Technology, Wright-Patterson AFB, OH; J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; M. McClearn, F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2018-1412 **The effects of ozonolysis activated autoignition on non-premixed jet flames** X. Gao, B. Wu, W. Sun, Georgia Institute of Technology, Atlanta, GA; T. Ombrello, C. Carter, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2018-1413 **Soot Suppression in Laminar Jet Diffusion Flames by Shear** D. Ram, V. Ramanan, V. Malhotra, H. Srivatsav, SRM University, Chennai, India	1600 hrs AIAA-2018-1414 **Exhaust Soot Investigation in a JP Combustor Working at Various Wall Temperature Considerations** G. Schneider, University of Waterloo, Waterloo, Canada; M. Ghafourizadeh, M. Darbandi, M. Saidi, Sharif University of Technology, Tehran, Iran	1630 hrs AIAA-2018-1415 **A Study on High Performance Hybrid Rocket Engine with Multi-Section Swirl Injection Method for Space Propulsion System** S. Aso, Y. Tani, Kyushu University, Fukuoka, Japan		

Wednesday, 10 January 2018						
327-PC-16/PGC-5	**Blast Wave and Detonative Pressure Gain Combustion Physics**					**Daytona 1**
Chaired by: J. AUSTIN, California Institute of Technology and A. KNISELY, Innovative Scientific Solutions, Inc.						
1430 hrs AIAA-2018-1416 **Turbulent Detonation Transition in a Linearized Rotating Detonation Engine** J. Chambers, K. Ahmed, University of Central Florida, Orlando, FL; C. Stevens, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2018-1417 **Computational Fluid Dynamic Modeling of Baffled Tube Ram Accelerator Experiments** C. Knowlen, N. Daneshvaran, J. Dumas, T. Byrd, University of Washington, Seattle, Seattle, WA	1530 hrs AIAA-2018-1418 **Analysis of Efficiency of Passive Blast Attenuators for Reactive Gas Mixtures** V. Gamezo, Naval Research Laboratory, Washington, D.C.; E. Oran, University of Maryland, College Park, College Park, MD	1600 hrs AIAA-2018-1419 **The Propagation Characteristics of a Detonation Wave in a Supersonic Mach 5 Flow** J. Sosa, K. Ahmed, D. Rosato, University of Central Florida, Orlando, FL	1630 hrs AIAA-2018-1420 **Detonation Wave Propagation in Discretely Spaced Hydrocarbon Cross-Flow** J. Burr, K. Yu, University of Maryland, College Park, College Park, MD		

Wednesday, 10 January 2018						
328-PC-17	**Spray and Droplet Combustion II**					**Osceola 6**
Chaired by: Y. HARDALUPAS, Imperial College London and R. LUCHT, Purdue University						
1430 hrs AIAA-2018-1421 **Lean Blowoff Scaling of Swirling, Bluff-Body Stabilized Spray Flames** P. Allison, Michigan State University, East Lansing, MI; J. Sidey, E. Mastorakos, University of Cambridge, Cambridge, United Kingdom	1500 hrs AIAA-2018-1422 **Ignition of Conventional and Alternative Fuel at Low Temperatures in a Single-Cup Swirl-Stabilized Combustor** T. Hendershott, S. Stouffer, J. Monfort, University of Dayton, Dayton, OH; J. Diemer, Innovative Scientific Solutions, Inc., Dayton, OH; K. Busby, Universal Technology Corporation, Dayton, OH; E. Corporan, Air Force Research Laboratory, Wright-Patterson AFB, OH; et al.	1530 hrs AIAA-2018-1423 **High Repetition-Rate Thermometry in a Piloted Spray Burner using Femtosecond Chirped-Probe-Pulse Coherent Anti-Stokes Raman Scattering** L. Thomas, Purdue University, West Lafayette, IN; A. Lowe, University of Sydney, Sydney, Australia; A. Satija, Purdue University, West Lafayette, IN; A. Masri, University of Sydney, Sydney, Australia; R. Lucht, Purdue University, West Lafayette, IN	1600 hrs AIAA-2018-1424 **Characterization of Highly-Confined, Low-Swirl, Non-Premixed Oxygen-Methane Injectors** L. Humphreys, D. Scarborough, Auburn University, Auburn, AL; T. Dawson, Georgia Institute of Technology, Atlanta, GA	1630 hrs AIAA-2018-1425 **Numerical simulation of transcritical injection** X. Li, M. Soteriou, United Technologies Corporation, East Hartford, CT		

Wednesday, 10 January 2018						
329-PC-18	**Turbulent Combustion V**					**Gainesville 1**
Chaired by: V. SANKARAN, US Air Force/AFRL/RQRC and A. CASWELL, USAF AFRL/RQTC						
1430 hrs AIAA-2018-1426 **Investigation of turbulence effects on chemical pathways for *n*-dodecane** D. Dasgupta, W. Sun, Georgia Institute of Technology, Atlanta, GA; M. Day, Lawrence Berkeley National Laboratory, Berkeley, CA; A. Aspden, Newcastle University, Newcastle, United Kingdom; T. Lieuwen, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2018-1427 **Comparison of Finite-Rate Chemistry and Flamelet/Progress-Variable Models II: Sandia Flame E** S. Yang, X. Wang, V. Yang, W. Sun, Georgia Institute of Technology, Atlanta, GA	1530 hrs AIAA-2018-1428 **Towards Accurate Temperature and Species Mass Fraction Predictions for Sandia Flame-D using Detailed Chemistry and Adaptive Mesh Refinement** S. Liu, Convergent Science, Inc., Madison, WI; G. Kumar, Convergent Science, Inc., New Braunfels, TX; M. Wang, Convergent Science, Inc., Madison, WI; E. Pomraning, Convergent Science, Inc., New Braunfels, TX				

Wednesday, 10 January 2018						
330-PDL-13	**Laser Enabled Plasma Interactions for Aerodynamics and Combustion**					**Destin 2**
Chaired by: R. MILES, Princeton University						
1430 hrs AIAA-2018-1429 **Electric Field Measurements in Nanosecond Pulse Discharges in Air over Solid and Liquid Dielectric Surfaces** M. Simeni Simeni, Ohio State University, Columbus, OH; E. Baratte, École Centrale Paris, Paris, France; C. Zhang, Chinese Academy of Sciences, Beijing, China; K. Frederickson, I. Adamovich, Ohio State University, Columbus, OH	1500 hrs AIAA-2018-1430 **Separation Control on an Airfoil Using Repetitive Laser Pulses** M. Takahashi, N. Ohnishi, Tohoku University, Sendai, Japan	1530 hrs AIAA-2018-1431 **On the use of REMPI Pre-ionization for Laser Ignition** C. Dumitrache, C. Butte, A. Eickelberg, A. Yalin, Colorado State University, Fort Collins, CO	1600 hrs Oral Presentation **Propagation velocty and internal structure of atmospheric laser discharge in various gas species** K. Matsui, J. Ofosu, K. Komurasaki, H. Koizumi, University of Tokyo, Tokyo, Japan	1630 hrs AIAA-2018-1432 **Electric Field Measurements in Nanosecond Pulsed Discharges Using a Femtosecond Laser** B. Goldberg, A. Dogariu, R. Miles, Princeton University, Princeton, NJ	1700 hrs AIAA-2018-1433 **Effect of Off-Body Laser Discharge on Drag Reduction of Hemisphere Cylinder in Supersonic Flow-Part II** N. Kianvashrad, D. Knight, Rutgers University, New Brunswick, NJ; S. Wilkinson, A. Chou, G. Beeler, M. Jangda, NASA Langley Research Center, Hampton, VA	

Wednesday, 10 January 2018						
331-SCS-6	**Solar Sail Design and Analysis**					**Emerald 2**
Chaired by: S. PELLEGRINO, California Institute of Technology and G. GRESCHIK, TentGuild Engineering Co						
1430 hrs AIAA-2018-1434 **Linear Structural Dynamics and Modal Cost Analysis for a Solar Sail** S. Hassanpour, C. Damaren, University of Toronto, Toronto, Canada	1500 hrs AIAA-2018-1435 **Modeling of Composite Booms' Deployment Dynamics under Microgravity Based on Ground Tests** T. Amamoto, H. Sakamoto, H. Furuya, Tokyo Institute of Technology, Yokohama, Japan; N. Okuizumi, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; A. Watanabe, N. Kawabata, Sakase Adtech, Sakai, Japan	1530 hrs AIAA-2018-1436 **Verification of Numerical Deployment Analysis for Membrane Structures Using Micro-gravity Experiment** B. Hohmann, University of Stuttgart, Stuttgart, Germany; H. Sakamoto, H. Furuya, Tokyo Institute of Technology, Tokyo, Japan; N. Okuizumi, Japan Aerospace Exploration Agency (JAXA), Kanagawa, Japan	1600 hrs AIAA-2018-1437 **An Advanced Composites-Based Solar Sail System for Interplanetary Small Satellite Missions** J. Fernandez, G. Rose, O. Stohlman, C. Younger, G. Dean, J. Warren, NASA Langley Research Center, Hampton, VA; et al.	1630 hrs AIAA-2018-1438 **Similarity Rule of Deployment Behavior for Spin Deployment Membrane** T. Suzuki, Y. Miyazaki, M. Yamazaki, Nihon University, Funabashi, Japan	1700 hrs AIAA-2018-1439 **Folding Approaches for Tensioned Precision Planar Shell Structures** N. Pehrson, Brigham Young University, Provo, UT; J. Banik, Air Force Research Laboratory, Kirtland AFB, NM	

Wednesday, 10 January 2018						
332-SD-11	**Dynamic Loads, Response, and Stability of Aerospace Vehicles**					**Emerald 7**
Chaired by: B. WILLIS, Jacobs Technology and V. BABUSKA, Sandia National Laboratories						
1430 hrs AIAA-2018-1440 **Aeroelastic System Identification and Flutter Prediction** D. Raveh, M. Argaman, Technion–Israel Institute of Technology, Haifa, Israel	1500 hrs AIAA-2018-1441 **Model Updating for Structural Dynamics of Flexible Wings with Surrogate Approach** Y. Huang, University of Alabama, Tuscaloosa, Tuscaloosa, AL; W. McDowell, SURVICE Engineering Company, Fort Walton Beach, FL; W. Su, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1530 hrs AIAA-2018-1442 **Design of a wing tip device for active maneuver and gust load alleviation** F. Fonte, F. Toffol, S. Ricci, Technical University of Milan, Milan, Italy	1600 hrs AIAA-2018-1443 **Dynamic Aeroelasticity of a Trapezoidal Wing Using Enhanced Piston Theory** D. Aravinth, P. Shinde, A. Misra, Defence Institute of Advanced Technology, Pune, India; M. M.Sucheendran, Indian Institute of Technology Hyderabad, Hyderabad, India; H. F.Ganji, Amirkabir University of Technology , Tehran, Iran	1630 hrs AIAA-2018-1444 **Dynamic High Temperature and Pressure Characterization of an Inconel Honeycomb Impact Attenuator** J. Sly, E. Maghsoudi, M. Pauken, P. Aubuchon, J. Dunkle, J. Koch, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; et al.	1700 hrs AIAA-2018-1445 **Sizing and performance analysis of albatross-inspired tilt-wing unmanned air vehicle** G. Sanchez, R. Salazar, M. Hassanalian, A. Abdelkefi, New Mexico State University, Las Cruces, NM	

Wednesday, 10 January 2018						
333-SD-12	**Computational Aeroelasticity II**					**Emerald 8**
Chaired by: J. MCNAMARA, The Ohio State University and R. MALLA, University of Connecticut						
1430 hrs AIAA-2018-1446 **A Fixed Point Iteration Approach for Harmonic Balance Based Aeroelastic Computations** J. Thomas, E. Dowell, Duke University, Durham, NC	1500 hrs AIAA-2018-1447 **Nonlinear Computational Aeroelasticity Using Structural Modal Coordinates** R. Medeiros, C. Cesnik, University of Michigan, Ann Arbor, Ann Arbor, MI; E. Coetzee, Airbus, Filton, United Kingdom	1530 hrs AIAA-2018-1448 **Rapid Modeling of Aeroelastic Loads in the Presence of Shock Impingements** K. Brouwer, J. McNamara, Ohio State University, Columbus, OH	1600 hrs AIAA-2018-1449 **Nonlinear Static Aeroelastic Behavior of Composite Missile Fin with Interlaminar and Intralaminar Damage** Ö. Özkaya, ROKETSAN Missile Industries, Inc., Ankara, Turkey; A. Kayran, Middle East Technical University, Ankara, Turkey			

Wednesday, 10 January 2018						
334-SFM-14	**Space Trajectory Design and Optimization III**					**Sarasota 1**
Chaired by: R. WILSON, Jet Propulsion Laboratory						
1430 hrs AIAA-2018-1450 **Julia Language Ephemeris and Physical Constants Reader for Solar System Bodies** K. Martin, J. Mihaylov, R. Spear, Embry-Riddle Aeronautical University, Prescott, AZ; D. Landau, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1500 hrs AIAA-2018-1451 **Application of Modern Fortran to Spacecraft Trajectory Design and Optimization** J. Williams, NASA Johnson Space Center, Houston, TX; R. Falck, NASA Glenn Research Center, Cleveland, OH; I. Beekman, ParaTools, Inc., Baltimore, MD	1530 hrs AIAA-2018-1452 **Parallel Monotonic Basin Hopping for Low Thrust Trajectory Optimization** S. McCarty, L. Burke, M. McGuire, NASA Glenn Research Center, Cleveland, OH	1600 hrs AIAA-2018-1453 **Efficiency Improvement of Trajectory Design by Elucidating the Mechanical Structure of Swing-By in Multi-Body Dynamics System** Y. Kayama, University of Tokyo, Kashiwa, Japan; Y. Kawakatsu, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan			

Wednesday, 10 January 2018						
335-SFM-15/GNC-29	**Spacecraft GN&C I**					**Naples 3**
Chaired by: C. D'SOUZA, NASA-Johnson Space Center						
1430 hrs AIAA-2018-1454 **Halo Orbit Station-keeping using Nonlinear MPC and Polynomial Optimization** G. Misra, H. Peng, X. Bai, Rutgers University, Piscataway, NJ	1500 hrs AIAA-2018-1455 **High-Order Orbital Guidance Using State-Transition Tensors** J. McMahon, University of Colorado, Boulder, Boulder, CO	1530 hrs AIAA-2018-1456 **Variable-Time-Domain Neighboring Optimal Guidance and Attitude Control for Low-Thrust Orbit Transfers** M. Pontani, F. Celani, University of Rome "La Sapienza", Rome, Italy	1600 hrs AIAA-2018-1457 **Adaptive Control for Powered Descent Vehicles** J. Green, R. Lindberg, University of Virginia, Charlottesville, Charlottesville, VA	1630 hrs AIAA-2018-1458 **Atmospheric Entry Guidance Based on Differential Algebra for High Elevation Mars Landing** P. Lunghi, Technical University of Milan, Milan, Italy; R. Armellin, University of Surrey, Guildford, United Kingdom; P. Di Lizia, Technical University of Milan, Milan, Italy; K. Mease, University of California, Irvine, Irvine, CA; M. Lavagna, Technical University of Milan, Milan, Italy		

Wednesday, 10 January 2018						
336-SOF-3/IS-12/UAS-7	**Interaction of Software Assurance and Risk Assessment Based Operation of Unmanned Aircraft II (Invited)**					**Tallahassee 2**
Chaired by: F. ADOLF, DLR - German Aerospace Center and C. TORENS, DLR - German Aerospace Center						
1430 hrs AIAA-2018-1459 **Open System Architectures for Unmanned Avionics Systems** J. Tokar, Pyrrhus Software, LLC, Phoenix, AZ	1500 hrs Oral Presentation **Modeling Ground Collision Severity of Small Unmanned Aircraft Systems** J. Breunig, MITRE Corporation, McLean, VA	1530 hrs **Open Discussion**				

Wednesday, 10 January 2018						
337-ICC-2/SEN-4	**Enabling Collaboration with Autonomous Elements**					**Tallahassee 2**
Chaired by: T. FREY, Lockheed Martin Aeronautics and M. SOTAK						
1430 hrs **No Presentations**				1630 hrs AIAA-2018-1460 **Path-planning with collision avoidance for operating multiple Unmanned Aerial Vehicles in same airspace** J. Lee, H. Shin, D. Shim, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1700 hrs AIAA-2018-1461 **Autonomous Landing of an Unmanned Aerial Vehicle on a Moving Ship** A. Robaglia, S. Libine, K. Gamagedara, George Washington University, Washington, VA	

Wednesday, 10 January 2018						
338-STR-12	**Advanced Computational Models for Composite Structures II**					**Emerald 5**
Chaired by: S. WANTHAL, Boeing Research & Technology and M. SENSEMEIER, Embry-Riddle University						
1430 hrs AIAA-2018-1462 **Coupling of peridynamics with finite elements without an overlap zone** E. Madenci, A. Barut, M. Dorduncu, University of Arizona, Tucson, Tucson, AZ; N. Phan, Naval Air Systems Command, Patuxent River, MD	1500 hrs AIAA-2018-1463 **ANSYS implementation of peridynamics for deformation of orthotropic materials** E. Madenci, C. Diyaroglu, University of Arizona, Tucson, Tucson, AZ; N. Phan, Naval Air Systems Command, Patuxent River, MD	1530 hrs AIAA-2018-1464 **Isogeometric analysis using peridynamics and XFEM** E. Madenci, University of Arizona, Tucson, Tucson, AZ; A. Kefal, Sabanci University, Istanbul, Turkey; M. Dorduncu, A. Barut, University of Arizona, Tucson, Tucson, AZ; M. Yildiz, Sabanci University, Istanbul, Turkey	1600 hrs AIAA-2018-1465 **Modeling of Lighning Strike Effects in the Fiber-Reinforced Polymer Matrix Composites** O. Zhupanska, University of Arizona, Tucson, Tucson, AZ; Y. Wang, University of Florida, Shalimar, Shalimar, FL	1630 hrs AIAA-2018-1466 **Continuum Damage Mechanics Models for the Analysis of Progressive Damage in Cross-Ply and Quasi-Isotropic Panels Subjected to Static Indentation** K. Song, Analytical Mechanics Associates, Inc., Hampton, VA; F. Leone, C. Rose, NASA Langley Research Center, Hampton, VA	1700 hrs AIAA-2018-1467 **A 3D progressive damage model for fatigue analysis of woven fabric composites** D. Pham, J. Lua, Global Engineering and Materials, Inc., Princeton, NJ	

Wednesday, 10 January 2018						
339-STR-13	**Special Session: In Honor of Dr. Ivatury S. Raju, NASA Langley Research Center I**					**Emerald 6**
Chaired by: D. PHILLIPS, NASA-Marshall Space Flight Center and S. ENGELSTAD, Lockheed Martin Aeronautics						
1430 hrs AIAA-2018-1468 **Combining Progressive Nodal Release with the Virtual Crack Closure Technique to Model Fatigue Delamination Growth Without Re-meshing** N. Vieira De Carvalho, National Institute of Aerospace, Hampton, VA	1500 hrs AIAA-2018-1469 **Aero-Elastic/Viscoelastic Sensitivity Analyses of Piezoelectric Energy Harvesting Part I: Linear Elastic Results** D. Guan, Yangzhou University, Yangzhou, China; Y. Saito, H. Hilton, University of Illinois, Urbana-Champaign, Urbana, IL	1530 hrs AIAA-2018-1470 **Fatigue of a Shaft with a Surface Flaw Subject to Cyclic Torsion Loads** V. Goyal, B. Higuera, D. Friedman, The Aerospace Corporation, El Segundo, CA	1600 hrs AIAA-2018-1471 **Stress-Intensity Factor Equations for Very Deep Corner Cracks at a Circular Hole in a Plate** J. Newman, Mississippi State University, Mississippi State, MS	1630 hrs AIAA-2018-1472 **Complex Potential Stress Field Models for Damage Evaluation in Composites** S. Russell, Self, Dallas, TX	1700 hrs AIAA-2018-1473 **Use of Shuttle Heritage Hardware in Space Launch System (SLS) Application-Structural Assessment** P. Aggarwal, NASA Marshall Space Flight Center, Huntsville, AL	

Wednesday, 10 January 2018						
340-TES-1	**Terrestrial Energy Systems–Fuel Power Technologies**					**Sun B**
Chaired by: A. GUPTA, University of Maryland and B. KHANDELWAL, The University of Sheffield						
1430 hrs AIAA-2018-1474 **The Effect of the Fuel Change from Petroleum Kerosene to HEFA Alternative Jet Fuel on the Emission of a Concentric Lean-Burn Burner for Gas Turbine** K. Okai, H. Fujiwara, S. Yoshida, T. Yamamoto, K. Shimodaira, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan	1500 hrs AIAA-2018-1475 **Reactant Composition Effects on Autothermal Methane Reforming in a Fluidized Bed** K. Burra, J. González, G. Bains, A. Gupta, University of Maryland, College Park, College Park, MD	1530 hrs AIAA-2018-1476 **Design and Experimental Demonastration of a High Pressure Oxy-Methane Combustor** A. Chowdhury, J. Cruz, J. Aboud, A. Rios, A. Choudhuri, N. Love, University of Texas, El Paso, El Paso, TX; et al.	1600 hrs AIAA-2018-1477 **Experimental Analysis of Heat Transfer in Stationary and Rotating Internal Cooling Channels** M. Saravani, S. Beyhaghi, R. Amano, University of Wisconsin, Milwaukee, Glendale, WI	1630 hrs AIAA-2018-1478 **On the Effects of Oxygen-Enrichment on Flame Liftoff, Stabilization, and Blowout in Ethylene Flames** R. Kumar, University of Illinois, Chicago, Chicago, IL; V. Katta, Innovative Scientific Solutions, Inc., Dayton, OH; S. Aggarwal, University of Illinois, Chicago, Chicago, IL		

Wednesday, 10 January 2018						
341-TP-8	**Thermal Protection Systems/Ablation II**					**Sarasota 3**
Chaired by: A. MARTIN, University of Kentucky and M. WINTER, University of Kentucky						
1430 hrs AIAA-2018-1479 **Remote Recession Measurements of Wire-Seeded PICA Samples in an Arc-Jet Flow** M. Winter, University of Kentucky, Lexington, Lexington, KY; B. Butler, P. Danehy, S. Spinter, NASA Langley Research Center, Hampton, VA; M. Stackpoole, NASA Ames Research Center, Moffett Field, CA	1500 hrs AIAA-2018-1480 **A Reliability Comparison of Classical and Stochastic Thickness Margin Approaches for the Orion Heat Shield Resulting From Material Property Uncertainties** S. Sepka, Analytical Mechanics Associates, Inc., Moffett Field, CA; M. McGuire, J. Vander Kam, NASA Ames Research Center, Moffett Field, CA	1530 hrs AIAA-2018-1481 **Defining the Critical Depth of Impact Damage for Thermal Protection Systems** N. Skolnik, Z. Putnam, University of Illinois, Urbana-Champaign, Urbana, IL	1600 hrs AIAA-2018-1482 **Steady-State Experimental Evaluation of Pyrolysis Gas and Plasma Reactions** N. Martin, L. Hantsche, R. Herrmann-Stanzel, J. Meyers, D. Fletcher, University of Vermont, Burlington, Burlington, VT	1630 hrs AIAA-2018-1483 **Operational Characteristics of Ablation Sensor Unit (ASU)** T. Sakai, K. Iwamoto, T. Nakamura, Tottori University, Tottori, Japan; Y. Dantsuka, Nagoya University, Nagoya, Japan; Y. Ishida, T. Suzuki, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan; et al.		

Wednesday, 10 January 2018						
342-TP-9	**Noncontinuum and High-Speed Flows**					**Sarasota 2**
Chaired by: K. STEPHANI, University of Illinois at Urbana-Champaign						
1430 hrs AIAA-2018-1484 **Computation of State to State Collision Parameters for Non-Equilibrium Flow Solvers** S. Subramaniam, K. Stephani, University of Illinois, Urbana-Champaign, Urbana, IL	1500 hrs AIAA-2018-1485 **A Hybrid DSMC-discontinuous Galerkin finite element method for rarefied gas flows** D. Kessler, A. Corrigan, T. Holman, Naval Research Laboratory, Washington, D.C.	1530 hrs AIAA-2018-1486 **From continuum to collisionless: jet loads on a planar plate** C. Cai, K. Zhang, Michigan Technological University, Houghton, MI	1600 hrs AIAA-2018-1487 **State-to-State Dissociation and Recombination Modeling in DSMC using Quasi-classical Trajectory Calculations for O + O2** T. Wilson, K. Stephani, University of Illinois, Urbana-Champaign, Urbana, IL			

Wednesday, 10 January 2018						
343-UAS-8	**UAS Missions and Applications II**					**Tallahassee 3**
Chaired by: M. ANDERSON						
1430 hrs AIAA-2018-1488 **Real-time fire segmentation via Active Contours for UAV integrated wildfire propagation prediction** F. De Vivo, M. Battipede, P. Gili, Technical University of Turin, Turin, Italy; A. Yezzi, E. Feron, Georgia Institute of Technology, Atlanta, GA; E. Johnson, Pennsylvania State University, University Park, PA	1500 hrs AIAA-2018-1489 **UAV Swarms for Migration Flow Monitoring and Search and Rescue Mission Support** S. Skinner, S. Urdahl, T. Harrington, M. Balchanos, E. Garcia, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1530 hrs AIAA-2018-1490 **Cooperative Search and Rescue using Autonomous Unmanned Aerial Vehicles** T. Sherman, J. Tellez, T. Cady, J. Herrera, H. Haideri, California State Polytechnic University, Pomona, CA; J. Lopez, Citrus College, Glendora, CA; et al.	1600 hrs AIAA-2018-1491 **Prescribed Fire Monitoring Using KHawk Unmanned Aircraft Systems** S. Gowravaram, H. Flanagan, P. Tian, H. Chao, University of Kansas, Lawrence, Lawrence, KS	1630 hrs AIAA-2018-1492 **Modeling, Simulation and Flight Testing to Support Proof of a Stratospheric Dual Aircraft Platform Concept** C. Nshuti, H. Moncayo, W. Engblom, D. Festa, Embry-Riddle Aeronautical University, Daytona Beach, FL		

Wednesday, 10 January 2018

344-WE-7 — **Blade Aerodynamics and Aeroacoustics II** — **Osceola 5**

Chaired by: Y. SUN, Envision Energy USA and B. ENNIS, Sandia National Laboratories

1430 hrs
AIAA-2018-1493
Simulating Ice Throw for Wind Turbine Certification
M. Lennie, D. Marten, S. Dominin, C. Paschereit, G. Pechlivanoglou, Technical University of Berlin, Berlin, Germany

1500 hrs
AIAA-2018-1494
Performance Analysis of Different Positions of Leading Edge Tubercles on a Wind Turbine Blade
G. Abate, D. Mavris, Georgia Institute of Technology, Atlanta, GA

1530 hrs
AIAA-2018-1495
Investigation of the MEXICO rotor aerodynamics in axial flow, including boundary layer transition effects
C. Lienard, R. Boisard, ONERA, Meudon, France

1600 hrs
AIAA-2018-1496
A Parametric CFD Study for the Effect of Taper/Twist Stacking Point Location on the Torque of NREL VI Wind Turbine Rotor Blade
M. Kaya, M. Elfarra, F. Kadioglu, Ankara Yildirim Beyazit University, Ankara, Turkey

1630 hrs
AIAA-2018-1497
Numerical Study of Transitional Unsteady Boundary Layer on Wind Turbine Airfoil Using Hybrid RANS/LES Turbulence Model
D. Zhang, D. Cadel, E. Paterson, K. Lowe, Virginia Polytechnic Institute and State University, Blacksburg, VA

Wednesday, 10 January 2018

345-RL-4
1500 - 1630 hrs
Rising Leaders: Propelling Your Aerospace Career to New Horizons
Osceola B

Moderator: Ali K. Raz, Purdue University

Panelists:

Michael Gazarik
Engineering
Ball Aerospace

Jenn Gustetic
Small Business Innovation Research
NASA

Anant Grewal
NRC Aerospace

Wednesday, 10 January 2018

346-NW-9
1530 - 1600 hrs
Wednesday Afternoon Coffee Break
Florida Hall CD

Wednesday, 10 January 2018

347-LEC-4
1730 - 1930 hrs
From Race Cars to Flying Machines: Celebrating 80 Years of Liebeck
Osceola A

This special session will celebrate the 80th birthday of Bob Liebeck, renowned aerodynamicist, professor and aerospace engineer. Guest speakers will highlight Bob's tremendous contributions to aerospace and education, and will provide a glimpse of the fun he has had along the way.

Wednesday, 10 January 2018

348-AFM-11
1800 - 2100 hrs
Handling Qualities of Unmanned Aerial Systems
Emerald 2

Panelists:

1800 hrs
Handling Qualities Database Generation with a Fixed-Wing sUAS
David Klyde
Systems Technology, Inc.

1820 hrs
X-48B/C Flight Test Experience and Handling Qualities Assessment
Ken Rossitto
Boeing Research and Technology

1840 hrs
Towards UAS Flying Qualities Requirements
Marcos Berrios
U.S. Army Aviation Development Directorate

1900 hrs
Performance, Dynamics, and Handling Qualities Flight Testing for Small UAVs
Mujahid Abdulrahim
AeroVironment

1920 hrs
Quadcopter System Identification
Sung Hyeok Cho
California State Polytechnic University, Pomona

1940 hrs
UAV Tail Sitter Flight *Measurements for System Identification*
Mark Snyder, Heurobotics and **Borja Martos**, Embry-Riddle Aeronautical University

2000 hrs
Physics-Based Flight-Mechanics Predictions for Multi-Copters
Farhan Gandhi
Rensselaer Polytechnic Institute

2020 hrs
Piecewise System Identification of a Mars Helicopter
Carlos Malpica
NASA Ames Research Center

Wednesday, 10 January 2018

349-FD-41
1800 - 2100 hrs
Transition Open Forum
Sanibel 3

Wednesday, 10 January 2018						
350-MVC-6	**Meshing Techniques**					**Daytona 1**
Chaired by: N. WYMAN, Pointwise, Inc. and R. DAVIS, University of California Davis						
1800 hrs AIAA-2018-1498 **New CFD capabilities based on intersecting arbitrary polyhedral meshes: P1-conservative interpolations and overset CFD applications** S. Landier, S. Peron, T. Renaud, ONERA, Châtillon, France	1830 hrs AIAA-2018-1499 **Contributions Towards the NASA 2030 Vision for Simulation** W. Dawes, Cambridge University, Cambridge, United Kingdom; W. Kellar, J. Verdicchio, T. Racz, N. Meah, A. Kudryavtsev, Cambridge Flow Solutions, Ltd., Cambridge, United Kingdom; et al.	1900 hrs AIAA-2018-1500 **Automatic Method for Multiblock Structured Grid Generation** M. Ferrari, Embraer, São José dos Campos, Brazil	1930 hrs AIAA-2018-1501 **Robust metric aligned quad-dominant meshing using Lp centroidal Voronoi tessellation** D. Ekelschot, M. Ceze, A. Garai, S. Murman, NASA Ames Research Center, Moffett Field, CA	2000 hrs AIAA-2018-1502 **Effects of Meshing, Solver Parameters and Post-processing on Aero-optical Image Quality Metric Modeling** K. Vogiatzis, Thirty Meter Telescope (TMT) International Observatory, Pasadena, CA	2030 hrs AIAA-2018-1503 **Seven keys for practical understanding and use of CGNS** M. Poinot, Safran Group, Magny les Hameaux, France; C. Rumsey, NASA Langley Research Center, Hampton, VA	

Wednesday, 10 January 2018						
351-SATS-1	**Small Satellites I**					**Emerald 3**
Chaired by: J. STRAUB, North Dakota State University						
1800 hrs AIAA-2018-1504 **Characterization and Analysis of Anomalous Diffusion Modes in a 600 W Permanent Magnet Hall Thruster** S. Wright, C. Hartsfield, Air Force Institute of Technology, Wright-Patterson AFB, OH	1830 hrs AIAA-2018-1505 **Plant Satellite Project** M. Lehmitz, University of Wyoming, Laramie, Laramie, WY	1900 hrs AIAA-2018-1506 **Dynamic Control of a Novel Magnetorheological Fluid Damper for a Small Spacecraft with Flexible Appendages** R. Waelchli, D. Seo, D. Kim, Embry-Riddle Aeronautical University, Daytona Beach, FL	1930 hrs AIAA-2018-1507 **Testbed Validation of Spacecraft Safe Mode for a Deep Space CubeSat** M. Sorgenfrei, J. Fusco, NASA Ames Research Center, Moffett Field, CA			

Wednesday, 10 January 2018		
352-SD-13 **1800 - 1900 hrs**	**SDM Lecture**	**Sun A**
Timothy Bunning Chief Scientist Air Force Research Laboratory		

Wednesday, 10 January 2018		
353-SE-3/DEI-1 **1800 - 1900 hrs**	**Digital Engineering – Elements and Context**	**Naples 3**
Moderator: Mat French, Rolls-Royce Corporation Panelists:		

Chuck Ward	**Brench Boden**	**Pam Kobryn**	**Eric Tuegel**	**Ed Kraft**
Air Force Research Laboratory	Digital Manufacturing & Design Innovation Institute	Air Force Research Laboratory	Air Force Research Laboratory	University of Tennessee Space Institute

Wednesday, 10 January 2018		
354-TES-2 **1800 - 2100 hrs**	**Recent Advances in Alternative Fuels Combustion**	**Emerald 4**
An overview of alternative fuels and combustion		

Thursday

Thursday, 11 January 2018

355-SB-4 0730 - 0800 hrs	Thursday Morning Speakers' Briefing	Session Rooms

Thursday, 11 January 2018

356-PLNRY-4 0800 - 0900 hrs	Welcome to the Holodeck	Osceola CD

Keynote Speaker: Elizabeth Baron, Virtual Reality & Advanced Visualization Technology Specialist, Ford Motor Company

Thursday, 11 January 2018

357-NW-10 0900 - 0930 hrs	Thursday Morning Coffee Break	Florida Hall CD

Thursday, 11 January 2018

358-WKSHOP-1 0900 - 1300 hrs	Cybersecurity Workshop	St. George #114

Speakers:

Kevin Finisterre
Security Researcher
Department 13

Margee Herring
Senior Engineer, Cybersecurity
Lockheed Martin Aeronautics

Mark Psiaki
Professor & Kevin Crofton Faculty Chair,
Kevin Crofton Department of Aerospace & Ocean Engineering
Virginia Polytechnic Institute and State University

Brett Schmuki
Mission Systems & Software Senior Manager
Lockheed Martin Aeronautics

Join subject matter experts to learn about cyber threats to connected, autonomous, electric air vehicles being developed for urban, on-demand mobility applications. Collaborate in real time to develop threat mitigation strategies for critical vulnerabilities.

Thursday, 11 January 2018

359-AMT-5	Progress in Measurement Diagnostics in Detonation Environments (Invited)	Osceola 2

Chaired by: J. WAGNER, Sandia National Laboratories and M. GAMBA, University of Michigan

0930 hrs Oral Presentation **Measurement Challenges to Determine Operability and Pressure Gain in Rotating Detonation Engines** C. Brophy, R. Wright, Naval Postgraduate School, Monterey, CA	1000 hrs Oral Presentation **Optical Measurements for Exploring Pressure-Gain Combustion (Invited)** J. Gord, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs Oral Presentation **Characterization of Combustion Wave and Exit Flow in a Rotating Detonation Engine with a Multi-Point Ion Probe and High Speed Sampling Probe** D. Ferguson, National Energy Technology Laboratory, Morgantown, WV; A. Roy, West Virginia University, Morgantown, WV; T. Sidwell, P. Strakey, National Energy Technology Laboratory, Morgantown, WV	1100 hrs Oral Presentation **Advancements in Optical Fragmentation Diagnostics for Explosive Munition** D. Guildenbecher, P. Reu, T. Miller, D. Turner, K. Lynch, Sandia National Laboratories, Albuquerque, NM	1130 hrs Oral Presentation **Hybrid fs/ps CARS and laser-based characterization of post-detonation regions** J. Michael, C. Dedic, A. LoCurto, Iowa State University, Ames, IA; T. Meyer, Purdue University, West Lafayette, IN; T. Sippel, Iowa State University, Ames, IA	1200 hrs Oral Presentation **Using Barium Nitrate Doping to Measure Early Time Afterburn Temperatures in Detonating Explosives (Invited)** C. Rumchik, Air Force Research Laboratory, Eglin AFB, FL; W. Lewis, University of Dayton, Dayton, OH	

Thursday, 11 January 2018

360-APA-12/EDU-1 0930 - 1130 hrs	Aerodynamics Education Panel	Gainesville 2

Leaders from academia and industry discuss aerodynamics curricula and instruction in how to best educate and prepare modern engineers.

Panelists:

Rolf Radespiel
Professor
Technical University of Braunschweig

Mark Maughmer
Professor
Pennsylvania State University

Dave Darmofal
Professor
Massachusetts Institute of Technology

Nigel Taylor
Capability Leader – Aerodynamic Tools and Methods
MBDA UK

Abdollah Khodadoust
The Boeing Company

Thursday, 11 January 2018						
361-APA-36	**Special Session: CREATE-AV HPC Multiphysics Applications of Full-Up Air Vehicles IV**					**Sun D**
Chaired by: N. HARIHARAN, CREATE-AV and R. NICHOLS, The University of Alabama at Birmingham						
0930 hrs AIAA-2018-1508 **Applications of the SPACE Platform for Internal Reacting Flow Simulations** M. Harvazinski, Air Force Research Laboratory, Edwards AFB, CA; C. Lietz, Sierra Lobo, Inc., Edwards AFB, CA; Z. Jozefik, ERC, Inc., Edwards AFB, CA; C. Umphrey, Sierra Lobo, Inc., Edwards AFB, CA; A. Edoh, N. Mundis, ERC, Inc., Edwards AFB, CA; et al.	1000 hrs AIAA-2018-1509 **HPCMP CREATE™-SH *Osprey*: Extension of CREATE™-AV *Kestrel* for Incompressible Ships Applications** K. Delaney, M. Jemison, J. Gorski, Naval Surface Warfare Center, West Bethesda, MD	1030 hrs AIAA-2018-1510 **Mixing Plane Simulation of a High-Performance Fan Using Kestrel** M. Unrau, S. Gorrell, Brigham Young University, Provo, UT	1100 hrs AIAA-2018-1511 **Verification of Turbulence Models Available in CREATE™-AV HELIOS v8** S. Tran, V. Lakshminarayan, Science and Technology Corporation, Moffett Field, CA; J. Sitaraman, Parallel Geometric Algorithms, LLC, Sunnyvale, CA; A. Wissink, Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA	1130 hrs AIAA-2018-1512 **CFD Validation and Flow Control of RAE-M2129 S-Duct Using CREATE-AV Kestrel Simulation Tools** P. Aref, M. Ghoreyshi, A. Jirasek, M. Satchell, U.S. Air Force Academy, Colorado Springs, CO		

Thursday, 11 January 2018						
362-APA-37	**Transonic and Supersonic Aerodynamics I**					**Gainesville 1**
Chaired by: J. AZEVEDO and J. FARNSWORTH, University of Colorado Boulder						
0930 hrs AIAA-2018-1513 **Normal Shock Wave-Turbulent Boundary Layer Interactions in Transonic Intakes at Incidence** A. Coschignano, H. Babinsky, University of Cambridge, Cambridge, United Kingdom	1000 hrs AIAA-2018-1514 **Effects of the Presence of Control Fins on the Flow Around Cylindrical Protuberances in Supersonic Crossflow** E. Stephen, S. O'Connell, W. Bertrand, T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO	1030 hrs AIAA-2018-1515 **Investigation of Reshaping Pin Protuberance for Missile Flight Control in Supersonic Flow** E. Stephen, D. Broadbent, B. Matherne, T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO	1100 hrs AIAA-2018-1516 **The Impact of Surface Roughness Geometry on Aero-Engine Intakes at Incidence** C. Coles, H. Babinsky, University of Cambridge, Cambridge, United Kingdom			

Thursday, 11 January 2018						
363-APA-38	**Aerodynamic Results from Ground Tests or Flight Tests**					**Sun 2**
Chaired by: K. CASPER, Sandia National Laboratories and N. RAJMOHAN, Aerion Technologies Inc.						
0930 hrs AIAA-2018-1517 **Shadow UAV Wind Tunnel Testing using an Additively Manufactured Model** Z. Hall, M. McDaniel, A. Owens, C. Waddle, C. Dobbins, Army Aviation and Missile Research Development and Engineering Center, Redstone Arsenal, AL; R. Whitmore, Materials Sciences Corporation, Horsham, PA; et al.	1000 hrs AIAA-2018-1518 **Wind Induced Loads on Elevated Shutters of an Open Observatory Dome** T. Siefers, T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO	1030 hrs AIAA-2018-1519 **Aircraft Geometry Effects on a Distributed Flush Airdata System** R. Laurence, G. Dunbar, J. Farnsworth, B. Argrow, University of Colorado, Boulder, Boulder, CO	1100 hrs AIAA-2018-1520 **Venting to Reduce Wind-Induced Loads on an Open Observatory Dome** T. Siefers, J. Warren, R. Robb, T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO			

Thursday, 11 January 2018						
364-APA-39	**Weapons Aerodynamics: Missile/Projectile/Guided-Munitions, Carriage and Store Separation II**					**Tampa 1**
Chaired by: J. DOYLE, US Army AMRDEC and K. GERZINA, Orbital ATK Organization						
0930 hrs AIAA-2018-1521 **Multi-disciplinary Simulations of Stores in Weapon Bays using Scale Adaptive Simulation** G. Loupy, G. Barakos, University of Glasgow, Glasgow, United Kingdom; N. Taylor, MBDA, Filton, United Kingdom	1000 hrs AIAA-2018-1522 **Comparative Analysis of Weapon Release Trajectory Using Numerical and Experimental Techniques** Z. Toor, T. Khan, Air University, Islamabad, Pakistan; O. Khan, Auburn University, Auburn, AL; J. Masud, Air University, Islamabad, Pakistan	1030 hrs AIAA-2018-1523 **Aerodynamic characterization of an axisymmetric body with fins at supersonic speeds** D. Dawson, R. Kumar, Florida State University, Tallahassee, FL; L. Parker, S. Kirby, T. Birch, Defence Science and Technology Laboratory, Portsdown West, United Kingdom; R. Taylor, Air Force Research Laboratory, Eglin AFB, FL	1100 hrs AIAA-2018-1524 **Experimental and Numerical Analysis of Fin Effectiveness on an Axisymmetric Configuration** D. Dawson, R. Kumar, Florida State University, Tallahassee, FL; S. Kirby, T. Birch, Defence Science and Technology Laboratory, Portsdown West, United Kingdom; R. Taylor, Air Force Research Laboratory, Eglin AFB, FL	1130 hrs AIAA-2018-1525 **Experimental Investigation on Muzzle Blast Affected by Air-Guiding Grooves on Bullets** J. Kim, Gwangju Institute of Science and Technology, Gwangju, South Korea; H. Kim, Duretek Company, Ltd., Daejeon, South Korea; S. Jee, Gwangju Institute of Science and Technology, Gwangju, South Korea		

Thursday, 11 January 2018						
365-APA-41	**Propeller/Rotorcraft/Wind Turbine Aerodynamics II**					**Miami 3**
Chaired by: L. ZIENTARSKI, Air Force Research Laboratory						
0930 hrs AIAA-2018-1526 **Aerodynamic Characterization of a Quad-Rotor Helicopter** A. Pandey, M. Sutkowy, M. McCrink, J. Gregory, Ohio State University, Columbus, OH	1000 hrs AIAA-2018-1527 **Computational Analysis of Isolated and Embedded Ducted Rotors in Edgewise Flight** M. Misiorowski, F. Gandhi, A. Oberai, Rensselaer Polytechnic Institute, Troy, NY	1030 hrs AIAA-2018-1528 **Performance Prediction of Multirotor Vehicles Using A Higher Order Potential Flow Method** D. Barcelos, A. Kolaei, G. Bramesfeld, Ryerson University, Toronto, Canada				

Thursday, 11 January 2018						
366-APA-42/FD-42	**Flow Control VI: Shocked Flows**					**Captiva 2**
Chaired by: H. BABINSKY, University of Cambridge and J. LITTLE, The University of Arizona						
0930 hrs AIAA-2018-1529 **Tetrahedral-Mesh Simulations of Shock-Turbulence Interaction** B. Venkatachari, National Institute of Aerospace, Hampton, VA; C. Chang, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2018-1530 **LES Study on Structure Characteristics of Shock/Vortex Ring Interaction** X. Dong, Nanjing University of Science and Technology, Nanjing, China; Y. Yan, Alcorn State University, Lorman, MS; Y. Dong, Y. Yang, C. Liu, University of Texas, Arlington, Arlington, TX	1030 hrs AIAA-2018-1531 **Effect of pulsed periodic energy deposition on mixing of supersonic flow interaction with oblique shock** F. Liu, H. Yan, Northwestern Polytechnical University, Xi'an, China; A. Zheltovodov, Russian Academy of Sciences, Novosibirsk, Russia	1100 hrs AIAA-2018-1532 **An Experimental Study of Corner Flow Control Applied to an Oblique Shock-Wave/Boundary-Layer Interaction** X. Xiang, H. Babinsky, University of Cambridge, Cambridge, United Kingdom			

Thursday, 11 January 2018						
367-EXPL-1	**Emerging Technologies for Mars and Other Planetary Exploration**					**Tampa 2**
Chaired by: S. CHINTALAPATI, Florida Institute of Technology and S. SHARMA, NASA Ames Research Center						
0930 hrs AIAA-2018-1533 **Aerodynamic performance analysis of fixed wing space drones in different solar system bodies** M. Hassanalian, D. Rice, A. Abdelkefi, New Mexico State University, Las Cruces, NM	1000 hrs AIAA-2018-1534 **A Novel Sensing Tether for Rovers** E. Templeton, D. Kominsky, Luna Innovations, Inc., Roanoke, VA; T. Brown, I. Nesnas, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1030 hrs AIAA-2018-1535 **Never-EVER Land - A Titan Flyer Concept** Z. Thai, S. Coles, J. Jacob, B. Duncan, C. Dancer, A. Hudson, Oklahoma State University, Stillwater, OK; et al.	1100 hrs AIAA-2018-1536 **A Summary of Recent NASA's Electric Sail Propulsion System Investigations** B. Wiegmann, A. Heaton, NASA Marshall Space Flight Center, Huntsville, AL	1130 hrs AIAA-2018-1537 **Water Electrolysis for Propulsion of a Crewed Mars Mission** K. Doyle, M. Peck, Cornell University, Ithaca, NY	1200 hrs AIAA-2018-1538 **Constellation Design for Mars Navigation using Small Satellites** P. Kelly, R. Bevilacqua, University of Florida, Gainesville, Gainesville, FL	

Thursday, 11 January 2018		
368-F360-7 **0930 - 1130 hrs**	**Digital Natives Leading the Digital Transformation in Design and Knowledge Environments**	**Osceola A**

Moderator: David E. Bowles, Director, NASA Langley Research Center

Panelists:

Michael Bergin
Principal Research Scientist
Autodesk

Rachel Narciso
Immersive Technology Specialist
Ball Aerospace

Adam Clark
Aerodynamics Engineer, Enabling Technology & Research
Boeing Commercial Aircraft

Thomas Convard
Technical Product Manager, Unreal Engine Enterprise
Epic Games

Rodney Martin
Deputy Data Sciences Group Lead
NASA Ames Research Center

Thursday, 11 January 2018						
369-FD-43	**Fluid-Membrane Interaction**					**Sun 6**
Chaired by: K. BERGERON, US Army NSRDEC and J. RABINOVITCH, Jet Propulsion Laboratory						
0930 hrs AIAA-2018-1539 **Model Verification and Validation Assessment for a Simulation of Supersonic Parachute Inflation during Martian Entry** L. Peterson, A. Derkevorkian, J. Rabinovitch, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; C. Farhat, P. Avery, Stanford University, Stanford, CA	1000 hrs AIAA-2018-1540 **Simulation of Parachute Inflation Dynamics Using an Eulerian Computational Framework for Fluid-Structure Interfaces Evolving in High-Speed Turbulent Flows** Z. Huang, P. Avery, C. Farhat, Stanford University, Stanford, CA; J. Rabinovitch, A. Derkevorkian, L. Peterson, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1030 hrs AIAA-2018-1541 **Evaluation of an Advanced Suite of Numerical Codes for Structural Simulation of Parachute Fabric** A. Derkevorkian, J. Rabinovitch, L. Peterson, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; P. Avery, C. Farhat, Stanford University, Stanford, CA	1100 hrs AIAA-2018-1542 **Preliminary Verification and Validation Test Suite for the CFD Component of Supersonic Parachute Deployment FSI Simulations** J. Rabinovitch, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; Z. Huang, P. Avery, C. Farhat, Stanford University, Stanford, CA; A. Derkevorkian, L. Peterson, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1130 hrs AIAA-2018-1543 **An Integrated High-fidelity Approach for Modeling Flow-structure Interaction in Biological Propulsion and its Strong Validation** G. Liu, B. Geng, X. Zheng, Q. Xue, University of Maine, Old Town, Old Town, ME; J. Wang, H. Dong, University of Virginia, Charlottesville, Charlottesville, VA	1200 hrs AIAA-2018-1544 **Reduced-order Modeling for Fluid-Structure Interaction of Membrane Wings at Low and Moderate Reynolds Numbers** M. Nardini, S. Illingworth, R. Sandberg, University of Melbourne, Melbourne, Australia	

Thursday, 11 January 2018						
370-FD-44	**Multiphase Flows I: Experiments**					**Sun 4**
Chaired by: D. RAGNI, Delft University of Technology						
0930 hrs AIAA-2018-1545 **Simulation-Driven Experiments of Macroscale Explosive Dispersal of Particles** K. Hughes, University of Florida, Gainesville, Gainesville, FL; A. Diggs, Air Force Research Laboratory, Eglin AFB, FL; C. Park, University of Florida, Gainesville, Gainesville, FL; D. Littrell, Air Force Research Laboratory, Eglin AFB, FL; R. Haftka, N. Kim, University of Florida, Gainesville, Gainesville, FL; et al.	1000 hrs AIAA-2018-1546 **Evolution of Convective Structure and Heat Transfer in Transient, Evaporating Films** J. Hermanson, J. Gonzales, University of Washington, Seattle, Seattle, WA; J. Allen, Michigan Technological University, Houghton, MI	1030 hrs AIAA-2018-1547 **Derivations of Averaged Two-Phase Flow Properties Using X-Ray Fluorescence Measurements** K. Lin, Taitech, Inc., Beavercreek, OH; A. Kastengren, Argonne National Laboratory, Chicago, IL; B. Bornhoft, C. Carter, Air Force Research Laboratory, Wright-Patterson AFB, OH				

Thursday, 11 January 2018						
371-FD-45	**Stability and Transition IV: Subsonic Boundary Layers**					**Sun 4**
Chaired by: H. FASEL, University of Arizona and M. KUESTER, Virginia Tech						
0930 hrs **No Presentations**				1130 hrs AIAA-2018-1548 **Adaptive Harmonic Linearized Navier-Stokes equations used for boundary layer instability analysis in the presence of large streamwise gradients** J. Franco Sumariva, S. Hein, German Aerospace Center (DLR), Göttingen, Germany	1200 hrs AIAA-2018-1549 **Large-Eddy Simulation with Boundary Layer Stability Theory for Transitional Flow Computations** S. Jee, Gwangju Institute of Science and Technology, Gwangju, South Korea; J. Joo, R. Lin, United Technologies Corporation, East Hartford, CT	

Thursday, 11 January 2018						
372-FD-46/PDL-14	**Plasma Flow Control II**					**Captiva 1**
Chaired by: M. RENNIE, University of Notre Dame						
0930 hrs AIAA-2018-1550 **Large-Eddy Simulations of Flow Control Effects of a DBD Plasma Actuator at Various Burst Frequencies on a Dynamic Flowfield around a Pitching NACA0012 Airfoil at Reynolds Number of 256,000** H. Fukumoto, University of Tokyo, Sagamihara, Japan; H. Aono, Tokyo University of Science, Katsushika, Japan; T. Nonomura, Tohoku University, Sendai, Japan; A. Oyama, University of Tokyo, Sagamihara, Japan; K. Fujii, Tokyo University of Science, Katsushika, Japan	1000 hrs AIAA-2018-1551 **Experimental Analysis of Burst Actuation for Separation Control around a Pitching NACA0015 Airfoil Using a DBD Plasma Actuator at low Reynolds number** S. Sekimoto, Tokyo University of Science, Katsushika, Japan; S. Shimomura, Tokyo University of Agriculture and Technology, Koganei, Japan; H. Fukumoto, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; K. Fujii, Tokyo University of Science, Katsushika, Japan; A. Oyama, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; H. Nishida, Tokyo University of Agriculture and Technology, Koganei, Japan	1030 hrs AIAA-2018-1552 **Numerical Analysis on Jet Formation Process of Sparkjet Actuator** H. Kim, J. Chae, S. Ahn, K. Kim, Seoul National University, Seoul, South Korea	1100 hrs AIAA-2018-1553 **Experimental Study of Serpentine Plasma Actuator for Transition to Turbulence** A. das Gupta, A. Lilley, A. Dagen, S. Roy, University of Florida, Gainesville, Gainesville, FL	1130 hrs AIAA-2018-1554 **Multi-Objective Design Optimization of Flow Control behind Backward Facing Steps with Dielectric Barrier Discharge Plasma Actuators** Y. Boom, K. Lio, H. Ogawa, RMIT University, Melbourne, Australia	1200 hrs AIAA-2018-1555 **Development of a Plasma Actuator with Arc Breakdown in a Magnetic Field** J. Zimmerman, CU Aerospace, LLC, Champaign, IL; G. Hristov, University of Illinois, Urbana-Champaign, Urbana, IL; A. Palla, D. Carroll, CU Aerospace, LLC, Champaign, IL; P. Ansell, University of Illinois, Urbana-Champaign, Urbana, IL	

Thursday, 11 January 2018						
373-FD-47	**CFD Applications I**					**Sun 3**
Chaired by: S. SILTON, US Army Research Laboratory						
0930 hrs AIAA-2018-1556 **Landing Gear Drag Reduction Using Lattice Boltzmann Method** P. Caruy Povoa, R. Granzoto, G. Becker, M. Lopez, Embraer, São José dos Campos, Brazil	1000 hrs AIAA-2018-1557 **Numerical Investigation of Dynamic Stall for a Helicopter Blade Section** G. Wen, A. Gross, New Mexico State University, Las Cruces, NM	1030 hrs AIAA-2018-1558 **Analysis of Duct Vortex Development with Low- and High-fidelity Models to Support StreamVane™ Design** K. Smith, W. O'Brien, K. Lowe, Virginia Polytechnic Institute and State University, Blacksburg, VA	1100 hrs AIAA-2018-1559 **High-fidelity methods for the prediction of ice debris trajectories** H. Beaugendre, National Polytechnic Institute of Bordeaux, Talence, France; L. Nouveau, National Institute for Research in Computer Science and Control (INRIA), Talence, France; M. Costes, C. Wervaecke, ONERA, Paris, France; T. Kilian, German Aerospace Center (DLR), Braunschweig, Germany			

Thursday, 11 January 2018						
374-FD-48	**Cartesian, Overset, and Meshfree CFD Methods**					**Sun 5**
Chaired by: C. BREHM, University of Kentucky and Z. WANG, University of Kansas						
0930 hrs AIAA-2018-1560 **Towards a Viscous Wall Model for Immersed Boundary Methods** C. Brehm, University of Kentucky, Lexington, Lexington, KY; N. Ashton, Oxford University, Oxford, United Kingdom	1000 hrs AIAA-2018-1561 **On Interpolation Schemes for Nested Cartesian Finite Difference Grids of Different Size** A. Figueroa, R. Lohner, George Mason University, Fairfax, VA; J. Sitaraman, Parallel Geometric Algorithms, LLC, Sunnyvale, CA	1030 hrs AIAA-2018-1562 **A Lagrangian discontinuous Galerkin hydrodynamic method for 2D Cartesian and RZ axisymmetric coordinates** X. Liu, N. Morgan, D. Burton, Los Alamos National Laboratory, Los Alamos, NM	1100 hrs AIAA-2018-1563 **Physically consistent formulations for kinetic energy preservation by quasi-skew-symmetric forms** Y. Kuya, S. Kawai, Tohoku University, Sendai, Japan	1130 hrs AIAA-2018-1564 **A Comparative Study of Different Overset Grid Solvers Between OpenFOAM, StarCCM+ and Ansys-Fluent** D. Chandar, B. Boppana, Institute of High Performance Computing, Singapore, Singapore; V. Kumar, University of Wyoming, Laramie, Laramie, WY	1200 hrs AIAA-2018-1565 **A Stabilized RBF Finite Difference Method for Convection Dominated Flows over Meshfree Nodes** A. Javed, National University of Sciences and Technology, Islamabad, Pakistan; K. Djidjeli, University of Southampton, Southampton, United Kingdom; M. Jamil, I. Arif, National University of Sciences and Technology, Islamabad, Pakistan	

Thursday, 11 January 2018						
375-FD-49	**Special Session: RANS Solutions for Benchmark Configurations II**					**Osceola 1**
Chaired by: H. NISHIKAWA, National Institute of Aerospace and D. ZINGG, University of Toronto						
0930 hrs AIAA-2018-1566 **RANS simulations on OM6 with the Onera *elsA* flow solver** M. Soismier, A. Dumont, C. Caillaux, J. Mayeur, B. Michel, B. Maugars, ONERA, Châtillon, France	1000 hrs AIAA-2018-1567 **Application of Diablo to Three-Dimensional Benchmark Problems for Reynolds-Averaged Navier-Stokes Solvers** T. Reist, D. Zingg, University of Toronto, Toronto, Canada	1030 hrs AIAA-2018-1568 **Evaluation of RANS Solutions for 3D Benchmark Configurations with HPCMP CREATE™-AV Kestrel** J. Erwin, R. Glasby, D. Stefanski, University of Tennessee, Knoxville, Oak Ridge, TN	1100 hrs AIAA-2018-1569 **An Investigation of Continuous and Discontinuous Finite-Element Discretizations on Benchmark 3D Turbulent Flows (Invited)** B. Reza Ahrabi, M. Brazell, D. Mavriplis, University of Wyoming, Laramie, Laramie, WY	1130 hrs Oral Presentation **Stabilized Finite-Element Solutions for the Special Session on Solver Technology for Turbulent Flows (Invited)** W. Anderson, NASA Langley Research Center, Hampton, VA	1200 hrs AIAA-2018-1570 **SANS RANS solutions for 3D benchmark configurations** M. Galbraith, S. Allmaras, D. Darmofal, Massachusetts Institute of Technology, Cambridge, MA	

Thursday, 11 January 2018						
376-GNC-30/IS-13	**V&V of Adaptive Systems IV**					**Naples 2**
Chaired by: T. YUCELEN and J. MUSE, AFRL/RQQA						
0930 hrs AIAA-2018-1571 **Adaptive Output Feedback Control of Non-Minimum Phase Systems Using Optimal Control Modification** N. Nguyen, NASA Ames Research Center, Moffett Field, CA; K. Hashemi, Universities Space Research Association, Moffett Field, CA; T. Yucelen, E. Arabi, University of South Florida, Tampa, FL	1000 hrs AIAA-2018-1572 **A Model Reference Adaptive Control Approach for Uncertain Dynamical Systems with Strict Component-wise Performance Guarantees** M. Fravolini, University of Perugia, Perugia, Italy; E. Arabi, T. Yucelen, University of South Florida, Tampa, FL	1030 hrs AIAA-2018-1573 **On Set-Theoretic Model Reference Adaptive Control of Uncertain Dynamical Systems Subject to Actuator Dynamics** E. Arabi, T. Yucelen, University of South Florida, Tampa, FL	1100 hrs AIAA-2018-1574 **Shared Control Between Human and Adaptive Autopilots** B. Thomsen, A. Annaswamy, Massachusetts Institute of Technology, Cambridge, MA; E. Lavretsky, The Boeing Company, Los Angeles, CA	1130 hrs AIAA-2018-1575 **Direct L1-Adaptive Nonlinear Dynamic Inversion Control for Command Augmentation Systems** J. Harris, J. Valasek, Texas A&M University, College Station, TX		

Thursday, 11 January 2018						
377-GNC-31/SFM-16	**Spacecraft GN&C II**					**Sanibel 2**
Chaired by: M. MCFARLAND, Orbital ATK and A. SCHUTTE, The Aerospace Corporation						
0930 hrs AIAA-2018-1576 **Spacecraft Trajectory Tracking with Identification of Mass Properties Using Dual Quaternions** A. Valverde, P. Tsiotras, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2018-1577 **A Convex Approach to Minimum-Time Low-Thrust Trajectory Optimization** Z. Wang, M. Grant, Purdue University, West Lafayette, IN	1030 hrs AIAA-2018-1578 **Innovative Control System Approaches for Improving Late Mission Performance: Experiences from the Kepler Space Telescope** D. Putnam, Ball Corporation, Boulder, CO	1100 hrs AIAA-2018-1579 **Agile Attitude Maneuver via SDRE Controller using SGCMG Integrated Satellite Model** R. Ozawa, M. Takahashi, Keio University, Yokohama, Japan	1130 hrs AIAA-2018-1580 **Extended Kalman Filter and Observability Analysis for Consensus Estimation of Spacecraft Relative Motion** J. Wang, E. Butcher, University of Arizona, Tucson, Tucson, AZ; T. Yucelen, University of South Florida, Tampa, FL		

Thursday, 11 January 2018						
378-GNC-32	**Missile Guidance II**					**Sanibel 3**
Chaired by: B. BISWELL, Raytheon Missile Systems and Y. DIAZ-MERCADO						
0930 hrs AIAA-2018-1581 **Cooperative Interception of a Highly Manoeuvrable Aerial Target** B. Yuksek, N. Ure, G. Inalhan, Istanbul Technical University, Istanbul, Turkey	1000 hrs AIAA-2018-1582 **AFSIM Implementation and Simulation of the Active Target Defense Differential Game** N. Hanlon, E. Garcia, D. Casbeer, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Pachter, Air Force Institute of Technology, Wright-Patterson AFB, OH	1030 hrs AIAA-2018-1583 **Blind Evasion with Amplitude Modulation** R. Morgan, J. Riel, B. Neschke, Raytheon Company, Tucson, AZ	1100 hrs AIAA-2018-1584 **State and Input Constrained Missile Guidance using Spectral Model Predictive Static Programming** S. Mondal, R. Padhi, Indian Institute of Science, Bengaluru, India			

Thursday, 11 January 2018						
379-GNC-33	**Aerospace Robotics II**					**Sarasota 1**
Chaired by: O. MA, University of Cincinnati and S. ULRICH, Carleton University						
0930 hrs AIAA-2018-1585 **Nonlinear Model Predictive Control Parameters and Path Geometry** A. Joos, W. Fichter, University of Stuttgart, Stuttgart, Germany	1000 hrs AIAA-2018-1586 **Increasing Predictability and Performance in UAS Flight Contingencies using AIDL and MPC** F. Gavilan, R. Vazquez, A. Lobato, M. de la Rosa, A. Gallego, E. Camacho, University of Seville, Seville, Spain; et al.	1030 hrs AIAA-2018-1587 **A Novel Fully Quaternion based Nonlinear Attitude and Position Controller** H. Parwana, J. Patrikar, M. Kothari, Indian Institute of Technology Kanpur, Kanpur, India	1100 hrs AIAA-2018-1588 **Design and Autonomous Control of a Solar-Power Blimp** C. Wan, N. Kingry, R. Dai, Iowa State University, Ames, IA	1130 hrs AIAA-2018-1589 **Autonomous Distributed Wildfire Surveillance using Deep Reinforcement Learning** K. Julian, M. Kochenderfer, Stanford University, Stanford, CA	1200 hrs AIAA-2018-1590 **A Fast Sampling-based Optimal Route-Planning Algorithm to Satisfy Linear Temporal Logic Specifications** Z. Zhang, R. Cowlagi, Worcester Polytechnic Institute, Worcester, MA	

Thursday, 11 January 2018						
380-GNC-34	**Aircraft Guidance II**					**Naples 1**
Chaired by: E. JOHNSON, Georgia Institute of Technology and I. WEINTRAUB, Air Force Research Laboratory						
0930 hrs AIAA-2018-1591 **Trajectory Optimization Using Cramér-Rao Lower Bound for Bearings-Only Target Tracking** H. Roh, M. Cho, M. Tahk, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1000 hrs AIAA-2018-1592 **Waypoint Following for Fixed-Wing MAVs in 3D Space** N. Singh, S. Hota, Indian Institute of Technology Kharagpur, Kharagpur, India	1030 hrs AIAA-2018-1593 **Design of Tracking System using Bayesian Position Prediction for Highly Maneuvarable Aerial Target** H. Lee, D. Lee, S. Jung, D. Shim, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1100 hrs AIAA-2018-1594 **Autonomous Execution of Aircraft Supermaneuvers with Switching Nonlinear Backstepping Control** M. Moghadam, N. Ure, G. Inalhan, Istanbul Technical University, Istanbul, Turkey	1130 hrs AIAA-2018-1595 **Cooperative UAV Navigation using Inter-Vehicle Ranging and Magnetic Anomaly Measurements** C. Yang, J. Strader, Y. Gu, A. Hypes, West Virginia University, Morgantown, WV; A. Canciani, Air Force Institute of Technology, Wright-Patterson AFB, OH; K. Brink, Air Force Research Laboratory, Wright-Patterson AFB, OH		

Thursday, 11 January 2018						
381-GNC-35	**Specialized Flight Phase Guidance**					**Osceola 3**
Chaired by: J. STECK, Wichita State University and A. CHAKRAVARTHY, Wichita State University						
0930 hrs AIAA-2018-1596 **Merging Optimization Method Considering Minimum Time Separation Based on Wake Turbulence Category** D. Toratani, E. Itoh, Electronic Navigation Research Institute, Chofu, Japan	1000 hrs AIAA-2018-1597 **A Study of Air Traffic Simulation Around Haneda Airport using Step Back Cellular Automaton** T. Tatsukawa, S. Nagaoka, K. Anzai, K. Fujii, Tokyo University of Science, Katsushika, Japan	1030 hrs AIAA-2018-1598 **Cooperative Docking Guidance and Control with Application to Autonomous Aerial Refueling** D. Löbl, Technical University of Munich, Garching, Germany; M. Weiss, Technion-Israel Institute of Technology, Haifa, Israel; F. Holzapfel, Technical University of Munich, Garching, Germany; T. Shima, Technion-Israel Institute of Technology, Haifa, Israel	1100 hrs AIAA-2018-1599 **Using Model Predictive Control for Trajectory Optimization and to Meet Spacing Objectives** X. Bai, Rutgers University, Piscataway, NJ; L. Weitz, MITRE Corporation, McLean, VA	1130 hrs AIAA-2018-1600 **Linearized Analysis of Inertial Navigation Employing Common Frame Error Representations** M. Whittaker, J. Crassidis, State University of New York, Amherst, NY		

Thursday, 11 January 2018						
382-GNC-36	**Navigation and Estimation II**					**Destin 1**
Chaired by: D. CHOUKROUN, Ben Gurion University of the Negev and J. GROSS, West Virginia University						
0930 hrs AIAA-2018-1601 **Comparison of Crater-Detection Algorithms for Terrain-Relative Navigation** S. Woicke, A. Moreno Gonzalez, I. El- Hajj, Delft University of Technology, Delft, The Netherlands; J. Mes, Leiden University, Leiden, The Netherlands; M. Henkel, R. Klavers, Delft University of Technology, Delft, The Netherlands	1000 hrs AIAA-2018-1602 **Hardware-in-the-Loop Testing of Stereo Vision-Based Hazard-Detection Method for Planetary Landing** S. Woicke, Delft University of Technology, Delft, The Netherlands; H. Krüger, German Aerospace Center (DLR), Bremen, Germany; E. Mooij, Delft University of Technology, Delft, The Netherlands	1030 hrs AIAA-2018-1603 **On-Orbit Mass Property Estimation for the Space Shuttle Orbiter with Uncertain Thruster Outputs** E. Evans, J. How, Massachusetts Institute of Technology, Cambridge, MA; S. Thrasher, L. Yang, Draper Laboratory, Cambridge, MA	1100 hrs AIAA-2018-1604 **CubeSat Simulation and Detection using Monocular Camera Images and Convolutional Neural Networks** J. Shi, S. Ulrich, Carleton University, Ottawa, Canada; S. Ruel, Neptec Design Group, Kanata, Canada	1130 hrs AIAA-2018-1605 **Light Curve Analysis Using Waveletss** A. Dianetti, J. Crassidis, State University of New York, Buffalo, NY	1200 hrs AIAA-2018-1606 **Estimate of All the Inertial Parameters of a Free-Floating Object in Orbit** Q. Meng, J. Liang, Tsinghua University, Beijing, China; O. Ma, University of Cincinnati, Cincinnati, OH	

Thursday, 11 January 2018						
383-GTE-6/PGC-6	**Pressure Gain Combustion for Gas Turbines**					**Osceola 4**
Chaired by: K. YU, University of Maryland						
0930 hrs AIAA-2018-1607 **A Disk Rotating Detonation Engine Part 2: Operation** M. McClearn, F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH; R. Huff, M. Polanka, Air Force Institute of Technology, Wright-Patterson AFB, OH; J. Hoke, M. Fotia, Innovative Scientific Solutions, Inc., Dayton, OH	1000 hrs AIAA-2018-1608 **Single and Counter-Rotating Wave Modes in an RDC** R. Bluemner, M. Bohon, C. Paschereit, Technical University of Berlin, Berlin, Germany; E. Gutmark, University of Cincinnati, Cincinnati, OH	1030 hrs AIAA-2018-1609 **Effect of Axial Spacing and Blockages on the Deflagration to Detonation Transition in a Pulse Detonation Engine** K. Porel, M. Attia, Embry-Riddle Aeronautical University, Daytona Beach, FL	1100 hrs AIAA-2018-1610 **Characterization of a Premixed Laboratory Scale Pulsed Detonation Burner** B. Sell, J. Hoke, K. Moosmann, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, I. Andrus, Air Force Research Laboratory, Wright-Patterson AFB, OH		

Thursday, 11 January 2018						
384-HIS-1	**Perspectives on Aerospace History**					**Sanibel 1**
Chaired by: R. HALLION						
0930 hrs AIAA-2018-1611 **The First World War's Aviation Legacy** R. Hallion, Florida Polytechnic University, Lakeland, FL	1000 hrs AIAA-2018-1612 **Unlikely Partners: German-Soviet Aeronautical Cooperation, 1919-1933** R. Hallion, Florida Polytechnic University, Lakeland, FL	1030 hrs AIAA-2018-1613 **Reengineering history: What can we learn from a photographed B-17 "Flying Fortress" in-flight structural failure?** M. Schuurman, C. Kassapoglou, Delft University of Technology, Delft, The Netherlands	1100 hrs AIAA-2018-1614 **(Un)controlled Flight Into Terrain: A History of Obstacle Clearance Regulations** J. Beard, T. Takahashi, Arizona State University, Tempe, AZ	1130 hrs AIAA-2018-1615 **From the *Viridarium* of Francisco de Mendoça to the Airship of Cypriano Jardim** J. Melo De Sousa, Technical University of Lisbon, Lisbon, Portugal	1200 hrs AIAA-2018-1616 **Extraordinary Care: A History of Flight Operations Rules for Common Carriers** D. Wood, T. Takahashi, Arizona State University, Tempe, AZ	

Thursday, 11 January 2018						
385-HSABP-9	**Scramjet Inlets**					**Daytona 2**
Chaired by: B. SARACOGLU, von Karman Institute for Fluid Dynamics and T. O'BRIEN, Raytheon Missiles Systems						
0930 hrs AIAA-2018-1617 **Scaling of pseudoshock length and pressure rise** R. Hunt, L. Edelman, M. Gamba, University of Michigan, Ann Arbor, Ann Arbor, MI	1000 hrs AIAA-2018-1618 **Supersonic Isolator Shock-Train Dynamics: Simple Physics-Based Model for Closed-Loop Control of Shock-Train Location** L. Vanstone, J. Lingren, N. Clemens, University of Texas, Austin, Austin, TX	1030 hrs AIAA-2018-1619 **Preliminary Investigation of Unstart Physics and Dynamics in an Axisymmetric Isolator** M. Leonard, V. Narayanaswamy, North Carolina State University, Raleigh, NC	1100 hrs AIAA-2018-1620 **Visualization of scoop inlet-induced circular isolator flows using planar laser Rayleigh scattering imaging** G. DiCristina, S. Im, University of Notre Dame, Notre Dame, IN; J. Choi, Agency for Defense Development, Daejeon, South Korea; K. Kang, H. Do, Seoul National University, Seoul, South Korea	1130 hrs AIAA-2018-1621 **Control of Unstart Phenomenon in Scramjet Engines** M. Ansari, M. Varshney, H. Gupta, M. S. Baig, Aligarh Muslim University, Aligarh, India		

Thursday, 11 January 2018						
386-INPSI-2	**Inlets, Nozzles, Propulsion Systems Integration II**					**Destin 2**
Chaired by: E. LOTH, University of Virginia and S. HIRT, NASA Glenn Research Center and D. CROWE, Air Force Institute of Technology						
0930 hrs AIAA-2018-1622 **Three-dimensional Measurements of Supersonic Flow Using Tomographic Background Oriented Schlieren** R. Ozawa, T. Cox, K. Ahmed, University of Central Florida, Orlando, FL	1000 hrs AIAA-2018-1623 **Fully Automated Procedure for Independent Variation of Mach and Reynolds Numbers for Ejector CFD Simulations** S. Brehm, R. Niehuis, University of the German Federal Armed Forces, Neubiberg, Germany	1030 hrs AIAA-2018-1624 **Effect of transonic inlet design on the performance of a mico-turbojet engine** U. Vyas, V. Andreoli, G. Paniagua, Purdue University, West Lafayette, IN	1100 hrs AIAA-2018-1625 **Experimental Study of an Underexpanded Supersonic Jet under Non-Swirling and Swirling Conditions** J. Ahumada Lazo, M. De La Torre Terrazas, R. Chen, F. Shu, New Mexico State University, Las Cruces, NM	1130 hrs AIAA-2018-1626 **Pressure Distribution and Performance Impacts of Aerospike Nozzles on Rotating Detonation Engines** M. Schnabel, C. Brophy, Naval Postgraduate School, Monterey, CA	1200 hrs AIAA-2018-1627 **On the Use of Synthetic Jet Actuators to Induce Jet-Vectoring in Nozzles** M. Ferlauto, R. Marsilio, Technical University of Turin, Turin, Italy	

Thursday, 11 January 2018						
387-IS-14	**Autonomy**					**Tallahassee 2**
Chaired by: A. MOORE, NASA and B. ALLIK, U. S. Army Research Laboratory (APG)						
0930 hrs AIAA-2018-1628 **Autonomous Inspection of Electrical Transmission Structures with Airborne UV Sensors and Automated Air Traffic Management** A. Moore, NASA Langley Research Center, Hampton, VA; M. Schubert, Analytical Mechanics Associates, Inc., Hampton, VA; N. Rymer, National Institute of Aerospace, Hampton, VA	1000 hrs AIAA-2018-1629 **A Variable Virtual Target Framework for Maneuvering Formation Guidance** V. Challa, A. Ratnoo, Indian Institute of Science, Bengaluru, India	1030 hrs AIAA-2018-1630 **Target Learning, Acquisition, and Tracking on a Guided Projectile** B. Allik, J. Maley, C. Miller, Army Research Laboratory, Aberdeen Proving Ground, MD	1100 hrs AIAA-2018-1631 **Towards a Modular Architecture for Intelligent Aerial Manipulator Systems** J. Medhi, C. McGhan, University of Cincinnati, Cincinnati, OH	1130 hrs AIAA-2018-1632 **Flight Testing of Intelligent Motion Video Guidance for Unmanned Air System Ground Target Surveillance** C. Noren, J. Valasek, C. Rogers, Texas A&M University, College Station, TX	1200 hrs AIAA-2018-1633 **Design Considerations for a Variable Autonomy Exeuctive for UAS in the NAS** M. Lowry, A. Bajwa, NASA Ames Research Center, Moffett Field, CA	

Thursday, 11 January 2018						
388-IS-15	**Learning, Reasoning, and Data-Driven Systems I**					**Tallahassee 1**
Chaired by: E. VAN KAMPEN, TU Delft and C. BOSSON						
0930 hrs AIAA-2018-1634 **The Actor-Judge Method: safe state exploration for Hierarchical Reinforcement Learning Controllers** S. Verbist, T. Mannucci, E. Van Kampen, Delft University of Technology, Delft, The Netherlands	1000 hrs AIAA-2018-1635 **Database Building and Interpolation for a Safe Flight Envelope Prediction System** Y. Zhang, C. de Visser, Q. Chu, Delft University of Technology, Delft, The Netherlands	1030 hrs AIAA-2018-1636 **Multicopter Failure Diagnosis through Supervised Learning and Statistical Trajectory Prediction** C. Ochoa, E. Atkins, University of Michigan, Ann Arbor, Ann Arbor, MI	1100 hrs AIAA-2018-1637 **Supervised Learning Applied to Air Traffic Trajectory Classification** C. Bosson, Purdue University, Moffett Field, CA; T. Nikoleris, NASA Ames Research Center, Moffett Field, CA	1130 hrs AIAA-2018-1638 **Using ADOPT Algorithm and Operational Data to Discover Precursors to Aviation Adverse Events** V. Janakiraman, B. Matthews, N. Oza, NASA Ames Research Center, Moffett Field, CA	1200 hrs AIAA-2018-1639 **Machine Learning Approaches for Multi-Sensor Data Pattern Recognition: K-means, Deep Neural Networks, and Multi-layer K-means** R. Suresh, F. Tao, J. Votion, Y. Cao, University of Texas, San Antonio, San Antonio, TX	

Thursday, 11 January 2018						
389-MAT-10	**Fatigue and Fracture II**					**Sun C**
Chaired by: S. WICKS, Lockheed Martin Corporation and E. PINEDA, NASA Glenn Research Ctr						
0930 hrs AIAA-2018-1640 **Probabilistic Life Prediction of Plastic Pipes Using an Equivalent Crack Growth Model** Y. Wang, Y. Liu, Arizona State University, Tempe, AZ; T. Peng, E. Lever, Gas Technology Institute, Des Plaines, IL	1000 hrs AIAA-2018-1641 **Fabrication and Mechanical Characterization of Nanoporous Ceramic Composites for Potential Toughening** J. Dai, J. Singh, N. Yamamoto, Pennsylvania State University, University Park, PA	1030 hrs AIAA-2018-1642 **Fatigue Failure Predictions of Laminated Composites using Mechanical Properties Degradation and Continuum Damage Models** A. Khan, S. Venkataraman, San Diego State University, San Diego, CA; I. Miller, N and R Engineering, Parma Heights, OH	1100 hrs AIAA-2018-1643 **On the influence of build direction on the fatigue crack growth resistance of Selective Laser Melted Ti-6Al-4V** C. Rans, J. Michielssen, M. Walker, W. Wang, Delft University of Technology, Delft, The Netherlands; L. 't Hoen-Velterop, Netherlands Aerospace Centre (NLR), Marknesse, The Netherlands	1130 hrs AIAA-2018-1644 **Fracture Properties of Seamless and Stitch-Bonded Carbon Fiber Plate and Tube Type Structures** M. Yekani Fard, Arizona State University, Tempe, AZ; B. Raji, Pipe Reconstruction, Phoenix, AZ; M. Padilla, J. Woodward, M. Oramas, A. Chattopadhyay, Arizona State University, Tempe, AZ	1200 hrs AIAA-2018-1645 **Modeling of Randomly Distributed Coated Fibers in a Ceramic Matrix Composite** H. Kim, W. Ji, Ulsan National Institute of Science and Technology, Ulsan, South Korea	

Thursday, 11 January 2018						
390-MDO-9	**Emerging Methods, Algorithms and Software Development in MAO II**					**Emerald 1**
Chaired by: M. BHATIA, Mississippi State University and S. CHOI, Virginia Tech						
0930 hrs AIAA-2018-1646 **Solution of ordinary differential equations in gradient-based multidisciplinary design optimization** J. Hwang, D. Munster, NASA Glenn Research Center, Cleveland, OH	1000 hrs AIAA-2018-1647 **Next generation aircraft design considering airline operations and economics** S. Roy, W. Crossley, Purdue University, West Lafayette, IN; K. Moore, J. Gray, NASA Glenn Research Center, Cleveland, OH; J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1030 hrs AIAA-2018-1648 **Deep Autoencoder for Off-Line Design-Space Dimensionality Reduction in Shape Optimization** D. D'Agostino, A. Serani, E. Campana, M. Diez, National Research Council (CNR), Rome, Italy	1100 hrs AIAA-2018-1649 **Approximate Discrete Adjoint Method for Parametric Sensitivity Analysis of Launch Vehicle Propulsion Systems** M. Gale, R. Harris, CFD Research Corporation, Huntsville, AL; E. Luke, Mississippi State University, Starkville, MS	1130 hrs AIAA-2018-1650 **MAST: An Open-Source Computational Framework for Design of Multiphysics Systems** M. Bhatia, Mississippi State University, Mississippi State, MS; P. Beran, Air Force Research Laboratory, Wright-Patterson AFB, OH		

Thursday, 11 January 2018						
391-MDO-10	**Aircraft Design Optimization II**					**Emerald 2**
Chaired by: B. STANFORD, NASA Langley Research Center						
0930 hrs AIAA-2018-1651 **Supersonic Business Jet Conceptual Design in a Multidisciplinary Design Analysis Optimization Environment** Y. Sun, H. Smith, Cranfield University, Bedford, United Kingdom	1000 hrs AIAA-2018-1652 **Distributed Electric Propulsion Effects on Existing Aircraft Through Multidisciplinary Optimization** K. Moore, A. Ning, Brigham Young University, Provo, UT	1030 hrs AIAA-2018-1653 **Evaluation of transonic airfoil geometrical parameters effect in drag divergence mach number and the associated impact in aircraft design multi-disciplinary optimization** R. Sorbilli, D. Di Bianchi, P. Ciloni, W. Afonso, Embraer, São José dos Campos, Brazil; R. Pereira, Konatus, São José dos Campos, Brazil; A. de Paula, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil	1100 hrs AIAA-2018-1654 **Aerodynamic Design Optimization of Control Mechanisms for a Subsonic, Small Diameter Munition** J. Vasile, F. Fresconi, I. Celmins, Army Research Laboratory, Aberdeen Proving Ground, MD; B. Nelson, Bennett Aerospace, Cary, NC	1130 hrs AIAA-2018-1655 **Calculating Implicit Reserve Factor Sensitivities from Performance Envelopes** S. Sheshanarayana, A. Dharmasaroja, C. Armstrong, T. Robinson, A. Murphy, Queen's University Belfast, Belfast, United Kingdom; J. Barron, Airbus, Toulouse, France		

Thursday, 11 January 2018						
392-NDA-7	**Special Session: A Framework for Managing Multiple Information Sources of Multi-Physics Systems**					**Sun A**
Chaired by: P. BERAN, US Air Force Research Laboratory(AFRL/RQVC) and M. MIGNOLET, Arizona State University						
0930 hrs AIAA-2018-1656 **Advances in Bayesian Optimization with Applications in Aerospace Engineering** R. Lam, Massachusetts Institute of Technology, Cambridge, MA; M. Poloczek, University of Arizona, Tucson, Tucson, AZ; P. Frazier, Cornell University, Ithaca, NY; K. Willcox, Massachusetts Institute of Technology, Cambridge, MA	1000 hrs AIAA-2018-1657 **Maximum Entropy-Based Uncertainty Modeling at the Finite Element Level** P. Song, M. Mignolet, Arizona State University, Tempe, AZ	1030 hrs AIAA-2018-1658 **Multifidelity Optimization Under Uncertainty for a Tailless Aircraft** A. Chaudhuri, Massachusetts Institute of Technology, Cambridge, MA; J. Jasa, J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI; K. Willcox, Massachusetts Institute of Technology, Cambridge, MA	1100 hrs AIAA-2018-1659 **Upgrading from Gaussian Processes to Student's-T Processes** B. Tracey, D. Wolpert, Santa Fe Institute, Santa Fe, NM	1130 hrs AIAA-2018-1660 **Multifidelity Monte Carlo estimation for large-scale uncertainty propagation** B. Peherstorfer, University of Wisconsin, Madison, Madison, WI; P. Beran, Air Force Research Laboratory, Wright-Patterson AFB, OH; K. Willcox, Massachusetts Institute of Technology, Cambridge, MA	1200 hrs AIAA-2018-1661 **Efficient Decoupling of Multiphysics Systems for Uncertainty Propagation** S. Friedman, B. Isaac, S. Ghoreishi, D. Allaire, Texas A&M University, College Station, TX	

Thursday, 11 January 2018						
393-NDA-8	**Model Calibration, Verification, and/or Validation**					**Sun 1**
Chaired by: V. ROMERO, Sandia National Laboratories and S. GHOSH, GE Global Research Center						
0930 hrs AIAA-2018-1662 **Uncertainty Investigation for Shock Tube Simulation Error Quantification** C. Park, S. Nili, J. Mathew, N. Kim, R. Haftka, University of Florida, Gainesville, Gainesville, FL	1000 hrs AIAA-2018-1663 **Bayesian Multi-Source Modeling with Legacy Data** S. Ghosh, I. Asher, J. Kristensen, Y. Ling, K. Ryan, L. Wang, General Electric Company, Niskayuna, NY	1030 hrs AIAA-2018-1664 **Lack-of-fit Tests to Indicate Material Model Improvement or Experimental Data Noise Reduction** C. Jekel, R. Haftka, University of Florida, Gainesville, Gainesville, FL; G. Venter, M. Venter, Stellenbosch University, Stellenbosch, South Africa	1100 hrs AIAA-2018-1665 **A Class of Simple and Effective UQ Methods for Sparse Replicate Data applied to the Cantilever Beam End-to-End UQ Problem** V. Romero, V. Weirs, Sandia National Laboratories, Albuquerque, NM	1130 hrs AIAA-2018-1666 **Expectation-Maximization Method for Data-Based Estimation of the Cantilever Beam End-to-End Problem** T. Kim, G. Lee, S. Kim, B. Youn, Seoul National University, Seoul, South Korea		

Thursday, 11 January 2018						
394-PC-19	**Advanced Combustion Concepts III**					**Tampa 3**
Chaired by: A. CASWELL, USAF AFRL/RQTC and K. BUTLER, AEDC - Arnold Engineering Development Complex						
0930 hrs AIAA-2018-1667 **Year 3 of the National Jet Fuels Combustion Program: Practical and Scientific Impacts of Alternative Jet Fuel Research** J. Heyne, E. Peiffer, University of Dayton, Dayton, OH; M. Colket, Self, New Haven, CT; A. Jardines, C. Shaw, Federal Aviation Administration, Washington, D.C.; J. Moder, NASA Glenn Research Center, Cleveland, OH; et al.	1000 hrs AIAA-2018-1668 **Ignition of Ultra-Lean Premixed H_2/air using an Impinging Hot Turbulent Jet** S. Biswas, L. Qiao, Purdue University, West Lafayette, IN	1030 hrs AIAA-2018-1669 **Flame speed enhancement of a solid monopropellant using metal-oxide doped carbon-based microstructures** S. Jain, L. Qiao, Purdue University, West Lafayette, IN	1100 hrs AIAA-2018-1670 **Numerical Studies of the Residence Time Distributions of an Off-center Shearing Jet Stirred Reactor (IOS-JSR)** T. Zhang, Y. Ju, Princeton University, Princeton, NJ	1130 hrs AIAA-2018-1671 **Preliminary Design of a Rotating Detonation Engine for Launch Vehicle Applications** G. Andrews, A. Black, J. Graham, O. Rique, Purdue University, West Lafayette, IN		

Thursday, 11 January 2018						
395-PC-20	**Turbulent Combustion VI**					**Daytona 1**
Chaired by: T. DROZDA, NASA Langley Research Center and T. WABEL, University of Toronto						
0930 hrs AIAA-2018-1672 **Efficient time stepping for reactive turbulent simulations with stiff chemistry** H. Wu, P. Ma, M. Ihme, Stanford University, Stanford, CA	1000 hrs AIAA-2018-1673 **Mesh-Sequenced Realizations for Evaluation of Subgrid-Scale Models for Turbulent Combustion** J. Edwards, North Carolina State University, Raleigh, NC	1030 hrs AIAA-2018-1674 **DNS Investigation of Cavity Stabilized Premixed Turbulent Ethylene-Air Flame** A. Rauch, University of Virginia, Charlottesville, Charlottesville, VA; A. Konduri, J. Chen, H. Kolla, Sandia National Laboratories, Livermore, CA; H. Chelliah, University of Virginia, Charlottesville, Charlottesville, VA	1100 hrs AIAA-2018-1675 **Comparative Study of RANS Models for Supercritical Liquid Oxygen and Kerosene Combustion** P. Garg, Birla Institute of Technology, Ranchi, India; A. Sharma, Birla Institute of Technology, Trivandrum, India; H. Shukla, Visvesvaraya Technological University (VTU) , Bengaluru, India; D. Agarwal, Birla Institute of Technology, Trivandrum, India; M. Varma, Birla Institute of Technology, Ranchi, India	1130 hrs AIAA-2018-1676 **Application of Pareto-efficient combustion modeling framework to large eddy simulations of turbulent reacting flows** H. Wu, P. Ma, T. Jaravel, M. Ihme, Stanford University, Stanford, CA	

Thursday, 11 January 2018						
396-SCS-7	**Small Satellite Deployable Systems**					**Emerald 3**
Chaired by: M. SILVER, MIT Lincoln Laboratory and J. FOOTDALE, Load Path, LLC						
0930 hrs AIAA-2018-1677 **Simulating CubeSat Structure Deployment Dynamics** J. Blandino, Virginia Military Institute, Lexington, VA; B. Ross, N. Woo, Z. Smith, Motionport, LLC, St. George, UT; E. McNaul, MMA Design, LLC, Boulder, CO	1000 hrs AIAA-2018-1678 **Flight Build of a Furled High Strain Composite Antenna for CubeSats** B. Davis, K. Cox, R. VanHalle, W. Francis, Roccor, LLC, Longmont, CO	1030 hrs AIAA-2018-1679 **Structural Performance of the NanoSat Deployable Truss** T. Ring, E. Ruhl, MMA Design, LLC, Boulder, CO; J. Banik, Air Force Research Laboratory, Kirtland AFB, NM				

Thursday, 11 January 2018						
397-SD-14	**Agile Wing Interaction**					**Emerald 7**
Chaired by: J. COOPER, University of Bristol and A. DATTA, University of Maryland, College Park						
0930 hrs AIAA-2018-1680 **On the Effect of Including Geometric Nonlinearity in the Sizing of a Wing** D. Calderon, J. Cooper, M. Lowenberg, S. Neild, University of Bristol, Bristol, United Kingdom; E. Coetzee, Airbus, Bristol, United Kingdom	1000 hrs AIAA-2018-1681 **Efficient Modelling of a Nonlinear Gust Loads Process for Uncertainty Quantification of Highly Flexible Aircraft** R. Cook, C. Wales, A. Gaitonde, D. Jones, J. Cooper, University of Bristol, Bristol, United Kingdom	1030 hrs AIAA-2018-1682 **CFD Aerodynamic Models for Separated Flow on High Aspect Ratio Flexible Wings** W. Hewson, D. Jones, A. Gaitonde, University of Bristol, Bristol, United Kingdom; E. Coetzee, Airbus, Bristol, United Kingdom	1100 hrs AIAA-2018-1683 **Effect of wingtip morphing on the roll mode of a flexible aircraft** G. Dussart, S. Yusuf, M. Lone, Cranfield University, Cranfield, United Kingdom		

Thursday, 11 January 2018						
398-SD-15	**Computational Aeroelasticity III**					**Emerald 8**
Chaired by: N. FALKIEWICZ, MIT Lincoln Laboratory and T. KINNEY, NASA						
0930 hrs AIAA-2018-1684 **Aerothermoelastic Scaling Laws for Hypersonic Skin Panel Configurations with Arbitrary Flow Orientation** D. Huang, T. Rokita, P. Friedmann, University of Michigan, Ann Arbor, Ann Arbor, MI	1000 hrs AIAA-2018-1685 **Coupled Flight Dynamics and Aeroelasticity of Very Flexible Aircraft Based on Commercial Finite Element Solvers** C. Riso, F. Mastroddi, University of Rome "La Sapienza", Rome, Italy; C. Cesnik, University of Michigan, Ann Arbor, Ann Arbor, MI	1030 hrs AIAA-2018-1686 **Application of Harmonic Balance Method for Non-linear Gust Responses** R. Thormann, S. Timme, University of Liverpool, Liverpool, United Kingdom	1100 hrs AIAA-2018-1687 **Impact of Flow and Structural Nonlinearities on Hypersonic Panel Flutter Predictions** J. Schoneman, C. Ostoich, ATA Engineering, Inc., San Diego, CA; L. Jarman, C. VanDamme, M. Allen, University of Wisconsin, Madison, Madison, WI		

Thursday, 11 January 2018

399-SFM-17	Dynamical Systems Theory Applied to Space Flight Problems					Naples 3
Chaired by: K. HOWELL						
0930 hrs AIAA-2018-1688 **Escape Trajectory for the Martian Moon Sample Return Mission Using Tube Dynamics** K. Takemura, Waseda University, Tokyo, Japan; Y. Kawakatsu, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1000 hrs AIAA-2018-1689 **Dynamics of Asteroid 2006 RH120: Temporary Capture Phase** B. Anderson, University of Southern California, Los Angeles, CA; M. Lo, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1030 hrs AIAA-2018-1690 **Impulsive and Low-Thrust Transfer Design Between Stable and Nearly-Stable Periodic Orbits in the Restricted Problem** R. Pritchett, E. Zimovan, K. Howell, Purdue University, West Lafayette, IN	1100 hrs AIAA-2018-1691 **Design and Feasibility Assessment of Ultra Low Thrust Trajectories to the Sun-Earth Saddle Point** F. Topputo, D. Dei Tos, Technical University of Milan, Milan, Italy; M. Rasotto, Dinamica SrL, Milan, Italy; F. Renk, ESA, Darmstadt, Germany	1130 hrs AIAA-2018-1692 **The Topology of Transport Through Planar Lyapunov Orbits** T. Swenson, Stanford University, Stanford, CA; M. Lo, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; B. Anderson, University of Southern California, Los Angeles, CA; T. Gorordo, California Institute of Technology, Pasadena, CA		

Thursday, 11 January 2018

400-STR-14	Stability of Structural Shells I					Emerald 4
Chaired by: M. HILBURGER, NASA-Langley Research Center and A. LOVEJOY, NASA-Langley Research Center						
0930 hrs AIAA-2018-1693 **Test and Analysis of a Buckling-Critical Large-Scale Sandwich Composite Cylinder** M. Schultz, D. Sleight, NASA Langley Research Center, Hampton, VA; N. Gardner, Analytical Services & Materials, Inc., Hampton, VA; M. Rudd, NASA Marshall Space Flight Center, Huntsville, AL; M. Hilburger, NASA Langley Research Center, Hampton, VA; T. Palm, Northrop Grumman Corporation, Redondo Beach, CA; et al.	1000 hrs AIAA-2018-1694 **Design of Buckling-Critical Large-Scale Sandwich Composite Cylinder Test Articles** A. Przekop, M. Schultz, M. Hilburger, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2018-1695 **Implementation of Fiber Optic Sensing System on Sandwich Composite Cylinder Buckling Test** F. Pena, NASA Armstrong Flight Research Center, Edwards, CA; W. Richards, NASA Langley Research Center, Hampton, VA; A. Parker, A. Piazza, NASA Armstrong Flight Research Center, Edwards, CA; M. Schultz, NASA Langley Research Center, Hampton, VA; M. Rudd, NASA Marshall Space Flight Center, Huntsville, AL; et al.	1100 hrs AIAA-2018-1696 **Buckling Imperfection Sensitivity of Conical Sandwich Composite Structures for Launch-Vehicles** D. Sleight, A. Satyanarayana, M. Schultz, NASA Langley Research Center, Hampton, VA	1130 hrs AIAA-2018-1697 **Test and Analysis of Buckling-Critical Stiffened Metallic Launch Vehicle Cylinders** M. Hilburger, M. Lindell, W. Waters, N. Gardner, NASA Langley Research Center, Hampton, VA	1200 hrs AIAA-2018-1698 **Digital Image Correlation Data Processing and Analysis Techniques to Enhance Test Data Assessment and Improve Structural Simulations** N. Gardner, Analytical Services & Materials, Inc., Hampton, VA; M. Hilburger, W. Haynie, M. Lindell, NASA Langley Research Center, Hampton, VA; W. Waters, Analytical Mechanics Associates, Inc., Hampton, VA	

Thursday, 11 January 2018

401-STR-15	NASA ACC High Energy Dynamic Impact					Emerald 5
Chaired by: M. RASSAIAN, Boeing Engineering Operations & Technology and L. ELDRED, NASA Glenn Research Center						
0930 hrs AIAA-2018-1699 **Dynamic Impact Testing and Model Development in Support of NASA's Advanced Composites Program** M. Melis, M. Pereira, R. Goldberg, NASA Glenn Research Center, Cleveland, OH; M. Rassaian, The Boeing Company, Seattle, WA	1000 hrs AIAA-2018-1700 **NASA ACC High Energy Dynamic Impact Methodology and Outcomes** K. Hunziker, J. Pang, The Boeing Company, Seattle, WA; M. Pereira, M. Melis, NASA Glenn Research Center, Cleveland, OH; M. Rassaian, The Boeing Company, Seattle, WA	1030 hrs AIAA-2018-1701 **Comparison of Test Methods to Determine Failure Parameters for MAT162 Calibration** M. Molitor, B. Justusson, The Boeing Company, Berkeley, MO; J. Pang, M. Rassaian, The Boeing Company, Tukwila, WA	1100 hrs AIAA-2018-1702 **Determination of Ballistic Limit for IM7/8552 Using MAT261** A. Byar, J. Iqbal, J. Pang, M. Rassaian, The Boeing Company, Seattle, WA	1130 hrs AIAA-2018-1703 **Determination of Ballistic Limit for IM7/8552 Using Peridynamics** O. Weckner, F. Cuenca, The Boeing Company, Everett, WA; S. Silling, Sandia National Laboratories, Albuquerque, NM; M. Rassaian, J. Pang, The Boeing Company, Everett, WA		

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402-STR-16	Special Session: In Honor of Dr. Ivatury S. Raju, NASA Langley Research Center II					Emerald 6
Chaired by: V. GOYAL, The Aerospace Corporation and J. DOMBER, Ball Aerospace & Technologies Corporation						
0930 hrs AIAA-2018-1704 **Prediction of Low-Velocity Face-on Impact Response and Compression after Impact (CAI) of Composite Laminates using EST and Cohesive Modeling (DCZM)** A. Waas, S. Thorsson, University of Washington, Seattle, Seattle, WA; M. Rassaian, The Boeing Company, Seattle, WA	1000 hrs AIAA-2018-1705 **Use of Simple Continuum Solutions in Finite Element Alternating Method (FEAM) for Fracture Problems** T. Krishnamurthy, I. Raju, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2018-1706 **Generalized Unified Formulation - Based Bending Analysis of Variable Angle Tow Panels in the Presence of Hole** L. Demasi, G. Biagini, F. Vannucci, E. Santarpia, San Diego State University, San Diego, CA; R. Cavallaro, Charles III University of Madrid, Madrid, Spain	1100 hrs AIAA-2018-1707 **Multiscale Analysis of Interlaminar Stresses Near a Free-Edge in a $[\pm 45/0/90]_s$ Laminate** K. Ballard, J. Whitcomb, Texas A&M University, College Station, TX	1130 hrs AIAA-2018-1708 **Total Fatigue Life Modeling and Data Reduction Methods** K. Shivakumar, North Carolina A&T State University, Greensboro, NC	1200 hrs AIAA-2018-1709 **Proof Test Methodology for Reducing the Risk of Unvented Honeycomb Core Failures in Aerospace Structures** E. Koontz, V. Goyal, The Aerospace Corporation, El Segundo, CA; D. Mueller, SpaceX, Hawthorne, CA; D. Friedman, S. Maghsoudy-Louyeh, The Aerospace Corporation, El Segundo, CA	

Thursday, 11 January 2018						
403-TES-3	**Terrestrial Energy Systems–Emerging Technologies**					**Sun B**
Chaired by: G. JACOBS, San Diego State Univ and K. OKAI, Japan Aerospace Exploration Agency						
0930 hrs Oral Presentation **Status and Future of Nanomaterials in Energy Storage (Invited)** S. Arepalli, Rice University, Houston, TX	1000 hrs AIAA-2018-1710 **An Analytical Study of Energy Efficiency Opportunities in Some Industrial Facilities** M. Al-Haddad, M. Saravani, A. Abbas, R. Amano, University of Wisconsin, Milwaukee, Glendale, WI	1030 hrs AIAA-2018-1711 **AMTech CAPE Turbine Materials Standards Road Map: An Industry-Led Road Map Supporting the Next Generation of Power and Propulsion Manufacturing, Maintenance and Repair** M. Aller, T. Franta, H. Von Helldorff-Garn, Energy Florida, Inc., Cape Canaveral, FL	1100 hrs AIAA-2018-1712 **Net-Zero-Energy (NZE) Wastewater Treatment Plants (WWTPs)** A. Abbas, M. Saravani, M. Al-Haddad, R. Amano, University of Wisconsin, Milwaukee, Glendale, WI	1130 hrs AIAA-2018-1713 **Effect of Fuel Sensitivity on PAH Emissions in Low-Octane Naphtha Partially Premixed Flames.** S. Jain, A. Badhe, S. Aggarwal, University of Illinois, Chicago, Chicago, IL		

Thursday, 11 January 2018		
404-TFPC-3/GEPC-2 **0930 - 1200 hrs**	**Electric Aircraft Standards and Certification**	**Miami 2**

During this panel, a detailed discussion will be held concerning electric aircraft standards and certification requirements. Topics will include the current state of systems for electric/hybrid-electric aircraft propulsion, barriers to integration for commercial use, redundancy and fault tolerance requirements, and paths to approval and entry to service.

Moderator: Nick Tongson, AIAA

Panelists:

Tine Tomazic	**Sean Clarke**	**Tom Gunnarson**	**Neil Garrigan**	**David Jenson**
Pipistrel	NASA Armstrong Flight Research Center	Zee Aero/ASTM	GE Global Research/SAE EASG	Federal Aviation Administration

Thursday, 11 January 2018						
405-TP-10	**Nonequilibrium Flows IV**					**Sarasota 3**
Chaired by: T. SCHWARTZENTRUBER, University of Minnesota						
0930 hrs AIAA-2018-1714 **Effectiveness of Thermionic Emission for Cooling Hypersonic Vehicle Surfaces** K. Hanquist, I. Boyd, University of Michigan, Ann Arbor, Ann Arbor, MI	1000 hrs Oral Presentation **Comparison of Molecular Dynamics Studies Studies of Gas-Surface Interactions with N2 Beam Studies for HOPG** N. Mehta, University of Illinois, Urbana-Champaign, Urbana, IL; V. Murray, C. Xu, Montana State University, Bozeman, MT; D. Levin, University of Illinois, Urbana-Champaign, Urbana, IL; T. Minton, Montana State University, Bozeman, MT	1030 hrs AIAA-2018-1715 **Solution of 3D Time-Independent Schroedinger's Equation for Hydrogen Atom in Cartesian Coordinates** S. Iyengar, E. Perrell, Embry-Riddle Aeronautical University, Daytona Beach, FL	1100 hrs AIAA-2018-1716 **Electron-impact Ionization of Atomic Nitrogen** C. Ciccarino, Harvard University, Cambridge, MA; D. Savin, Columbia University, New York, NY	1130 hrs AIAA-2018-1717 **A Novel Quantum Mechanical Approach to Radiation Heat Transfer** F. Thomas, E. Perrell, Embry-Riddle Aeronautical University, Daytona Beach, FL		

Thursday, 11 January 2018						
406-TP-11	**Aerothermodynamics II**					**Sarasota 2**
Chaired by: R. BOND, University of Tennessee Space Institute and B. CRUDEN, AMA Inc at NASA Ames Research Center						
0930 hrs AIAA-2018-1718 **Characterization of a 10.5 kW RF-Plasma Generator by Optical Methods** M. Winter, H. Koch, University of Kentucky, Lexington, Lexington, KY; J. Beyer, University of Stuttgart, Stuttgart, Germany	1000 hrs AIAA-2018-1719 **Computational Prediction of NASA Langley HYMETS Arc Jet Flow with KATS** U. Duzel, O. Schroeder, A. Martin, University of Kentucky, Lexington, Lexington, KY	1030 hrs AIAA-2018-1720 **Overview of the first test-flight of the Kentucky Re-entry Universal Payload System (KRUPS)** J. Sparks, E. Whitmer, S. Smith, A. Martin, University of Kentucky, Lexington, Lexington, KY	1100 hrs AIAA-2018-1721 **Assessment of Reflected Shock Tunnels for Mars Entry Vehicle Ground Testing** M. Leibowitz, J. Austin, California Institute of Technology, Pasadena, CA	1130 hrs AIAA-2018-1722 **Computations of High Enthalpy Shock-waves in Electric Arc Shock-Tube (EAST) at NASA Ames** D. Chandel, I. Nompelis, G. Candler, University of Minnesota, Twin Cities, Minneapolis, MN		

Thursday, 11 January 2018						
407-UAS-9	**UAS Safety, Certification, and Integration**					**Tallahassee 3**
Chaired by: O. ARIFF, University of Salford						
0930 hrs AIAA-2018-1723 **Trends in Remotely Piloted Aircraft Systems Airworthiness** S. Cook, L. King, Northrop Grumman Corporation, Melbourne, FL	1000 hrs AIAA-2018-1724 **Design Considerations for Safer Small UAS** M. Logan, NASA Langley Research Center, Hampton, VA; J. Gundlach, FlightHouse Engineering, LLC, Portland, OR; T. Vranas, National Institute of Aerospace, Hampton, VA	1030 hrs AIAA-2018-1725 **Experimental and Simulation Weight Threshold Study for Safe Drone Operations** C. Koh, C. Deng, L. Li, Y. Zhao, S. Tan, Y. Chen, Nanyang Technological University, Singapore, Singapore; et al.	1100 hrs AIAA-2018-1726 **A Database System Architecture for Air-to-Ground UAS Link Characterization** A. Jadon, Z. Williams, C. Kafka, H. Rotta, S. Roy, C. Lum, University of Washington, Seattle, Seattle, WA	1130 hrs AIAA-2018-1727 **Unmanned Aircraft Systems (UAS) Traffic Management (UTM) National Campaign II** A. Aweiss, B. Owens, J. Rios, J. Homola, C. Mohlenbrink, NASA Ames Research Center, Moffett Field, CA		

Thursday, 11 January 2018						
408-WE-8	**Aeroelasticity, Structural Dynamics, and Loads Prediction II**					**Osceola 5**
Chaired by: J. JONKMAN, National Renewable Energy Laboratory and B. LEBLANC						
0930 hrs AIAA-2018-1728 **Assessment of Wind Parameter Sensitivity on Extreme and Fatigue Wind Turbine Loads** A. Robertson, L. Sethuraman, J. Jonkman, National Renewable Energy Laboratory, Golden, CO	1000 hrs AIAA-2018-1729 **Uncertainty Quantification of Wind Turbine Blade Load Measurement, Estimation, and Transformation** B. Ennis, J. White, J. Paquette, Sandia National Laboratories, Albuquerque, NM	1030 hrs AIAA-2018-1730 **Estimation of Rotor Loads Due to Wake Steering** J. White, B. Ennis, T. Herges, Sandia National Laboratories, Albuquerque, NM	1100 hrs AIAA-2018-1731 **Gravo-Aeroelastic Scaling a 13.2 MW Wind Turbine Blade to a 1-meter Model** M. Kaminski, E. Loth, C. Qin, University of Virginia, Charlottesville, Charlottesville, VA; D. Griffith, Sandia National Laboratories, Albuquerque, NM	1130 hrs AIAA-2018-1732 **Lifetime Reliability Evaluation of Spar Type Floating Wind Turbine Subjected to Combined Wind-Wave Action** X. Li, W. Zhang, D. Wu, University of Connecticut, Storrs, Storrs, CT	1200 hrs AIAA-2018-1733 **Hurricane effects on offshore wind turbines considering tower aerodynamics** S. Jung, G. Amirinia, Florida State University, Tallahassee, FL	

Thursday, 11 January 2018		
409-LUNCH-3 **1200 - 1400 hrs**	**Recognition Luncheon: Celebrating Achievements in Aerospace Design/Structures and Aerospace Literature**	**Osceola CD**

Keith Belvin
Principal Technologist for Advanced Materials and Structures, Space Technology Mission Directorate
NASA Langley Research Center

Ticket is required.

Thursday, 11 January 2018		
410-RL-5 **1230 - 1400 hrs**	**Rising Leaders: Lunch with AIAA Technical Committees**	**Osceola B**

Come learn how you can excel in your career and within the aerospace industry. Members of several AIAA Technical Committees will be taking time to meet with the Rising Leaders in Aerospace participants and highlight their role within AIAA as well as how their committees serve the industry and Institute at large. This interactive event is a great way to get insight from your peers, gain industry contacts and meet your fellow young professionals.

Boxed lunches will be available for the first 80 young professionals who attend.

Thursday, 11 January 2018						
411-AA-8	**Jet Noise III**					**Tampa 2**
Chaired by: A. PILON, Lockheed Martin Aeronautics and F. GROSVELD, Northrup Grumman						
1400 hrs AIAA-2018-1734 **Three-dimensional fluctuations in large-eddy simulation of a warm complex supersonic jet** J. Lewalle, Syracuse University, Syracuse, NY; C. Ruscher, S. Gogineni, Spectral Energies, LLC, Dayton, OH	1430 hrs AIAA-2018-1735 **Data Fusion to Improve Supersonic Jet Data** C. Ruscher, S. Gogineni, Spectral Energies, LLC, Dayton, OH; A. Magstadt, M. Berry, M. Glauser, Syracuse University, Syracuse, NY	1500 hrs AIAA-2018-1736 **A Deep Learning Approach to Jet Noise Prediction** A. Tenney, M. Glauser, J. Lewalle, Syracuse University, Syracuse, NY	1530 hrs AIAA-2018-1737 **Large Eddy Simulation of Three-Stream Jets** J. Xiong, F. Liu, D. Papamoschou, University of California, Irvine, Irvine, CA	1600 hrs AIAA-2018-1738 **Characterization of Three-stream Jets** C. Ruscher, S. Gogineni, Spectral Energies, LLC, Dayton, OH	1630 hrs AIAA-2018-1739 **The Very Near Pressure Field of Three-Stream Jets** A. Adam, D. Papamoschou, J. Xiong, F. Liu, University of California, Irvine, Irvine, CA	1700 hrs AIAA-2018-1740 **Perceived Noise Assessment of Offset Three-Stream Nozzles for Low Noise Supersonic Aircraft** D. Papamoschou, V. Phong, University of California, Irvine, Irvine, CA

Thursday, 11 January 2018						
412-ACD-7	**New Technologies and Aircraft System Architectures**					**Tampa 1**
Chaired by: R. VOS, TU Delft fac. Aerospace Engineering and I. CHAKRABORTY, ASDL, Georgia Tech						
1400 hrs AIAA-2018-1741 **Integrated Assessment of Vehicle-level Performance of Novel Aircraft Concepts and Subsystem Architectures in Early Design** Y. Cai, I. Chakraborty, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1430 hrs AIAA-2018-1742 **Conceptual Design of Distributed Propellers Aircraft: Non-Linear Aerodynamic Model Verification of Propeller-Wing Interaction in High-Lifting Configuration** B. Bohari, Q. Borlon, P. Mendoza-Santos, ISAE-Supaero, Toulouse, France; A. Sgueglia, ONERA, Toulouse, France; E. Benard, ISAE-Supaero, Toulouse, France; M. Bronz, ENAC, Toulouse, France; et al.	1500 hrs AIAA-2018-1743 **Revolutionary Affordable Architecture Generation & Evaluation - Application to a System of Attritable UAVs** J. Pagan, D. Huynh, S. Schafer, O. Pinon-Fischer, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1530 hrs AIAA-2018-1744 **Preliminary Feasibility Study of a Multi-Purpose Aircraft Concept with a Leading-Edge Embedded Cross-Flow Fan** S. Karpuk, P. Kazarin, S. Gudmundsson, V. Golubev, Embry-Riddle Aeronautical University, Daytona Beach, FL	1600 hrs AIAA-2018-1745 **Exploration and Sizing of a Large Passenger Aircraft with Distributed Ducted Electric Fans** A. Sgueglia, P. Schmollgruber, N. Bartoli, O. Atinault, ONERA, Toulouse, France; E. Benard, J. Morlier, Higher Institute of Aeronautics and Space, Toulouse, France	1630 hrs AIAA-2018-1746 **Future Technologies Prioritization for Aircraft Conceptual Design** K. Amadori, E. Bäckström, C. Jouannet, Saab Group, Linköping, Sweden	

Thursday, 11 January 2018						
413-ACD-8/TFPC-4	**Electric Aircraft Design I**					**Tampa 3**
Chaired by: M. PATTERSON, NASA Langley Research Center and R. MCDONALD, California Polytechnic State University-San Luis Obispo						
1400 hrs AIAA-2018-1747 **Structural Configuration Analysis of Advanced Flight Vehicle Concepts with Distributed Hybrid-Electric Propulsion** V. Mukhopadhyay, M. McMillin, T. Ozoroski, NASA Langley Research Center, Hampton, VA	1430 hrs Oral Presentation **Summary of 2017 NASA Workshop on Assessment of Advanced Battery Technologies for Aerospace Applications** A. Misra, NASA Glenn Research Center, Cleveland, OH	1500 hrs AIAA-2018-1748 **Integrated Gas Turbine and Environmental Control System Pack Sizing and Analysis** M. Shi, I. Chakraborty, J. Tai, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1530 hrs AIAA-2018-1749 **Mission Analysis and Component-Level Sensitivity Study of Hybrid-Electric General Aviation Propulsion Systems** T. Dean, G. Wroblewski, P. Ansell, University of Illinois, Urbana-Champaign, Urbana, IL	1600 hrs AIAA-2018-1750 **Development of Propulsion System Models for Electric-VTOL Aircraft** W. Ng, A. Datta, University of Maryland, College Park, College Park, MD	1630 hrs AIAA-2018-1751 **Mission-Level Study of Integrated Gas Turbine and Environmental Control System Architectures** M. Shi, I. Chakraborty, Y. Cai, J. Tai, D. Mavris, Georgia Institute of Technology, Atlanta, GA	

Thursday, 11 January 2018						
414-ACD-9	**Aircraft Sizing and Performance Analysis**					**Daytona 1**
Chaired by: W. ANEMAAT, DARcorporation						
1400 hrs AIAA-2018-1752 **Real Pilots Don't Go Around: Discontinued Approach and Balked Landing Climb Performance** T. Takahashi, D. Wood, J. Beard, Arizona State University, Tempe, AZ	1430 hrs AIAA-2018-1753 **Case Study of Quality Function Deployment Method in Defence Missions** B. Nicholds, C. Bil, RMIT University, Bundoora, Australia; P. Marzocca, Defence Science and Technology Group, Melbourne, Australia; J. Mo, RMIT University, Bundoora, Australia; M. Stimson, D. Holmes, Defence Science and Technology Group, Melbourne, Australia	1500 hrs AIAA-2018-1754 **An Overview of the Layered and Extensible Aircraft Performance System (LEAPS) Development** J. Welstead, NASA Langley Research Center, Hampton, VA; D. Caldwell, R. Condotta, N. Monroe, Analytical Mechanics Associates, Inc., Hampton, VA	1530 hrs AIAA-2018-1755 **An Energy-Based Low-Order Approach for Mission Analysis of Air Vehicles in LEAPS** F. Capristan, J. Welstead, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2018-1756 **The Effect of Piloting Practices Upon Actual as Opposed to Scheduled Landing Field Performance** D. Wood, T. Takahashi, Arizona State University, Tempe, AZ	1630 hrs AIAA-2018-1757 **Sensitivity Analysis of Aero-Propulsive Coupling for Over-Wing-Nacelle Concepts** A. Renganathan, S. Berguin, M. Chen, J. Ahuja, J. Tai, D. Mavris, Georgia Institute of Technology, Atlanta, GA; et al.	

Thursday, 11 January 2018						
415-AFM-12	**Flight Dynamic Modeling**					**Osceola 3**
Chaired by: T. LAVIN, Sandia National Laboratories and Z. PUTNAM, University of Illinois at Urbana-Champaign						
1400 hrs AIAA-2018-1758 **Wake Modelling for Aerial Refuelling Using Aerodynamic Adjoints** L. Peristy, R. Perez, P. Jansen, Royal Military College of Canada, Kingston, Canada	1430 hrs AIAA-2018-1759 **Nonlinear Models for Representing Aerodynamic Coefficients of a Wing in Ground Effect** P. Boschetti, E. Cárdenas, Simón Bolívar University, Naiguata , Venezuela	1500 hrs AIAA-2018-1760 **Reduced Order Modeling of the Pressure Distribution over the AGARD 445.6 Wing** Y. Issac, Georgia Institute of Technology, Atlanta, GA; W. Silva, NASA Langley Research Center, Hampton, VA; D. Mavris, Georgia Institute of Technology, Atlanta, GA	1530 hrs AIAA-2018-1761 **Effect of Rectangular and Airfoil Planar Member Cross-section on Cascade Fin Aerodynamics** M. Tripathi, A. Misra, Defence Institute of Advanced Technology, Pune, India; M. M.Sucheendran, Indian Institute of Technology Hyderabad, Hyderabad, India	1600 hrs AIAA-2018-1762 **Estimating Uncertainty Bounds for Modified Configurations from an Aerodynamic Model of a Nominal Configuration** C. Denham, M. Patil, C. Roy, Virginia Polytechnic Institute and State University, Blacksburg, VA	1630 hrs AIAA-2018-1763 **Advanced Flight Dynamic Modelling of Variable Pitch Quadrotor** V. Chipade, A. Abhishek, M. Kothari, Indian Institute of Technology Kanpur, Kanpur, India	1700 hrs AIAA-2018-1764 **Model Predictive Cueing** W. Gray, U.S. Air Force Test Pilot School, Edwards AFB, CA; J. Kemper, Calspan, Inc., Buffalo, NY

Thursday, 11 January 2018						
416-AMT-6	**Velocimetry I**					**Osceola 1**
Chaired by: K. LOWE, Virginia Tech and N. PARZIALE, Stevens Institute of Technology						
1400 hrs AIAA-2018-1765 **Decomposition of Periodic Eddies with Varying Energy in a Turbulent Flow Using a Directional Averaging Technique** C. Moon, D. Zhang, K. Lowe, E. Paterson, Virginia Polytechnic Institute and State University, Blacksburg, VA	1430 hrs AIAA-2018-1766 **Cross-Correlation Doppler Global Velocimetry using Rayleigh and Mie Scattering** M. Boyda, K. Lowe, Virginia Polytechnic Institute and State University, Blacksburg, VA	1500 hrs AIAA-2018-1767 **High-Resolution Velocimetry from Tracer Particle Fields Using Wavelet-based Optical Flow** B. Schmidt, J. Sutton, Ohio State University, Columbus, OH	1530 hrs AIAA-2018-1768 **Shear layer measurements along curved surfaces using the FLEET method** Y. Zhang, R. Miles, Princeton University, Princeton, NJ	1600 hrs AIAA-2018-1769 **Non-Intrusive Hypersonic Freestream and Turbulent Boundary-Layer Velocity Measurements in AEDC Tunnel 9 Using FLEET** L. Dogariu, Plasma TEC, Inc., Princeton, NJ; A. Dogariu, Princeton University, Princeton, NJ; R. Miles, Plasma TEC, Inc., Princeton, NJ; M. Smith, E. Marineau, Arnold Engineering Development Complex, Silver Spring, MD	1630 hrs AIAA-2018-1770 **A Microresonator Based Laser Velocity Sensor** B. Wise, V. Eghbalifarkoosh, V. Otugen, Southern Methodist University, Dallas, TX; D. Fourguette, Michigan Aerospace Corporation, Ann Arbor, MI	1700 hrs AIAA-2018-1771 **Two-Dimensional Krypton Tagging Velocimetry (KTV-2D) Investigation of Shock-Wave/Turbulent Boundary-Layer Interaction** M. Mustafa, N. Parziale, Stevens Institute of Technology, Hoboken, NJ; E. Marineau, M. Smith, Arnold Engineering and Development Complex, Silver Spring, MD

Thursday, 11 January 2018						
417-AMT-7/PC-24	**Measurements for Flame Characterization**					**Osceola 2**
Chaired by: R. PITZ, Vanderbilt University and C. SLABAUGH, Purdue University						
1400 hrs AIAA-2018-1772 **Filtered Rayleigh Scattering Thermometry in Premixed Flames** I. Trueba Monje, J. Sutton, Ohio State University, Columbus, OH	1430 hrs AIAA-2018-1773 **Carbon Monoxide Femtosecond TALIF in Turbulent Flames** D. Richardson, Sandia National Laboratories, Albuquerque, NM; S. Roy, Spectral Energies, LLC, Dayton, OH; J. Gord, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2018-1774 **Experimental Investigation of Self-sustaining Spray Flame in Annular O_2 Sonic Dispersions of Liquid Ethanol** Y. Wu, M. Gragston, Z. Zhang, University of Tennessee, Knoxville, Knoxville, TN	1530 hrs AIAA-2018-1775 **Time-gated Line-LIBS for Fuel/Air Ratio Measurements at Elevated Pressures** Y. Wu, M. Gragston, Z. Zhang, C. Smith, University of Tennessee, Knoxville, Knoxville, TN; P. Hsu, N. Jiang, Spectral Energies, LLC, Dayton, OH; et al.	1600 hrs AIAA-2018-1776 **Ultrafast Laser-Induced-Breakdown Spectroscopy (LIBS) for F/A-Ratio Measurement of Hydrocarbon Flames** A. Patnaik, P. Hsu, Spectral Energies, LLC, Dayton, OH; Y. Wu, M. Gragston, Z. Zhang, University of Tennessee, Knoxville, Knoxville, TN; J. Gord, Air Force Research Laboratory, Wright-Patterson AFB, OH; et al.	1630 hrs AIAA-2018-1777 **Two-photon laser-induced fluorescence imaging of CW microwave-enhanced sodium-doped propellant flames** K. Zhu, S. Barkley, C. Dedic, T. Sippel, J. Michael, Iowa State University, Ames, IA	1700 hrs AIAA-2018-1778 **Laser Absorption Spectroscopy of Carbon Monoxide near 4.97 μm for Temperature and Species Measurements in Hydrocarbon-Fueled Rockets** D. Lee, F. Bendana, M. Spearrin, University of California, Los Angeles, Los Angeles, CA

Thursday, 11 January 2018						
418-APA-43	**Special Session: Simulation of Rotor in Hover II**					**Miami 3**
Chaired by: R. NARDUCCI, Boeing Defense, Space & Security and R. JAIN, Aviation Development Directorate (AMRDEC)						
1400 hrs AIAA-2018-1779 **Hovering Rotor Simulation using OVERFLOW with Improved Turbulence Model** B. Min, Sikorsky, a Lockheed Martin Company, Stratford, CT; C. Reimann, United Technologies Corporation, East Hartford, CT; B. Wake, Sikorsky, a Lockheed Martin Company, Bridgeport, CT; S. Jee, Gwangju Institute of Science and Technology, Gwangju, South Korea; J. Baeder, University of Maryland, College Park, College Park, MD	1430 hrs AIAA-2018-1780 **Numerical Simulations and Comparisons of PSP and S-76 Rotors in Hover** Q. Zhao, University of Toledo, Toledo, OH; J. Wang, Sun Yat-Sen University, Guangzhou, China; C. Sheng, University of Toledo, Toledo, OH	1500 hrs AIAA-2018-1781 **Hover Prediction Assessment of CREATE™-AV Helios for Engineering Applications** T. Wong, D. O'Brien, Army Aviation and Missile Research Development and Engineering Center, Redstone Arsenal, AL	1530 hrs AIAA-2018-1782 **Optimization of S-76 rotor blade for hover performance** R. Eshcol, Y. Dewan, Siemens, Orlando, FL; C. Zhou, L. Sankar, Georgia Institute of Technology, Atlanta, GA	1600 hrs AIAA-2018-1783 **Further Assessment of Analysis Methods for Rotor/Airframe Interaction in Hover** T. Quackenbush, G. Whitehouse, B. Silbaugh, M. Yu, Continuum Dynamics, Inc., Ewing, NJ		

Thursday, 11 January 2018						
419-APA-44	**Transonic and Supersonic Aerodynamics II**					**Gainesville 1**
Chaired by: G. GATLIN, NASA Langley Research Center and V. BHAGWANDIN, US Army Research Laboratory						
1400 hrs AIAA-2018-1784 **Aerodynamics of a Transonic Airfoil above Wavy Ground** B. Gao, Washington University in St. Louis, St. Louis, MO; Q. Qu, Beihang University, Beijing, China; R. Agarwal, Washington University in St. Louis, St. Louis, MO	1430 hrs AIAA-2018-1785 **High-Speed Flow over an Open Cavity Using High-Resolution Numerical Scheme** O. Khan, Tuskegee University, Auburn, AL; G. Arshed, National University of Sciences and Technology, Karachi, Pakistan	1500 hrs AIAA-2018-1786 **Parametric study of supersonic flow over a wall-mounted hemisphere** P. Morgan, Ohio Aerospace Institute, Cleveland, OH; S. Sherer, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2018-1787 **A Numerical Study on Transonic Shock Buffet Alleviation Through Oscillating Shock Control Bumps** J. Geoghegan, N. Giannelis, G. Vio, University of Sydney, Sydney, Australia	1600 hrs AIAA-2018-1788 **Robust Parallel Computations of Turbulent Aerodynamic Flows** L. Carvalho, A. Almeida, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; R. da Silva, E. Basso, J. Azevedo, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil	1630 hrs AIAA-2018-1789 **Transition Behavior of Shock Waves from Oscillation to Pulsation around a Forward-Facing Concave with Spike** T. Mizukaki, Tokai University, Hiratsuka, Japan; K. Yamada, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	

Thursday, 11 January 2018

420-APA-45 — **Airfoil/Wing/Configuration Aerodynamics IV** — **Gainesville 2**

Chaired by: K. KONTIS, University of Glasgow and B. HINSON, Textron Aviation

1400 hrs	1430 hrs	1500 hrs	1530 hrs	1600 hrs	1630 hrs	1700 hrs
AIAA-2018-1790	AIAA-2018-1791	AIAA-2018-1792	AIAA-2018-1793	AIAA-2018-1794	AIAA-2018-1795	AIAA-2018-1796
Minimum Induced Drag Conditions for Strut-and Truss-Braces Wings	**Aerodynamic Design of Airfoil for Flying Wing Mars Airplane**	**Design and Computational Fluid Dynamics Analysis of an Idealized Modern Wingsuit**	**Investigation and Improvement of Directional Stability and Control under Slipstream Effects**	**An Experimental Study on Gust Load Alleviation using Passive Ventilation Wing Concept**	**A Parametric CFD Study for the Effect of Spanwise Parabolic Chord Distribution on the Thrust of an Untwisted Helicopter Rotor Blade**	**Effect of Fractal Endplates on the Wingtip Vortex**
L. Demasi, San Diego State University, San Diego, CA; G. Monegato, Technical University of Turin, Turin, Italy; R. Cavallaro, Charles III University of Madrid, Madrid, Spain; R. Rybarczyk, San Diego State University, San Diego, CA	T. Harada, Tokyo University of Science, Katsushika, Japan; K. Fujita, A. Oyama, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; H. Mamori, M. Yamamoto, Tokyo University of Science, Katsushika, Japan	M. Ferguson, R. Agarwal, Washington University in St. Louis, St. Louis, MO	D. Keller, R. Rudnik, German Aerospace Center (DLR), Brunswick, Germany	Y. Tani, S. Seki, S. Aso, Kyushu University, Fukuoka, Japan	M. Elfarra, M. Kaya, F. Kadioglu, Ankara Yildirim Beyazit University, Ankara, Turkey	P. Gehlert, G. Cafiero, J. Vassilicos, Imperial College London, London, United Kingdom

Thursday, 11 January 2018

421-APA-46/FD-50 — **Flow Control VII: Sweeping Jets** — **Captiva 2**

Chaired by: J. LITTLE, The University of Arizona and J. MILGRAM, Office of Naval Research

1400 hrs	1430 hrs	1500 hrs	1530 hrs	1600 hrs		
AIAA-2018-1797	AIAA-2018-1798	AIAA-2018-1799	AIAA-2018-1800	AIAA-2018-1801		
Delaying Separation Through Sweeping Jet Flow Control	**Computational Validation and Analysis of Interaction of a Sweeping Jet and an Attached Turbulent Flow**	**Active Flow Control for Trailing Edge Flap Separation**	**Sweeping Jet Active Flow Control on a Representative High Performance Military Wing**	**A PIV Study of Baseline and Controlled Flow over a Highly Deflected Flap of a Generic Trapezoidal Wing**		
M. Salinas, J. Wojewodka, B. Werling, M. Lewis, U.S. Military Academy, West Point, NY; D. Schatzman, J. Wilson, Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA; et al.	S. Aram, H. Shan, Naval Surface Warfare Center, Bethesda, MD; F. Ostermann, R. Woszidlo, Technical University of Berlin, Berlin, Germany	L. Pack Melton, M. Koklu, M. Andino, J. Lin, NASA Langley Research Center, Hampton, VA; E. Shellabarger, Iowa State University, Ames, IA	T. Ghee, Naval Air Systems Command, Patuxent River, MD; S. Raghu, Advanced Fluidics, LLC, Columbia, MD; A. Morgan, Naval Air Systems Command, Patuxent River, MD	K. Genschow, P. Tewes, J. Little, I. Wygnanski, University of Arizona, Tucson, Tucson, AZ		

Thursday, 11 January 2018

422-CMS-1 — **Communication Systems** — **Tallahassee 3**

Chaired by: C. NIEDERHAUS, NASA Glenn Research Center

1400 hrs	1430 hrs	1500 hrs	1530 hrs			
AIAA-2018-1802	AIAA-2018-1803	AIAA-2018-1804	AIAA-2018-1805			
A Probabilistic Network Formulation for Satellite Swarm Communications	**An Investigation into Optimal Estimation of Open Architecture Performance Parameters**	**A Fault-Tolerant Clock Synchronization Protocol For Wireless Networks**	**LinkStar-X, A High Performance, Secure, Integrated Flight Computer and Radio System for Cubesats In LEO and Deep Space**			
V. Adams, M. Peck, Cornell University, Ithaca, NY	S. Cafarelli, A. Hebert, J. Shaver, Air Force Research Laboratory, Eglin AFB, FL	M. Malekpour, NASA Langley Research Center, Hampton, VA	A. Santangelo, sci_Zone, Inc., Rio Rancho, NM			

Thursday, 11 January 2018

423-F360-8 — **Human-Machine Teaming** — **Osceola A**

1400 - 1600 hrs

Moderator: Bill Casebeer, Senior Research Area Manager, Human Systems and Autonomy, Lockheed Martin Advanced Technology Laboratories

Panelists:

Julia Badger
Robonaut Project Manager, Autonomous Spacecraft Management Projects
NASA Johnson Space Center

Matthias Scheutz
Director, Human-Robot Interaction Lab
Tufts University

Eileen Liu
Research Scientist, Human Systems and Anatomy
Lockheed Martin Corporation Advanced Technology Laboratories

Victoria Coleman
Chief Technology Officer
Wikimedia Foundation

Michael Casale
Chief Science Officer
STRIVR

Thursday, 11 January 2018						
424-FD-51	**Shock-Boundary Layer Interactions I**					**Sun 6**
Chaired by: J. SIVASUBRAMANIAN, The University of Arizona						
1400 hrs AIAA-2018-1806 **Investigating the effects of non-adiabatic walls on shock/boundary-layer interaction at low Reynolds number using direct numerical simulations** P. Volpiani, University of Maryland, College Park, College Park, MD; M. Bernardini, University of Rome "La Sapienza", Rome, Italy; J. Larsson, University of Maryland, College Park, College Park, MD	1430 hrs AIAA-2018-1807 **Numerical Investigation of Shock Wave Turbulent Boundary Layer Interactions** A. Gross, New Mexico State University, Las Cruces, NM; J. Little, H. Fasel, University of Arizona, Tucson, Tucson, AZ	1500 hrs AIAA-2018-1808 **Influence of Flat Plate Leading Edge Sweep and Boundary Layer State on Unswept Shock Boundary Layer Interaction** I. Stab, Technical University of Berlin, Berlin, Germany; J. Threadgill, J. Little, University of Arizona, Tucson, Tucson, AZ	1530 hrs AIAA-2018-1809 **Study of shock wave boundary layer interaction using modal decomposition** N. Chaganti, B. Brooker, S. Olcmen, University of Alabama, Tuscaloosa, Tuscaloosa, AL; P. Kolhe, Indian Institute of Technology Hyderabad, Hyderabad, India	1600 hrs AIAA-2018-1810 **Physical insight into a Mach 7.2 compression corner flow** K. Ritos, I. Kokkinakis, D. Drikakis, University of Strathclyde, Glasgow, United Kingdom	1630 hrs AIAA-2018-1811 **Effect of Vortex Generators on Corner Flow Separation Caused by Shock Wave-Boundary-Layer Interaction** S. Koike, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; H. Babinsky, University of Cambridge, Cambridge, United Kingdom	1700 hrs AIAA-2018-1812 **The Effect of Thermochemistry on Prediction of Aerothermodynamic Loading over a Double Cone in a Laminar Hypersonic Flow** N. Kianvashrad, D. Knight, Rutgers University, New Brunswick, NJ

Thursday, 11 January 2018						
425-FD-52	**Multiphase Flows II: Computations**					**Sun 4**
Chaired by: E. DEMAURO, Rutgers University						
1400 hrs AIAA-2018-1813 **Numerical analysis on mixing processes for transcritical real-fluid simulations** P. Ma, H. Wu, D. Banuti, M. Ihme, Stanford University, Stanford, CA	1430 hrs AIAA-2018-1814 **A Finite-Volume Method for Compressible Viscous Multiphase Flows** A. Pandare, H. Luo, North Carolina State University, Raleigh, NC	1500 hrs AIAA-2018-1815 **Real-Gas Effects and Phase Separation in Underexpanded Jets at Engine-Relevant Conditions** C. Traxinger, M. Banholzer, M. Pfitzner, University of the German Federal Armed Forces, Munich, Germany	1530 hrs AIAA-2018-1816 **Modeling MultiPhase Flow: Spray Break-up Using Volume of Fluids in a dynamic LES FEM method** J. Waters, D. Carrington, Los Alamos National Laboratory, Los Alamos, NM	1600 hrs AIAA-2018-1817 **Validity of Miles Equation in Predicting Propellant Slosh Damping in Baffled Tanks at Variable Slosh Amplitude** H. Yang, CFD Research Corporation, Huntsville, AL; J. West, NASA Marshall Space Flight Center, Huntsville, AL	1630 hrs AIAA-2018-1818 **Extension of a Standard Flow Solver for Simulating Phase Change in Cryogenic Tanks** M. Konopka, Airbus, Bremen, Germany	1700 hrs AIAA-2018-1819 **A Parallel All-Speed Algorithm for High-Resolution Simulations of Turbulent Reacting and Multiphase Flows Using SLAU2 Scheme in a Rule-Based Framework** S. Thakur, J. Wright, Streamline Numerics, Inc., Gainesville, FL

Thursday, 11 January 2018						
426-FD-53	**Stability and Transition V: High-Speed Cones**					**Miami 1**
Chaired by: T. KOCIAN, Texas A&M University and J. JEWELL, Air Force Research Laboratory						
1400 hrs AIAA-2018-1820 **Effects of Initial Disturbance Amplitude on Hypersonic Crossflow Instability** A. Moyes, T. Kocian, D. Mullen, H. Reed, Texas A&M University, College Station, TX	1430 hrs AIAA-2018-1821 **Influence of Environmental Disturbances on Hypersonic Crossflow Instability on the HIFiRE-5 Elliptic Cone** I. Neel, A. Leidy, N. Tichenor, R. Bowersox, Texas A&M University, College Station, TX	1500 hrs AIAA-2018-1822 **Transition on a Variable Bluntness 7-Degree Cone at High Reynolds Number** J. Jewell, Air Force Research Laboratory, Wright-Patterson AFB, OH; R. Kennedy, S. Laurence, University of Maryland, College Park, College Park, MD; R. Kimmel, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2018-1823 **Nonlinear Evolution and Breakdown of Azimuthally Compact Crossflow Vortex Pattern over a Yawed Cone** M. Choudhari, F. Li, P. Paredes, NASA Langley Research Center, Hampton, VA; L. Duan, Missouri University of Science and Technology, Rolla, MO	1600 hrs AIAA-2018-1824 **Diffusion and chemical non-equilibrium effects on hypersonic boundary-layer stability** F. Miró Miró, F. Pinna, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium; E. Beyak, Texas A&M University, College Station, TX; P. Barbante, Technical University of Milan, Milan, Italy; H. Reed, Texas A&M University, College Station, TX	1630 hrs AIAA-2018-1825 **Hypersonic Fluid-Structure Interactions on a Slender Cone** K. Casper, S. Beresh, J. Henfling, R. Spillers, P. Hunter, S. Spitzer, Sandia National Laboratories, Albuquerque, NM	1700 hrs AIAA-2018-1826 **Consistent Turbulent Boundary Layer Wall Pressure Spectra and Coherence Functions** L. DeChant, J. Smith, Sandia National Laboratories, Albuquerque, NM

Thursday, 11 January 2018						
427-FD-54	**Unsteady Flows III**					**Sun 5**
Chaired by: D. GARMANN, Air Force Research Laboratory and O. STALNOV, Technical University of Berlin Germany						
1400 hrs AIAA-2018-1827 **Geometrical Reduced Order Modeling (ROM) by Proper Orthogonal Decomposition (POD) for the incompressible Navier Stokes equations** N. Akkari, R. Mercier, Safran Group, Châteaufort, France; V. Moureau, Rouen University, Rouen, France	1430 hrs AIAA-2018-1828 **Computational Study of a Vortex-Ring Pair Interacting with a Constant-Wall-Temperature Heated Wall** H. Jabbar, A. Naguib, Michigan State University, East Lansing, MI	1500 hrs AIAA-2018-1829 **Computational Study of Asymmetric Wake-Vortex Around Ogive-Cylinder Body at High Angles of Attack** O. Obeid, I. AlQadi, King Abdulaziz University, Jeddah, Saudi Arabia	1530 hrs AIAA-2018-1830 **Rotor Wake Structure Development in Low Reynolds Number Conditions** M. Sutkowy, A. Pandey, M. McCrink, J. Gregory, Ohio State University, Columbus, OH	1600 hrs AIAA-2018-1831 **Adaptive Mesh Refinement on Parallel Heterogeneous (CPU/GPU) Architectures** S. Guzik, J. Riley, Colorado State University, Fort Collins, CO		

Thursday, 11 January 2018						
428-FD-55	**CFD Applications II**					**Sun 3**
Chaired by: M. GALBRAITH						
1400 hrs AIAA-2018-1832 **Numerical Investigation of Active Flow Control for Front-Loaded Low-Pressure Turbine Cascade** S. Romero Martinez, A. Gross, New Mexico State University, Las Cruces, NM	1430 hrs AIAA-2018-1833 **Comparison of the Finite Volume and Discontinuous Galerkin schemes for the Double Vortex Pairing Problem using the SU2 Software Suite** K. Singh, D. Drikakis, M. Frank, I. Kokkinakis, University of Strathclyde, Glasgow, United Kingdom; J. Alonso, Stanford University, Stanford, CA; T. Economon, Bosch Research and Technology Centre, Palo Alto, CA; et al.	1500 hrs AIAA-2018-1834 **Simulations of Hypersonic Flow Regions with Fick's Law of Diffusion with addition of Different Diffusivity Models** H. Gür, S. Eyi, Middle East Technical University, Ankara, Turkey	1530 hrs AIAA-2018-1835 **Multi-Layer Ice Accretion Simulations Using a Level-Set Method With B-Spline Representation** S. Bourgault-Cote, École Polytechnique de Montréal, Montréal, Canada; J. Docampo-Sánchez, Massachusetts Institute of Technology, Cambridge, MA; E. Laurendeau, École Polytechnique de Montréal, Montréal, Canada			

Thursday, 11 January 2018						
429-FD-56	**Special Session: Experimental Measurements of Gas-Surface Interactions for Hypersonic Flows**					**Sun D**
Chaired by: T. SCHWARTZENTRUBER, University of Minnesota and R. GOSSE, AFRL/RQH						
1400 hrs Oral Presentation **Behavior of Ultra High Temperature Aerospace Materials in High Enthalpy Flows Using an Oxyacetylene Torch Facility** E. Corral, University of Arizona, Tucson, Tucson, AZ	1430 hrs Oral Presentation **Determination of Surface Reaction Rates from Laser-Induced Fluorescence Measurements of Species** D. Fletcher, University of Vermont, Burlington, Burlington, VT	1500 hrs Oral Presentation **Optical Diagnostics for the Characterization of Plasma-Ablator Interactions** C. Laux, École Centrale Paris, Paris, France	1530 hrs Oral Presentation **Plasma Ground Testing Facility for GSI Characterization under Reentry Flight Conditions** O. Chazot, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	1600 hrs Oral Presentation **Single Nanoparticle Mass Spectrometry for High Temperature Sublimation and Oxidation Kinetics** S. Anderson, University of Utah, Salt Lake City, Salt Lake City, UT	1630 hrs Oral Presentation **Molecular Beam Scattering Studies of Carbon Oxidation at High Temperature** T. Minton, Montana State University, Bozeman, MT	1700 hrs Oral Presentation **Oxidation and Nitridation of Graphite in Buoyant, Stagnation and Shear Flow Using Imaging Fourier Transformation Spectrometry** G. Perram, Air Force Institute of Technology, Wright-Patterson AFB, OH

Thursday, 11 January 2018						
430-GNC-37/IS-16	**V&V of Adaptive Systems V**					**Naples 2**
Chaired by: J. MUSE, AFRL/RQQA and T. YUCELEN						
1400 hrs AIAA-2018-1836 **An Adaptive Flight Control System For A Flapping Wing Aircraft** B. Chandrasekaran, J. Steck, Wichita State University, Wichita, KS	1430 hrs AIAA-2018-1837 **An Intelligent Propulsion Control Architecture to Enable More Autonomous Vehicle Operation** J. Litt, NASA Glenn Research Center, Cleveland, OH; T. Sowers, Vantage Partners, LLC, Brook Park, OH; D. Simon, A. Owen, NASA Glenn Research Center, Cleveland, OH; A. Rinehart, A. Chicatelli, Vantage Partners, LLC, Brook Park, OH; et al.	1500 hrs AIAA-2018-1838 **Retrospective Cost Adaptive PID Control of Quadcopter/Fixed-Wing Mode Transition in a VTOL Aircraft** A. Ansari, N. Zhang, D. Bernstein, University of Michigan, Ann Arbor, Ann Arbor, MI	1530 hrs AIAA-2018-1839 **Integrated Path Planning and Control for Impaired Aircraft Approach and Landing** M. Deniz, S. Balakrishnan, Missouri University of Science and Technology, Rolla, MO; T. Yucelen, University of South Florida, Tampa, FL	1600 hrs AIAA-2018-1840 **Robustness of an Adaptive Control Law to Uncertain Input Dynamics** K. Dogan, B. Gruenwald, T. Yucelen, University of South Florida, Tampa, FL; J. Muse, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2018-1841 **Observer-Free Output Feedback Adaptive Control for Multivehicle Systems with Exogenous Disturbances** A. Albattat, Missouri University of Science and Technology, Rolla, MO; T. Yucelen, B. Gruenwald, University of South Florida, Tampa, FL; J. Sarangapani, Missouri University of Science and Technology, Rolla, MO	1700 hrs AIAA-2018-1842 **Evaluation of Heterogeneous Trajectory Sets for Unmanned Rotorcraft** A. Verma, University of Minnesota, Twin Cities, Minneapolis, MN; F. Adolf, S. Benders, J. Dauer, German Aerospace Center (DLR), Braunschweig, Germany

Thursday, 11 January 2018						
431-GNC-38	**Guidance and Control of Mini/Micro Air Vehicles**					**Sanibel 1**
Chaired by: J. LANGELAAN, Pennsylvania State University and E. JOHNSON, Georgia Institute of Technology						
1400 hrs AIAA-2018-1843 **Tightly Coupled Navigation and Wind Estimation for Mini UAVs** M. Brossard, Paris Institute of Technology, Paris, France; J. Condomines, French Civil Aviation University, Toulouse, France; S. Bonnabel, Paris Institute of Technology, Paris, France	1430 hrs AIAA-2018-1844 **Model Aided Estimation of Angle of Attack, Sideslip Angle, and 3D Wind without Flow Angle Measurements** P. Tian, H. Chao, University of Kansas, Lawrence, Lawrence, KS	1500 hrs AIAA-2018-1845 **Efficient and Low-cost Localization of Radio Signals with a Multirotor UAV** L. Dressel, M. Kochenderfer, Stanford University, Stanford, CA	1530 hrs AIAA-2018-1846 **Comparison between A* and RRT Algorithms for UAV Path Planning** C. Zammit, E. Van Kampen, Delft University of Technology, Delft, The Netherlands	1600 hrs AIAA-2018-1847 **Efficient Prioritization in Explicit Adaptive NMPC through Reachable-Space Search** V. Desaraju, N. Michael, Carnegie Mellon University, Pittsburgh, PA	1630 hrs AIAA-2018-1848 **Transition Control of a Tilt-Rotor VTOL UAV** Y. Yeo, H. Liu, University of Toronto, Toronto, Canada	1700 hrs AIAA-2018-1849 **Guidance and Control for a Mars Helicopter** H. Grip, D. Scharf, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; C. Malpica, W. Johnson, NASA Ames Research Center, Moffett Field, CA; M. Mandic, G. Singh, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; et al.

Thursday, 11 January 2018						
432-GNC-39	**Aerospace Robotics III**					**Captiva 1**
Chaired by: H. LIU, University of Toronto and S. ULRICH, Carleton University						
1400 hrs AIAA-2018-1850 **Development of Flight Dynamics Model of Quadrotor** A. Shastry, M. Kothari, A. Abhishek, Indian Institute of Technology Kanpur, Kanpur, India	1430 hrs AIAA-2018-1851 **Development of Flight Dynamics Model and Control of Biplane-Quadrotor UAV** S. Swarnkar, H. Parwana, M. Kothari, A. Abhishek, Indian Institute of Technology Kanpur, Kanpur, India	1500 hrs AIAA-2018-1852 **Analysis of a Quadcoptor Manipulator Operating in a Workspace above the Altitude of the Aerial Vehicle** V. Sumathy, D. Ghose, S. Omkar, Indian Institute of Science, Bengaluru, India	1530 hrs AIAA-2018-1853 **Integrating Hydrogen Fuel Cell Propulsion and Autonomous Soaring Techniques** D. Edwards, Naval Research Laboratory, Washington, D.C.	1600 hrs AIAA-2018-1854 **Estimation of Multiple Thermal Updrafts Using a Particle Filter Approach** S. Notter, P. Schrapel, P. Groß, W. Fichter, University of Stuttgart, Stuttgart, Germany	1630 hrs AIAA-2018-1855 **Trajectory Optimization via Particle Swarms for Robust Parafoil Guidance** M. Weinstein, B. Streetman, M. Neave, Draper Laboratory, Cambridge, MA; K. Bergeron, G. Noetscher, Army Research, Development and Engineering Command, Natick, MA	1700 hrs AIAA-2018-1856 **Sampled-Data Flocking with Application to Unmanned Rotorcraft** B. Wellman, J. Hoagg, University of Kentucky, Lexington, Lexington, KY

Thursday, 11 January 2018						
433-GNC-40	**Distributed/Cooperative Control**					**Sanibel 3**
Chaired by: E. GARCIA, Air Force Research Laboratory and N. YOKOYAMA, National Defense Academy of Japan						
1400 hrs AIAA-2018-1857 **Decentralized Conflict Detection and Resolution Using Intent-Based Probabilistic Trajectory Prediction** N. Yokoyama, National Defense Academy, Yokosuka, Japan	1430 hrs AIAA-2018-1858 **Decentralized Event-Triggered Consensus of Autonomous Agents over Unreliable Communication Networks** E. Garcia, Air Force Research Laboratory, Wright-Patterson AFB, OH; Y. Cao, University of Texas, San Antonio, San Antonio, TX; D. Casbeer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2018-1859 **Cooperative Multiple Task Assignment Considering Precedence Constraints Using Multi-Chromosome Encoded Genetic Algorithm** X. Guangtong, L. Li, T. Long, Z. Wang, M. Cai, Beijing Institute of Technology, Beijing, China	1530 hrs AIAA-2018-1860 **A Decentralized and Autonomous Control Architecture for Large-Scale Spacecraft Swarm Using Artificial Potential Field and Bifurcation Dynamics** J. Sun, H. Chen, Beihang University, Beijing, China	1600 hrs AIAA-2018-1861 **Distributed and Coordinated Control for Large Scale Spacecraft Swarm Using Sliding Mode Control and Artificial Bifurcating Potential Field** H. Chen, Beihang University, Beijing, China; G. Ning, Aerospace Technology Institute, Beijing, China; J. Sun, Beihang University, Beijing, China; K. Li, Beijing Institute of Control Engineering, Beijing, China; H. Liu, S. Zhang, Beihang University, Beijing, China	1630 hrs AIAA-2018-1862 **Decentralized Route-Planning to Satisfy Global Linear Temporal Logic Specifications on Multiple Aircraft** J. Fang, Z. Zhang, R. Cowlagi, Worcester Polytechnic Institute, Worcester, MA	

Thursday, 11 January 2018						
434-GNC-41	**Flying on the Edge**					**Sun B**
Chaired by: A. CHAKRAVARTHY, Wichita State University and M. NIESTROY, Lockheed Martin Corporation						
1400 hrs AIAA-2018-1863 **Multivariate Spline-Based Adaptive Control for High Performance Aircraft in the Presence of Atmospheric Turbulence** H. Mehmood, H. Tol, C. de Visser, Delft University of Technology, Delft, The Netherlands	1430 hrs AIAA-2018-1864 **Piloted Flight Test Evaluation of Robust Upset-Recovery Guidance** N. Richards, N. Gandhi, A. Bateman, Barron Associates, Inc., Charlottesville, VA; D. Klyde, P. Schulze, Systems Technology, Inc., Hawthorne, CA; C. Belcastro, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2018-1865 **Recoverability Envelope Analysis of Nonlinear Control Laws for Agile Maneuvering Aircraft** U. Akcal, B. Hostas, N. Ure, G. Inalhan, Istanbul Technical University, Istanbul, Turkey	1530 hrs AIAA-2018-1866 **Automatic Spin Recovery with Minimal Altitude Loss** R. Bunge, Airbus, Santa Clara, CA; I. Kroo, Stanford University, Stanford, CA	1600 hrs AIAA-2018-1867 **Finite State Automata Based Approach to Autonomous Stall and Upset Recovery for Agile Aircraft** A. Yildiz, U. Akcal, B. Hostas, N. Ure, G. Inalhan, Istanbul Technical University, Istanbul, Turkey	1630 hrs AIAA-2018-1868 **Fuzzy Gain-Scheduling Applied for a Very Flexible Aircraft** G. Barbosa, R. Bertolin, P. González, A. Guimaraes Neto, F. Silvestre, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil	1700 hrs AIAA-2018-1869 **Large Angle Maneuvering with an Asymmetric Aircraft: A Single Loop Control Formulation** B. Mukherjee, M. Sinha, Indian Institute of Technology Kharagpur, Kharagpur, India

Thursday, 11 January 2018						
435-GNC-42	**Descent and Landing GN&C**					**Sanibel 2**
Chaired by: K. BOLLINO, U.S. Air Force and M. MCFARLAND, Orbital ATK						
1400 hrs AIAA-2018-1870 **Generalized hp Pseudospectral Convex Programming for Powered Descent and Landing** M. Sagliano, German Aerospace Center (DLR), Bremen, Germany	1430 hrs AIAA-2018-1871 **A Pseudospectral-Convex Optimization Algorithm for Rocket Landing Guidance** J. Wang, N. Cui, Harbin Institute of Technology, Harbin, China	1500 hrs AIAA-2018-1872 **Nonlinear Guidance and Autopilot Design for Lunar Soft Landing** A. Banerjee, R. Padhi, Indian Institute of Science, Bengaluru, India	1530 hrs AIAA-2018-1873 **Extended State Observer-Based Model Predictive Control in Mars Powered Descent** D. Ge, P. Cui, Beijing Institute of Technology, Beijing, China	1600 hrs AIAA-2018-1874 **Simulations and flight tests of a new nonlinear controller for the EAGLE lander** M. Sagliano, M. Dumke, S. Theil, German Aerospace Center (DLR), Bremen, Germany		

Thursday, 11 January 2018						
436-GTE-7	**Combustors**					**Osceola 4**
Chaired by: D. BLUNCK, Air Force Reseach Laboratory						
1400 hrs AIAA-2018-1875 **Measurements of Temperature, Pressure, Velocity, and Frequency in an Ultra Compact Combustor** B. Bohan, M. Polanka, Air Force Institute of Technology, Wright-Patterson AFB, OH; L. Goss, Innovative Scientific Solutions, Inc., Dayton, OH	1430 hrs AIAA-2018-1876 **Design Strategy for Fuel Introduction to a Circumferential Combustion Cavity** E. Hornedo Rodriquez, K. DeMarco, B. Bohan, M. Polanka, Air Force Institute of Technology, Wright-Patterson AFB, OH; L. Goss, Innovative Scientific Solutions, Inc., Dayton, OH	1500 hrs AIAA-2018-1877 **On the interactions of an axisymmetric and two precessing modes in a model combustor** J. Lewalle, Syracuse University, Syracuse, NY; I. Boxx, German Aerospace Center (DLR), Stuttgart, Germany; C. Carter, Air Force Research Laboratory, Wright-Patterson AFB, OH; K. Geigle, German Aerospace Center (DLR), Stuttgart, Germany	1530 hrs AIAA-2018-1878 **Predicting the Amplitude of Limit Cycle Oscillations in Thermoacoustic Systems with Vortex Shedding** A. Seshadri, I. P, V. Unni, R. Sujith, Indian Institute of Technology Madras, Chennai, India	1600 hrs AIAA-2018-1879 **Effects of Sub-Atmospheric Pressures on the Temperature Evolution of Spark Kernels** D. Caplan, D. Blunck, Oregon State University, Corvallis, OR	1630 hrs AIAA-2018-1880 **A lab-scale Rich-Quench-Lean (RQL) combustor for stability and soot investigations** T. Tracey, J. Sidey, E. Mastorakos, University of Cambridge, Cambridge, United Kingdom	

Thursday, 11 January 2018						
437-HSABP-10/PGC-7	**Pressure Gain Combustion–Rotating Detonation Engines IV**					**Daytona 2**
Chaired by: D. SCHWER, Naval Research Lab and V. TANGIRALA, General Electric						
1400 hrs AIAA-2018-1881 **Hydrocarbon Fuel Absorption Measurement in Rotating Detonation Engine** K. Cho, B. Sell, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2018-1882 **Simultaneous mid-IR H_2O/CO_2 emission and OH chemiluminesence measurements within a RDE operating with and without backpressure** J. Codoni, National Research Council, Wright-Patterson AFB, OH; K. Cho, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; B. Rankin, F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2018-1883 **Examination of Wave Speed in Rotating Detonation Engines Using Simplified Computational Fluid Dynamics** D. Paxson, NASA Glenn Research Center, Cleveland, OH	1530 hrs AIAA-2018-1884 **Quasi Steady Heat Transfer Measuments in an RDE** C. Stevens, M. Fotia, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2018-1885 **Three-dimensional Numerical Simulation on Hydrogen-Oxygen Rotating Detonation Engine with Unchoked Aerospike Nozzle** N. Tsuboi, N. Jourdaine, T. Watanabe, Kyushu Institute of Technology, Kitakyushu, Japan; A. Hayashi, Aoyama Gakuin University, Sagamihara, Japan; T. Kojima, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan	1630 hrs AIAA-2018-1886 **Quantification of Infinite Line Pressure Probe Response to Shocks and Detonation Waves** A. Naples, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1700 hrs AIAA-2018-1887 **Reconstruction of Rotating Detonation after Being Influenced by Shock** Y. Wang, Southwest University of Science and Technology, Mianyang, China

Thursday, 11 January 2018						
438-INPSI-3	**Inlets, Nozzles, Propulsion Systems Integration SMH (Invited)**					**Destin 2**
Chaired by: V. ACHARYA, Georgia Institute of Technology and M. CARTER, NASA-Langley Research Center and C. CHUCK, Boeing Commercial Airplanes						
1400 hrs Oral Presentation **On and Off Design Performance of an Embedded Boundary Layer Ingesting Propulsor** D. Arend, J. Wolter, S. Hirt, A. Provenza, NASA Glenn Research Center, Cleveland, OH; J. Gazzaniga, Zin Technologies, Inc., Cleveland, OH; W. Cousins, United Technologies Corporation, East Hartford, CT; et al.	1430 hrs AIAA-2018-1888 **Data Analysis Techniques for Fan Performance in Highly-Distorted Flows from Boundary Layer Ingesting Inlets** L. Hardin, W. Cousins, United Technologies Corporation, East Hartford, CT; J. Wolter, D. Arend, S. Hirt, NASA Glenn Research Center, Cleveland, OH	1500 hrs AIAA-2018-1889 **Performance Calculations for a Boundary-Layer-Ingesting Fan Stage from Sparse Measurements** S. Hirt, J. Wolter, D. Arend, T. Hearn, NASA Glenn Research Center, Cleveland, OH; L. Hardin, United Technologies Corporation, East Hartford, CT; J. Gazzaniga, Zin Technologies, Inc., Cleveland, OH	1530 hrs AIAA-2018-1890 **Cyclic Symmetry Finite Element Forced Response Analysis of a Distortion Tolerant Fan with Boundary Layer Ingestion** J. Min, NASA Glenn Research Center, Cleveland, OH; T. Reddy, University of Toledo, Toledo, OH; M. Bakhle, R. Coroneos, G. Stefko, A. Provenza, NASA Glenn Research Center, Cleveland, OH; et al.	1600 hrs AIAA-2018-1891 **Aeromechanics Analysis of a Distortion-Tolerant Fan with Boundary Layer Ingestion** M. Bakhle, NASA Glenn Research Center, Cleveland, OH; T. Reddy, University of Toledo, Toledo, OH; R. Coroneos, J. Min, A. Provenza, NASA Glenn Research Center, Cleveland, OH; K. Duffy, University of Toledo, Toledo, OH; et al.	1630 hrs Oral Presentation **Abstract Title: Aeromechanical Response of a 22" Fan Operating in a Heavily Distorted Axial Flow** A. Provenza, NASA Glenn Research Center, Cleveland, OH; K. Duffy, University of Toledo, Cleveland, OH; M. Bakhle, NASA Glenn Research Center, Cleveland, OH	1700 hrs AIAA-2018-1892 **Laser Displacement Measurements of Fan Blades in Resonance and Flutter During the Boundary Layer Ingesting Inlet and Distortion-Tolerant Fan Test** K. Duffy, University of Toledo, Toledo, OH; A. Provenza, M. Bakhle, J. Min, NASA Glenn Research Center, Cleveland, OH; A. Abdul-Aziz, Kent State University, Kent, OH

Thursday, 11 January 2018						
439-IS-17/UAS-10	**UAS Autonomy and Path Planning I**					**Tallahassee 1**
Chaired by: J. WILHELM, Ohio University						
1400 hrs AIAA-2018-1893 **Trajectory Generation using Deep Neural Network** T. Watanabe, E. Johnson, Georgia Institute of Technology, Atlanta, GA	1430 hrs AIAA-2018-1894 **A Utility Approach to UAS-Based Persistent ISR** C. Olsen, D. Kunz, Air Force Institute of Technology, Wright-Patterson AFB, OH	1500 hrs AIAA-2018-1895 **Toward an Autonomy Architecture for sUAS Network-Enabled Planning in the Cloud** K. Glasheen, A. Mills, E. Frew, University of Colorado, Boulder, Boulder, CO				

Thursday, 11 January 2018						
440-MAT-11/STR-17	**ICME for Structural Analysis: Validation and Application**					**Sun A**
Chaired by: S. ENGELSTAD, Lockheed Martin Aeronautics and J. DUSTIN, Purdue University						
1400 hrs AIAA-2018-1896 **Evaluating the Performance of Fasteners Subjected to Multiple Loadings and Loadings Rates and Identifying Sensitivities of the Modeling Process** J. Mersch, J. Smith, E. Johnson, T. Basiljevac, Sandia National Laboratories, Albuquerque, NM	1430 hrs AIAA-2018-1897 **Micromechanical Modeling of Ti/TiB Composites: Effects of TiB Whisker Orientational Distribution on the Overall Properties** P. Deierling, National Research Council, Shalimar, FL; O. Zhupanska, University of Arizona, Tucson, Tucson, AZ; C. Pasiliao, Air Force Research Laboratory, Eglin AFB, FL	1500 hrs AIAA-2018-1898 **A Multi-Physics Processing Model for Predicting Spring-in Angle of a Resin Transfer Molded Composite Flange** W. Chen, D. Zhang, University of Connecticut, Storrs, Storrs, CT	1530 hrs AIAA-2018-1899 **ICME Approach to Compression Strength after Impact Modeling** J. Action, Lockheed Martin Corporation, Marietta, GA; M. Flores, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2018-1900 **The Effects of RVE Size and Fiber Packing on the Tensile and Compressive Transverse Response of ICME of Fiber Reinforced Media** A. Waas, R. D'Mello, University of Washington, Seattle, Seattle, WA	1630 hrs AIAA-2018-1901 **Effect of uncertainty in matrix fracture properties on the transverse strength of fiber reinforced polymer matrix composites** M. Maiaru, University of Massachusetts, Lowell, Lowell, MA	1700 hrs AIAA-2018-1902 **Integration of Information Management System, Workflow and Computational Tools Enabling Multiscale Modeling Within an ICME Paradigm** S. Arnold, NASA Glenn Research Center, Cleveland, OH; S. Maphey, Clarkson University, Potsdam, NY

Thursday, 11 January 2018						
441-MDO-11	**Applications of Metamodeling and Model Reduction**					**Emerald 1**
Chaired by: H. CHUNG and M. BHATIA, Mississippi State University						
1400 hrs AIAA-2018-1903 **Application of Convolutional Neural Network to Predict Airfoil Lift Coefficient** Y. Zhang, W. Sung, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1430 hrs AIAA-2018-1904 **Resistance and Payload Optimization of a Sea Vehicle by Adaptive Multi-Fidelity Metamodeling** R. Pellegrini, A. Serani, R. Broglia, M. Diez, National Research Council (CNR), Rome, Italy; S. Harries, FRIENDSHIP SYSTEMS AG, Potsdam, Germany	1500 hrs AIAA-2018-1905 **Aerodynamic Data Predictions for Transonic Flows via a Machine-Learning-based Surrogate Model** R. Dupuis, Institute for Technological Research (IRT), Toulouse, France; J. Jouhaud, CERFACS, Toulouse, France; P. Sagaut, National Center for Scientific Research (CNRS), Marseille, France	1530 hrs AIAA-2018-1906 **Simultaneous Design of Non-Newtonian Lubricant and Surface Texture Using Surrogate-Based Optimization** Y. Lee, J. Schuh, R. Ewoldt, J. Allison, University of Illinois, Urbana-Champaign, Urbana, IL	1600 hrs AIAA-2018-1907 **Aerodynamic Design Exploration through Point-By-Point Pareto Set Identification using Local Surrogate Models** A. Amrit, L. Leifsson, Iowa State University, Ames, IA; S. Koziel, Reykjavik University, Reykjavik, Iceland	1630 hrs AIAA-2018-1908 **Efficient Approximation of Coupling Variable Fixed Point Sets for Decoupling Multidisciplinary Systems** B. Isaac, S. Friedman, D. Allaire, Texas A&M University, College Station, TX	

Thursday, 11 January 2018						
442-MDO-12	**Aerodynamic Shape Optimization II**					**Emerald 2**
Chaired by: L. LEIFSSON, Iowa State University and D. ALLAIRE, Texas A&M University						
1400 hrs AIAA-2018-1909 **Aerodynamic Shape Optimization using Continuum Shape Sensitivity Analysis** A. Turner, M. Patil, Virginia Polytechnic Institute and State University, Blacksburg, VA	1430 hrs AIAA-2018-1910 **Morphing Wings: A Study Using Aerodynamic Shape Optimization** N. Curiale, D. Zingg, University of Toronto, Toronto, Canada	1500 hrs AIAA-2018-1911 **Low-cost unsteady discrete adjoints for aeroacoustic optimization using temporal and spatial coarsening techniques** S. Nimmagadda, T. Economon, J. Alonso, Stanford University, Stanford, CA; C. Silva, Embraer, São Paulo, Brazil; B. Zhou, T. Albring, Technical University of Kaiserlautern, Kaiserslautern, Germany	1530 hrs AIAA-2018-1912 **Aerodynamic Shape Optimization of the STARC-ABL Concept for Minimal Inlet Distortion** G. Kenway, C. Kiris, NASA Ames Research Center, Moffett Field, CA	1600 hrs AIAA-2018-1913 **Aero-Structure Coupled Optimization for High Aspect Ratio Wings Using Multi-model Fusion Method** Y. Wang, T. Long, R. Shi, L. Li, Beijing Institute of Technology, Beijing, China	1630 hrs AIAA-2018-1914 **A Study on the Aerodynamic Efficiency and Static Stability of a Tailless Aircraft** Y. Kashiwagura, K. Shimoyama, Tohoku University, Sendai, Japan	

Thursday, 11 January 2018						
443-MST-13	**Modeling and Simulation of Unmanned Aerial Systems**					**Sarasota 2**
Chaired by: N. MACCHIARELLA, Embry-Riddle Aeronautical University and C. REYNERSON						
1400 hrs AIAA-2018-1915 **A Modeling, Simulation and Control Framework for Small Unmanned Multicopter Platforms in Urban Environments** C. Ippolito, NASA Ames Research Center, Moffett Field, CA; S. Hening, S. Sankararaman, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; V. Stepanyan, University of California, Santa Cruz, Santa Cruz, CA	1430 hrs AIAA-2018-1916 **Control System Design of a Quadrotor Suppressing the Virtual Reality Sickness** K. Watanabe, M. Takahashi, Keio University, Kanagawa, Japan	1500 hrs AIAA-2018-1917 **Quadrotor Model Generation using System Identification Techniques** J. Angarita, J. Black, Virginia Polytechnic Institute and State University, Blacksburg, VA	1530 hrs AIAA-2018-1918 **A configuration-independent modeling toolset for the analysis of small-scale electric-powered UAVs** R. Gautier, Z. Fisher, C. McMillan, M. Steffens, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1600 hrs AIAA-2018-1919 **Model Predictive Control for Path Tracking of a VTOL Tailsitter UAV in an HIL Simulation Environment** B. Li, W. Zhou, J. Sun, C. Wen, Hong Kong Polytechnic University, Hong Kong, Hong Kong; C. Chen, National Taipei University of Technology, Taipei, Taiwan		

Thursday, 11 January 2018						
444-MST-14	**Verification and Validation in Modeling and Simulation**					**Sun 2**
Chaired by: D. KEATING, The Charles Stark Draper Laboratory, Inc.						
1400 hrs AIAA-2018-1920 **Identification and Validation of the Cessna Citation X Turbofan Modelling with Flight Tests** P. Bardela, R. Botez, T. Bournisien, University of Québec, Montréal, Canada; R. Rusovici, Florida Institute of Technology, Melbourne, FL	1430 hrs AIAA-2018-1921 **Open Architecture Modeling, Verification, and Validation** P. Bagby, A. Hebert, R. White, Engility Corporation, Shalimar, FL; S. Cafarelli, MacAulay Brown, Inc., Dayton, OH; J. Shaver, Air Force Research Laboratory, Eglin AFB, FL	1500 hrs AIAA-2018-1922 **Quadrotor Performance Model Verification and Validation** A. Schang, A. Hebert, B. Berry, Engility Corporation, Shalimar, FL; M. Block, Dynetics, Inc., Shalimar, FL; R. Sherrill, Air Force Research Laboratory, Eglin AFB, FL	1530 hrs AIAA-2018-1923 **Differential Adaptive Stress Testing of Airborne Collision Avoidance Systems** R. Lee, O. Mengshoel, Carnegie Mellon University, Moffett Field, CA; A. Saksena, R. Gardner, D. Genin, J. Brush, Johns Hopkins University Applied Physics Laboratory, Laurel, MD; et al.	1600 hrs AIAA-2018-1924 **Building Credibility of Models and Simulations through Iterative Verification and Validation** P. Turner, T. Hurst, A. Bruner, Raytheon Company, Tucson, AZ	1630 hrs AIAA-2018-1925 **The Role of V&V in the Early Stages of the Lifecycle** S. Dam, SPEC Innovations, Manassas, VA	1700 hrs AIAA-2018-1926 **Verification of HTV-X resilient design by simulation environment with model-based technology** A. Noumi, R. Ujiie, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan; S. Ueda, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; K. Someya, N. Ishihama, Y. Kondoh, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan

Thursday, 11 January 2018						
445-MST-15	**Multidisciplinary Modeling and Simulation Across Domains II**					**Miami 2**
Chaired by: A. ELMILIGUI, NASA Langley Research Center and D. GINGRAS, Bihrle Applied Research Inc.						
1400 hrs AIAA-2018-1927 **Finite Element Analysis of an Index Finger Flexion in an Extravehicular Activity Glove** V. Varya, W. Scholten, R. Fernandes, B. Dunbar, D. Hartl, Texas A&M University, College Station, TX	1430 hrs AIAA-2018-1928 **An Efficient Implementation of Transonic Aeroelastic Tailoring based on a Reduced-Order Model using Structural Dynamic Reanalysis Method** L. Dongfeng, Xi'an Jiaotong University, Xi'an, China; C. Gong, Northwestern Polytechnical University, Xi'an, China; Y. Wang, C. Gang, Xi'an Jiaotong University, Xi'an, China; A. Da Ronch, University of Southampton, Southampton, United Kingdom; L. Yueming, Xi'an Jiaotong University, Xi'an, China	1500 hrs AIAA-2018-1929 **Fast Multipole Method for Nonlinear, Unsteady Aerodynamic Simulations** A. Kebbie-Anthony, N. Gumerov, S. Preidikman, B. Balachandran, S. Azarm, University of Maryland, College Park, College Park, MD	1530 hrs AIAA-2018-1930 **A Parametric Multi-Fidelity Approach to Conceptual Airframe Design** J. Corman, N. Weston, C. Friedland, D. Mavris, Georgia Institute of Technology, Atlanta, GA; T. Laughlin, Laughlin Research, New York, NY			

Thursday, 11 January 2018						
446-NDA-9	**Reliability Analysis Methods and Applications II**					**Sun 1**
Chaired by: M. RAIS-ROHANI, University of Maine and R. GRANDHI, Wright State University						
1400 hrs AIAA-2018-1931 **Design for Resilience of Complex Systems through Control-Guided Failure Restoration** N. Yodo, North Dakota State University, Fargo, ND; Y. Li, P. Wang, University of Illinois, Urbana-Champaign, Urbana, IL	1430 hrs AIAA-2018-1932 **Uncertainty Quantification for Mars 2020 Powered Descent Closed Loop Stability** P. Blelloch, ATA Engineering, Inc., San Diego, CA; E. Brandeau, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; D. Kammer, ATA Engineering, Inc., San Diego, CA	1500 hrs AIAA-2018-1933 **Evaluation of Bayesian-Based Models for Belief Structure Representations of Epistemic Uncertainty** I. Dettwiller, Army Corps of Engineers, Vicksburg, MS; M. Rais-Rohani, University of Maine, Orono, Orono, ME	1530 hrs AIAA-2018-1934 **Reliability Analysis of Multidisciplinary System with Spatio-temporal Response using Adaptive Surrogate Modeling** Z. Hu, S. Mahadevan, Vanderbilt University, Nashville, TN	1600 hrs AIAA-2018-1935 **Comparison of metamodelling techniques for uncertainty quantification and global sensitivity analysis in assembled aircraft structures** E. Menga, Airbus, Getafe, Spain; C. López, S. Hernandez, A. Baldomir, University of A Coruña, A Coruña, Spain; I. Romero, M. Sánchez, Technical University of Madrid, Madrid, Spain		

Thursday, 11 January 2018						
447-SATS-2	**Small Satellites II**					**Sarasota 1**
Chaired by: J. STRAUB, North Dakota State University						
1400 hrs AIAA-2018-1936 **Design of a CubeSat Mission to Investigate High-Enthalpy Nonequilibrium Flow Chemistry** N. Zuiker, J. Williams, Z. Putnam, D. Levin, A. Ghosh, University of Illinois, Urbana-Champaign, Urbana, IL; M. Goggin, Purdue University, West Lafayette, IN; et al.	1430 hrs AIAA-2018-1937 **Small Satellites: Observations and Considerations** A. Gohardani, International Rectifier HiRel Products, El Segundo, CA	1500 hrs AIAA-2018-1938 **Debris, Launch and Other Considerations - Towards a Small Satellite Operations Paradigm** J. Straub, North Dakota State University, Fargo, ND	1530 hrs AIAA-2018-1939 **Small Satellite Platform and Payload Concept for Implementing the Imaging X-Ray Polarimeter Explorer (IXPE) Mission** W. Deininger, W. Kalinowski, J. Bladt, M. Boysen, J. Wedmore, Z. Allen, Ball Corporation, Boulder, CO; et al.	1600 hrs AIAA-2018-1940 **Design and Optimization of a Small Satellite Communication System** D. Lee, University of Texas, Austin, Austin, TX; S. Sharma, University of Michigan, Ann Arbor, Ann Arbor, MI; H. Park, Naval Postgraduate School, Monterey, CA; J. Cutler, University of Michigan, Ann Arbor, Ann Arbor, MI	1630 hrs AIAA-2018-1941 **MicroNimbus: A CubeSat Mission for Millimeter-Wave Atmospheric Temperature Profiling** T. Himani, E. Lightsey, C. Coen, M. Frounchi, J. Cressler, W. Williams, Georgia Institute of Technology, Atlanta, GA	

Thursday, 11 January 2018						
448-SCS-8	**Next Generation Solar Arrays**					**Emerald 3**
Chaired by: R. PAPPA, NASA Langley Research Center and M. CHAMBERLAIN, NASA						
1400 hrs AIAA-2018-1942 **On-orbit Structural Dynamics Performance of the Roll-Out Solar Array** M. Chamberlain, NASA Langley Research Center, Hampton, VA; S. Kiefer, Deployable Space Systems, Inc., Santa Barbara, CA; J. Banik, Air Force Research Laboratory, Kirtland AFB, NM	1430 hrs AIAA-2018-1943 **Self-Deploying Tent Array for Mars Surface Solar Power** M. Duchek, A. Colozza, Analytical Mechanics Associates, Inc., Denver, CO	1500 hrs AIAA-2018-1944 **Compact Telescoping Surface Array for Mars Solar Power** R. Pappa, G. Rose, M. Chamberlain, D. Paddock, NASA Langley Research Center, Hampton, VA; M. Mikulas, National Institute of Aerospace, Hampton, VA	1530 hrs AIAA-2018-1945 **Compact Telescoping Array: Advancement from Concept to Reality** M. McEachen, Orbital ATK, Goleta, CA			

Thursday, 11 January 2018						
449-SD-16	**Dynamic Testing**					**Emerald 7**
Chaired by: V. BABUSKA, Sandia National Laboratories and T. BARTKOWICZ, Boeing Defense, Space & Security						
1400 hrs AIAA-2018-1946 **CST-100 Structural Test Article Dynamic Environments Induced by Ground Transportation** T. Bartkowicz, S. Zimmerman, The Boeing Company, Houston, TX	1430 hrs AIAA-2018-1947 **Multi-DOF Transient Testing Validation by Means of Virtual Testing** M. Remedia, G. Aglietti, University of Surrey, Guildford, United Kingdom; A. Kiley, Airbus, Stevenage, United Kingdom; M. Appolloni, A. Cozzani, ESA, Noordwijk, The Netherlands	1500 hrs AIAA-2018-1948 **Applications of Phase-Based Motion Processing** N. Branch, Georgia Institute of Technology, Atlanta, GA; E. Stewart, NASA Marshall Space Flight Center, Huntsville, AL	1530 hrs AIAA-2018-1949 **Experimental Transonic Investigations on Laminar Flow and Load Alleviation** J. Cooper, University of Bristol, Bristol, United Kingdom	1600 hrs AIAA-2018-1950 **Modal Parameters Estimate of AH-64D Apache Helicopter from Flight Data and Correlation with Numerical Model** G. Coppotelli, E. Conti, University of Rome "La Sapienza", Rome, Italy; H. Van Tongeren, Netherlands Aerospace Centre (NLR), Amsterdam, The Netherlands	1630 hrs AIAA-2018-1951 **Modal Expansion Method for Eigensensitivity Calculations of Cyclically Symmetric Bladed Disks** J. Beck, Perceptive Engineering Analytics, LLC, Minneapolis, MN; J. Brown, O. Scott-Emuakpor, Air Force Research Laboratory, Wright-Patterson AFB, OH; A. Kaszynski, Universal Technology Corporation, Dayton, OH; E. Henry, Air Force Research Laboratory, Wright-Patterson AFB, OH	1700 hrs AIAA-2018-1952 **A Proposal of New Deployable Space Structure Applying Buckling** S. Arita, I. Fukuta, Y. Yamagiwa, Shizuoka University, Hamamatsu, Japan; Y. Miyazaki, Nihon University, Funabashi, Japan

Thursday, 11 January 2018						
450-SD-17	**Aeroelastic Analysis II**					**Emerald 8**
Chaired by: A. SCOTTI, Pilatus Aircraft Ltd and S. SMITH, University of Kentucky						
1400 hrs AIAA-2018-1953 **Comparison of Nonlinear Aeroelastic Methods for Maneuver Simulation of Very Flexible Aircraft** M. Ritter, German Aerospace Center (DLR), Göttingen, Germany; P. Teixeira, C. Cesnik, University of Michigan, Ann Arbor, Ann Arbor, MI	1430 hrs AIAA-2018-1954 **Large Deflection Aeroelasticity and Aeroelastic Lifting Line Theory for Examination of Aerodynamic Effects and Nonlinear Limit Cycle Oscillations** N. Nguyen, E. Ting, NASA Ames Research Center, Moffett Field, CA; D. Chaparro, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA	1500 hrs AIAA-2018-1955 **Computational Aeroelastic Analysis using an Enhanced OpenFoam-based CFD Solver** A. Fereidooni, A. Grewal, S. Seraj, M. Grzeszczyk, National Research Council Canada, Ottawa, Canada	1530 hrs AIAA-2018-1956 **Deployment Simulation Model based on ANCF Plate Element for Next-Generation Aerospace Structures** K. Otsuka, K. Makihara, Tohoku University, Sendai, Japan	1600 hrs AIAA-2018-1957 **Effects of Sweep Angle in Aeroelastic Response of Wings Made of Isotropic and Fiber Reinforced Composite Materials** H. Lebkuchen, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; C. de Souza, Federal University of Santa Maria, Santa Maria, Brazil; R. Annes da Silva, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil	1630 hrs AIAA-2018-1958 **Passive Gust Load Alleviation In a Truss-Braced Wing Using an Inerter-Based Device** C. Szczyglowski, S. Neild, B. Titurus, J. Jiang, University of Bristol, Bristol, United Kingdom; E. Coetzee, Airbus, Bristol, United Kingdom	1700 hrs AIAA-2018-1959 **Characteristics and comparative analysis of monostable and bistable piezomagnetoelastic energy harvesters under vortex-induced vibrations** R. Naseer, A. Abdelkefi, New Mexico State University, Las Cruces, NM; H. Dai, L. Wang, Huazhong University of Science and Technology, Wuhan, China

Thursday, 11 January 2018						
451-SFM-19	**Formation Flying and Relative Motion I**					**Osceola 6**
Chaired by: J. SHAN, York University						
1400 hrs AIAA-2018-1960 **Validated Semi-Analytical Transition Matrix for Linearized Relative Spacecraft Dynamics via Chebyshev Polynomials** P. Arantes Gilz, F. Bréhard, C. Gazzino, National Center for Scientific Research (CNRS), Toulouse, France	1430 hrs AIAA-2018-1961 **Real-Time Collision Avoidance for Multiple Spacecraft Operations via Discrete-Time Generating Functions** K. Lee, C. Park, Yonsei University, Seoul, South Korea	1500 hrs AIAA-2018-1962 **Formation Flying in Multiple Libration Orbits in the Circular Restricted Four-Body Problem** P. Scarcella, D. Spencer, Pennsylvania State University, University Park, PA	1530 hrs AIAA-2018-1963 **ORB-SLAM Applied to Spacecraft Non-Cooperative Rendezvous** M. Dor, P. Tsiotras, Georgia Institute of Technology, Atlanta, GA	1600 hrs AIAA-2018-1964 **DA-based nonlinear filters for spacecraft relative state estimation** F. Cavenago, P. Di Lizia, M. Massari, S. Servadio, Technical University of Milan, Milan, Italy; A. Wittig, University of Southampton, Southampton, United Kingdom	1630 hrs AIAA-2018-1965 **Decentralized Estimation of Spacecraft Relative Motion Using Consensus Extended Kalman Filter** J. Wang, E. Butcher, University of Arizona, Tucson, Tucson, AZ	

Thursday, 11 January 2018						
452-SFM-20	**Orbital Dynamics, Perturbations, Stability, and Satellite Drag I**					**Sarasota 3**
Chaired by: I. HUSSEIN						
1400 hrs AIAA-2018-1966 **Using Artificial Neural Network in Machine Learning Approach to Improve Orbit Prediction Accuracy** H. Peng, X. Bai, Rutgers University, Piscataway, NJ	1430 hrs AIAA-2018-1967 **A Perturbed F and G Solution with Application to Orbit Estimation** D. Burder, T. Henderson, Embry-Riddle Aeronautical University, Daytona Beach, FL	1500 hrs AIAA-2018-1968 **Multi-revolution perturbed Lambert problem** R. Armellin, D. Gondelach, University of Surrey, Guildford, United Kingdom; J. San Juan, University of La Rioja, Logrono, Spain	1530 hrs AIAA-2018-1969 **Numerical stability analysis of normalized recursion methods for computing gravitational potential** C. Han, Y. Wang, X. Gao, Beihang University, Beijing, China			

Thursday, 11 January 2018						
453-SFM-21	**Space Situational Awareness, Orbital Debris, and Conjunction Analysis I**					**Naples 1**
Chaired by: R. WEISMAN, Air Force Research Laboratory, Space Vehicles Directorate						
1400 hrs AIAA-2018-1970 **THALASSA: a fast orbit propagator for near-Earth and cislunar space** D. Amato, Technical University of Madrid, Madrid, Spain; A. Rosengren, University of Arizona, Tucson, Tucson, AZ; C. Bombardelli, Technical University of Madrid, Madrid, Spain	1430 hrs AIAA-2018-1971 **Optical Data Processing Using Directional Statistics In a Multiple Hypothesis Framework With Maneuvering Objects** W. Faber, I. Hussein, Applied Defense Solutions, Columbia, MD; J. Kent, S. Bhattacharjee, University of Leeds, Leeds, United Kingdom; M. Jah, University of Texas, Austin, Austin, TX	1500 hrs AIAA-2018-1972 **Fisher-Bingham-Kent Mixture Models for Angles-Only Observation Processing** J. Kent, S. Bhattacharjee, University of Leeds, Leeds, United Kingdom; I. Hussein, W. Faber, Applied Defense Solutions, Columbia, MD; M. Jah, University of Texas, Austin, Austin, TX	1530 hrs AIAA-2018-1973 **The Spacecraft Orbital Characterization Kit and its Applications to the CYGNSS Mission.** C. Bussy-Virat, University of Michigan, Ann Arbor, Ann Arbor, MI; J. Getchius, Intuitive Machines, Inc., Houston, TX; A. Ridley, University of Michigan, Ann Arbor, Ann Arbor, MI	1600 hrs AIAA-2018-1974 **Development of The Probabilistic Admissible Region With Equinoctial Orbital Elements** M. Mercurio, W. Zaidi, W. Faber, C. Roscoe, I. Hussein, M. Wilkins, Applied Defense Solutions, Columbia, MD		

Thursday, 11 January 2018						
454-SFM-22/GNC-43	**Spacecraft GN&C III**					**Naples 3**
Chaired by: R. KARIMI, Jet Propulsion Laboratory						
1400 hrs AIAA-2018-1975 **Angles-Only Orbit Determination Using Hamiltonian Monte Carlo** L. Schlenker, University of Minnesota, Twin Cities, Minneapolis, MN; A. Sinclair, Air Force Research Laboratory, Kirtland AFB, NM; R. Linares, University of Minnesota, Twin Cities, Minneapolis, MN	1430 hrs AIAA-2018-1976 **Angles-Only Navigation of a Formation in the Proximity of a Binary System** M. Vasile, F. Torre, R. Serra, S. Grey, University of Strathclyde, Glasgow, United Kingdom	1500 hrs AIAA-2018-1977 **Autonomous Optical Navigation for LUMIO Mission** V. Franzese, P. Di Lizia, F. Topputo, Technical University of Milan, Milan, Italy	1530 hrs AIAA-2018-1978 **Orion Optical Navigation Progress Toward Exploration Mission 1** G. Holt, C. D'Souza, D. Saley, NASA Johnson Space Center, Houston, TX	1600 hrs AIAA-2018-1979 **A Performance Based Comparison of Deep-space Navigation using Optical Communication and Conventional Navigation Techniques: Small Body Missions** R. Karimi, T. Martin-Mur, S. Mccandless, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1630 hrs AIAA-2018-1980 **Relative Pose Stabilization using Backstepping Control with Dual Quaternions** A. Valverde, P. Tsiotras, Georgia Institute of Technology, Atlanta, GA	

Thursday, 11 January 2018						
455-SOF-4	**Software Challenges in Aerospace**					**Tallahassee 2**
Chaired by: E. ATKINS, University of Michigan and C. TORENS, DLR - German Aerospace Center						
1400 hrs AIAA-2018-1981 **A Hybrid Method of Assurance Cases and Testing for Improved Confidence in Autonomous Space Systems** B. Smith, M. Feather, T. Huntsberger, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1430 hrs AIAA-2018-1982 **Dynamic Probabilistic Risk Assessment of Unmanned Aircraft Adaptive Flight Control Systems** M. Hejase, A. Kurt, T. Aldemir, U. Ozguner, Ohio State University, Columbus, OH; S. Guarro, M. Yau, ASCA, Inc., Redondo Beach, CA; et al.	1500 hrs AIAA-2018-1983 **Advances in Aerospace Software Engineering** F. Briggs, F. Briggs & Associates, Solomons, MD	1530 hrs AIAA-2018-1984 **Early Safety Analysis of Manned-Unmanned Team System** K. Hobbs, C. Cargal, E. Feron, Georgia Institute of Technology, Atlanta, GA; R. Burns, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2018-1985 **Application of Run-time Assurance Architecture to Robust Geofencing of SUAS** A. Bateman, W. Gressick, N. Gandhi, Barron Associates, Inc., Charlottesville, VA	1630 hrs AIAA-2018-1986 **Formal Monitoring of Risk-based Geofences** S. Schirmer, C. Torens, F. Adolf, German Aerospace Center (DLR), Braunschweig, Germany	1700 hrs **Open Discussion**

Thursday, 11 January 2018						
456-STR-18	**Stability of Structural Shells II**					**Emerald 4**
Chaired by: M. SCHULTZ, NASA Langley Research Center and M. RUDD, NASA Marshall Space Flight Center						
1400 hrs AIAA-2018-1987 **Buckling Response of a Large-Scale, Seamless, Orthogrid- Stiffened Metallic Cylinder** M. Rudd, NASA Marshall Space Flight Center, Huntsville, AL; M. Hilburger, A. Lovejoy, M. Lindell, NASA Langley Research Center, Hampton, VA; N. Gardner, Analytical Services & Materials, Inc., Hampton, VA; M. Schultz, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2018-1988 **Scaling Methodology for Buckling of Sandwich Composite Cylindrical Structures** I. Uriol Balbin, C. Bisagni, Delft University of Technology, Delft, The Netherlands; M. Schultz, M. Hilburger, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2018-1989 **Test and Analysis of Full-Scale 27.5-Foot-Diameter Stiffened Metallic Launch Vehicle Cylinders** A. Lovejoy, M. Hilburger, NASA Langley Research Center, Hampton, VA; N. Gardner, Analytical Services & Materials, Inc., Hampton, VA	1530 hrs AIAA-2018-1990 **On the Development of Shell Buckling Knockdown Factors for Stiffened Metallic Launch Vehicle Cylinders** M. Hilburger, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2018-1991 **An Approximate Method for the Buckling Analysis of a Composite Lattice Cylindrical Panel** Y. Kim, J. Park, Korea Aerospace University, Goyang, South Korea	1630 hrs AIAA-2018-1992 **Nonlinear Postbuckling Analyses of Cylindrical Structures using Hybrid-Grid Systems for Launch Vehicles** C. Sim, H. Kim, Y. Lee, M. Hwang, J. Bang, J. Park, Chungnam National University, Daejeon, South Korea; et al.	

Thursday, 11 January 2018						
457-STR-19	**Other Topics in Structures**					**Emerald 5**
Chaired by: P. MURTHY, NASA Glenn Research Center and T. MANN, NASA-Langley Research Center						
1400 hrs AIAA-2018-1993 **Application of Load Updating to a Complex Three Dimensional Frame Structure** J. Nichols, R. Kapania, J. Schetz, Virginia Polytechnic Institute and State University, Blacksburg, VA	1430 hrs AIAA-2018-1994 **Structural Analysis and Optimization of the Hexakis Lighter Than Air Vehicle** A. Castello, A. Palazotto, Air Force Institute of Technology, Wright-Patterson AFB, OH	1500 hrs AIAA-2018-1995 **Fatigue test method on full scale aeroengine turbine casing** D. Huang, C. Liu, X. Zhang, M. Qi, Z. Rao, X. Yan, Beihang University, Beijing, China	1530 hrs AIAA-2018-1996 **A Methodology for Reducing Overtesting on Spacecraft Structure Equipment** C. Knight, M. Remedia, G. Aglietti, University of Surrey, Guildford, United Kingdom	1600 hrs AIAA-2018-1997 **Design, Fabrication and Testing of 3D Printed Wings for Rapid Evaluation of Aeroelastic Performance** C. Black, K. Singh, Miami University, Oxford, OH; S. Goodman, A. Altman, University of Dayton, Dayton, OH; R. Kolonay, Air Force Research Laboratory, Dayton, OH	1630 hrs AIAA-2018-1998 **Design and Nonlinear Closed-Form Displacement Expressions of Low Stiffness Lattice Truss Beam Structures** W. Kenner, NASA Langley Research Center, Hampton, VA	

Thursday, 11 January 2018						
458-STR-20	**Special Session: In Honor of Dr. Ivatury S. Raju, NASA Langley Research Center III**					**Emerald 6**
Chaired by: B. BEDNARCYK, NASA Glenn Research Center and P. AGGARWAL, NASA Marshall Space Flight Center						
1400 hrs AIAA-2018-1999 **Fracture behavior of NASA Layered Pressure Vessels** F. Brust, Engineering Mechanics Corporation of Columbus (EMC2), Columbus, OH	1430 hrs AIAA-2018-2000 **A New Test Method for Measuring the Mode-I Fracture Toughness of Low-Modulus Materials** V. Goyal, The Aerospace Corporation, El Segundo, CA; J. Ratcliffe, NASA Langley Research Center, Hampton, VA; D. Friedman, The Aerospace Corporation, El Segundo, CA; J. Reeder, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2018-2001 **Conceptual Design Shop: A Tool for Rapid Airframe Structural Modeling** B. Mason, J. Quinlan, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2018-2002 **Predicting Residual Energy Release Rates due to Bonding Geometrically Dissimilar Adherend Surfaces** E. Koontz, V. Goyal, The Aerospace Corporation, El Segundo, CA	1600 hrs AIAA-2018-2003 **Damage Initiation and Propagation in Hybrid Composite Structures** M. Yekani Fard, Arizona State University, Tempe, AZ; B. Raji, Pipe Reconstruction, Phoenix, AZ; J. Woodward, M. Oramas, M. Padilla, A. Chattopadhyay, Arizona State University, Tempe, AZ	1630 hrs AIAA-2018-2004 **Micromechanisms Governing Crack Propagation in Al 7075 under In-plane Biaxial Fatigue with Single Overloads** S. Datta, A. Chattopadhyay, Arizona State University, Tempe, AZ	

Thursday, 11 January 2018						
459-TFPC-5	**Advanced/Transformational Aircraft Requirements, Concepts of Operations, and Markets**					**Destin 1**
Chaired by: V. STOUFFER, LMI and M. ARMSTRONG						
1400 hrs AIAA-2018-2005 **Online Prediction of Battery Discharge and Flight Mission Assessment for Electrical Rotorcraft** A. Alnaqeb, Y. Li, Y. Lui, P. Pradeep, J. Wallin, C. Hu, Iowa State University, Ames, IA; et al.	1430 hrs AIAA-2018-2006 **Cargo Delivery in by Passenger eVTOL Aircraft: A Case Study in the San Francisco Bay Area** B. German, M. Daskilewicz, T. Hamilton, M. Warren, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2018-2007 **Functional Requirements for Remotely Managing Fleets of On-Demand Passenger Aircraft** V. Nneji, M. Cummings, A. Stimpson, Duke University, Durham, NC; K. Goodrich, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2018-2008 **Energy Efficient Arrival with RTA Constraint for Urban eVTOL Operations** P. Pradeep, P. Wei, Iowa State University, Ames, IA	1600 hrs AIAA-2018-2009 **Challenges and Opportunities: A Strategic General Aviation Exploratory Analysis for 2030** Z. Gao, P. Lin, Georgia Institute of Technology, Atlanta, GA; A. Chakraborty, B. Sells, Purdue University, West Lafayette, IN; S. Briceno, Georgia Institute of Technology, Atlanta, GA; W. Crossley, Purdue University, West Lafayette, IN; et al.	1630 hrs AIAA-2018-2010 **Smart Precise Rotorcraft InTerconnected Emergency Services (SPRITES)** L. Young, NASA Ames Research Center, Moffett Field, CA	

Thursday, 11 January 2018						
460-UAS-11	**Detect and Avoid Technologies for UAS**					**Sun C**
Chaired by: O. ARIFF, University of Salford						
1400 hrs AIAA-2018-2011 **Interactive Multiple Model Hazard States Prediction for Unmanned Aircraft Systems (UAS) Detect and Avoid (DAA)** A. Canolla, M. Jamoom, B. Pervan, Illinois Institute of Technology, Chicago, IL	1430 hrs AIAA-2018-2012 **The Effects of Severity of Losses of Well Clear on UAS Detect and Avoid Performance Standards** R. Ghatas, NASA Langley Research Center, Hampton, VA; D. Jack, Adaptive Aerospace Group, Inc., Hampton, VA; D. Tsakpinis, J. Sturdy, SAIC, Hampton, VA; M. Vincent, NASA Langley Research Center, Hampton, VA; K. Hoffler, Adaptive Aerospace Group, Inc., Hampton, VA; et al.	1500 hrs AIAA-2018-2013 **Least Square Sparse Mapping and Octree-based A* Algorithm** T. Watanabe, Georgia Institute of Technology, Atlanta, GA; E. Balci, University of Stuttgart, Stuttgart, Germany; E. Johnson, Georgia Institute of Technology, Atlanta, GA	1530 hrs AIAA-2018-2014 **µADS-B Detect and Avoid Flight Tests on Phantom 4 Unmanned Aircraft System** R. Arteaga, NASA Armstrong Flight Research Center, Edwards, CA; K. Epperson, Vigilant Aerospace Systems, Inc., Oklahoma City, OK; M. Dandachy, Jacobs, Edwards AFB, CA; A. Aruljothi, Vigilant Aerospace Systems, Inc., Oklahoma City, OK; H. Truong, University of California, Davis, Davis, CA; M. Vedantam, University of Kansas, Lawrence, Lawrence, KS			

Thursday, 11 January 2018						
461-WE-9	**Wind Turbine/Wind Plant Optimization II**					**Osceola 5**
Chaired by: K. DYKES and R. KING						
1400 hrs AIAA-2018-2015 **Aero-elastic design optimization of floating offshore wind turbine blades** E. Gaertner, M. Lackner, University of Massachusetts, Amherst, Amherst, MA	1430 hrs AIAA-2018-2016 **Benefits of Two Turbine Rotor Diameters and Hub Heights in the Same Wind Farm** A. Stanley, A. Ning, Brigham Young University, Provo, UT; K. Dykes, National Renewable Energy Laboratory, Golden, CO	1500 hrs AIAA-2018-2017 **Data-driven Parameter Calibration in Wake Models** B. Liu, University of Michigan, Ann Arbor, Ann Arbor, MI; M. Plumlee, Northwestern University, Evanston, IL; E. Byon, University of Michigan, Ann Arbor, Ann Arbor, MI	1530 hrs AIAA-2018-2018 **Profitability optimization of a wind power plant performed through different optimization algorithms and a data-driven RANS solver** V. Santhanagopalan, S. Letizia, L. Zhan, L. Al-Hamidi, G. Iungo, University of Texas, Dallas, Richardson, TX	1600 hrs AIAA-2018-2019 **Active Subspaces for Wind Plant Surrogate Modeling** R. King, J. Quick, National Renewable Energy Laboratory, Golden, CO; C. Adcock, Massachusetts Institute of Technology, Cambridge, MA; K. Dykes, National Renewable Energy Laboratory, Golden, CO	1630 hrs AIAA-2018-2020 **Load Alleviation on Wind Turbines using Camber Morphing Blade Tip** E. Ferede, F. Gandhi, Rensselaer Polytechnic Institute, Troy, NY	1700 hrs AIAA-2018-2021 **Coupled Aerodynamic and Structural Optimization of Multi-Megawatt VAWT using MATLAB** A. Alhamaly, Saudi Aramco, Dhahran, Saudi Arabia; F. Saeed, Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia; A. Sahin, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia

Thursday, 11 January 2018		
462-NW-11 **1530 - 1600 hrs**	**Thursday Afternoon Coffee Break**	**Florida Hall CD**

Thursday, 11 January 2018		
463-NW-12 **1630 - 1730 hrs**	**Enhancing the Musical Brain: The Cognitive Exoskeleton Concert**	**Osceola CD**

Science meets music in a live experiment, where neuroscientist Dr. Bill Casebeer demonstrates how human-machine teams may help people lead better lives. Using a brain-sensing headband, scientists will monitor the brainwaves of the band Beemo and select audience members simultaneously during a live show. This information is collected for Lockheed Martin's Cognitive Exoskeleton and displayed as color coded graphs on a giant screen. The program will address how music changes a performer's brain waves, how music change an audience member's brain waves and how machines can help people get the most out of their brain's performance.

Thursday, 11 January 2018		
464-NW-13 **1730 - 1930 hrs**	**Women at SciTech Social Hour and Keynote**	**Osceola A**

Debra Facktor
Vice President and General Manager, Strategic Operations and Commercial Aerospace Business
Ball Aerospace

All attendees are welcome. No ticket required.

Thursday, 11 January 2018		
465-ACD-10 **1800 - 2100 hrs**	**CADWG — Battle Stories and Lessons Learned in Conceptual Design**	**Emerald 8**

Panelists:

Daniel Raymer	**Darold Cummings**	**Paul Bevilaqua**	**Armand Chaput**	**Willem Anemaat**
Conceptual Research Corporation	Darold Cummings Consulting	Aerospace Consultant	University of Texas at Austin	DARcorporation

Thursday, 11 January 2018						
466-GNC-44	**Cassini Spacecraft Attitude Control Flight Experience I**					**Sanibel 1**
Chaired by: T. BURK, Jet Propulsion Laboratory						
1800 hrs **Video Presentation: The Cassini Mission at Saturn – The Grand Finale Proximal Mission and Final Plunge into Saturn**	1830 hrs AIAA-2018-2022 **Cassini's Grand Finale – Attitude Control Subsystem Performance During Proximal Ring Plane Crossings** T. Sung, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1900 hrs AIAA-2018-2023 **A Full Mission Summary (1997-2017) of the Attitude Control Performance during Orbit Trim Maneuvers Performed by the Cassini-Huygens Spacecraft** T. Brown, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA				

Thursday, 11 January 2018		
467-MST-16 **1800 - 2000 hrs**	**Standardization in Simulation Scenario Development**	**Emerald 5**

We are missing a common understanding and standardized practices in simulation scenario development. There is no widely accepted format to share scenarios. It is almost always a labor intensive process to run the same scenario at two different simulation sites that belong to two different organizations. There is no formal way to check qualities of a scenario such as completeness or consistency. This leads to increased costs, marginal reuse and degraded interoperability. With these motivations, the American Institute of Aeronautics and Astronautics (AIAA) Modeling and Simulation Technical Committee (MSTC) recently launched a working group towards development of a standard scenario definition language for aviation, namely AIAA Simulation Scenario Development Working Group (AIAA SSDWG). The charter of the working group is available at https://goo.gl/8EcsCE. In this workshop AIAA SSDWG will be discussing the underlying technical solution of a standard scenario definition language.

Friday

Friday, 12 January 2018		
468-SB-5 **0730 - 0800 hrs**	**Friday Morning Speakers' Briefing**	**Session Rooms**

Friday, 12 January 2018		
469-PLNRY-5 **0800 - 0900 hrs**	**Serving our Robot Overlords**	**Osceola CD**

Moderator: Scott Fouse, Vice President, Advanced Technology Center, Lockheed Martin Corporation

Panelists:

Kristen Kearns
Senior Advisor for Autonomy Research
Air Force Research Laboratory

Gerhard Grunwald
Head of Orbital Robotics
Institute of Robotics and Mechatronics

Stefanie Tellex
Assistant Professor of Computer Science and Assistant Professor of Engineering
Brown University

Friday, 12 January 2018		
470-NW-14 **0900 - 0930 hrs**	**Friday Morning Coffee Break**	**Session Room Foyers**

Friday, 12 January 2018						
471-ACD-11/TFPC-6	**Electric Aircraft Design II**					**Tampa 3**
Chaired by: S. GINN, NASA AFRC and V. STOUFFER, LMI						
0930 hrs AIAA-2018-2024 **Megawatt-class Turboelectric Distributed Propulsion, Power, and Thermal Systems for Aircraft** J. Kim, K. Kwon, S. Roy, E. Garcia, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2018-2025 **Conceptual Assessment of Different Hybrid Electric Air Vehicle Options for a Commuter with 19 Passengers** J. Hartmann, M. Strack, B. Nagel, German Aerospace Center (DLR), Hamburg, Germany	1030 hrs AIAA-2018-2026 **A Combined Thermal-Fluid-Electrical-Mechanical Simulink© Model for Hybrid Electric Flight Vehicle Studies** J. Hartwig, B. Niezgoda, L. Kohlman, NASA Glenn Research Center, Cleveland, OH	1100 hrs AIAA-2018-2027 **System-Level Study of Different Super/Turbocharger Architectures for Rotorcraft Diesel Engine** M. Shi, K. Milios, J. Gladin, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1130 hrs AIAA-2018-2028 **Mission Analysis and Emissions for Conventional and Hybrid-Electric Commercial Transport Aircraft** G. Wroblewski, P. Ansell, University of Illinois, Urbana-Champaign, Urbana, IL		

Friday, 12 January 2018						
472-ACD-12	**Multidisciplinary Design and Optimization**					**Tampa 1**
Chaired by: P. SCHMOLLGRUBER, ONERA and C. BIL, RMIT University						
0930 hrs AIAA-2018-2029 **Uncertainty-Based Design Optimization and Technology Evaluation: A Review** M. Roelofs, R. Vos, Delft University of Technology, Delft, The Netherlands	1000 hrs AIAA-2018-2030 **Design of a Dual-Use Aerobatic Light Jet** D. Kallas, K. Brown, J. Ingham, D. Miskin, T. Remsing, T. Takahashi, Arizona State University, Tempe, AZ	1030 hrs AIAA-2018-2031 **A Functional Approach to a Collaborative Integrated Wing and Movables Design** G. Bona, K. Risse, German Aerospace Center (DLR), Braunschweig, Germany	1100 hrs AIAA-2018-2032 **Comparison of Aircraft Conceptual Design Weight Estimation Methods to the Flight Optimization System** B. Horvath, NASA Langley Research Center, Hampton, VA; D. Wells, Self, Hampton, VA	1130 hrs AIAA-2018-2033 **A Study of Engine Number as a Criterion for an Optimal Regional Aircraft Design** E. Coelho Inouye, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; P. London Guedes, W. Alves, Embraer, São José dos Campos, Brazil; A. de Paula, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil		

Friday, 12 January 2018						
473-AMT-8	**Velocimetry II**					**Osceola 1**
Chaired by: X. LIU, San Diego State University and G. JONES, NASA-Langley Research Center						
0930 hrs AIAA-2018-2034 **Denoising 400-kHz "Postage-Stamp PIV" using Uncertainty Quantification** S. Beresh, Sandia National Laboratories, Albuquerque, NM	1000 hrs AIAA-2018-2035 **The effect of out-of-plane shear within the depth of correlation in macroscopic planar particle shadow velocimetry** C. Truong, J. Harris, Pennsylvania State University, State College, State College, PA; M. McPhail, Mayo Clinic, Phoenix, AZ	1030 hrs AIAA-2018-2036 **Comparison of 4-camera Tomographic PIV and Single-camera Plenoptic PIV** B. Rice, J. McKenzie, S. Peltier, Air Force Research Laboratory, Arnold AFB, TN; C. Combs, University of Tennessee, Tullahoma, Tullahoma, TN; B. Thurow, C. Clifford, Auburn University, Auburn, AL; et al.	1100 hrs AIAA-2018-2037 **A Comparative Assessment of Processing Approaches for SPIV Velocity Fields** D. Miklosovic, S. Swegle, U.S. Naval Academy, Annapolis, MD	1130 hrs AIAA-2018-2038 **Time-resolved pulse-burst tomographic PIV of impulsively-started cylinder wakes in a shock tube** K. Lynch, J. Wagner, Sandia National Laboratories, Albuquerque, NM	1200 hrs AIAA-2018-2039 **Spanwise Correlations Along a Circular Cylinder using Particle Shadow Velocimetry** S. Hinkle, R. Jefferies, C. Truong, J. Harris, Pennsylvania State University, University Park, PA; M. McPhail, Mayo Clinic, Phoenix, AZ	

Friday, 12 January 2018						
474-AMT-9	**Rayleigh and Raman Techniques**					**Osceola 2**
Chaired by: J. SUTTON, Ohio State University and A. CUTLER, The George Washington University						
0930 hrs AIAA-2018-2040 **High-Speed, Two-dimensional, Multi-species Raman Imaging for Combustion and Flow Diagnostics** N. Jiang, S. Roy, P. Hsu, J. Mance, Spectral Energies, LLC, Dayton, OH; Y. Wu, M. Gragston, University of Tennessee, Knoxville, Knoxville, TN; et al.	1000 hrs AIAA-2018-2041 **Towards Volumetric Measurement of Density using Scanning Sheet Filtered Rayleigh Scattering** J. George, T. Jenkins, MetroLaser, Inc., Laguna Hills, CA	1030 hrs AIAA-2018-2042 **A Model Study of Filtered Rayleigh Scattering Sensitivity to Pressure and Temperature** D. Feng, B. Goldberg, M. Naphade, M. Shneider, R. Miles, Princeton University, Princeton, NJ	1100 hrs AIAA-2018-2043 **Rayleigh Scattering Density Measurements from Ultrafast Lasers in High-Pressure, Cryogenic Wind Tunnels** R. Burns, National Institute of Aerospace, Hampton, VA; P. Danehy, NASA Langley Research Center, Hampton, VA			

Friday, 12 January 2018						
475-APA-47/FD-57/PDL-15	**Plasma Flow Control III**					**Destin 1**
Chaired by: F. THOMAS and A. VANDERWYST, Leidos						
0930 hrs AIAA-2018-2044 **Investigation of Maximum Velocity Induced by Body-Force Fields for Simpler Modeling of Plasma Actuators** S. Kawai, University of Tokyo, Sagamihara, Japan; T. Bouwhuis, University of Twente, Enschede, The Netherlands; Y. Abe, University of Tokyo, Sagamihara, Japan; A. Yakeno, T. Nonomura, A. Oyama, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; et al.	1000 hrs AIAA-2018-2045 **Numerical Investigation on Voltage Waveform Composed of Gradual and Steep Slope for Performance Improvement of Plasma Actuator** A. Nakano, M. Naka, H. Nishida, Tokyo University of Agriculture and Technology, Koganei, Japan	1030 hrs AIAA-2018-2046 **Numerical Study of a nSDBD Actuator: Discharge Parameters and Energy Distribution** Y. Zhu, S. Shcherbanev, S. Starikovskaia, Pierre and Marie Curie University, Paris, France	1100 hrs AIAA-2018-2047 **Investigation of Shock Dynamics Over Turrets with Different Spanwise Aspect Ratios Using PSP and Optical Diagnostics** N. De Lucca, S. Gordeyev, J. Morrida, E. Jumper, University of Notre Dame, Notre Dame, IN	1130 hrs AIAA-2018-2048 **Conditional Studies of the Wake Dynamics of Hemispherical Turret Using PSP** S. Gordeyev, N. De Lucca, J. Morrida, E. Jumper, University of Notre Dame, Notre Dame, IN	1200 hrs AIAA-2018-2049 **Active Flow Control of the Laminar Separation Bubble on an Oscillating Airfoil Near Stall** M. Agate, A. Pande, J. Little, University of Arizona, Tucson, Tucson, AZ; A. Gross, New Mexico State University, Las Cruces, NM; H. Fasel, University of Arizona, Tucson, Tucson, AZ	1230 hrs AIAA-2018-2050 **Suppression of transonic buffet phenomenon by spark plasma actuator** A. Firsov, I. Moralev, Y. Isaenkov, Joint Institute for High Temperatures of the Russian Academy of Sciences, Moscow, Russia; S. Leonov, University of Notre Dame, Notre Dame, IN; V. Soudakov, TsAGI, Zhukovsky, Russia

Friday, 12 January 2018						
476-APA-48	**Aero-Propulsive Interaction**					**Sun 3**
Chaired by: K. KONTIS, University of Glasgow and C. KIRIS, NASA Ames Research Center						
0930 hrs AIAA-2018-2051 **Aero-Propulsive and Propulsor Cross-Coupling Effects on a Distributed Propulsion System** A. Perry, P. Ansell, University of Illinois, Urbana-Champaign, Urbana, IL; M. Kerho, Aerion Corporation, Reno, NV	1000 hrs AIAA-2018-2052 **Aerodynamic Interaction Effects of Tip-Mounted Propellers Installed on the Horizontal Tailplane** N. Arnhem, T. Sinnige, T. Stokkermans, G. Eitelberg, L. Veldhuis, Delft University of Technology, Delft, The Netherlands	1030 hrs AIAA-2018-2053 **Aerodynamic Investigation of an Over-the-Wing Propeller for Distributed Propulsion** E. Marcus, R. de Vries, A. Raju Kulkarni, L. Veldhuis, Delft University of Technology, Delft, The Netherlands				

Friday, 12 January 2018						
477-APA-49	**High Angle of Attack and High Lift Aerodynamics**					**Sanibel 2**
Chaired by: B. MCGRATH, The Johns Hopkins University Applied Physics Laboratory and T. CHYCZEWSKI, Northrop Grumman Aerospace Systems						
0930 hrs AIAA-2018-2054 **Numerical Simulation of Super-Lift Coefficient of Co-Flow Jet Flow Control Wing** Y. Yang, G. Zha, University of Miami, Coral Gables, FL	1000 hrs AIAA-2018-2055 **Transient Force Evolution of Swept Flat-Plate Wings Pitching at a Constant Acceleration Amplitude** H. Yu, National Defense University, Taiyuan, Taiwan; L. Bernal, University of Michigan, Ann Arbor, Ann Arbor, MI	1030 hrs AIAA-2018-2056 **LAVA Simulations for the 3rd AIAA CFD High Lift Prediction Workshop using Body Fitted Grids** J. Jensen, G. Stich, J. Housman, M. Denison, C. Kiris, NASA Ames Research Center, Moffett Field, CA	1100 hrs AIAA-2018-2057 **Analysis of High Alpha Aerodynamic Characteristics of a Supersonic Aircraft** J. Masud, T. Khan, Z. Toor, Air University, Islamabad, Pakistan			

Friday, 12 January 2018						
478-APA-50	**Low-Speed and Low Reynolds Number Aerodynamics**					**Miami 2**
Chaired by: K. VANDEN, USAF and M. SCHOENENBERGER, NASA Langley Research Center						
0930 hrs AIAA-2018-2058 **Aerodynamic Characteristics of Mars Airplane Airfoils with Control Surface in Propeller Slipstream** K. Kurane, K. Uechi, K. Takahashi, K. Fujita, H. Nagai, Tohoku University, Sendai, Japan	1000 hrs AIAA-2018-2059 **Verification, Validation, and Application of Shear Stress Transport Transitional Model to a R/C Aircraft** J. Willems, W. Engblom, J. Wurts, Embry-Riddle Aeronautical University, Daytona Beach, FL	1030 hrs AIAA-2018-2060 **Time Spectral Method for Unsteady Three-Dimensional Confined Viscous Flows with Variable Inflow Velocity at Low Reynolds Numbers** D. Mateescu, A. Khaled, McGill University, Montréal, Canada	1100 hrs AIAA-2018-2061 **Basic Understanding of Unsteady Airfoil Aerodynamics at Low Reynolds Numbers** C. Badrya, B. Govindarajan, I. Chopra, University of Maryland, College Park, Silver Spring, MD	1130 hrs AIAA-2018-2062 **An experimental investigation into the flow mechanics of dimpled surfaces in turbulent boundary layers** O. van Campenhout, M. van Nesselrooij, L. Veldhuis, B. van Oudheusden, F. Schrijer, Delft University of Technology, Delft, The Netherlands		

Friday, 12 January 2018						
479-APA-51	**Aerodynamic-Structural Dynamics Interaction**					**Miami 3**
Chaired by: J. AZEVEDO and M. POST, USAF Academy						
0930 hrs AIAA-2018-2063 **Prediction of Dynamic Stability Derivatives for Flexible Aircraft using FUN3D** M. Bozeman, J. Tai, B. Robertson, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2018-2064 **Nonlinear Structural Damping Effects on F-16 Limit Cycle Oscillations** P. Chen, Z. Zhang, Z. Zhou, ZONA Technology, Inc., Scottsdale, AZ; X. Wang, M. Mignolet, Arizona State University, Tempe, AZ	1030 hrs AIAA-2018-2065 **Coupling of a Multibody Simulation Tool for Rotary Systems with an Unsteady Viscous Flow Solver** S. Soganci, Turkish Aerospace Industries, Inc., Ankara, Turkey; A. Kayran, I. Tuncer, Middle East Technical University, Ankara, Turkey	1100 hrs AIAA-2018-2066 **An Efficient Model for Aeroelastic Tailoring of Aircraft Wings Under Gust Loads** M. Melville, A. Kolaei, G. Bramesfeld, H. Alighanbari, Ryerson University, Toronto, Canada	1130 hrs AIAA-2018-2067 **Membrane wing dynamic stability: The role of membrane mass** S. Tiomkin, D. Raveh, Technion–Israel Institute of Technology, Haifa, Israel	1200 hrs AIAA-2018-2068 **A Highly Efficient Aeroelastic Analysis Method Based on External Aerodynamic Force and Strip Theory** Q. Yan, Z. Wan, Beihang University, Beijing, China	

Friday, 12 January 2018						
480-APA-52	**VSTOL/STOL Aerodynamics**					**Sun 2**
Chaired by: M. CALVERT, U.S. Army AMRDEC and D. QUINN, U.S. Army						
0930 hrs AIAA-2018-2069 **Comparison of Aerodynamic Analysis Tools for Rotorcraft in Hover** W. Anemaat, D. van Dommelen, S. Johnson, P. Sargent, W. Liu, Design, Analysis and Research Corporation, Lawrence, KS	1000 hrs AIAA-2018-2070 **Longitudinal Aerodynamic Characteristics of a V/STOL Tilt-wing Four-Propeller Transport Model using a Surface Vorticity Flow Solver** B. Sandoz, Terrafugia, Inc., Woburn, MA; V. Ahuja, R. Hartfield, Research in Flight, Auburn, AL	1030 hrs AIAA-2018-2071 **Performance Optimization of a Novel Wing Integrated Distributed Propulsion Systems** S. Durmaz, O. Alahmad, B. Saracoglu, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	1100 hrs AIAA-2018-2072 **Aerodynamic Analysis of Lifting Fan Embedded in Wing Using ADM and ASM** S. Choi, S. Lee, Inha University, Incheon, South Korea			

Friday, 12 January 2018						
481-FD-58	**Shock-Boundary Layer Interactions II**					**Sun 6**
Chaired by: A. GROSS, New Mexico State University						
0930 hrs AIAA-2018-2073 **POD Analysis of Unsteadiness Mechanisms within a Swept Compression-Ramp Shock-Wave Boundary-Layer Interaction at Mach 2** L. Vanstone, S. Seckin, N. Clemens, University of Texas, Austin, Austin, TX	1000 hrs AIAA-2018-2074 **Effect of Sweep on the Mean and Unsteady Structures of Impinging Shock/Boundary Layer Interactions** A. Doehrmann, S. Padmanabhan, J. Threadgill, J. Little, University of Arizona, Tucson, Tucson, AZ	1030 hrs AIAA-2018-2075 **Unsteadiness in Shock/Turbulent-Boundary-Layer Interactions with Open Flow Separation** M. Adler, D. Gaitonde, Ohio State University, Columbus, OH	1100 hrs AIAA-2018-2076 **Introducing Controlled Perturbations in a 3-D Swept Shock Boundary Layer Interaction** L. Mears, N. Arora, F. Alvi, Florida State University, Tallahassee, FL	1130 hrs AIAA-2018-2077 **Uncertainty Analysis of Turbulence Model Closure Coefficients for Shock Wave-Boundary Layer Interaction Simulations** A. Erb, S. Hosder, Missouri University of Science and Technology, Rolla, MO		

Friday, 12 January 2018						
482-FD-59	**Multiphase Flows III: Dispersion/Atomization**					**Sun 4**
Chaired by: D. BODONY, University of Illinois at Urbana-Champaign						
0930 hrs AIAA-2018-2078 **Diffuse Interface Eularian Spray Atomization Modeling of Impinging Jet Sprays** G. Jacobsohn, University of Massachusetts, Amherst, Amherst, MA; E. Baldwin, ICON USA, Cincinnati, OH; D. Schmidt, University of Massachusetts, Amherst, Amherst, MA; B. Halls, Air Force Research Laboratory, Wright-Patterson AFB, OH; A. Kastengren, Argonne National Laboratory, Lemont, IL; T. Meyer, Purdue University, West Lafayette, IN	1000 hrs AIAA-2018-2079 **Numerical Simulation of Two-Phase Flow Structures Inside an Aerated-Liquid Injector with Various Aerating Tube Configurations** B. Bornhoft, K. Lin, Taitech, Inc., Beavercreek, OH; J. Edwards, North Carolina State University, Raleigh, NC	1030 hrs AIAA-2018-2080 **A Parametric Study of Particle-Laden Shock Tubes Using an Eulerian-Lagrangian Framework** G. Shallcross, J. Capecelatro, University of Michigan, Ann Arbor, Ann Arbor, MI	1100 hrs AIAA-2018-2081 **Direct Numerical Simulation of Long-term Shock-particle Curtain Interaction** X. Deng, L. Jiang, Y. Ding, Beijing Computational Science Research Center, Beijing, China	1130 hrs AIAA-2018-2082 **Modeling of sub-grid dispersion in large-eddy simulation using regularized deconvolution method** Q. Wang, Stanford University, Stanford, CA; X. Zhao, University of Connecticut, Storrs, Storrs, CT; M. Ihme, Stanford University, Stanford, CA		

Friday, 12 January 2018						
483-FD-60	**Stability and Transition VI: High-Speed Flows**					**Miami 1**
Chaired by: X. WANG, The University of Alabama						
0930 hrs AIAA-2018-2083 **Visualization of the Second-Mode Instability on a Sharp Cone at Mach 14** R. Kennedy, S. Laurence, University of Maryland, College Park, College Park, MD; M. Smith, E. Marineau, Arnold Engineering Development Complex, Silver Spring, MD	1000 hrs AIAA-2018-2084 **Stability Analysis of a Mach 10 Flat-Plate Boundary Layer using a High-Order Non-Equilibrium Solver** X. Wang, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1030 hrs AIAA-2018-2085 **Supersonic Modes in Hot-Wall Hypersonic Boundary Layers with Thermochemical Nonequilibrium Effects** C. Knisely, X. Zhong, University of California, Los Angeles, Los Angeles, CA	1100 hrs AIAA-2018-2086 **Kovasznay-type analysis of transition modes in a hypersonic boundary layer** S. Unnikrishnan, D. Gaitonde, Ohio State University, Columbus, OH	1130 hrs AIAA-2018-2087 **Nonlinear Parabolized Stability Analysis of Hypersonic Flows in Presence of Curvature Effects** L. Zanus, F. Miró Miró, F. Pinna, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	1200 hrs AIAA-2018-2088 **Stabilization of a Hypersonic Boundary Layer Using Regular Porous Coating** X. Wang, University of Alabama, Tuscaloosa, Tuscaloosa, AL	

Friday, 12 January 2018						
484-FD-61	**RANS/Hybrid/LES Modeling II**					**Sun 5**
Chaired by: B. SMITH, Lockheed Martin Aeronautics						
0930 hrs AIAA-2018-2089 **Performance Assessment of a Two-Equation Very Large Eddy Simulation (VLES) Model** R. Kelly, A. Jemcov, University of Notre Dame, Notre Dame, IN; S. Rida, Honeywell International, Inc., Phoenix, AZ; D. Mahapatra, Honeywell International, Inc., Bengaluru, India	1000 hrs AIAA-2018-2090 **Coherent-vorticity Preserving Large-Eddy Simulation of trefoil knotted vortices** Z. Yu, J. Chapelier, C. Scalo, Purdue University, West Lafayette, IN	1030 hrs AIAA-2018-2091 **Adjoint-Based Optimization of RANS Eddy Viscosity Model for U-Bend Channel Flow** M. Hayek, General Electric Company, Lynn, MA; Q. Wang, Massachusetts Institute of Technology, Cambridge, MA; G. Laskowski, General Electric Company, Lynn, MA	1100 hrs AIAA-2018-2092 **An Algebraic Wall-Model for Large Eddy Simulation With the FR/CPR Method** J. Shi, H. Yan, Northwestern Polytechnical University, Xi'an, China; Z. Wang, University of Kansas, Lawrence, Lawrence, KS	1130 hrs AIAA-2018-2093 **Large-Eddy Simulation of Supersonic Turbulent Flow in Asymmetric Planar Nozzle** S. Kumar, S. Ghosh, Indian Institute of Technology Kharagpur, Kharagpur, India	1200 hrs AIAA-2018-2094 **First-Order Hyperbolic System Based Reconstructed Discontinuous Galerkin Methods for Nonlinear Diffusion Equations on Unstructured Grids** J. Lou, L. Li, H. Luo, North Carolina State University, Raleigh, NC; H. Nishikawa, National Institute of Aerospace, Hampton, VA	

Friday, 12 January 2018						
485-GNC-45/SFM-23	**Spacecraft GN&C IV**					**Sarasota 3**
Chaired by: M. MCFARLAND, Orbital ATK and J. RAMAKRISHNAN, Bastion Technologies, Inc.						
0930 hrs AIAA-2018-2095 **Extension of Farrenkopf Steady-State Solutions with Estimated Angular Rate** A. Dianetti, J. Crassidis, State University of New York, Buffalo, NY	1000 hrs AIAA-2018-2096 **An Innovative Control Allocation Scheme to Address Reaction Thruster Interactions on a 3U CubeSat** J. Pei, NASA Langley Research Center, Hampton, VA; M. Choueiri, R. Elandt, M. Peck, Cornell University, Ithaca, NY; P. Finch, Stanford University, Stanford, CA	1030 hrs AIAA-2018-2097 **Practical Methodology for the Inclusion of Nonlinear Slosh Damping in the Stability Analysis of Liquid-propelled Space Vehicles** J. Ottander, Dynamic Concepts, Inc., Huntsville, AL; R. Hall, CRM Solutions, Huntsville, AL; J. Powers, NASA Marshall Space Flight Center, Huntsville, AL	1100 hrs AIAA-2018-2098 **Comparison of Sigma-Delta and Pulse-Width Modulation for Spacecraft Thruster Control** R. Zappulla, J. Virgili-Llop, M. Romano, Naval Postgraduate School, Monterey, CA	1130 hrs AIAA-2018-2099 **Control Recovery of a Satellite with Large Flexible Appendages after Impact with Space Debris** D. Gransden, E. Mooij, Delft University of Technology, Delft, The Netherlands	1200 hrs AIAA-2018-2100 **Multi-View Monocular Pose Estimation for Spacecraft Relative Navigation** D. Rondao, N. Aouf, Cranfield University, Shrivenham, United Kingdom	1230 hrs AIAA-2018-2101 **Vision-Based Relative State Estimation for A Non-Cooperative Target** Q. Feng, Y. Liu, Northwestern Polytechnical University, Xi'an, China; Z. Zhu, York University, Toronto, Canada; Y. Hu, University of Wisconsin, Madison, Madison, WI; Q. Pan, Y. Lyu, Northwestern Polytechnical University, Xi'an, China

Friday, 12 January 2018						
486-GNC-46	**Aerospace Robotics IV**					**Captiva 1**
Chaired by: J. SHI, MDA Corporation and S. LEE, Alfred University						
0930 hrs AIAA-2018-2102 **UAV Navigation with Computer Vision – Flight Testing a Novel Visual Odometry Technique** R. Depaola, C. Chimento, M. Anderson, U.S. Air Force Academy, Colorado Springs, CO; K. Brink, Air Force Research Laboratory, Eglin AFB, FL; A. Willis, University of North Carolina, Charlotte, NC	1000 hrs AIAA-2018-2103 **Monocular Vision Occupancy Grid Mapping with Obstacle Avoidance on UAVs** E. Balci, University of Stuttgart, Stuttgart, Germany; T. Watanabe, D. Magree, T. Khamvilai, E. Johnson, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2018-2104 **Vision-Based State Estimation Using Tracked Landmarks** N. Myhre, A. Chavez Armijos, M. Clark, R. Prazenica, Embry-Riddle Aeronautical University, Daytona Beach, FL	1100 hrs AIAA-2018-2105 **Visually-Guided Counter-sUAS Aerial Vehicle: Flight Results** T. Horiuchi, I. Faruque, T. Cervi, D. McColl, J. Isbell, D. Jauregui, University of Maryland, College Park, College Park, MD; et al.	1130 hrs AIAA-2018-2106 **Parallel Motion Planning with Obstacle Avoidance on Google Tango Tablet** C. Seiferth, A. Winter, W. Fichter, University of Stuttgart, Stuttgart, Germany	1200 hrs AIAA-2018-2107 **Pursuit-Evasion Problems Involving Two Pursuers and One Evader** V. Makkapati, W. Sun, P. Tsiotras, Georgia Institute of Technology, Atlanta, GA	1230 hrs AIAA-2018-2108 **Pursuit Evasion Games using Collision Cones** V. Sunkara, A. Chakravarthy, Wichita State University, Wichita, KS; D. Ghose, Indian Institute of Science, Bengaluru, India

Friday, 12 January 2018						
487-GNC-47	**Cassini Spacecraft Attitude Control Flight Experience II, at Saturn**					**Sanibel 1**
Chaired by: T. BURK, Jet Propulsion Laboratory and J. WEBSTER, Jet Propulsion Laboratory						
0930 hrs AIAA-2018-2109 **Cassini Spacecraft Attitude Control System: Flight Performance and Lessons Learned, 1997–2017** A. Lee, T. Burk, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1000 hrs AIAA-2018-2110 **Mission Summary of Cassini Spacecraft Guidance and Control Hardware Health and Performance** J. Stupik, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1030 hrs AIAA-2018-2111 **Skimming through Saturn's Atmosphere: The Climax of the Cassini Grand Finale Mission** L. Andrade, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1100 hrs AIAA-2018-2112 **Performance of Cassini Reaction Wheel Friction Compensation Scheme during Spin Rate Zero-crossing** A. Lee, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1130 hrs AIAA-2018-2113 **High Fidelity Reconstructed Attitude Estimation Using Cassini Flight Telemetry** T. Burk, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA		

Friday, 12 January 2018						
488-GT-6	**Wind Tunnel Corrections and Data Studies**					**Sun D**
Chaired by: T. WAYMAN, Gulfstream Aerospace Corporation and M. RIVERS, NASA Langley Research Center						
0930 hrs AIAA-2018-2114 **Use of the Ames Check Standard Model for the Validation of Wall Interference Corrections** N. Ulbrich, Jacobs, Moffett Field, CA; M. Amaya, R. Flach, NASA Ames Research Center, Moffett Field, CA	1000 hrs AIAA-2018-2115 **Expanding the Wall Interference Effect Correction Capability in the National Full-Scale Aerodynamics Complex 80- by 120-foot Wind Tunnel for Semi-Span and Automotive Applications** P. Goulding, C. Nykamp, National Full-Scale Aerodynamics Complex, Moffett Field, CA; C. Czlapinski, Navistar, Inc., Lisle, IL	1030 hrs AIAA-2018-2116 **Consistency Verifications of the DNW-HST Tunnel Interference Correction Bookkeeping** R. Gebbink, K. Kapteijn, German-Dutch Wind Tunnels, Marknesse, The Netherlands; F. Bai, K. Mao, D. Zhang, Y. Ba, Shanghai Aircraft Design and Research Institute, Shanghai, China; et al.	1100 hrs **Wind Tunnel Wall Correction Methods: An Informal Discussion** Moderator: Patrick Goulding, Test Director, National Full Scale Aerodynamic Complex, NASA AMES Research Center Norbert Ulbrich, Senior Aerodynamicist, Jacobs Technology Stephen Ryle, Aerotest Engineering Manager, San Diego Wind Tunnel Alex Krynytzky, Test and Evaluation Engineer, The Boeing Company Eric Walker, Chief Engineer for Test Operational Excellence, NASA Langley Research Center Nigel Taylor, Capability Leader, Aerodynamic Tools & Methods, MBDA Systems			

Friday, 12 January 2018						
489-GT-7	**Propulsion and Thermal Ground Testing Topics**					**Captiva 2**
Chaired by: S. SIMERLY, NASA Glenn Research Center and D. MYREN						
0930 hrs AIAA-2018-2117 **Design and Operation of a Thrust Test Stand for University Small Satellite Thrusters** T. Stevenson, E. Lightsey, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2018-2118 **A Modular Altitude Test Stand for a Small-Scale Turbojet** N. Lucido, T. Schroeder, G. Williams, K. Rouser, Oklahoma State University, Stillwater, OK	1030 hrs AIAA-2018-2119 **Small Turbojet Altitude Test Facility with Two Stage Turbocharger Inlet Air Cooling** N. Grannan, K. Moosmann, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; M. McClearn, F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2018-2120 **Directing Thermal Vacuum (TVAC) Chamber Testing at a Facility in another State Lessons Learned** D. Zakar, R. Baldauff, Naval Research Laboratory, Washington, D.C.			

Friday, 12 January 2018						
490-GTE-8	**Turbine Aerodynamics**					**Sanibel 3**
Chaired by: G. PANIAGUA, Purdue University						
0930 hrs AIAA-2018-2121 **The Impact of Manufacturing Variability on High Pressure Turbine Profile Loss** W. Lee, W. Dawes, J. Coull, University of Cambridge, Cambridge, United Kingdom; F. Goenaga, Rolls-Royce Group plc, Filton, United Kingdom	1000 hrs AIAA-2018-2122 **LES and RANS Prediction of Adverse Pressure Transition on Linear Turbine Cascade for High-Fidelity Design** K. Matsui, N. Tani, J. Furukawa, IHI Corporation, Tokyo, Japan	1030 hrs AIAA-2018-2123 **Performance Analysis of Labyrinth Seals Using Analytical Methods and Numerical Techniques** J. Masud, A. Yar, Z. Sohail, H. Anwar, Z. Toor, Air University, Islamabad, Pakistan	1100 hrs AIAA-2018-2124 **Unsteady Flow Measurements in a Front Loaded Low Pressure Turbine Passage** E. Veley, C. Marks, R. Anthony, R. Sondergaard, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Wolff, Wright State University, Dayton, OH	1130 hrs AIAA-2018-2125 **Non-Axisymmetric Endwall Contouring of Front-Loaded High-Lift Low Pressure Turbines** J. Dickel, C. Marks, J. Clark, R. Sondergaard, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Wolff, Wright State University, Dayton, OH		

Friday, 12 January 2018						
491-GTE-9	**Combustor Fuel and Instabilities**					**Osceola 4**
Chaired by: J. HAYNES, GE						
0930 hrs AIAA-2018-2126 **Effects alternative fuels on gas emissions and combustion dynamic characteristics on a 9-point LDI combustor** Z. He, D. Podboy, C. Chang, NASA Glenn Research Center, Cleveland, OH	1000 hrs AIAA-2018-2127 **A Study on Design Optimization of Direct-Fired sCO2 Combustors** R. Kancherla, University of Central Florida, Orlando, FL; L. Vesely, Czech Technical University in Prague, Prague, Czechia; S. Martin, Embry-Riddle Aeronautical University, Daytona Beach, FL; J. Bobren-Diaz, S. Vasu, University of Central Florida, Orlando, FL	1030 hrs AIAA-2018-2128 **Characterization of Heat Load on the Liner Walls during Near Blowout Instabilities** S. Gadiraju, S. Park, Virginia Polytechnic Institute and State University, Blacksburg, VA; S. Ekkad, North Carolina State University, Raleigh, NC; F. Liberatore, R. Srinivasan, S. Ho, Solar Turbines Inc., San Diego, CA	1100 hrs AIAA-2018-2129 **Combustion Instability in Gas Turbines: A Review on Analytical, Experimental and Numerical Studies** A. Taha, M. Vellakal, Q. Lu, University of Illinois, Urbana-Champaign, Urbana, IL			

Friday, 12 January 2018						
492-INPSI-4	**Inlets, Nozzles, Propulsion Systems integration III**					**Destin 2**
Chaired by: S. HIRT, NASA Glenn Research Center and M. CARTER, NASA-Langley Research Center and L. GEA, Boeing Engineering Operations & Technology						
0930 hrs AIAA-2018-2130 **Unsteady Numerical Investigation of a Rectangular Diffusing S-duct with High Aspect Ratio** B. Connolly, E. Loth, University of Virginia, Charlottesville, Charlottesville, VA; C. Smith, Rolls-Royce Group plc, Indianapolis, IN	1000 hrs AIAA-2018-2131 **Assessment of detached eddy simulation of a separated flow in a planar nozzle** E. Martelli, University of Campania, Aversa, Italy; P. Ciottoli, M. Bernardini, F. Nasuti, M. Valorani, University of Rome "La Sapienza", Rome, Italy	1030 hrs AIAA-2018-2132 **Considerations for Pairing the IC Engine and Electric Motor in a Hybrid Power System for Small UAVs** M. Hageman, T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO	1100 hrs AIAA-2018-2133 **Designing and Research of 3-D Inlet for Small Supersonic Cruise M=1.8 Business Jet** V. Vinogradov, A. Makarov, N. Melkonyan, Y. Melnikov, V. Stepanov, Central Institute of Aviation Motors, Moscow, Russia			

Friday, 12 January 2018						
493-IS-18	**Learning, Reasoning, and Data-Driven Systems II**					**Tallahassee 1**
Chaired by: E. VAN KAMPEN, TU Delft and J. VALASEK, Texas A&M University						
0930 hrs AIAA-2018-2134 **Flexible Heuristic Dynamic Programming for Reinforcement Learning in Quad-Rotors** A. Helmer, C. de Visser, E. Van Kampen, Delft University of Technology, Delft, The Netherlands	1000 hrs AIAA-2018-2135 **Machine Learning for Flapping Wing Flight Control** M. Goedhart, E. Van Kampen, S. Armanini, C. de Visser, Q. Chu, Delft University of Technology, Delft, The Netherlands	1030 hrs AIAA-2018-2136 **Genetic Fuzzy based Target Geo-localization using Unmanned Aerial Systems for Firefighting Applications** S. Kukreti, M. Kumar, K. Cohen, University of Cincinnati, Cincinnati, OH	1100 hrs AIAA-2018-2137 **Aircraft Detection using Deep Convolutional Neural Network in Small Unmanned Aircraft Systems** S. Hwang, J. Lee, H. Shin, S. Cho, D. Shim, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1130 hrs AIAA-2018-2138 **Real Time Embedded System Framework for Autonomous Drone Racing using Deep Learning Techniques** S. Jung, H. Lee, S. Hwang, D. Shim, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1200 hrs AIAA-2018-2139 **Control of Morphing Wing Shapes with Deep Reinforcement Learning** V. Goecks, P. Leal, T. White, J. Valasek, D. Hartl, Texas A&M University, College Station, TX	

Friday, 12 January 2018						
494-IS-19/UAS-12	**UAS Autonomy and Path Planning II**					**Tallahassee 2**
Chaired by: M. BATTIPEDE, Politecnico Di Torino						
0930 hrs AIAA-2018-2140 **Geofencing in Immediate Reaches Airspace for Unmanned Aircraft System Traffic Management** M. Stevens, E. Atkins, University of Michigan, Ann Arbor, Ann Arbor, MI	1000 hrs AIAA-2018-2141 **Online Hybrid RF Propagation Model for Communication-Aware sUAS Relay Application** S. Watza, E. Frew, University of Colorado, Boulder, Boulder, CO	1030 hrs AIAA-2018-2142 **Self-Directed and Informed Forced-Landing System for UAV Avoidance of On-Ground Persons, Vehicles, and Structures** N. Richards, Barron Associates, Inc., Charlottesville, VA; L. Hook, University of Tulsa, Tulsa, OK; P. Suh, NASA Armstrong Flight Research Center, Edwards, CA	1100 hrs AIAA-2018-2143 **Autonomous taxi operations: algorithms for the solution of the routing problem** G. Sirigu, Technical University of Turin, Turin, Italy; M. Cassaro, ONERA, Toulouse, France; M. Battipede, P. Gili, Technical University of Turin, Turin, Italy	1130 hrs AIAA-2018-2144 **UAV Formation Generation Guidance with Engagement Time Constraints** S. Suresh, A. Ratnoo, Indian Institute of Science, Bengaluru, India		

Friday, 12 January 2018						
495-MAT-12	**Advanced Material Behavior: Experiment and Computation**					**Sun C**
Chaired by: J. MATLIK, Rolls-Royce Corp and R. FERTIG, University of Wyoming						
0930 hrs AIAA-2018-2145 **Development of a Computational Aircraft Tire Mechanical Property Model** S. Labban, A. Zakrajsek, 704th Test Group, Wright-Patterson AFB, OH; S. Nabolusi, Air Force Research Laboratory, Wright-Patterson AFB, OH; C. Alsobrook, 704th Test Group, Wright-Patterson AFB, OH	1000 hrs AIAA-2018-2146 **Influence of Flow Speed and Temperature on the Microstructure Crystallization for Polymer** H. Huang, Stress Analysis and Structural Design LLC, Reston, VA	1030 hrs AIAA-2018-2147 **Electrospun Carbon Nanofiber with Controllable Waviness for Stretchable Electronics** J. Cai, M. Naraghi, Texas A&M University, College Station, TX				

Friday, 12 January 2018						
496-MDO-13	**Aeroelastic and Aero-Structures Optimization II**					**Emerald 2**
Chaired by: F. ENGELSEN, The Boeing Company and J. DEATON, Adjoint Technologies						
0930 hrs AIAA-2018-2148 **Variable-Fidelity Design Optimization of Low-Aspect-Ratio Wing in Hypersonic Flow** J. Park, S. Choi, P. Raj, Virginia Polytechnic Institute and State University, Blacksburg, VA	1000 hrs AIAA-2018-2149 **A Coupled Newton--Krylov Time Spectral Solver for Flutter Prediction** S. He, E. Jonsson, C. Mader, J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1030 hrs AIAA-2018-2150 **BLP Optimization of Composite Flying-wings with SpaRibs and Multiple Control Surfaces** W. Zhao, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA	1100 hrs AIAA-2018-2151 **Aeroelastic Level Set Topology Optimization for a 3D Wing** S. Kambampati, University of California, San Diego, San Diego, CA; S. Townsend, Cardiff University, Cardiff, United Kingdom; H. Kim, University of California, San Diego, San Diego, CA	1130 hrs AIAA-2018-2152 **Insects' wing shape comparison of bio-inspired air vehicles for hovering flight applications** M. Hassanalian, G. Throneberry, A. Abdelkefi, New Mexico State University, Las Cruces, NM	1200 hrs AIAA-2018-2153 **Design of a flying demonstrator wing for manoeuvre load alleviation with cruise shape constraint** J. Sodja, N. Werter, R. De Breuker, Delft University of Technology, Delft, The Netherlands	1230 hrs AIAA-2018-2154 **Jig-Shape Optimization of a Low-Boom Supersonic Aircraft** C. Pak, NASA Armstrong Flight Research Center, Edwards, CA

Friday, 12 January 2018						
497-MST-17	**Modeling and Simulation of Dynamic Systems**					**Osceola 5**
Chaired by: J. SCHROEDER, Federal Aviation Administration and D. KLYDE, Systems Technology, Inc.						
0930 hrs AIAA-2018-2155 **Proper orthogonal decomposition of straight and level flight kinematics in an insectivorous bat** X. Fan, P. Windes, D. Tafti, S. Sekhar, M. Bender, A. Kurdila, Virginia Polytechnic Institute and State University, Blacksburg, VA; et al.	1000 hrs AIAA-2018-2156 **Global LPV model identification of flapping-wing dynamics using flight data** S. Armanini, M. Karásek, C. de Visser, Delft University of Technology, Delft, The Netherlands	1030 hrs AIAA-2018-2157 **Sensitivity Analysis of State Estimation to IMU Error Parameters for Autonomous Navigation** M. Lau, S. Urdahl, M. Steffens, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1100 hrs AIAA-2018-2158 **Linear Modeling of an Electromechanical Actuator Test Rig** J. Hoffman, A. Palazotto, Air Force Institute of Technology, Wright-Patterson AFB, OH; N. Niedbalski, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2018-2159 **Estimation Method of Missing Components for Spin Deployable Membrane Dynamic** S. Kawazoe, M. Yamazaki, Y. Miyazaki, Nihon University, Chiba, Japan		

Friday, 12 January 2018						
498-MST-18	**Multidisciplinary Modeling and Simulation Across Domains III**					**Sarasota 2**
Chaired by: P. ZAAL, NASA Ames Research Center						
0930 hrs AIAA-2018-2160 **Applying the DASE Protocol to a High-Speed Engine Performance Analysis** R. Henderson, S. Snyder, C. Ward, T. Hurst, Raytheon Company, Tucson, AZ	1000 hrs AIAA-2018-2161 **Grid Convergence Study of a Bluff-Body Stabilized Turbulent Premixed Flame** Z. Jozefik, N. Mundis, ERC, Inc., Edwards AFB, CA; V. Sankaran, Air Force Research Laboratory, Edwards AFB, CA	1030 hrs AIAA-2018-2162 **Overview of Studies using the Numerical Propulsion System Simulation at UT-Arlington** L. Vu, N. Vijayakumar, D. Wilson, University of Texas, Arlington, Arlington, TX	1100 hrs AIAA-2018-2163 **Validation and Determination of Critical Parameters for a Material Ablation Model Using the Charring Ablation Response Program** J. Langston, J. Priest, F. Stefani, J. Koo, University of Texas, Austin, Austin, TX	1130 hrs AIAA-2018-2164 **Variable Coupling and Time Step Selection among Multiple Disciplinary Models** E. DeCarlo, S. Mahadevan, Vanderbilt University, Nashville, TN		

Friday, 12 January 2018						
499-NDA-10	**Uncertainty Quantification and Management II**					**Sun A**
Chaired by: N. KIM, University of Florida and P. WANG, University of Illinois at Urbana-Champaign						
0930 hrs AIAA-2018-2165 **Development of a Wing Weight Convergence Simulation including Uncertainty Modelling and Sensitivity Analysis** T. Reis, D. Calderon, P. Sartor, J. Cooper, University of Bristol, Bristol, United Kingdom; J. Cheeseman, Airbus, Bristol, United Kingdom	1000 hrs AIAA-2018-2166 **Uncertainty Quantification of Atomistic Materials Simulation with Machine Learning Potentials** Y. Li, P. Wang, W. Xiao, Wichita State University, Wichita, KS	1030 hrs AIAA-2018-2167 **Uncertain reduced-order modeling via balanced truncation for structural dynamic systems with interval parameters** X. Chen, Z. Qiu, Beihang University, Beijing, China; Y. Li, University of Illinois, Urbana-Champaign, Urbana, IL; N. Jiang, Beihang University, Beijing, China	1100 hrs AIAA-2018-2168 **Variance Based Adaptive-Sparse Polynomial Chaos with Adaptive Sampling** M. Thapa, S. Mulani, University of Alabama, Tuscaloosa, Tuscaloosa, AL; R. Walters, Virginia Polytechnic Institute and State University, Blacksburg, VA	1130 hrs AIAA-2018-2169 **Epistemic Uncertainty Stemming from Measurement Processing - A Case Study of Multiphase Shock Tube Experiments** J. Mathew, C. Park, R. Haftka, N. Kim, University of Florida, Gainesville, Gainesville, FL	1200 hrs AIAA-2018-2170 **Interactive Uncertainty Allocation and Trade-off at Early-stage Aircraft Computational Design** A. Molina-Cristobal, X. Chen, M. Guenov, A. Riaz, A. van Heerden, Cranfield University, Cranfield, United Kingdom	

Friday, 12 January 2018						
500-NDA-11	**Optimization Under Uncertainty Methods II**					**Sun 1**
Chaired by: Z. HU, University of Michigan, Dearborn and G. IACCARINO, Stanford University						
0930 hrs AIAA-2018-2171 **Reliability-based Design Optimization of High-Dimensional Engineered Systems Involving Computationally Expensive Simulations** M. Li, M. Sadoughi, Iowa State University, Ames, IA; Z. Hu, Vanderbilt University, Nashville, TN; C. Hu, Iowa State University, Ames, IA	1000 hrs AIAA-2018-2172 **Reliability Based Design Optimization Using First, Second and Quasi-Second Order Saddlepoint Approximations** D. Papadimitriou, D. Panagiotopoulos, Z. Mourelatos, Oakland University, Rochester, MI	1030 hrs AIAA-2018-2173 **Dynamic Data-Driven Aeroelastic Response Prediction with Discrete Sensor Observations** X. Zhao, R. Kania, A. Kebbie-Anthony, S. Azarm, B. Balachandran, University of Maryland, College Park, College Park, MD	1100 hrs AIAA-2018-2174 **A Locally Adapted Reduced Basis Method for Solving Risk-Averse PDE-Constrained Optimization Problems** W. Aquino, Duke University, Durham, NC; D. Kouri, Sandia National Laboratories, Albuquerque, NM; Z. Zou, Duke University, Durham, NC	1130 hrs AIAA-2018-2175 **Aerodynamic Design of Aircraft Engine Nozzles with Consideration of Model Form Uncertainties** V. Srivastava, K. Duraisamy, University of Michigan, Ann Arbor, Ann Arbor, MI	1200 hrs AIAA-2018-2176 **Noise Filtering and Uncertainty Quantification in Surrogate based Optimization** M. Fernandez-Godino, R. Haftka, S. Balachandar, University of Florida, Gainesville, Gainesville, FL; C. Gogu, University of Toulouse, Toulouse, France; N. Bartoli, S. Dubreuil, ONERA, Toulouse, France	

Friday, 12 January 2018						
501-OPS-1/EXPL-2/GEPC-3	**Space Operations Services**					**Sun B**
Chaired by: S. BURLEIGH, Jet Propulsion Laboratory and S. CHINTALAPATI, Florida Institute of Technology						
0930 hrs AIAA-2018-2177 **Flyback of the SPARTAN Scramjet-Powered Launch Vehicle** S. Forbes-Spyratos, M. Smart, M. Kearney, I. Jahn, University of Queensland, Brisbane, Australia	1000 hrs AIAA-2018-2178 **Overview and Technical Architecture of India's Chandrayaan-2 Mission to the Moon** V. Sundararajan, Aerospace India, Research Triangle Park, NC	1030 hrs AIAA-2018-2179 **Analytical Modeling of Radiation Attenuation and Heat Deposition in Propellant for Nuclear Thermal Rockets** A. Aueron, D. Thomas, J. Cassibry, University of Alabama, Huntsville, Huntsville, AL	1100 hrs AIAA-2018-2180 **Inter-habitat Communications Analog Research Utility System (ICARUS)** Z. Thai, K. Cooper, C. Jump, J. Jacob, S. O'Hara, Oklahoma State University, Stillwater, OK			

Friday, 12 January 2018						
502-PC-21	**Laminar Flames**					**Daytona 1**
Chaired by: Y. JU, Princeton University and S. AGGARWAL, University of Illinois at Chicago						
0930 hrs AIAA-2018-2181 **Autoignition Stabilization of a Premixed Jet in Vitiated Coflow** S. Grib, M. Renfro, University of Kentucky, Lexington, Lexington, KY	1000 hrs AIAA-2018-2182 **Kinetic Study of high pressure laminar flame speeds of 1,3-butadiene, n-butanol, and 1,3-butadiene/n-butanol blends** H. Zhao, Princeton University, Princeton, NJ; Z. Zhang, Wuhan University of Technology, Wuhan, China; Y. Rezgui, University of Oum El Bouaghi, Oum El Bouaghi, Algeria; Y. Ju, Princeton University, Princeton, NJ	1030 hrs AIAA-2018-2183 **Effect of Oxygenation on PAHs And Soot Emissions in Coflow Jet Flames** S. Aggarwal, K. Kalvakala, University of Illinois, Chicago, Chicago, IL; V. Katta, Innovative Scientific Solutions, Inc., Dayton, OH	1100 hrs AIAA-2018-2184 **Counterflow Experiments and Kinetic Modeling of Dimethyl Ether/Methane Cool Diffusion Flames** C. Reuter, Princeton University, Princeton, NJ; R. Zhang, Nanjing University of Science and Technology, Nanjing, China; O. Yehia, Y. Ju, Princeton University, Princeton, NJ	1130 hrs AIAA-2018-2185 **On low-temperature ether multistage flames** O. Yehia, C. Reuter, Y. Ju, Princeton University, Princeton, NJ		

Friday, 12 January 2018						
503-PC-22/AMT-10	**Measurements for Combustion Diagnostics**					**Tampa 2**
Chaired by: T. LEE, University of Illinois at Urbana Champaign and A. ALEXANDER, National Aerospace Solutions						
0930 hrs AIAA-2018-2186 **Spatial Development of Shear Layer Vortices in a Reacting Jet in Crossflow** V. Nair, B. Wilde, B. Emerson, T. Lieuwen, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2018-2187 **Spray Characteristics of a Hybrid Airblast Pressure-Swirl Atomizer at Near Lean Blowout Conditions using Phase Doppler Anemometry** A. Bokhart, D. Shin, N. Rodrigues, P. Sojka, J. Gore, R. Lucht, Purdue University, West Lafayette, IN	1030 hrs AIAA-2018-2188 **Combustion Characteristics of Gaseous H_2/O_2 Coaxial Jets in a Single-Element Combustor** Y. Ahn, T. Kim, S. Choi, H. Kim, Y. Kim, O. Kwon, Sungkyunkwan University, Suwon, South Korea	1100 hrs AIAA-2018-2189 **An Experimental and Numerical Investigation of Flame Propagation in Converging-Diverging Microchannels** S. Biswas, P. Zhang, H. Wang, L. Qiao, Purdue University, West Lafayette, IN	1130 hrs AIAA-2018-2190 **Exploration of adiabatic flow assumption of a sub-atmospheric flame using narrow-band infrared imaging measurements** M. Rhoby, T. Ombrello, Air Force Research Laboratory, Wright-Patterson AFB, OH	1200 hrs AIAA-2018-2191 **Development of TDLAS for Harsh Environment In Situ Water Vapor Concentration Measurement** M. Button, P. Bardet, George Washington University, Washington, D.C.	

Friday, 12 January 2018						
504-PDL-16	**Computational Methods for Plasmas**					**Naples 3**
Chaired by: T. MOELLER, University of Tennessee Space Institute						
0930 hrs AIAA-2018-2192 **Multiscale plasma modeling in dynamic fields** D. Pederson, K. Kourtzanidis, L. Raja, University of Texas, Austin, Austin, TX	1000 hrs AIAA-2018-2193 **Magnetohydrodynamic simulation study of plasma jets and plasma-surface contact in coaxial plasma accelerators** V. Subramaniam, L. Raja, University of Texas, Austin, Austin, TX	1030 hrs AIAA-2018-2194 **Weighted Nonlinear Schemes for Magnetized Electron Fluid in Quasi-neutral plasma** A. Chamarthi, Z. Wang, R. Kawashima, K. Komurasaki, University of Tokyo, Tokyo, Japan	1100 hrs AIAA-2018-2195 **A Fourth-Order Finite-Volume Method with Adaptive Mesh Refinement for the Multifluid Plasma Model** S. Polak, X. Gao, Colorado State University, Fort Collins, CO	1130 hrs AIAA-2018-2196 **PIFE-PIC: A 3-D Parallel Immersed Finite Element Particle-in-Cell Framework for Plasma Simulations** D. Han, Worcester Polytechnic Institute, Worcester, MA; X. He, Missouri University of Science and Technology, Rolla, MO; J. Wang, University of Southern California, Los Angeles, CA		

Friday, 12 January 2018						
505-SATS-3	**Small Satellites III**					**Naples 2**
Chaired by: J. STRAUB, North Dakota State University						
0930 hrs AIAA-2018-2197 **Thermal Design assessment for Propulsion Tank intended for small satellites in non-earthbound missions** S. Dash, K. Naik, S. Singh, S. Gupta, SRM University, Chennai, India	1000 hrs AIAA-2018-2198 **Pseudo Linear Hall Effect Thruster Characterization Through Potential, Magnetic, and Optical Measurements** B. Sheets, C. Hartsfield, Air Force Institute of Technology, Wright-Patterson AFB, OH	1030 hrs AIAA-2018-2199 **Star Selection algorithm for Arcsecond Pico Star Tracker** V. Muruganandan, J. Park, S. Lee, I. Jeung, Seoul National University, Seoul, South Korea; S. Kim, Kyushu Institute of Technology, KitaKyushu, Japan; G. Ju, Korea Aerospace Research Institute (KARI), Daejeon, South Korea	1100 hrs AIAA-2018-2200 **Effect of Different Operational Parameters on the Free Molecular Electro Jet (FMEJ) Performance** A. Blanco, S. Roy, University of Florida, Gainesville, Gainesville, FL	1130 hrs AIAA-2018-2201 **Design of a Zero-Gravity, Vacuum-Based 3D Printer Robot for Use of In-Space Satellite Assembly** J. McCrea, J. Cerri, C. Hartsfield, Air Force Institute of Technology, Wright-Patterson AFB, OH		

Friday, 12 January 2018						
506-SCS-9	**Next Generation Solar Array Enabling Technology**					**Emerald 3**
Chaired by: R. PAPPA, NASA Langley Research Center and M. CHAMBERLAIN, NASA						
0930 hrs AIAA-2018-2202 **A lightweight tile structure integrating photovoltaic conversion and RF power transfer for space solar power applications** E. Gdoutos, C. Leclerc, F. Royer, M. Kelzenberg, H. Atwater, S. Pellegrino, California Institute of Technology, Pasadena, CA	1000 hrs AIAA-2018-2203 **Trusselator™ Technology for In-Situ Fabrication of Solar Array Support Structures** B. Levedahl, R. Hoyt, T. Silagy, J. Gorges, N. Britton, J. Slostad, Tethers Unlimited, Bothell, WA	1030 hrs AIAA-2018-2204 **Scaling and Optimization of a Modular Origami Solar Array** S. Jeon, J. Footdale, LoadPath, LLC, Albuquerque, NM	1100 hrs AIAA-2018-2205 **Characteristics of Deployable Planar Origami Structures with Partial Constraints** Y. Terada, H. Sakamoto, M. Okuma, Tokyo Institute of Technology, Tokyo, Japan	1130 hrs AIAA-2018-2206 **Development of High Specific Power Solar Arrays with Shape Memory Polymer Hinge Lines** A. Rakow, K. Hedin, Composite Technology Development, Inc., Lafayette, CO; B. Anthony, Sierra Nevada Corporation, Louisville, CO	1200 hrs AIAA-2018-2207 **Roll Stabilization for Wrapped Array Prototype** G. Greschik, TentGuild Engineering Company, Boulder, CO	

Friday, 12 January 2018						
507-SD-18	**Adaptive Aeroelastic Wing Shaping Control**					**Emerald 7**
Chaired by: N. NGUYEN, NASA-Ames Research Center and W. SU, University of Alabama, Tuscaloosa						
0930 hrs AIAA-2018-2208 **A new updating-method for theoretical FRF matrices using incomplete vibration data** Ö. Süelözgen, German Aerospace Center (DLR), Wessling, Germany; J. Brink-Spalink, Airbus, Hamburg, Germany; S. Adden, IBK Innovation GmbH & Co. KG, Hamburg, Germany	1000 hrs AIAA-2018-2209 **An Integrated Modelling Approach for Flight Dynamics, Manoeuvre- and Gust-Loads Analysis** T. Kier, German Aerospace Center (DLR), Wessling, Germany	1030 hrs AIAA-2018-2210 **Development of an Integrated Nonlinear Aeroservoelastic Flight Dynamic Model of the NASA Generic Transport Model** N. Nguyen, E. Ting, NASA Ames Research Center, Moffett Field, CA; D. Chaparro, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA	1100 hrs AIAA-2018-2211 **Guaranteed H_infinity Performance LPV ICC Control with Application to Blended-Wing-Body Model** T. He, A. Al-jiboory, G. Zhu, Michigan State University, East Lansing, MI; S. Swei, NASA Ames Research Center, Moffett Field, CA; W. Su, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1130 hrs AIAA-2018-2212 **Sizing and Layout Design of an Aeroelastic Wingbox through Nested Optimization** B. Stanford, NASA Langley Research Center, Hampton, VA; C. Jutte, Craig Technologies, Inc., Cape Canaveral, FL; C. Coker, Mississippi State University, Starkville, MS	1200 hrs AIAA-2018-2213 **Optimum Wing Shaping and Gust Load Alleviation of Highly Flexible Aircraft with Finite Actuations** J. Hammerton, W. Su, University of Alabama, Tuscaloosa, Tuscaloosa, AL; G. Zhu, Michigan State University, East Lansing, MI; S. Swei, NASA Ames Research Center, Moffett Field, CA	

Friday, 12 January 2018						
508-SD-19	**Vibration Control**					**Emerald 8**
Chaired by: S. LIGUORE, Boeing Engineering Operations & Technology and J. BLACK, Virginia Tech						
0930 hrs AIAA-2018-2214 **Effect of Number of Tracks and Balancing Masses on Passive Balancing Performance** A. Haidar, J. Palacios, Pennsylvania State University, University Park, PA	1000 hrs AIAA-2018-2215 **Development of a Multi-axis Active Seat Mount to Mitigate Vibration Transmission to Helicopter Aircrew** F. Hadj-Moussa, A. Fereidooni, Y. Chen, V. Wickramasinghe, National Research Council Canada, Ottawa, Canada	1030 hrs AIAA-2018-2217 **Distributed vibration control for the large space structures** E. Wang, S. Wu, X. Wang, Z. Wu, Dalian University of Technology, Dalian, China	1100 hrs AIAA-2018-2216 **Active Control of Vibrating Structures Using Damping Effect of Shape Memory Alloy Wires** M. Fouda, Cairo University, Cairo, Egypt; M. Tawfik, Zewail University of Science and Technology, Cairo, Egypt; G. Elbayoumi, Cairo University, Cairo, Egypt			

Friday, 12 January 2018						
509-SFM-24	**Formation Flying and Relative Motion II**					**Osceola 6**
Chaired by: A. SINCLAIR, Air Force Research Laboratory						
0930 hrs AIAA-2018-2218 **Pulse-Width Pulse-Frequency Modulated Nonlinear Model Predictive Control for Spacecraft Rendezvous** P. Li, Z. Zhu, York University, Toronto, Canada	1000 hrs AIAA-2018-2219 **Reconfiguration of Small-Satellite General Circular Orbit Formations** R. LaRue, K. Johnson, Air Force Institute of Technology, Wright-Patterson AFB, OH	1030 hrs AIAA-2018-2220 **Applied Reachability Analysis for Spacecraft Rendezvous and Docking with a Tumbling Object** C. Zagaris, M. Romano, Naval Postgraduate School, Monterey, CA	1100 hrs AIAA-2018-2221 **FLEX: a parametric study of its tandem formation with Sentinel-3** D. Arnas, B. Duesmann, P. Jurado, I. Barat, ESA, Noordwijk, The Netherlands	1130 hrs AIAA-2018-2222 **Experimental Results on the Vision-based Navigation System for Spacecraft Operation in Proximity using Ground Test Facility** Y. Eun, G. Kim, J. Hyun, S. Park, Yonsei University, Seoul, South Korea		

Friday, 12 January 2018						
510-SFM-25	**Orbital Dynamics, Perturbations, Stability, and Satellite Drag II**					**Sarasota 1**
Chaired by: T. HENDERSON						
0930 hrs AIAA-2018-2223 **Differential Dynamic Programming in the Three-Body Problem** J. Aziz, D. Scheeres, University of Colorado, Boulder, Boulder, CO; G. Lantoine, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1000 hrs AIAA-2018-2224 **Families of Unstable Quasi-Satellite Orbits in the Spatial Circular Restricted Three-Body Problem** K. Oshima, T. Yanao, Waseda University, Tokyo, Japan	1030 hrs AIAA-2018-2225 **Tuning Orthogonal Polynomial Degree and Segment Interval Length to Achieve Prescribed Precision Approximation of Irregular Functions** A. Atallah, National Authority for Remote Sensing and Space Sciences, Cairo, Egypt; R. Woollands, Texas A&M University, College Station, TX; A. Bani Younes, San Diego State University, San Diego, CA; J. Junkins, Texas A&M University, College Station, TX	1100 hrs AIAA-2018-2226 **On Satellite Orbit Decay Compensation in Low Earth Orbits** E. Taheri, R. Zidek, I. Kolmanovsky, A. Girard, University of Michigan, Ann Arbor, Ann Arbor, MI	1130 hrs AIAA-2018-2227 **High fidelity modeling of SRP and its effect on the relative motion of Starshade and WFIRST** A. Farres , C. Webster, D. Folta, NASA Goddard Space Flight Center, Greenbelt, MD	1200 hrs AIAA-2018-2228 **Improvements to Modeling and Trajectory Simulation of Mars Aerocapture and Aerobraking** E. Kazmierczak, N. Nakhjiri, California State Polytechnic University, Pomona, CA	

Friday, 12 January 2018						
511-SFM-26	**Space Situational Awareness, Orbital Debris, and Conjunction Analysis II**					**Naples 1**
Chaired by: M. WILKINS, Applied Defense Solutions						
0930 hrs AIAA-2018-2229 **Optimal Deployment of Solar Radiation Pressure Enhancement Devices for Space Debris Mitigation** M. Pellegrino, D. Scheeres, University of Colorado, Boulder, Boulder, CO	1000 hrs AIAA-2018-2230 **Statistical Pairwise Collision Probability of the International Space Station with Debris** K. Chan, Chan Aerospace Consultants, South Riding, VA; W. Zhou, Chinese Academy of Sciences, Beijing, China	1030 hrs AIAA-2018-2231 **Collision Probability for Rectangular Cross Sections** K. Chan, Chan Aerospace Consultants, South Riding, VA; Y. Xie, Beijing Institute of Technology, Beijing, China	1100 hrs AIAA-2018-2232 **Full Characterization of Satellite Conjunction Walk-ins** S. Alfano, D. Oltrogge, CSSI, Colorado Springs, CO	1130 hrs AIAA-2018-2233 **Application Of Multi-Hypothesis Sequential Monte Carlo For Breakup Analysis With The Comparison Of Two Probabilistic Admissible Region Techniques** W. Faber, W. Zaidi, M. Mercurio, I. Hussein, M. Wilkins, C. Roscoe, Applied Defense Solutions, Columbia, MD; et al.	1200 hrs AIAA-2018-2234 **CubeSat Detection Using Convolutional Neural Networks** S. Gamage, Y. Cheng, Mississippi State University, Mississippi State, MS	

Friday, 12 January 2018						
512-STR-21	**Aircraft Structural Design, Test and Analysis**					**Emerald 4**
Chaired by: L. DEMASI, San Diego State University College of Engineering and J. ZIPAY, NASA-Johnson Space Center						
0930 hrs AIAA-2018-2235 **Application of Progressive Damage Failure Analysis to Large Aircraft Composite Structures** A. Selvarathinam, M. Stewart, S. Engelstad, B. Eby, Lockheed Martin Corporation, Fort Worth, TX	1000 hrs AIAA-2018-2236 **Introductory Comparison of Agricultural and Single-Engine Air Tanker Operational Loads** K. Rokhsaz, L. Kliment, Wichita State University, Wichita, KS	1030 hrs AIAA-2018-2237 **Flight Loads and Usage Analysis of a Fleet of BE-1900D Commuter Airliners** K. Rokhsaz, L. Kliment, Wichita State University, Wichita, KS	1100 hrs AIAA-2018-2238 **Airframe Usage and Operational Loads of ASM/Lead Aircraft in USFS Service** L. Kliment, K. Rokhsaz, Wichita State University, Wichita, KS; J. Nelson, B. Terning, U.S. Forest Service, Boise, ID	1130 hrs AIAA-2018-2239 **Preliminary Investigation of Next-Generation Airtankers** L. Kliment, K. Rokhsaz, Wichita State University, Wichita, KS; J. Nelson, B. Terning, U.S. Forest Service, Boise, ID		

Friday, 12 January 2018						
513-STR-22	**Composite Structural Optimization**					**Emerald 5**
Chaired by: R. TAYLOR, University of Texas, Arlington and A. NAJAFI, ANSYS, Inc.						
0930 hrs AIAA-2018-2240 **Exploration of Commercial Optimizers for Non-Traditional Laminate Optimization** S. Subramani, M. Koteshwara, The Boeing Company, Bengaluru, India; V. Balabanov, The Boeing Company, Seattle, WA; M. Rassaian, The Boeing Company, Tukwila, WA	1000 hrs AIAA-2018-2241 **Cure-induced deformation of ultra-thin composite laminates** F. Bosi, A. Schlothauer, S. Pellegrino, California Institute of Technology, Pasadena, CA	1030 hrs AIAA-2018-2242 **Optimization of Variable Stiffness Composite Laminates by Particle Swarm and Whale Optimization Algorithms Utilizing Surrogate Models** H. Inci, TUBITAK, Ankara, Turkey; A. Kayran, Middle East Technical University, Ankara, Turkey	1100 hrs AIAA-2018-2243 **Optimal Design of Tow-Steered Composite Laminates with Curvilinear Stiffeners** K. Singh, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA	1130 hrs AIAA-2018-2244 **Rapid Quantification of Gaps and Overlaps for Fiber Steering Design Optimization** M. Van Tooren, D. Lucas, L. Bahamonde, I. Jahangir, D. Barazanchy, University of South Carolina, Columbia, Columbia, SC; A. Elham, Delft University of Technology, Delft, The Netherlands	1200 hrs AIAA-2018-2245 **Tailoring Snap-through Loads in Variable Stiffness Composites** A. Haldar, E. Jansen, R. Rolfes, Leibniz University, Hannover, Germany; P. Weaver, University of Bristol, Bristol, United Kingdom	

Friday, 12 January 2018						
514-STR-23	**Special Session: A Tribute in Memory of Professor Kuen-Yuan Lin, University of Washington**					**Emerald 6**
Chaired by: G. MABSON, Boeing Engineering Operations & Technology and A. WAAS, University of Washington						
0930 hrs AIAA-2018-2246 **Delamination Arrest by Fasteners in Aircraft Structures Under Static and Fatigue Loading** L. Richard, K. Lin, University of Washington, Seattle, Seattle, WA	1000 hrs AIAA-2018-2247 **Impact of Moisture and Thermal Cycling on Delamination Fracture Toughness of Sandwich Composites** M. Tuttle, University of Washington, Seattle, Seattle, WA	1030 hrs AIAA-2018-2248 **Closed-Form Fracture Analysis Based on First Order Shear Deformable Plate Theory** P. Enjuto, D. Graesser, NSE Composites, Seattle, WA; G. Mabson, O. Weckner, The Boeing Company, Seattle, WA	1100 hrs AIAA-2018-2249 **Analytical Buckling Analysis of Curved and Stiffened Anisotropic Panels** A. Anderson, M. Ramnath, V. Shekar, G. Mabson, The Boeing Company, Seattle, WA	1130 hrs AIAA-2018-2250 **Rayleigh-Ritz Predictions of Delamination Threshold Load of Laminated Composite Plates subject to Flexural Loading** J. Xie, University of Michigan, Ann Arbor, Ann Arbor, MI; A. Waas, University of Washington, Seattle, Seattle, WA; M. Rassaian, The Boeing Company, Seattle, WA	1200 hrs AIAA-2018-2251 **Investigation of Stiffening and Curvature Effects on the Residual Strength of Composite Stiffened Panels with Large Transverse Notches** P. Enjuto, T. Walker, M. Lobo, NSE Composites, Seattle, WA; S. Cregger, S. Wanthal, The Boeing Company, Charleston, SC	1230 hrs AIAA-2018-2252 **University of Washington/Boeing Certificate programs in Aircraft Structures and Composite Materials** M. Mohaghegh, The Boeing Company, Seattle, WA

Friday, 12 January 2018						
515-TES-4	**Terrestrial Energy Systems–Simulation and Modeling**					**Daytona 2**
Chaired by: G. JACOBS, San Diego State Univ and R. AMANO, University of Wisconsin-Milwaukee						
0930 hrs AIAA-2018-2253 **The Lagrangian Ramped Cavity SCRAMJET Combustor; Mass In, Mass Out** G. Jacobs, San Diego State University, San Diego, CA	1000 hrs AIAA-2018-2254 **Thermodynamic Analysis of ENEL and TIPS Oxy-coal Power Cycles** M. Chowdhury, M. Khan, A. Chowdhury, A. Choudhuri, N. Love, University of Texas, El Paso, El Paso, TX	1030 hrs AIAA-2018-2255 **Pulse Actuation and Its Effects on Separated Lagrangian Coherent Structures for Flow over aCambered Airfoil** M. Kamphuis, G. Jacobs, San Diego State University, San Diego, CA; K. Chen, Institute for Defense Analyses, La Jolla, CA; G. Spedding, University of Southern California, Los Angeles, CA; H. Hoeijmakers, University of Twente, Enschede, The Netherlands	1100 hrs AIAA-2018-2256 **A Proposed Triple Stream Turbofan New Engine** E. Khalil, G. ElHarriri, Cairo University, Cairo, Egypt; E. AbdelGhany, Institute of Aviation Engineering, Cairo, Egypt; M. Hussien, CEB, Cairo, Egypt	1130 hrs AIAA-2018-2257 **Stabilized Turbulent Diffusion Flames Using Synthesis Fuel with Different Burner Configurations** M. Medhat, H. Harridi, E. Khalil, Cairo University, Cairo, Egypt		

Friday, 12 January 2018						
516-UAS-13	**UAS for Urban Environments and Other Topics**					**Tallahassee 3**
Chaired by: B. ARGROW, University of Colorado Boulder						
0930 hrs AIAA-2018-2258 **Real-time Estimation of Power Consumption in Multi-rotor Flight** D. Jang, NASA Ames Research Center, Moffett Field, CA	1000 hrs AIAA-2018-2259 **Simplex Optimal Control Methods for Urban Environment Path Planning** M. Zollars, R. Cobb, Air Force Institute of Technology, Wright-Patterson AFB, OH; D. Grymin, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2018-2260 **Preliminary Concept of Adaptive Urban Airspace Management for Unmanned Aircraft Operations** M. Mohamed Salleh, C. Wanchao, Z. Wang, S. Huang, D. Tan, T. Huang, Nanyang Technological University, Singapore, Singapore; et al.	1100 hrs AIAA-2018-2261 **Analysis and Verification of Cost-Effective Design Modifications to Commercially Available Fixed-Wing Unmanned Aerial Vehicle to Improve Performance, Stability and Control Characteristics, and Structural Integrity** A. Blevins, H. Benyamen, G. Godfrey, D. Shukla, B. Kim, University of Kansas, Lawrence, Lawrence, KS	1130 hrs AIAA-2018-2262 **Anisotropic Flocking Control of Distributed Multi-Agent Systems using Fluid Abstraction** M. Silic, Z. Song, K. Mohseni, University of Florida, Gainesville, Gainesville, FL		

Special Sessions and Events

MONDAY, 8 JANUARY

0900–1300 HRS

AIAA Foundation International Student Conference

The first-place winners of the AIAA Regional Student Conferences, which took place in the spring, will gather to present their research to a team of judges made up of professional members in the industry. The students will have three consecutive sessions in the categories of Undergraduate, Masters, and Team.

Sponsored by: BOEING

UNDERGRADUATE CATEGORY

0900–1300 HRS — OSCEOLA B

MASTERS CATEGORY

0930–1130 HRS — ST. GEORGE #104

TEAM CATEGORY

0930–1300 HRS — ST. GEORGE #114

TUESDAY, 9 JANUARY

0900–1100 HRS — ST. GEORGE #108

AIAA Foundation International Student Conference Awards Breakfast

This year The Boeing Company will sponsor the awards breakfast along with the AIAA Foundation. The top three winners will be announced during the breakfast after hearing from the chair of the Student Conference Committee and the guest speaker, Ben Linder, from The Boeing Company. Best overall prizes in the amount of $1,000 will be awarded in each of the categories. *This is an invite-only event.*

Sponsored by: BOEING

1000–1500 HRS — FLORIDA HALL B

Generation STEM: Discovering Aerospace Through Experience

Hosted by the AIAA Foundation and the Lockheed Martin Corporation, Generation STEM will be a day filled with fun and interactive educational STEM experiences for middle school students.

Generation STEM is designed to engage and stimulate students by offering challenging and engaging demonstrations from various aerospace organizations, an inside look at a variety of aerospace careers, and a chance to discover aerospace findings that are impacting everyday life.

Conference attendees are encouraged to stop by during the afternoon program to inspire, encourage, or guide the students. Or just come to observe the activities and take ideas back to your section.

Stop in for a few minutes or hang out for the afternoon!

0900–1630 HRS — OSCEOLA B

Career Workshop: Taking Control of Your Career

Career success in the aerospace field relies more than on just technical knowledge. You also need to be thinking about how to work in the global aerospace community and transition through the various stages of your career.

0900–1200 HRS — OSCEOLA B

Introduction to Global Competency for Engineers

PRESENTER: Dianne DeTurris, Professor, California State Polytechnic University

For multinational companies, global expansion is occurring through business development, outsourcing, subcontracting and acquisitions. It is extremely beneficial for employees working in an international setting to understand the ways that culture overtakes any interaction

1400–1445 HRS — OSCEOLA B

How to be a Leader in your Technical Field

Panelists will share their experiences in developing their technical expertise and establishment as a recognized subject-matter expert to lead others.

MODERATOR: Karen Copper, Engineering MRB Coordinator, Boeing Defense, Space & Security

PANELISTS INCLUDE:

Peter Hartwich, Engineering Skills Manager, The Boeing Company

Shrina Patel, Manager, Structures Product Development & Technology, Boeing Commercial Airplanes

Larry Brase, Technical Fellow, Structures & Flight, Boeing Defense, Space & Security

1450–1540 HRS — OSCEOLA B

Transitioning from Technical Leadership to Organizational Leadership

Making the decision to change from a technical role to a management leadership role is often not easy. Our panelists will share their concerns and results in making their career transition decision.

MODERATOR: Karen Copper, Engineering MRB Coordinator, Boeing Defense, Space & Security

PANELISTS INCLUDE:

Peter Hartwich, Engineering Skills Manager, The Boeing Company

Shrina Patel, Manager, Structures Product Development & Technology, Boeing Commercial Airplanes

Basil Hassan, Senior Manager, Sandia National Laboratories

Jonathan Ransom, Acting Deputy Director for Structures and Materials, NASA Langley Research Center

1545–1630 HRS OSCEOLA B

10 Years from Retirement—Passing Along Your Legacy

Retirement is a dream for many, but also a concern for what will happen to their years of work product. The panelists will share their plans, execution and results of preparing for others to pick up where they left off.

MODERATOR: Karen Copper, Engineering MRB Coordinator, Boeing Defense, Space & Security

PANELIST INCLUDE:

Melvin J. Ferebee, Director, Systems Analysis and Concepts, NASA Langley Research Center

Jeff Laube, Senior Project Leader, The Aerospace Corporation

David McGrath, Director, Advanced Technology, Alliant Techsystems, Inc.

Joaquin Castro, Manager, DOD Marketing & Strategy, Aerojet Rocketdyne

WEDNESDAY, 10 JANUARY

1630–1800 HRS EXPOSITION HALL

2019 AIAA Programs Preview and Corporate Member/Exhibitor Reception

Come hear about AIAA's plans for 2019, which include hosting the 70th International Astronautical Congress (IAC 2019), 21–25 October, in Washington, DC, and combining the Propulsion and Energy and SPACE Forums, 19–23 August, in Indianapolis, IN.

1730–1930 HRS OSCEOLA A

From Race Cars to Flying Machines: Celebrating 80 Years of Liebeck

Robert H. Liebeck, The Boeing Company, University of California at Irvine, Massachusetts Institute of Technology

This special session will celebrate the 80th birthday of Bob Liebeck, renowned aerodynamicist, professor and aerospace engineer. Guest speakers will highlight Bob's tremendous contributions to aerospace and education, and will provide a glimpse of the fun he has had along the way.

1430–1630 HRS FLAGLER

TUTORIAL

Verification and Validation Best Practices for Integrated Computational Materials Engineering

This tutorial will provide an overview of the topics of verification and validation (V&V) and uncertainty quantification (UQ), demonstrated by contextualized examples with a focus on the process and quantifying the confidence that can be attributed to results of computational materials science models. *No additional ticket is required.*

1800–2100 HRS EMERALD 4

TUTORIAL

Recent Advances in Alternative Fuels Combustion

The tremendous increase in aviation demand combined with energy and environmental challenges has been the driving force for alternative fuels research. This tutorial will provide an overview of the field and take a closer look at current research topics. *No additional ticket is required.*

THURSDAY, 11 JANUARY

0900–1300 HRS ST. GEORGE #114

AIAA Cybersecurity Workshop

The aerospace community is at the vanguard of a race to develop and deploy a new transportation paradigm built on connected, autonomous, electric air vehicles that will revolutionize urban mobility. Join subject matter experts for a learning session to discuss cyber threats and possible mitigation strategies for these new vehicles.

FACILITATOR: Jeffrey Carr, Founder, Suits and Spooks

PANELISTS:

Mark Psiaki, Professor & Kevin Crofton Faculty Chair, Kevin Crofton Department of Aerospace & Ocean Engineering, Virginia Polytechnic Institute and State University

Kevin Finisterre, Security Researcher, Department 13

Margee Herring, Senior Engineer, Cybersecurity, Lockheed Martin Aeronautics

Brett Schmuki, Mission Systems & Software Senior Manager, Lockheed Martin Aeronautics

1630–1730 HRS OSCEOLA CD

Enhancing the Musical Brain: The Cognitive Exoskeleton Concert

Science meets music in a live experiment at 2018 SciTech! Neuroscientist Bill Casebeer will demonstrates how human-machine teams may help people lead better lives. Using a brain-sensing headband, scientists will monitor the brainwaves of the Americana band Beemo and select audience members simultaneously during a live show. The program will address how machines can help people get the most out of their brain's performance.

1730–1930 HRS OSCEOLA A

Women at SciTech Social Hour and Keynote

Women are underrepresented in the engineering sciences and industry, and this event will provide an opportunity to meet informally, network, discuss experiences, and celebrate women who are leaders in their fields. The speaker for the event will be **Debra Facktor**, Vice President and General Manager, Strategic Operations and Commercial Aerospace Business, Ball Aerospace.There is no charge to attend this event and all attendees are welcome.

Rising Leaders in Aerospace

Rising Leaders are graduate students and professionals who are 35 or younger. They are the people who will become the leaders of tomorrow. The multidimensional program features speed mentoring, panel sessions, Q&A with top industry leaders, and multiple opportunities for networking. These exciting and energetic activities will provide access to top aerospace leaders and their perspectives, with subject matter relevant to your career stage.

MONDAY, 8 JANUARY

1600–1730 HRS — **ORANGE BLOSSOM**

Speed Mentoring

Leaders in the aerospace industry and AIAA will be taking time to meet with the Rising Leaders participants and share their experiences. This event is a great way to get insight and make some great new contacts. And, maybe, they will end up being a mentor for more than just the 15 minutes at this event.

1745–1900 HRS — **CASTILLO FORT**

Networking Reception

The reception is a perfect opportunity for young leaders to mingle with others who will be participating in AIAA SciTech as attendee, presenter, or veteran professional. Come meet other participants in a casual environment. You're bound to see them again throughout the week.

Sponsored by: HondaJet

TUESDAY, 9 JANUARY

1230–1400 HRS — **ST. GEORGE #108**

Lunch Panel: *Moving Us Forward: Growing Diversity in the Aerospace Sector*

MODERATOR: Jandria Alexander, Booz Allen Hamilton, Inc.

PANELISTS:

Melissa Sampson, United Launch Alliance, LLC

Janet Nickloy, Harris Corporation

Michael Vinje, NASA Kennedy Space Center

Despite making major advances in recent years, the aerospace sector still struggles with diversity, as many groups that comprise a large portion of the U.S. labor force only account for a small fraction of the aerospace workforce. This panel will provide perspectives on the role of diversity in STEM fields and how creating a diverse workforce can propel technological innovation. Panelists will also discuss efforts and best practices for closing the gap in STEM fields for minorities and women. Panelists will share their personal commitment, experiences, and activities related to growing diversity in the workforce as well as the efforts of their associated organizations.

Boxed lunches will be available for the first 80 young professionals who attend.

Sponsored by: AIAA Diversity Working Group

WEDNESDAY, 10 JANUARY

1500–1630 HRS — **OSCEOLA B**

Propelling Your Aerospace Career to New Horizons

MODERATOR: Ali K. Raz, Purdue University

PANELISTS:

Michael Gazarik, Vice President, Engineering, Ball Aerospace

Jenn Gustetic, Small Business Innovation Research, NASA

Anant Grewal, NRC Aerospace

Learn about the of future aerospace careers from some of the current leaders of our discipline. Panelist—senior leaders and executives from industry, government, and academia—will share their career progression experiences, their vision of future aerospace careers, and most importantly what is it that the young professionals and students need to do today to be successful in the future. Get answers to your career questions, discuss how the aerospace workplace is evolving for millennials, and pave the way for success in your career ambitions.

THURSDAY, 11 JANUARY

1230–1400 HRS — **OSCEOLA B**

Lunch with AIAA Technical Committees

Come learn how you can excel in your career and within the aerospace industry. Members of several AIAA Technical Committees will be taking time to meet with the Rising Leaders in Aerospace participants and highlight their role within AIAA as well as how their committees serve the industry and Institute at large. This interactive event is a great way to get insight from your peers, gain industry contacts, and meet your fellow young professionals.

Boxed lunches will be available for the first 100 young professionals who attend.

Sponsored by: Aurora Flight Sciences, A Boeing Company

Recognition and Lectures

MONDAY, 8 JANUARY

1230–1400 HRS OSCEOLA CD

Durand Lecture for Public Service and Luncheon

NAE's Grand Challenges for Engineering and the Scholars Program

C. D. Mote Jr., President, National Academy of Engineering

The Durand Lecture, named in honor of William F. Durand, is presented to showcase notable achievements by a scientific or technical leader whose contributions have led directly to the understanding and application of the science and technology of aeronautics and astronautics for the betterment of mankind. Lunch will be provided to the first 200 guests on a first-come, first-served basis. The lecture will be presented after lunch and is open to all attendees at that time.

Sponsored by: LOCKHEED MARTIN

1730–1830 HRS OSCEOLA A

von Kármán Lecture in Astronautics

The Alpha Magnetic Spectrometer on the International Space Station: Unlocking the Secrets of the Cosmos

Samuel C. C. Ting, Thomas Dudley Cabot Professor of Physics, Massachusetts Institute of Technology

2018 Associate Fellows Recognition Ceremony and Dinner

Each year, the Institute recognizes exemplary professionals for their accomplishments in engineering or scientific work, outstanding merit and contributions to the art, science, or technology of aeronautics or astronautics. Please support your colleagues and join us for the induction of the 2018 Associate Fellows. The reception is open to all who would like to congratulate the newest members of the Class of 2018. Tickets to this celebrated event are available on a first-come, first-served basis and can be purchased for $100 via the AIAA SciTech Forum registration form, or onsite (based on availability).

RECEPTION (no ticket required)

1830–1930 HRS OSCEOLA FOYER

DINNER (Ticket required)

1930–2230 HRS OSCEOLA CD

TUESDAY, 9 JANUARY

1230–1400 HRS OSCEOLA CD

Recognition Luncheon: Celebrating Achievements in Aerospace Sciences and Information Systems

We honor our up-and-coming students, our technical innovators, and our seasoned practitioners. We meet to elevate their work and encourage our community. A ticket for the luncheon is required and included in the registration fee where indicated. Additional tickets for guests may be purchased onsite, as space is available. Please join us as we recognize the following award winners.

STUDENT PAPER COMPETITION WINNERS:

- **ATMOSPHERIC FLIGHT MECHANICS**
- **GUIDANCE, NAVIGATION AND CONTROL**
- **INTELLIGENT SYSTEMS**

BEST PAPERS: Please see page 184 for awardee names

- **ATMOSPHERIC FLIGHT MECHANICS**
- **COMPUTATIONAL FLUID DYNAMICS**
- **FLUID DYNAMICS**
- **GUIDANCE, NAVIGATION AND CONTROL**
- **INTELLIGENT SYSTEMS**
- **MESHING, VISUALIZATION AND COMPUTATIONAL ENVIRONMENTS**
- **MODELING AND SIMULATION**
- **THEORETICAL FLUID DYNAMICS**

TECHNICAL AWARDS:

- **AEROSPACE GUIDANCE, NAVIGATION AND CONTROL AWARD**
  Mark J. Balas, Jake D. Whitfield Professor of Dynamic Systems and Director, Center for Autonomous and Evolving Systems, University of Tennessee Space Institute, Tullahoma, TN; formerly Distinguished Professor, Embry-Riddle Aeronautical University

  "For sustained excellence in developing the frontiers of theory and practice in advanced adaptive control systems for complex and dynamic systems."

- **DE FLOREZ AWARD FOR FLIGHT SIMULATION**
  Laurence Retman Young, Professor
  Massachusetts Institute of Technology, Cambridge, Massachusetts

  "Distinguished researcher responsible for fundamental contributions in applying quantitative models of human perception and control to enhance flight simulation motion and visual cueing."

- **INTELLIGENT SYSTEMS AWARD**
  Kevin A. Wise, Senior Technical Fellow
  The Boeing Company, St. Charles, Missouri

  "For his long history of developing intelligent autonomy and integrating intelligent systems into production aerospace systems."

Recognition and Lectures

› **MECHANICS AND CONTROL OF FLIGHT AWARD**
Hanspeter Schaub, Professor
University of Colorado Boulder, Boulder, Colorado

"For the far-reaching theoretical and practical advances in spacecraft guidance, navigation and control, particularly in the fields of relative motion and nonlinear attitude dynamics and control, as well as space debris remediation dynamics."

› **SURVIVABILITY AWARD**
Vincent Volpe, Research Staff Member
Institute for Defense Analyses, Alexandria, Virginia

"For pioneering efforts as founding member of AIAA Survivability Technical Committee and more than 40 years of outstanding technical contributions to aircraft survivability community."

› **DIVERSITY & INCLUSION AWARD** - *New this year*
AIAA Guidance, Navigation, and Control (GNC) Technical Committee
Represented by: Lesley A. Weitz, Principal Simulation Modeling Engineer, The MITRE Corporation, McLean, Virginia

"For significant contributions to AIAA diversity and inclusion as a champion of women's leadership and technical advancements in guidance, navigation, and control systems."

1730–1830 HRS OSCEOLA A

Dryden Lecture in Research

Advances in the Simulation of High-Speed Combustion Flows

Graham V. Candler, McKnight Presidential Professor and Russell J. Penrose Professor, Associate Department Head, Aerospace Engineering and Mechanics, University of Minnesota

The Dryden Lecture in Research was named in honor of Dr. Hugh L. Dryden in 1967, succeeding the Research Award established in 1960. The Lecture emphasizes the great importance of basic and applied research to the advancement in aeronautics and astronautics and is a salute to research scientists and engineers.

THURSDAY, 11 JANUARY

1200–1400 HRS OSCEOLA CD

Recognition Luncheon: Celebrating Achievements in Aerospace Design/Structures and Aerospace Literature

SPEAKER: Keith Belvin, Principal Technologist for Advanced Materials and Structures, Space Technology Mission Directorate, NASA Langley Research Center

A ticket for the luncheon is required and included in the registration fee where indicated. Additional tickets for guests may be purchased onsite, as space is available.

Please join us as we recognize the following award winners:

STUDENT COMPETITIONS:

› **AMERICAN SOCIETY OF COMPOSITES (ASC) STUDENT COMPETITION IN COMPOSITES**

› **CFD BEST STUDENT PAPER**

› **HARRY H. AND LOIS G. HILTON STUDENT PAPER AWARD IN STRUCTURES**

› **JEFFERSON GOBLET**

› **LOCKHEED MARTIN STUDENT PAPER IN STRUCTURES**

› **SOUTHWEST RESEARCH INSTITUTE STUDENT PAPER AWARD IN NON-DETERMINISTIC APPROACHES**

BEST PAPERS:

› **ASME/BOEING BEST PAPER IN STRUCTURES**

› **COLLIER RESEARCH HYPERSIZER/AIAA STRUCTURES**

EDUCATOR AWARDS:

› **ABE M. ZAREM AWARD FOR DISTINGUISHED ACHIEVEMENT IN ASTRONAUTICS**
Langston L. Williams, Graduate Research Assistant/AEP Facilitator, Auburn University, Auburn, Alabama

› **ABE M. ZAREM EDUCATOR AWARD**
Joseph Majdalani, Professor
Auburn University, Auburn, Alabama

› **FACULTY ADVISOR AWARD**
Farhan Gandhi, Professor
Rensselaer Polytechnic Institute, Troy, New York

"For reviving the AIAA RPI Student Branch, facilitating seminars, astronaut visits, company tours, conference participation, and providing students opportunity, exposure, and sense-of-community through the association with AIAA."

› **J. LELAND ATWOOD AWARD**
Hanspeter Schaub, Professor
University of Colorado Boulder, Boulder, Colorado

"For seminal contributions and recognition for his innovation, elegance, dedication, enthusiasm and impact as an aerospace educator to the University of Colorado Boulder."

TECHNICAL AWARDS:

› **AEROSPACE DESIGN ENGINEERING AWARD**
NASA/Boeing PRSEUS Development and Test Team
Received by Dawn Jegley, Team Primary
NASA Langley Research Center
Hampton Roads, Virginia

"In recognition of excellence in developing and demonstrating damage arresting composites technology in a Pultruded Rod Stitched Efficient Unitized Structure (PRSEUS)."

› **ICME PRIZE** - *New this year*
The Integrated Computational Materials Engineering (ICME) Prize recognizes innovation in the integrated and holistic systems-based approach to optimize the materials, manufacturing processes, and component design long before components are fabricated. The emphasis in ICME is on the "I" for Integrated and "E" for Engineering, with a focus of the prize being the connection of the manufacturing processes and material microstructure. Underwritten by NASA, Composite Design and Manufacturing HUB, and the Rolls-Royce

Recognition and Lectures

Corporation and awarded by the AIAA Materials Technical Committee, the best aerospace-focused ICME project will be chosen during the week of the forum. To be announced.

› **STRUCTURES, STRUCTURAL DYNAMICS AND MATERIALS AWARD**
Dewey H. Hodges, Professor, School of Aerospace Engineering
Georgia Institute of Technology, Atlanta, Georgia

"For exceptional contributions to structures, structural dynamics and aeroelasticity of rotary- and fixed-wing aircraft including seminal research advancements and publications, and academic mentoring of outstanding aerospace engineers."

LITERARY AWARDS:

› **GARDNER-LASSER AEROSPACE HISTORY LITERATURE AWARD**
Margot Lee Shetterly
Author, HarperCollins Publishers
Hidden Figures

› **HISTORY MANUSCRIPT AWARD**
Amy Kaminski
NASA Headquarters, Washington, DC
Sharing the Shuttle with America: NASA and Public Engagement After Apollo

› **PENDRAY AEROSPACE LITERATURE AWARD**
Josette R. Bellan, Senior Research Scientist
Jet Propulsion Laboratory
California Institute of Technology, Pasadena, California

"For widely reaching, seminal and outstanding publications on bio-fuels, sprays and high pressure flows to meet future challenges of aeronautics and astronautics combustion systems."

› **SUMMERFIELD BOOK AWARD**
Leland Nicolai, Lockheed Martin Corporation (ret.)

Grant Carichner, Lockheed Martin Corporation (ret.)

Authors: *Fundamentals of Aircraft and Airship Design*

TECHNICAL PROGRAM LECTURES

MONDAY, 8 JANUARY

0930 HRS — EMERALD 4

Advances in Manufacturing Approaches for Adaptive Structures

SPEAKERS:
Derek Doyle, Energy Responsive Structures Lead/Team Technical Advisor, Integrated Structural Systems, Air Force Research Laboratory, Space Vehicles Directorate

Mark Benedict, America Makes Chief Technology Adviser, Air Force Research Laboratory

Jerry Qi, Professor and The Woodruff Faculty Fellow, Georgia Institute of Technology

0930 HRS — SUN A

Non-Deterministic Approaches Lecture: Harnessing Uncertainty in Modeling and Design: Lessons from the DARPA EQUiPS Program

SPEAKER: **Fariba Fahroo**, Program Manager, Defense Sciences Office, DARPA

1100 HRS — SUN A

Spacecraft Structures Lecture: A Few JWST Lessons Learned During Final Integration and Test

MODERATOR: **Gregory Davis**, Associate Chief Technologist, Jet Propulsion Laboratory

PANELISTS:
Jon Arenberg, JWST Chief Engineer, Northrop Grumman Aerospace

Sandra Irish, James Webb Space Telescope NASA Mechanical Systems Lead Structures Engineer, NASA Goddard Space Flight Center

Michael Menzel, James Webb Space Telescope NASA Mission Systems Engineer, NASA Goddard Space Flight Center

Jim Moore, Vice President, NeXolve Division, ManTech International Corp

1400 HRS — NAPLES 1

Quantum Information Systems and Infinite Dimensional Direct Adaptive Control

SPEAKER:
Mark J. Balas, Jake D. Whitfield Professor of Dynamic Systems and Director, Center for Autonomous and Evolving Systems, University of Tennessee Space Institute, Tullahoma, TN; formerly Distinguished Professor, Embry-Riddle Aeronautical University

WEDNESDAY, 10 JANUARY

1800–1900 HRS — SUN A

Structures, Structural Dynamics, and Materials Lecture

Timothy Bunning, Chief Scientist, Air Force Research Laboratory

Networking Activities

SUNDAY, 7 JANUARY

1800–1930 HRS — OSCEOLA 1-3

Student Welcome Reception

AIAA SciTech has one of the largest gatherings of students of any of the AIAA forums. Come meet fellow students who you are sure to see again throughout the week. Many student award winners and presenters will be in attendance. AIAA Executive Director Dan Dumbacher will address the attendees, as will a representative from the corporate sponsors.

Members of the AIAA Board of Trustees and the Technical Activities Division will also be in attendance. Take advantage of this chance to meet key members of AIAA and learn about opportunities that are available.

Sponsored by:

Lead: BOEING *Supporting:* HondaJet

Coffee Breaks

Coffee breaks allow even more time for making new contacts, continuing discussions from sessions, visiting the Exposition Hall, or checking emails and voicemails to keep in touch with the office while you are at the forum. Coffee breaks will be located in the following locations and times:

MONDAY, 8 JANUARY

0900 AND 1530 HRS — MEETING ROOM FOYERS

Sponsored by: BOEING

TUESDAY, 9 JANUARY

0900 HRS — MEETING ROOM FOYERS
1530 HRS — EXPOSITION HALL

WEDNESDAY, 10 JANUARY

0900 AND 1530 HRS — EXPOSITION HALL

Sponsored by: BASTION TECHNOLOGIES

THURSDAY, 11 JANUARY

0900 AND 1530 HRS — EXPOSITION HALL

FRIDAY, 12 JANUARY

0900 HRS — MEETING ROOM FOYERS

TUESDAY, 9 JANUARY

1815 HRS — EXPOSITION HALL

Welcome Reception

Take this opportunity to engage new contacts and refresh old ones. A ticket for the reception is required and included in the registration fee where indicated. Additional tickets for guests may be purchased upon registration or on site, as space is available.

WEDNESDAY, 10 JANUARY

1230–1400 HRS — EXPOSITION HALL

Luncheon in the Exposition Hall

A ticket is required and included in the registration fee where indicated.

THURSDAY, 11 JANUARY

1630–1730 HRS — OSCEOLA CD

Enhancing the Musical Brain: The Cognitive Exoskeleton Concert

Science meets music in a live experiment at 2018 SciTech! Neuroscientist Bill Casebeer will demonstrates how human-machine teams may help people lead better lives. Using a brain-sensing headband, scientists will monitor the brainwaves of the Americana band Beemo and select audience members simultaneously during a live show. The program will address how machines can help people get the most out of their brain's performance.

1730–1930 HRS — OSCEOLA A

Women at SciTech Social Hour and Keynote

Women are underrepresented in the engineering sciences and industry, and this event will provide an opportunity to meet informally, network, discuss experiences, and celebrate women who are leaders in their fields. The speaker for the event will be **Debra Facktor**, Vice President and General Manager, Strategic Operations and Commercial Aerospace Business, Ball Aerospace. There is no charge to attend this event and all attendees are welcome.

Exposition Hall

Exposition Hall Hours

TUESDAY, 9 JANUARY

1300–1630 HRS
1815–2000 HRS — WELCOME RECEPTION*

WEDNESDAY, 10 JANUARY

0845–1600 HRS
1230–1400 HRS — LUNCHEON*

THURSDAY, 11 JANUARY

0845–1600 HRS

**A ticket is required and included in the registration fee where indicated.*

DAILY PRIZE DRAWINGS – VISIT THE HUB TO ENTER!

New in 2018: Visit the HUB in the Exposition Hall to drop your business card for a chance at **winning one of three gift cards!**

Visit the HUB daily to enter as prize entry collection restarts each morning with an empty box. You must drop a business card each day to have a chance to win each day!

- Prize 1 drawing at 1945 hrs on Tuesday during reception in Exposition Hall.
- Prize 2 drawing at 1600 hrs on Wednesday.
- Prize 3 drawing at 1600 hrs on Thursday.

Please drop **only one** entry (business card) per day! Multiple entries will be removed. You do not need to be present to win, but you may claim your prize in the HUB while at 2018 AIAA SciTech Forum.

AIAA PUBLICATIONS PAVILION AND FOUNDATION WITHIN THE HUB

Stop by the AIAA Publications Pavilion, located in the Exposition Hall, to browse publications and merchandise, learn about your membership benefits, and meet AIAA staff.

30% OFF ALL BOOKS

AIAA Publications is offering a special show discount on all titles featured at the AIAA SciTech Forum. Attendees can take advantage of a 30% discount off the list price of all books for sale at the AIAA Publications Pavilion. This show special will only be available during the forum! Take advantage of these super savings and visit the AIAA Publications Pavilion!

AIAA FOUNDATION

Please join our generous donors in advancing aerospace with your gift today. With your help, we will continue to inspire and support the next generation of aerospace professionals. Come check out our silent auction that has some cool aerospace items up for bid. All proceeds from this particular auction will support two student branches affected by recent hurricanes: the Polytechnic University of Puerto Rico and the University of Puerto Rico.

MEET THE AUTHOR

TUESDAY, 9 JANUARY

1815–2000 HRS

Leland M. Nicolai
Fundamentals of Aircraft and Airship Design

WEDNESDAY, 10 JANUARY

1230–1400 HRS

Daniel P. Raymer
Aircraft Design, 5E and RDSWin Student

0900–0930 & 1530–1600 HRS

Eugene Fleeman
Missile Design and System Engineering

the HUB

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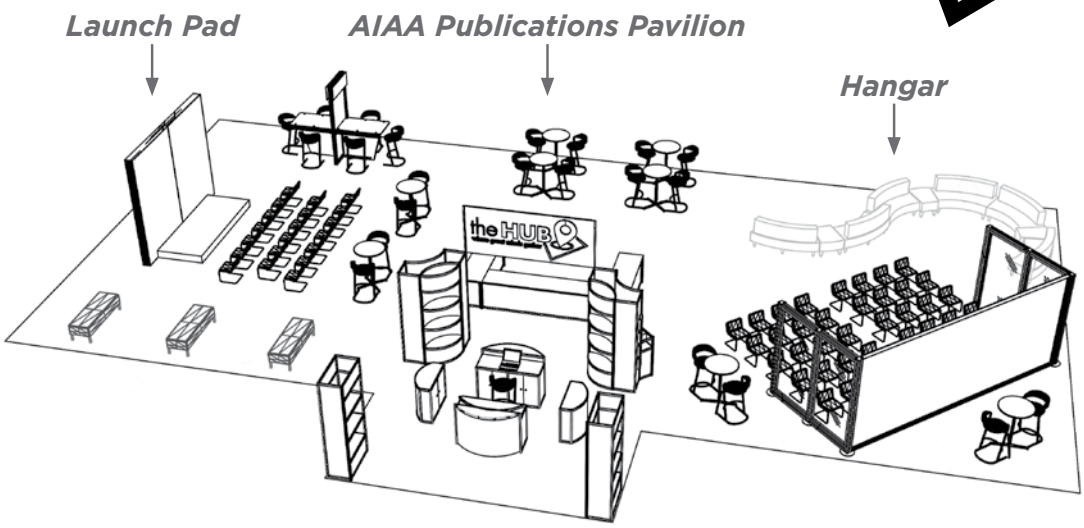

TUESDAY, 9 JANUARY

1300–1400 HRS — **HANGAR**

Publications Focus Group

Come and share your thoughts about the value, relevance, usability, and future of AIAA technical publications, including journals and meeting papers. Participants will receive five free paper downloads from Aerospace Research Central (ARC). *Space is limited.*

1400–1430 HRS — **LAUNCH PAD**

AvWeek Check 6 Podcast

Reporters from *Aviation Week & Space Technology* will broadcast their daily podcast from the HUB and discuss all of the cool stuff happening at 2018 AIAA SciTech!

1400–1430 HRS — **HANGAR**

2018 Transformational Electric Flight Workshop Preview

Hear the plans for the Transformational Electric Flight Workshop being held at the 2018 AIAA AVIATION Forum. This workshop will provide an opportunity for the AIAA community to come together and learn about the exciting developments in electric flight.

1430–1500 HRS — **THE HUB**

Design Challenge: Balloon Rocket Car

Contestants of this challenge will build a rocket-powered car using a balloon. This will demonstrate how aerospace propulsion systems work by generating a high pressure gas and forcing it out a narrow opening. Join the fun as a contestant or a spectator! Organized by the AIAA University of Central Florida Student Branch and AIAA Cape Canaveral Section.

1500–1530 HRS — **HANGAR**

Social Media 101

Get the word out! Learn how to leverage social media to spread the word about AIAA activities and the aerospace industry.

1530–1600 HRS — **HANGAR**

GoFly Prize Announcement: Call for Mentors

The GoFly Prize aims to catalyze the development of personal flying devices. Check out how you can mentor or provide technical expertise to student teams.

Schedule subject to change.

the HUB

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1815–2000 HRS AIAA PUBLICATIONS PAVILION

Meet the Author: Leland Nicolai

Come meet the author of *Fundamentals of Aircraft and Airship Design* and *Lessons Learned: A Guide to Improved Aircraft Design*.

1815–2000 HRS HANGAR

2017 Best Paper Authors Digital Posters

Meet the best paper authors from 2017 and learn about their research.

WEDNESDAY, 10 JANUARY

0900–0930 HRS AIAA PUBLICATIONS PAVILION

Meet the Author: Eugene Fleeman

Get the chance to talk to Eugene Fleeman one-on-one about his book *Missile Design and System Engineering*.

0930–1000 HRS HANGAR

Introduction to Digital Engineering Display

Hear about the history of the Department of Defense's initiative related to Digital Engineering, Digital Thread, and Digital Twin. Also, learn more and plan your visit to the Digital Twin-Digital Engineering display in the Exposition Hall.

0930–1130 HRS THE HUB

Seeking Input on AIAA's Website and Event App

AIAA is constantly evolving the systems it uses to serve its members and the larger aerospace community. Come share your feedback with staff about the following systems and receive an AIAA Participation is Power cell phone booster:

- AIAA.org will be redesigned to modernize its look, content, and features. Share your suggestions for the new site in this open discussion.
- We will be changing the mobile event app we use for AIAA forums and we want your input. This is your chance to rate the features you value and use most.

1000–1100 HRS HANGAR

Publications Focus Group

Come and share your thoughts about the value, relevance, usability, and future of AIAA technical publications, including journals and meeting papers. Participants will receive five free paper downloads from Aerospace Research Central (ARC). Space is limited.

1100–1130 HRS HANGAR

AIAA Public Policy 101

Find out how to engage with policymakers and make your voice heard through AIAA public policy activities.

1130–1200 HRS HANGAR

How Realistic Is Your Simulation? Bridging the Gap Between Simulation and Test

What happens when your simulation results don't match reality? This presentation will discuss ways to calibrate simulation using test results and how to spot simulation anomalies and inaccurate results. Please join us to learn how SmartUQ software can bridge the gap between your simulation and testing.

1130–1200 HRS THE HUB

Meet & Greet with New AIAA Executive Director

Welcome Dan Dumbacher as the new AIAA Executive Director and share your thoughts about the future of the Institute.

1200–1230 HRS HANGAR

Dan Raymer Discusses Aircraft Design and RDSWin Student

Meet best-selling author Dan Raymer, who will talk about this book and how it addresses the entire process of aircraft conceptual design—from requirements definition to initial sizing, configuration layout, analysis, sizing, optimization, and trade studies.

the HUB

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1230–1300 HRS HANGAR

Transportation Enabling a Robust Space Economy

Learn how ULA is developing transportation to enable access to space resources. Powered by ULA's next-gen rocket with an Advanced Cryogenic Evolved Stage (ACES), long duration in-space missions will be possible for the first time in history; enabling utilization of space resources and habitation for the benefit of all humankind.

1230-1300 HRS LAUNCH PAD

Q&A: Dude, Where's My Flying Car?

Don't miss the opportunity to ask the experts from the Forum 360 panel earlier in the day about how personal air transportation is being transformed.

1230–1400 HRS AIAA PUBLICATIONS PAVILION

Meet the Author: Dan Raymer

Get the chance to talk to Dan Raymer one-on-one and get a signed copy of his seminal work.

1300–1400 HRS HANGAR

NASA Space Technology Mission Directorate's Strategic Framework

Associate Administrator of the Space Technology Mission Directorate Stephen Jurczyk will talk about NASA's strategic thrusts that provide the vision for future space technology investments.

1400-1430 HRS LAUNCH PAD

Learn about DATT Summit

DATT (Defense & Aerospace Test & Telemetry) Summit 2018 shifts the paradigm of learning and networking within the test and telemetry industries. Be part of DATT Summit 2018 where you will gain valuable knowledge throughout the week in the specialized educational workshops, head to the live demonstration lab and put your newfound knowledge to use, hear from the leaders in the test and telemetry fields, and meet with like-minded individuals through exciting networking opportunities. DATT Summit 2018 is the place to learn and experience everything you need in your day-to-day career.

1400–1430 HRS HANGAR

San Diego 2019 AIAA SciTech Preview

Learn how to make the most of your participation at 2019 AIAA SciTech by seeing what San Diego has to offer.

1430–1500 HRS THE HUB

Design Challenge: Mars Marshmallow Lander

Contestants will design a shock absorbing method to protect their rover and other hardware from the impact of landing. Come join the fun as a contestant or a spectator! Organized by the AIAA Florida Institute of Technology Student Branch.

1500–1530 HRS HANGAR

Space for Humanity Presentation

Space for Humanity's mission is to democratize space and to increase human awareness to help the world solve its most intractable problems. Come hear how Space for Humanity plans to send 10,000 humans to space within the next ten years.

1500–1530 HRS LAUNCH PAD

AvWeek Check 6 Podcast

Reporters from *Aviation Week & Space Technology* will broadcast their daily podcast from the HUB and discuss all of the cool stuff happening at 2018 AIAA SciTech!

1500–1600 HRS AIAA PUBLICATIONS PAVILION

Appreciation Reception for Book Authors

The Publications community will celebrate AIAA book authors. If you are interested in publishing with AIAA, this is a great opportunity to learn the process.

1530–1600 HRS HANGAR

GoFly Prize Announcement: Call for Competitors and University Teams

The GoFly Prize aims to catalyze the development of personal flying devices. Learn how to enter your ideas to bring on this exciting future!

the HUB

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THURSDAY, 11 JANUARY

0900–0930 HRS — HANGAR

NASA SBIR/STTR Solicitation Announcement

NASA is releasing its Small Business Innovation Research (SBIR)/Small Business Technology Transfer (STTR) Program Solicitation on 11 January. The SBIR/STTR Program makes more than $160M annually available for small businesses to fund research, development, and demonstration of innovative technologies that fulfill NASA needs as described in the annual solicitations and have significant potential for successful commercialization. In response to input NASA received directly from program participants and industry, NASA is streamlining complex processes where possible, enhancing the solicitation, and upgrading the system so that proposers can focus on submitting a quality proposal to get innovations into NASA's missions and into the commercial market. At this session, the NASA SBIR/STTR Program Executive will discuss how to get involved in this program and the changes you will see in 2018.

1000–1100 HRS — HANGAR

Publications Focus Group

Come and share your thoughts about the value, relevance, usability, and future of AIAA technical publications, including journals and meeting papers. Participants will receive five free paper downloads from Aerospace Research Central (ARC). *Space is limited.*

1100–1130 HRS — HANGAR

TruSTAR Threat Intelligence Exchange

TruSTAR allows the good guys to share information; timely, context-rich intelligence exchanged across the AIAA aerospace enclave and to the broader TruSTAR user community. This software-as-a-service platform enables anonymous cyberincident-sharing and provides real-time insight into what other companies are experiencing.

1130–1230 HRS — LAUNCH PAD

Aerospace America Interview: Dr. David Bowles

Aerospace America Editor-in-Chief Ben Iannotta will interview David Bowles, Director, NASA Langley Research Center.

1330–1400 HRS — HANGAR

AIAA Standards 101

Learn about the AIAA Standards Program including current areas of focus and opportunities for subject-matter experts to participate.

1400–1430 HRS — LAUNCH PAD

AvWeek Check 6 Podcast

Reporters from *Aviation Week & Space Technology* will broadcast their daily podcast from the HUB and discuss all of the cool stuff happening at 2018 AIAA SciTech!

1430–1500 HRS — THE HUB

Design Challenge: Rube Goldberg

Contestants will design, build, and demonstrate a Rube Goldberg invention that incorporates as many different energy transfers as possible, with the minimum requirement being three different transfers. Come join the fun as a contestant or a spectator! Organized by the AIAA Florida A&M University and Florida State University Student Branches.

1500–1530 HRS — LAUNCH PAD

Share Your Ideas for Future AIAA SciTech Topics

Share your thoughts on the most interesting and challenging topics we should tackle at AIAA SciTech!

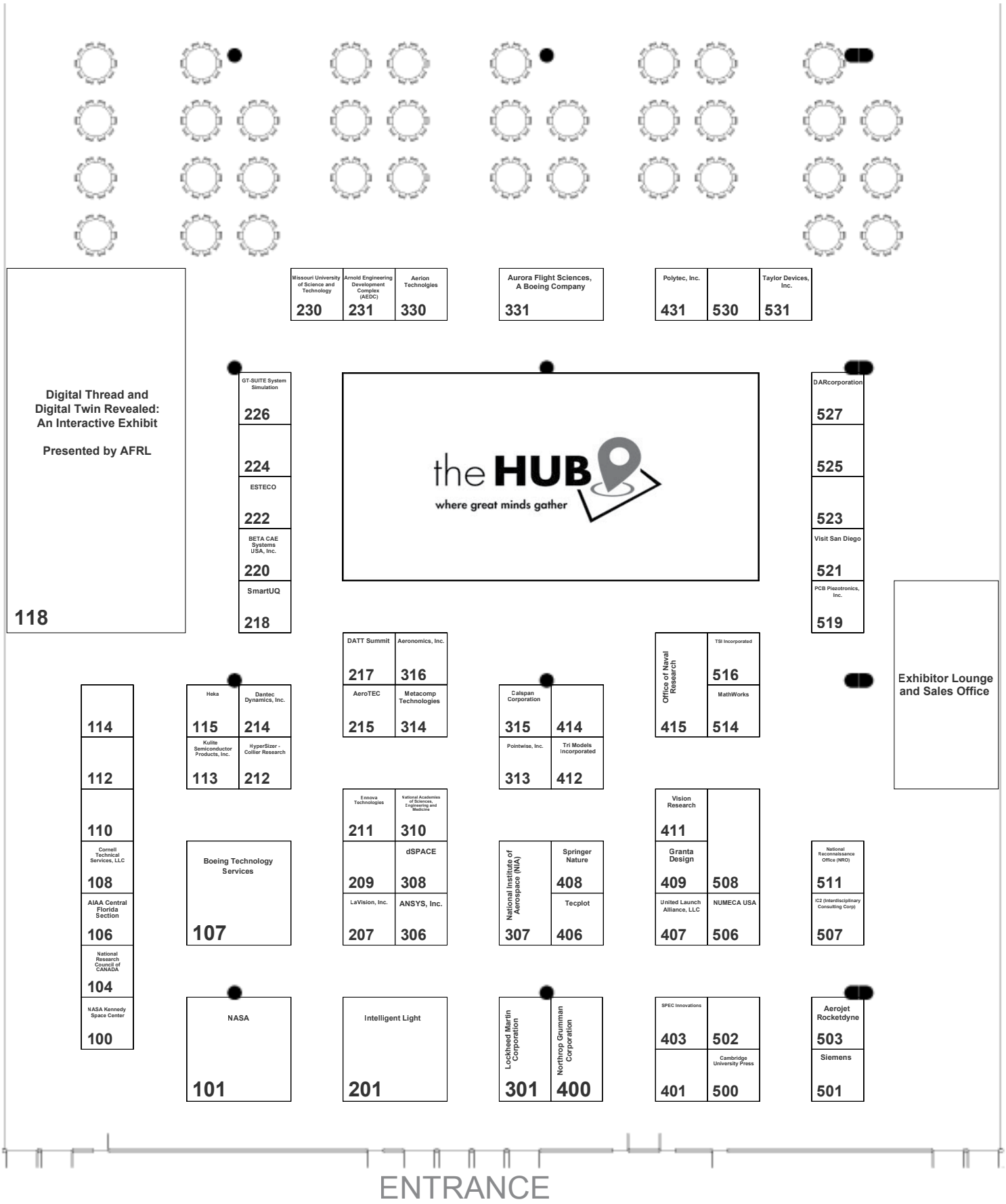
1530–1600 HRS — HANGAR

Crossmark 101

Learn how AIAA is using Crossmark to inform readers about author changes to AIAA published content such as journal articles and meeting papers on AIAA's content platform, Aerospace Research Central. Q&A session to follow.

For the most current schedule go to **http://aiaa-mst18.abstractcentral.com/itin.jsp** or scan the QR code.

Exposition Hall Floor Plan



Exhibitors by Booth Number

330 Aerion Technologies ★

503 Aerojet Rocketdyne ★

316 Aeronomics, Inc.

215 AeroTEC ★

106 AIAA Central Florida Section

306 ANSYS, Inc.

231 Arnold Engineering Development Complex

331 Aurora Flight Sciences ★

220 BETA CAE Systems USA, Inc.

107 Boeing Technology Services ★

315 Calspan Corporation

500 Cambridge University Press

108 Cornell Technical Services, LLC

214 Dantec Dynamics, Inc.

527 DARcorporation ★

217 DATT Summit ★

118 Digital Thread and Digital Twin Revealed

308 dSPACE Inc. ★

211 Ennova Technologies

222 ESTECO

409 Granta Design

226 GT-SUITE System Simulation

115 Heka

212 HyperSizer®- Collier Research ★

507 IC2 (Interdisciplinary Consulting Corp)

201 Intelligent Light ★

113 Kulite Semiconductor Products, Inc.

207 LaVision, Inc.

301 Lockheed Martin Corporation ★

514 MathWorks

314 Metacomp Technologies ★

230 Missouri University of Science and Technology

101 NASA

100 NASA Kennedy Space Center

310 National Academies of Sciences, Engineering and Medicine

307 National Institute of Aerospace (NIA) ★

511 National Reconnaissance Office (NRO)

104 National Research Council of Canada

400 Northrop Grumman Corporation ★

506 NUMECA USA

415 Office of Naval Research

519 PCB Piezotronics, Inc.

313 Pointwise, Inc. ★

431 Polytec Inc.

521 San Diego Tourism Authority and the Manchester Grand Hyatt San Diego

501 Siemens PLM Software

218 SmartUQ

403 SPEC Innovations

408 Springer Nature

531 Taylor Devices, Inc.

406 Tecplot ★

412 Tri Models Incorporated

516 TSI Incorporated

407 United Launch Alliance ★

411 Vision Research

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Exhibitors

Aerion Technologies 330

Charles Schnake
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Palo Alto, CA 94303
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cschnake@aerioncorp.com

Aerion Technologies (formerly Desktop Aeronautics) creates tools for aerodynamic design and analysis of aerospace vehicles. Our flagship product, GoCart, is an intuitive aerial vehicle design tool built around NASA's renowned Cartesian Euler CFD solver, Cart3D. Our customer list includes the major players from the aerospace and defense industry.

Aerojet Rocketdyne 503

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abrown@aeronomicsinc.com

Aeronomics is small business providing advanced solutions to system engineering design problems. Founded in 2017, our team of industry recognized experts excels in the areas of thermal protection systems, hypersonic aerothermodynamics, thermostructural analysis, electronics thermal management, flight test and evaluation, and aerothermal ground test and evaluation, strategic simulation planning, threat modeling, hypersonic missile systems, and integrated defense architecture characterization.

AeroTEC 215

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206.763.6087

AeroTEC was founded in 2003 by President & CEO Lee Human with the desire to offer one-stop, turnkey flight test, engineering and certification services to aerospace OEMs, airlines and modifiers. In 2013, AeroTEC was awarded a contract to assist in the flight testing & certification program for the Mitsubishi MRJ-90, and subsequently experienced rapid growth as their role in that program expanded. AeroTEC corporate headquarters is located north of Boeing Field (KBFI) in Seattle and they own a state-of-the-art flight test center with 65,000-square-foot and 32,000-square-foot hangars in Moses Lake, Washington. AeroTEC now employs over 350 engineers, technicians, and support staff, including 23 DERs specializing in a variety engineering disciplines.

AIAA Central Florida Section 106

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The Central Florida Section of the American Institute of Aeronautics and Astronautics is dedicated to furthering the interests, activities, and technical programs of local professionals, students and educators within our aerospace community.

ANSYS, Inc. 306

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Exhibitors

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Exhibitors

DATT Summit 217

Glenn Rosenthal
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301-846-4800
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DATT (Defense & Aerospace Test & Telemetry) Summit 2018 shifts the paradigm of learning and networking within the test and telemetry industries. Be part of DATT Summit 2018 where you will gain valuable knowledge throughout the week in the specialized educational workshops, head to the live demonstration lab and put your newfound knowledge to use, hear from the leaders in the test and telemetry fields, and meet with like-minded individuals through exciting networking opportunities. DATT Summit 2018 is the place to learn and experience everything you need in your day-to-day career.

Digital Thread and Digital Twin Revealed 118

Brenchley Boden
brenchley.boden@us.af.mil

Hear about the history of the Department of Defense's initiative related to Digital Engineering, Digital Thread, and Digital Twin. Also, learn more and plan your visit to the Digital Twin-Digital Engineering display in the Exposition Hall.

dSPACE Inc. 308

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Exhibitors

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Missouri University of Science and Technology 230

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NASA 101

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NASA's Vision: We reach for new heights and reveal the unknown for the benefit of humankind.

NASA Kennedy Space Center 100

Kay Craig
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kay.l.craig@nasa.gov

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National Academies of Sciences, Engineering, and Medicine 310

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500 Fifth Street NW
Washington, DC 20001
www.nationalacademies.org/rap
202-334-2031
lhuynh@nas.edu

The National Academies of Sciences, Engineering, and Medicine are private, nonprofit institutions that provide expert advice on some of the most pressing challenges facing the nation and the world. Our work helps shape sound policies, inform public opinion, and advance the pursuit of science, engineering, and medicine. Visit our booth to learn about our Fellowships Office which administers predoctoral, postdoctoral, and senior fellowship awards on behalf of government and private/foundation sponsors. Also learn about the Aeronautics and Space Engineering Board which provides an independent, authoritative forum for space engineering and aeronautics research.

National Institute of Aerospace (NIA) 307

Harla Sherwood
100 Exploration Way
Hampton, VA 23666
www.nianet.org
757-636-6300
harla.sherwood@nianet.org

NIA is a non-profit research and graduate education institute created to conduct innovative aerospace and atmospheric research, develop new technologies for the nation and help inspire the next generation of scientists and engineers.

National Reconnaissance Office (NRO) 511

Ms. Stephanie Gusto
14675 Lee Road
Chantilly, VA 21051
acq.westfields.net
703-808-3412
dii@nro.mil

An R&D Funding Program - The National Reconnaissance Office's Director's Innovation Initiative (DII) invests in advanced technologies, fosters innovation, and provides seed funding to push the boundaries of technology to dramatically improve our overhead reconnaissance capabilities. It presents an opportunity for developers not traditionally associated with the NRO to participate in building the National Reconnaissance Office of the 21st Century.

National Research Council of Canada 104

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Exhibitors

NUMECA USA 506

Rebecca Watrous
1044 Larkin St. San Francisco
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NUMECA offers grid generation, CFD tools, and consulting targeted to the aerospace industry. NUMECA's software and engineering services cover a wide range of aerospace flow analyses including: passenger aircraft, full aircraft configurations, transonic, supersonic, and hypersonic flows, aircraft cabins, wing-box fuel tanks an d high-lift devices.

Office of Naval Research 415

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The Office of Naval Research's Naval Air Warfare and Weapons division supports the Navy's power projection needs, fostering the technology development of naval aircraft, structures, propulsion, autonomy, energetics, directed energy and electric weapons.

PCB Piezotronics, Inc. 519

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Pointwise, Inc. 313

Travis Carrigan
213 South Jennings Avenue
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817-377-2807 ext 117
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Pointwise, Inc. is solving the top problem facing computational fluid dynamics (CFD) today – reliably generating high-fidelity meshes. The Pointwise software generates structured, unstructured, overset and hybrid meshes; interfaces directly with CFD solvers; utilizes native CAD geometry; runs on Windows, Linux, and Mac; and has a scripting language for automation. More information about Pointwise is available at www.pointwise.com.

Polytec Inc. 431

John Foley
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Polytec has been the leading supplier of non-contact, laser based, precision vibration measurement instrumentation for more than 30 years. Polytec's laser Doppler vibrometers are utilized for many aerospace applications including Jet Engine Design Validations, Flow Induced Vibration Studies, Ground Vibration Testing and Shock Measurements. Polytec's new multipoint vibrometer allows simultaneous, real time measurements at up to 48 locations for capturing non-repeating or non-linear phenomena.

San Diego Tourism Authority and the Manchester Grand Hyatt San Diego 521

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Siemens PLM Software 501

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5800 Granite Parkway, Suite 600
Plano, TX 75024
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carin.pierce@siemens.com

Siemens PLM Software is a world-leading provider of product lifecycle management (PLM) software. We help thousands of companies make great products by optimizing their lifecycle processes, from planning and development through manufacturing and support.

SmartUQ 218

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SmartUQ software provides breakthrough analytics and uncertainty quantification solutions for simulation, testing and complex systems. Using advanced statistics and stochastic methods, SmartUQ allows engineers to quickly analyze high-dimensional or Big Data, understand the probabilities of all what-if scenarios, accelerate simulation cycles, easily calibrate models, and create innovative designs with greater confidence.

Exhibitors

SPEC Innovations 403

Sarah Campbell
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SPEC Innovations has been serving the aerospace community for over 20 years. Our business services include systems engineering services and software development. SPEC Innovations' flagship software product, Innoslate, is the first web-based full lifecycle systems engineering tool, Innoslate. Innoslate is an all in one solution that combines: requirements management, model-based systems engineering, and testing. Simplify your product development, visit innoslate.com for a cloud trial.

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Vision Research 411

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General Information

AIAA Registration and Information Center Hours

The AIAA Registration and Information Center is located on the convention center side of the hotel in the City Hall Lobby located on the second floor.

SUNDAY, 7 JANUARY

1500–1900 HRS

MONDAY, 8 JANUARY – THURSDAY, 11 JANUARY

0700–1730 HRS

FRIDAY, 12 JANUARY

0700–1300 HRS

Wi-Fi Internet Access

AIAA provides limited Wi-Fi service for attendees to use while onsite. To keep this service available and optimized for all attendees, please do not download files larger than 2MB, create multiple sessions across multiple devices, or download multiple files in one session. If you receive an error message that an AIAA server is blocking your current IP address, please inform the AIAA registration desk.

Network Name: **AIAASciTech**

Password: **2018scitech**

AIAA Livestream Channel

Visit **livestream.com/aiaavideo** to view selected keynotes, plenaries, and Forum 360 sessions. Share the link with colleagues who couldn't attend the conference so they can watch live or view later.

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Social Media at #aiaaSciTech

Tweet or post on Instagram using the hashtag #aiaaSciTech to see your messages appear on electronic display boards throughout the forum. Win prizes! See official rules: **scitech.aiaa.org/SocialMediaContest**

Join AIAA in the HUB at 1430 hrs on Tuesday, 9 January, for a Social Media 101 discussion and learn how you can enhance the profile of your section, branch, or technical committee on social media.

Conference Proceedings

ARC AEROSPACE RESEARCH CENTRAL

Proceedings for the forum will be available online. The cost is included in the registration fee where indicated. Online proceedings will be available for viewing and downloading on Monday, 8 January. Please follow the instructions below to access the proceedings:

1. To view proceedings visit **aiaa.org** >ARC>Meeting Papers.
   a. Log in with the link at the top right of the page.
   b. Select the appropriate conference from the list.
   c. **Search for individual papers** with the **Quick Search toolbar** in the upper-right corner of the page:
      i. By paper number: Click the "Paper Number" link, select the conference year, and enter the paper number.
      ii. Use the Search textbox to find papers by author, title, or keyword. The Advanced Search link provides additional search information and options.
2. All manuscript files submitted by four days prior to the conference are currently in the proceedings. Files submitted after that date will not be available until the final proceedings update, which may take up to 15 business days after the last day of the conference.
3. Direct any questions concerning access to proceedings and/or ARC to **arcsupport@aiaa.org**.

Manuscript Corrections:

Check for updates

1. The manuscript in the proceedings is the version of record and may not be replaced with a different version. **NEW FOR 2018:** Corrections to manuscripts will be available through the Crossmark feature. To view any corrections made to a manuscript click the Crossmark icon, located on every article's webpage and PDF.
2. Corrections will be available online approximately 15 business days after the last day of the conference.

Certificate of Attendance

Certificates of Attendance are available for attendees who request documentation at the forum itself. Beginning Wednesday, 10 January, you will be able to create and print your certificate at the AIAA Registration and Information Center. AIAA offers this service to better serve the needs of the professional community. Claims of hours or applicability toward professional education requirements are the responsibility of the participant.

General Information

Employment Opportunities

AIAA members can post and browse resumes, browse job listings, and access other online employment resources by visiting the AIAA Career Center at **http://careercenter.aiaa.org.**

In addition, there will be a job board located within the Exposition Hall.

Young Professional Guide for Gaining Management Support

Young professionals have the unique opportunity to meet and learn from some of the most important people in the business by attending conferences and participating in AIAA activities. A detailed online guide, published by the AIAA Young Professional Committee, is available to help you gain support and financial backing from your company. The guide explains the benefits of participation, offers recommendations, and provides an example letter for seeking management support and funding, and shows you how to get the most out of your participation. The online guide can be found on the AIAA website at **aiaa.org/YPGuide**.

Badge Policy

AIAA forum badges are provided to those attendees who have paid for a registration to the event (and must be worn at all times to participate in all forum activities). Badges are not provided at the registration desk for committee meetings. In order to obtain a SciTech badge, one must register for the forum.

Nondiscriminatory Practices

AIAA accepts registrations irrespective of race, creed, sex, color, physical handicap, and national or ethnic origin.

Restrictions

Photos, video, or audio recording of sessions or exhibits, as well as the unauthorized sale of AIAA-copyrighted material, is prohibited.

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Please contact AIAA's Communications Director John Blacksten at johnb@aiaa.org with requests or questions.

Stay Fit at SciTech

Stay fit with your fellow attendees! Join AIAA staff on Tuesday, 9 January, and Thursday, 11 January, at 0600 hrs at the Gaylord Registration Lobby by Bell Services. All levels are welcome for a 1-3 mile route.

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Shaping the Future of Aerospace

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Meet our 2017 Best Paper Authors

A Digital Poster Session

TUESDAY, 9 JANUARY

1815–2000 HRS HANGAR IN THE HUB

Atmospheric Flight Mechanics

Christoph Deiler, Nicolas Fezans
DLR – German Aerospace Center
Braunschweig, Germany

"Performance-Based Ice Detection Methodology" (AIAA 2017-3394)

Next to a feasibility study using FDR data, the proposed ice detection method is demonstrated on various test cases and is evaluated in flight simulator by professional A320 pilots.

Computational Fluid Dynamics Conference

Hiroaki Nishikawa
National Institute of Aerospace
Hampton, Virginia

"Uses of Zero and Negative Volume Elements for Node-Centered Edge-Based Discretization" (AIAA 2017-4295)

This paper demonstrates that the third-order edge-based discretization works with zero- and negative-volume elements, and that such elements can be useful for resolving difficulties in discontinuity capturing, singularity resolutions, hanging nodes, and overset grids.

Guidance, Navigation, and Control Conference

Kyuman Lee
Georgia Institute of Technology

Eric Johnson
Pennsylvania State University

"Multiple-Model Adaptive Estimation for Measurements with Unknown Time Delay" (AIAA 2017-1260)

This paper describes and evaluates a multiple-model adaptive estimation (MMAE) filter proposed for time-delay compensation; applicable when a measurement has an uncertain time-delay.

Intelligent Systems Best Paper

Tom Rijndorp, Coen de Visser, Olaf Stroosma, Clark Borst, Max Mulder, M.M. van Passen
Delft University of Technology
Delft, Netherlands

"Aviate, Navigate: Functional Visualizations of Asymmetric Flight Envelope Limits" (AIAA 2017-1297)

This work explores augmenting current avionics displays with novel constraint-based symbology to facilitate the task of navigating an aircraft suffering from a performance-altering failure that reduces its safe flight envelope. A human-in-the-loop experiment was conducted to validate the effectiveness of the used symbology.

Meshing, Visualization and Computational Environments

Carolyn Woeber, Erick Gantt, Nicholas Wyman
Pointwise, Inc.
Ft. Worth, Texas

"Mesh Generation for the NASA High Lift Common Research Model (HL-CRM)" (AIAA 2017-0363)

The meshing processes and lessons learned generating unstructured, structured, hybrid, and hybrid overset CFD meshes for the 3rd AIAA High Lift Prediction Workshop and the 1st AIAA Geometry and Mesh Generation Workshop are explored from geometry preprocessing to final volume mesh creation.

Modeling and Simulation

David Klyde, Amanda Lampton, P. Chase Schulze
Systems Technology, Inc.
Hawthorne, California

"Evaluation of a Steep Turn Spatial Disorientation Demonstration Scenario for Commercial Pilot Training" (AIAA 2017-1079)

Piloted evaluations of a steep bank, constant altitude turn scenario were conducted with 12 commercial airline pilots and two FAA pilots. The scenario was found to provide an effective demonstration of spatial disorientation for commercial pilot training.

Theoretical Fluid Mechanics Conference

Max M.J. Opgenoord, Mark Drela and Karen Willcox
Massachusetts Institute of Technology
Cambridge, Massachusetts

"Towards a Low-Order Model for Transonic Flutter Prediction" (AIAA 2017-4340)

This paper develops a physics-based low-order model for two-dimensional unsteady transonic airfoil flow. The model is cheap enough to allow for transonic flutter prediction in conceptual design tools, increasing the fidelity of such tools for novel transport aircraft concepts.

ASME/Boeing Best SDM Paper

Accepted by Jennifer Heeg, Pawel Chwalowski
NASA Langley Research Center
Hampton, Virginia

"Investigating the Transonic Flutter Boundary of the Benchmark Supercritical Wing" (AIAA 2017-2199)

Author and Sessions Chair Information

Speakers' Briefing in Session Rooms

Authors who are presenting papers will meet with session chairs and co-chairs in their session rooms for a short 30-minute briefing on the day of their sessions to exchange bios and review final details prior to the session. Please attend on the day of your session(s). Laptops preloaded with the Speaker Briefing preparation slides will be provided in each session room. Speaker's Briefing schedule is as follows:

MONDAY, 8 JANUARY–FRIDAY, 12 JANUARY

0730 HRS

Speakers' Practice Room

Speakers who wish to practice their presentations may do so in the Osceola Reg 3-4 located on the convention center side past Osceola A. A sign-up sheet will be posted in front of the door. In consideration of others, please limit practice time to 30-minute increments.

Session Chair Reports

All session chairs are asked to complete a session chair report to evaluate their session for future planning. AIAA has partnered with Canvas Solutions to provide an electronic Session Chair Report form. You can download the FREE mobile app in your App Store, AppWorld, or Marketplace by searching for "GoCanvas." If you do not have a tablet or a smartphone, simply enter your session chair report information at the session chair reporting computer station located on site near the AIAA registration area. Report data will be collected and used for future planning purposes, including session topics and room allocations. Please submit your session chair report **electronically** by Friday, 12 January.

Audiovisual

Each session room will be preset with the following: one LCD projector, one screen, one microphone and sound system (if necessitated by room size), and one laser pointer. **Laptop computers will also be provided.** You may also use your own computer. Any additional audiovisual equipment requested onsite will be at cost to the presenter. Please note that AIAA does not provide security in the session rooms and recommends that items of value not be left unattended.

"No Paper, No Podium" and "No Podium, No Paper" Policies

If a written paper is not submitted by the final manuscript deadline, authors will not be permitted to present the paper at the forum. Also, if the paper is not presented at the forum, it will be withdrawn from the proceedings. It is the responsibility of those authors whose papers or presentations are accepted to ensure that a representative attends the conference to present the paper. These policies are intended to improve the quality of the program for attendees.

Journal Publication

Authors of appropriate papers are encouraged to submit them for possible publication in one of the Institute's archival journals: *AIAA Journal; Journal of Aircraft; Journal of Air Transportation; Journal of Guidance, Control, and Dynamics; Journal of Propulsion and Power; Journal of Spacecraft and Rockets; Journal of Thermophysics and Heat Transfer;* or *Journal of Aerospace Information Systems*. You may now submit your paper online at **http://mc.manuscriptcentral.com/aiaa**.

Committee Meetings/Events

** Suite #5328 is on the hotel side on the 5th floor; Suite #8329 is on the hotel side on the 8th floor.*

TIME	COMMITTEE AND ANCILLARY MEETINGS/EVENTS	ROOM
	Sunday, 7 January	
1200-1600	**TAD/IOD Director and Deputy Director Training**	Sarasota 1
1200-1600	**TAD/IOD TC/IOC Chair Training**	Tampa
1400-1430	**GTTC Steering Subcommittee**	Naples 2 & 3
1430-1500	**GTTC Membership Subcommittee**	Naples 2 & 3
1430-1530	**APATC Liaisons Subcommittee**	Sanchez Boardroom
1500-1530	**GTTC Introduction/Overview**	Naples 2 & 3
1500-1600	**APATC Planning Subcommittee**	Sarasota 3
1500-1600	**APATC Membership and Nominations Subcommittee**	Destin 2
1500-1600	**APATC Honors and Awards Subcommittee**	Flagler
1500-1600	**APATC Publicity and Publications Subcommittee**	St. George #102
1500-1600	**APATC Education Subcommittee**	Hemingway Boardroom
1530-1600	**GTTC Program Subcommittee**	Naples 2 & 3
1600-1700	**GTTC Conferences Subcommittee**	Naples 2 & 3
1600-1700	**APATC Technical Activities Meeting**	Sanchez Boardroom
1700-1730	**International Student Conference Briefing**	Palm Beach
1700-1800	**APATC Steering Committee**	Tallahassee 3
1700-1800	**GTTC Awards Subcommittee**	Naples 2 & 3
1730-2030	**Structures TC**	St. George #108
1800-1900	**GTTC Standards Subcommittee**	Naples 2 & 3
1800-2100	**TAD Information Systems Group Meeting**	Flagler
1800-2200	**Applied Aerodynamics TC**	Sun C
1800-2200	**Guidance, Navigation, and Control (GNC) Student Paper Competition**	Destin 1
1830-2030	**Systems Integration Group**	St. George #102
1900-2000	**GTTC Education and Student Activities Subcommittee**	Naples 2 & 3
1900-2030	**FDTC Transition DG**	Palm Beach
1900-2100	**MVCE Meshing Subcommittee**	St. George #104
1900-2100	**TAD Aerospace Design and Structures Group Meeting**	Sarasota 2
1900-2200	**Atmospheric Flight Mechanics TC**	Orange Blossom
1900-2200	**Propulsion and Energy Group Meeting**	St. George #106
1900-2200	**TAD Aircraft and Atmospheric Systems Group**	St. George #112
1930-2100	**Academic Affairs Committee**	St. George #114
2000-2100	**GTTC Publications Subcommittee**	Naples 2 & 3
2000-2200	**AMT Conferences Subcommittee**	Sanchez Boardroom
	Monday, 8 January	
0900-1000	**ABP Steering Committee**	St. George #106
0900-1030	**Publications Ethical Standards Subcommittee**	St. George #108
0900-1300	**Executive Nominating Committee**	St. George #102
0900-1600	**GTTC Internal Balance WG**	Palm Beach
0930-1330	**NIA Technical Activities Committee**	Hemingway Boardroom
1000-1100	**ABP PAW Workshop Meeting**	Flagler
1000-1100	**GTE Steering Committee**	Orange Blossom
1000-1100	**HSABPTC Steering Committee**	Sanchez Boardroom

Committee Meetings/Events

TIME	COMMITTEE AND ANCILLARY MEETINGS/EVENTS	ROOM
1000-1200	**RAC I Meeting**	St. George #112
1030-1200	**Books Series Subcommittee**	Suite #5328
1100-1200	**ABP Honors & Awards**	St. George #108
1200-1300	**RAC II Meeting**	Orange Blossom
1200-1400	**TAD Aerospace Sciences Group Meeting**	St. George #108
1230-1530	**Systems Engineering TC**	Flagler
1300-1400	**Gas Turbine Engine TC**	St. George #112
1300-1400	**High Speed Air Breathing Propulsion TC**	St. George #106
1300-1400	**ABP INPSI TC Meeting**	Orange Blossom
1400-1500	**ABP Student Design Competition**	St. George #114
1400-1530	**RAC IV Meeting**	Sanchez Boardroom
1400-1530	**Journal of Aircraft Editors and Advisory Board**	Osceola B
1400-1530	**Education Series Editorial Advisory Board**	St. George #102
1400-1530	**Council of Innovation and Initiative Committee (CIIC)**	St. George #104
1500-1600	**HSABP TC Working Group Meeting**	St. George #106
1500-1700	**Flight Test TC**	Suite #5328
1600-1700	**ABP Working Group**	Sanchez Boardroom
1600-1700	**TPTC Best Paper Subcommittee**	St. George #104
1600-1700	**TPTC Education Subcommittee**	St. George #108
1600-1700	**TPTC Awards Subcommittee**	St. George #114
1600-1730	**Progress Series Editorial Advisory Board**	St. George #112
1600-1730	**AIAA Journal Editors and Advisory Board**	Osceola B
1630-1715	**GEPC Conference Subcommittee**	Hemingway Boardroom
1700-1800	**TPTC Conference Subcommittee**	St. George #106
1700-1800	**TPTC Publicity Subcommittee**	Sanchez Boardroom
1700-2000	**Computing Systems Technical Committee**	Palm Beach
1715-1800	**GEPC Leadership Team**	Suite #8329
1730-1830	**APATC Aeropropulsive Interactions DG**	Osceola 3
1800-1900	**TPTC Emerging Technologies**	St. George #108
1800-1900	**TPTC Nominations Subcommittee**	St. George #114
1800-1900	**TPTC Publications Subcommittee**	Hemingway Boardroom
1800-1900	**AMT Nominations Subcommittee**	Suite #5328
1800-1930	**FDTC Flow Control and Fluid Applications Subcommittee**	Destin 2
1800-1930	**FDTC CFD Methods Subcommittee**	Tallahassee 2
1800-1930	**FDTC Fundamentals of Flow Phenomena Subcommittee**	Flagler
1800-2000	**Design Engineering TC Sub Committees**	St. George #104
1800-2100	**APATC Sailplane Aerodynamics & Design DG**	St. George #112
1800-2200	**ABP Meeting**	Tallahassee 3
1830-2030	**Purdue Aeronautics & Astronautics Alumni & Friends Reception**	Sun C
1830-2130	**Small Satellite Technical Committee**	Miami 1
1830-2130	**Sensor Systems and Information Fusion TC**	Sanchez Boardroom
1830-2130	**Propellants and Combustion Technical Committee**	Emerald 8
1830-2200	**Aircraft Design TC**	Sun B

Committee Meetings/Events

TIME	COMMITTEE AND ANCILLARY MEETINGS/EVENTS	ROOM
1900-2000	**Thermophysics TC**	Emerald 2
1900-2030	**AMT Awards Subcommittee**	Suite #5328
1900-2130	**CFD Vision 2030 Integration Committee**	Sun A
1900-2200	**Adaptive Structures Technical Committee**	Emerald 6
1900-2200	**Meshing, Visualization and Computational Environments Technical Committee**	Orange Blossom
1900-2200	**Friends of UC Reception**	Captiva 1
1900-2200	**V/STOL Short Course Working Group**	St. George #102
1930-2100	**FDTC Massively Separated Flows DG**	St. George #106
	Tuesday, 9 January	
0900-1000	**Publications Awards Subcommittee**	St. George #106
0900-1100	**Journals Subcommittee**	St. George #102
0900-1200	**2019 Associate Fellows Committee Kickoff Meeting**	Hemingway Boardroom
0900-1600	**Council of Directors**	Orange Blossom
0900-1700	**GTTC Uncertainty Analysis WG**	Flagler
1000-1400	**Public Policy Committee Meeting**	St. George #104
1100-1200	**Journal of Propulsion and Power Editors and Advisory Board**	St. George #102
1200-1330	**GNC TC Undergraduate Conference Experience (UCE) Lunch Panel**	St. George #106
1300-1500	**Student Activities Committee Meeting**	Palm Beach
1400-1600	**Journal Editors-in-Chief**	St. George #102
1430-1730	**Aerospace Cyber Security Working Group (ACWG)**	St. George #108
1600-1730	**Journal of Thermophysics and Heat Transfer Editors and Advisory Board**	St. George #102
1600-1730	**Publications Review Subcommittee**	Hemingway Boardroom
1700-1900	**AIAA Computational Fluid Dynamics (CFD) CoS Meeting**	St. George #114
1730-1830	**FDTC Turbulence Model Benchmarking DG**	Flagler
1730-1830	**FDTC LES DG**	St. George #112
1730-1830	**Continuing Education Committee**	Sanchez Boardroom
1730-2000	**National Partnership for Aeronautical Testing (NPAT) Mini-Facility Users Meeting (FUM)**	Naples 1
1800-1900	**HyTASP Steering Committee**	Tallahassee 2
1800-1900	**FDTC High-Order Methods/Algorithms DG**	Palm Beach
1800-1900	**FDTC Modal Decomposition DG**	St. George #108
1800-1930	**FDTC Non-Equilbrium DG**	Orange Blossom
1800-2000	**AAS/AIAA Joint Technical Committee**	Osceola C
1800-2000	**Section Officer Meeting**	St. George #106
1800-2100	**Software TC Meeting**	Sun 2
1800-2200	**Wind Energy TC Meeting**	Captiva 1
1830-2130	**Pressure Gain Combustion TC Meeting**	St. George #104
1830-2130	**Energy Optimized Aircraft Systems Integration Committee**	Daytona 1
1900-2000	**AMT Technical Committee Meeting**	Sun D
1900-2000	**FDTC Fluid Structure Interaction DG**	Osceola 3
1900-2100	**HyTASP TC Meeting**	Tallahassee 2
1900-2100	**University of Maryland Alumni Reception**	Gainesville 1
1900-2200	**Aerospace Department Chairs Association Meeting**	Sun B
1900-2200	**Structures TC**	Sun C

Committee Meetings/Events

TIME	COMMITTEE AND ANCILLARY MEETINGS/EVENTS	ROOM
1900-2200	**Unmanned Systems Integration Committee**	Emerald 1
1900-2200	**V/STOL Aircraft Systems TC**	Emerald 2
1900-2200	**Plasmadynamics and Lasers TC**	Emerald 4
1900-2200	**Aeroacoustics TC**	Emerald 6
1900-2200	**Terrestrial Energy Systems TC**	St. George #102
1930-2230	**Materials Technical Committee**	Emerald 8
2000-2200	**APATC Rotorcraft Simulations & Performance Predictions DG**	Palm Beach
2000-2200	**APATC Collaborative Experiments & Computations DG**	Flagler
2000-2200	**APATC/FDTC Flow Control Applications and Impacts DG**	St. George #114
	Wednesday, 10 January	
0800-1200	**Integration and Outreach Division Meeting**	St. George #112
0800-1200	**GTTC Future of Ground Testing WG**	St. George #114
0800-1600	**Sections & Regions Activities Division**	St. George #108
0830-1200	**Honors and Awards Committee**	Palm Beach
0830-1200	**Publications Committee**	St. George #106
0900-1200	**Certification/Qualification by Analysis Steering Group**	St. George #104
0900-1700	**GTTC Dual Flow Reference Nozzle WG**	Hemingway Boardroom
0930-1130	**Finance Committee**	Sanchez Boardroom
1130-1230	**SciTech 2019 Technical Program Committee Planning Meeting**	Orange Blossom
1200-1500	**GTTC WT Model Attitude and Deformation Measurement WG**	St. George #114
1300-1500	**AIAA Standards Executive Council (SEC)**	Suite #8329
1300-1500	**GTTC Statistically Defensible Test Methods Focus Group**	St. George #112
1400-1530	**Journal of Spacecraft and Rockets Editors and Advisory Board**	Palm Beach
1400-1630	**Corporate Member Group**	Orange Blossom
1400-1700	**TAD Executive Board Meeting**	St. George #106
1430-1630	**Tutorial - Verification and Validation Best Practices for Integrated Compuational Materials Engineering**	Flagler
1600-1730	**Journal of Guidance, Control, and Dynamics Editors and Advisory Board**	Palm Beach
1600-1730	**LM Aeronautics Company Meeting**	St. George #112
1730-1900	**APATC Missile & Projectile Aeroprediction DG**	St. George #104
1730-1900	**APATC Low Boom DG**	St. George #114
1730-1930	**APATC Applied CFD Transition Modeling DG**	Orange Blossom
1730-1930	**Plasma Aerodynamics Discussion Group**	Sun 3
1800-1900	**APATC Legacy Data Sets: F-18 HARV**	Flagler
1800-2000	**Michigan Aerospace Alumni Reunion Reception**	Miami 2
1800-2000	**Society and Aerospace IOC Meeting**	St. George #106
1800-2100	**Spacecraft Structures Technical Committee**	St. George #112
1800-2100	**Design Engineering TC**	Sanchez Boardroom
1800-2100	**Intelligent Systems TC Meeting**	Osceola B
1800-2100	**Survivability Technical Committee**	Hemingway Boardroom
1800-2200	**AMT Updates and Student Event**	St. George #108
1800-2300	**GNC Technical Committee Meeting**	Osceola C
1830-2030	**Virginia Tech Alumni and Friends**	Osceola 1

Committee Meetings/Events

TIME	COMMITTEE AND ANCILLARY MEETINGS/EVENTS	ROOM
1830-2130	**Multidisciplinary Design Optimization TC**	Osceola 3
1900-2100	**Solid Rockets Technical Committee**	Emerald 1
1900-2200	**Transformational Flight IOC**	Palm Beach
1900-2200	**Fluid Dynamics TC**	Sun B
1900-2200	**Non-Deterministic Approaches TC**	Sun C
1900-2200	**Structural Dynamics TC**	Sun D
2000-2130	**Digital Engineering IC**	St. George #102
	Thursday, 11 January	
0800-1200	**GTTC High Speed Wind Tunnel Calibration WG**	St. George #102
0800-1200	**Sections and Regions Activities Division**	Sanchez Boardroom
0800-1600	**AIAA Board of Trustees**	St. George #112
1000-1600	**Technical Activities Division**	St. George #106
1300-1500	**AAS Space Flight Mechanics Technical Committee**	St. George #104
1300-1500	**AIAA Astrodynamics Technical Committee Meeting**	St. George #108
1300-1500	**AAS Space Flight Mechanics Conference Administration Subcommittee (CAS) Meeting**	Flagler
1300-1500	**AAS Space Flight Mechanics Technical Administration (TAS) Subcommittee**	Palm Beach
1300-1700	**GTTC Wind Tunnel Flow Quality WG**	St. George #102
1400-1600	**History Technical Committee**	St. George #114
1700-1830	**Aircraft Electric/Hybrid Electric Power & Propulsion Working Group**	St. George #106
1700-2000	**Boeing - NASA Directors Meeting**	St. George #112
1730-1830	**FDTC Solver Technology for Turbulent Flows DG**	St. George #102
1730-2030	**GTTC Conference Close-Out Meeting**	Osceola B
1800-2000	**AAS Space Flight Mechanics Website Administration Subcommittee (WAS) Meeting**	Palm Beach
1900-2200	**Green Engineering Integration Committee**	St. George #104
1900-2200	**Modeling and Simulation TC**	St. George #108
1930-2200	**ICME Working Group**	Flagler
	Friday, 12 January	
0800-1730	**NASA Combustion Modeling Grants Year 2 Review**	Palm Beach
0830-1230	**AIAA/ASE Space Traffic Management Workshop**	St. George #108
1400-1600	**Space Operations Support Technical Committee**	Sanchez Boardroom

** Suite #5328 is on the hotel side on the 5th floor; Suite #8329 is on the hotel side on the 8th floor.*

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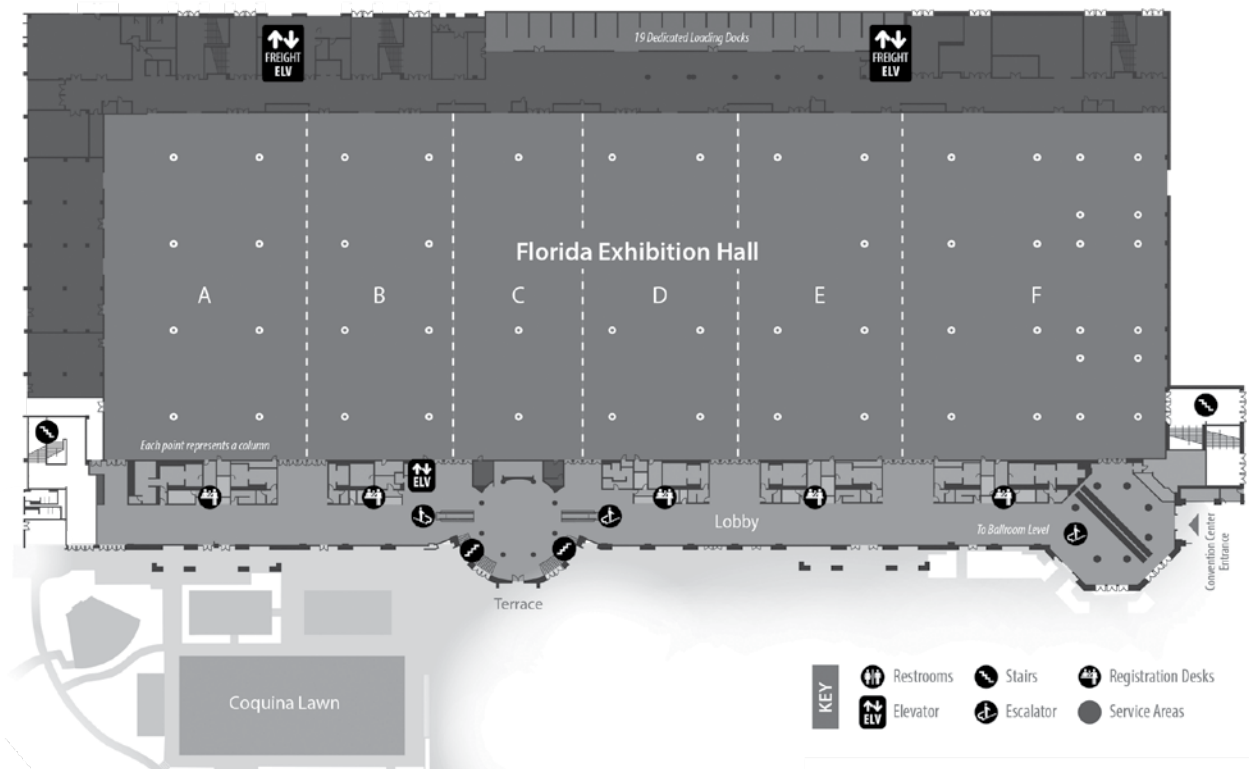
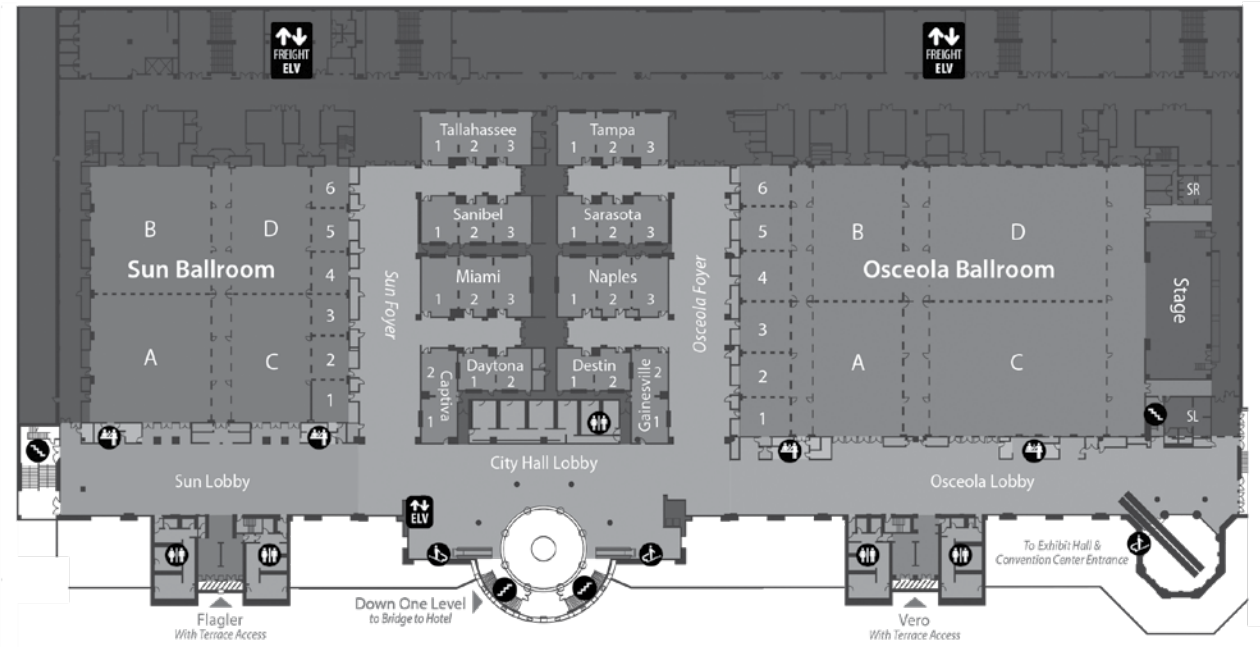
Venue Map

LEVEL 1: EXHIBITION HALL

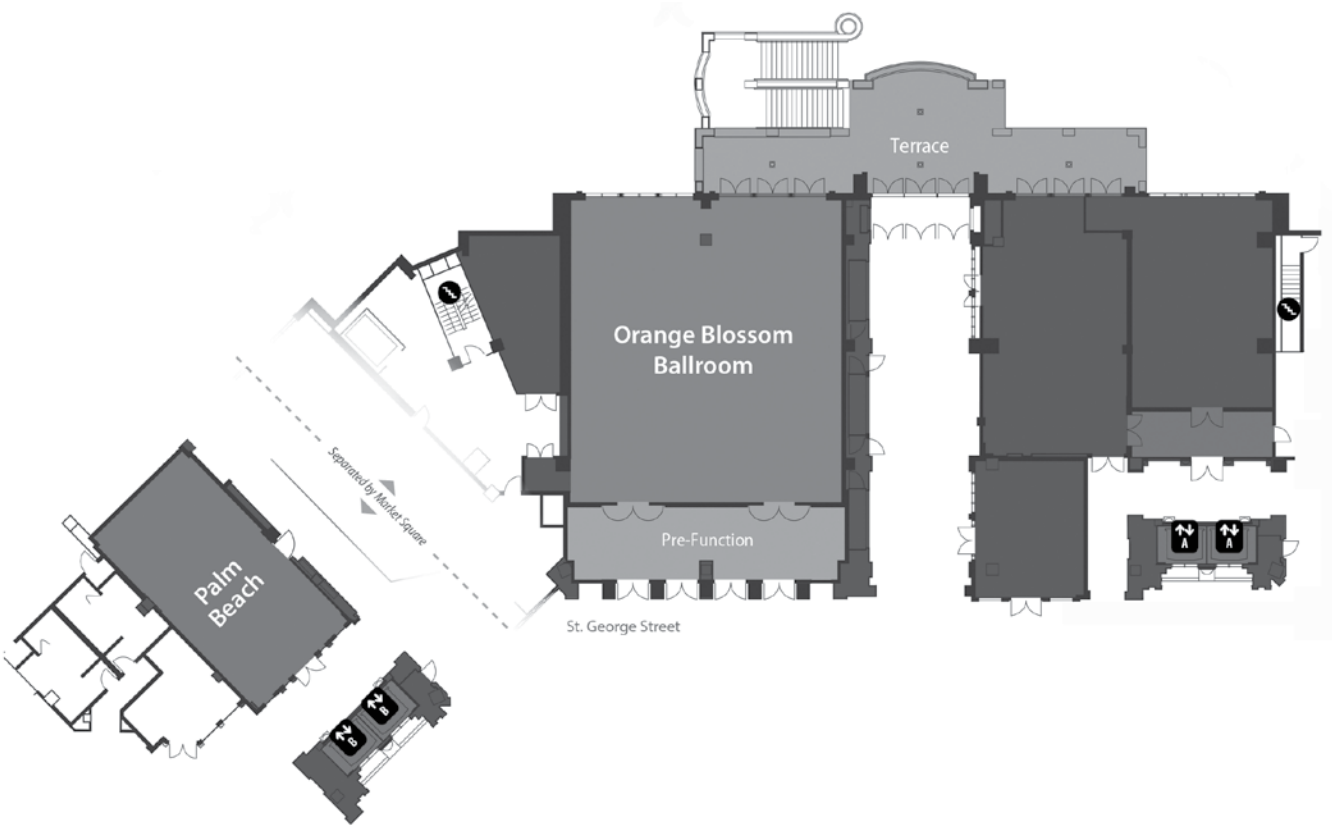


LEVEL 2: SUN & OSCEOLA BREAKOUT ROOMS/BALLROOMS



Venue Map

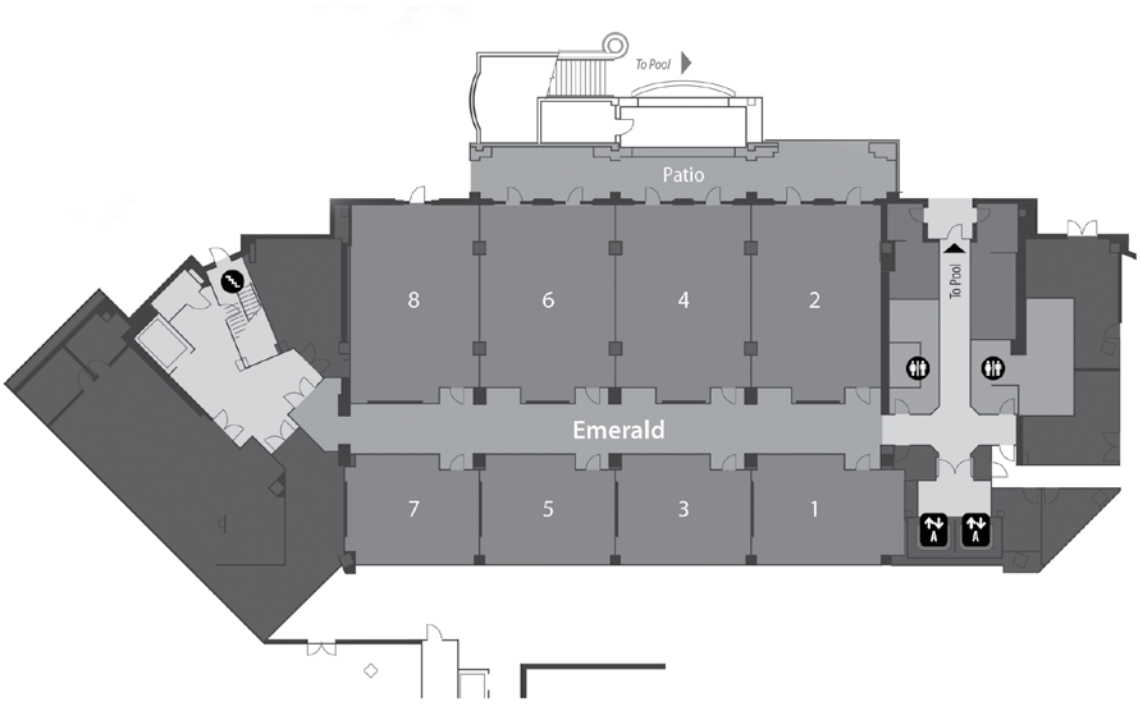
ARTIUM LEVEL: PALM BEACH MEETING ROOM & ORANGE BLOSSOM BALLROOM



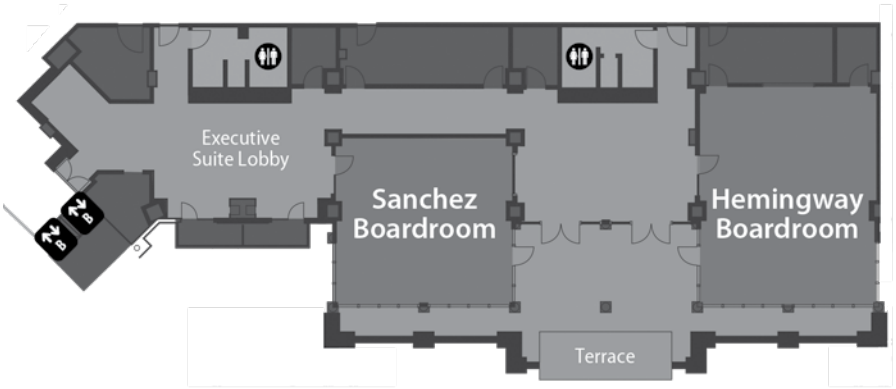
ARTIUM LEVEL: ST. GEORGE MEETING ROOMS

Venue Map

LEVEL 2: SUN & OSCEOLA BREAKOUT ROOMS/BALLROOMS



LOWER LEVEL: EMERALD BAY MEETING ROOMS



Notes

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[Insert list of exhibitors by booth number (two column) underneath hall floor plan if space allows otherwise can be own page (*indicates AIAA Corporate Members) – provided by Jean Riley]

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