SCITECH FORUM

9–13 JANUARY 2017

GRAPEVINE, TX

Addressing Full Spectrum Disruptions Across the Global Aerospace Community

PROGRAM

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AIAA
Shaping the Future of Aerospace

17-4000


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AIAA SciTech Forum

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Pamela Melroy
DARPA

Darryll Pines
University of Maryland

Robie Samanta Roy
Lockheed Martin Corporation

Robbie Robertson
Air Force Research Laboratory

Welcome

Welcome to the 2017 AIAA Science and Technology Forum and Exposition (AIAA SciTech Forum) – the world's largest event for aerospace research, development, and technology! Only here will you find the diversity of topics, caliber of speakers, and level of discourse about issues that directly impact your work, your career, and your industry – we are confident you will leave Grapevine prepared to shape the future of aerospace in new and exciting ways.

By bringing together 11 aerospace science and technology conferences, and by attracting attendees from across academia, industry, and government, AIAA SciTech will give you an unparalleled opportunity to hear from industry thought leaders, interact with your peers, and begin the inspired exchange of ideas that so often leads to breakthroughs in our community. Our organizing committee has worked hard over the past year to ensure that our plenary sessions examine some of the most critical issues facing aerospace today, especially the role that disruption plays in our community for better or worse. The five plenary sessions will explore the factors driving today's disruptive environment, the disruptive business model, presidential transitions, technology breakthroughs that will transform aerospace, and how we can build a next-generation workforce that is second to none.

The Forum 360 program dives even deeper into a diverse range of issues, including the CREATE modeling and simulation environment, a historical look at NASA Langley Research Center, the future of the aerospace workforce, geoengineering to mitigate climate change, space traffic management, UAS integration, managing change during the development of disruptive technologies, and the NASA Innovative Advanced Concepts program.

The forum's technical sessions will provide unique opportunities to learn how your peers are tackling the pressing challenges that face the advancement of aerospace technology and science. Whatever session you attend, you will gain actionable, future-focused insights that will enable you to begin thinking about how you will use your talents and skills to advance the state of the art in aerospace.

While you are with us this week, be sure to attend our networking events, which provide unique opportunities to connect, collaborate, and exchange ideas. It is often those conversations that lead to groundbreaking collaboration. They also provide rich networking opportunities as you continue to build your career, and as you seek out colleagues and students with similar interests.

Also, be sure to spend some time in our Exposition Hall. Over 50 companies and organizations are waiting to show you their innovative products and services, and with the wide variety of technology on display, you are sure to see something that captivates your imagination.

AIAA SciTech Forum offers every aerospace professional, regardless of the role you play in our community, an opportunity to explore important topics at every level and to gain insights into technologies and industry sectors that are intersecting with aerospace in heretofore unimaginable ways – all in one place. We are excited to offer you this program, and we thank you for making the choice to be with us this week.

AIAA SciTech Forum is proud to feature the following conferences:

- Adaptive Structures Conference
- Aerospace Sciences Meeting
- Atmospheric Flight Mechanics Conference
- Information Systems — Infotech@Aerospace
- Guidance, Navigation, and Control Conference
- Modeling and Simulation Technologies Conference
- Non-Deterministic Approaches Conference
- Spacecraft Structures Conference
- Structures, Structural Dynamics, and Materials Conference
- Symposium on Space Resource Utilization
- Wind Energy Symposium

Organizing Committee

2017 AIAA SciTech Forum General Chair
Robie Samanta Roy, Lockheed Martin Corporation

Forum 360 Chair
Robbie Robertson, Air Force Research Laboratory

Forum 360 Deputy Chair
Martiqua Post, U.S. Air Force Academy

Young Professional Chair
Samantha Alberts, Purdue University

Forum Technical Chairs
Terry Morris, NASA Langley Research Center

Richard Ruff, MathWorks

Ben Thacker, Southwest Research Institute

Forum Deputy Technical Chairs
Kevin Melcher, NASA Glenn Research Center

Gregory Odegard, Michigan Technological University

Subrata Roy, University of Florida

Eric Silk, NASA Goddard Space Flight Center

Technical Discipline Chairs
Adaptive Structures
Edward White, The Boeing Company

Aeroacoustics
Eric Nesbitt, The Boeing Company

Aerodynamic Measurement Technology
Bharathram Ganapathisubramani, University of Southampton

Aerospace Education
K. Ravindra, St. Louis University

Air Breathing Propulsion Systems Integration
Eric Loth, University of Virginia

Aircraft Design
Cees Bil, RMIT University

Applied Aerodynamics
Dennis Finley, Lockheed Martin Aeronautics

Atmospheric Flight Mechanics
Timur Alexeev, University of California

Communications Systems
Denise Ponchak, NASA Glenn Research Center

Computer Systems
Chiping Li, Air Force Office of Scientific Research

Design Engineering
Lisa Saam, ATA Engineering, Inc.

Digital Avionics
Douglas Abernathy, Lockheed Martin Corporation

Fluid Dynamics
Steve Karman, Pointwise, Inc.

Gas Turbine Engines
Scott Drennan, Convergent Science, Inc.

Green Engineering
Tarek Abdel-Salam, East Carolina University

Ground Test
Rajan Kumar, Florida State University

Guidance, Navigation, and Control
Jason Hui, BAE Systems

High-Speed Air-Breathing Propulsion
Dan Paxson, NASA Glenn Research Center

History
Dick Hallion, Science and Technology Policy Institute, IDA

Information and Command & Control Systems
Mike Sotak, Kratos Defense and Security Solutions

Intelligent Systems
Amanda Lampton, Systems Technology, Inc.

Materials
Mohammad Naraghi, Texas A&M University

Meshing Visualization and Computational Environments
Andrew Lofthouse, U.S. Air Force Academy

Modeling and Simulation Technologies
Peter Grant, University of Toronto Institute for Aerospace Studies

Multi-Disciplinary Design Optimization
Frode Engelsen, Boeing Research and Technology

Non-Deterministic Approaches
Barron Bichon, Southwest Research Institute

Plasmadynamics and Lasers
Marco Panesi, University of Illinois at Urbana-Champaign

Propellants and Combustion
Tim Lieuwen, Georgia Institute of Technology

Sensor Systems and Information Fusion
Domenico Accardo, University of Naples

Small Satellites
Jeremy Straub, University of North Dakota

Society and Aerospace Technology
Jarret Lafleur, Sandia National Laboratories

Software
Christoph Torens, DLR

Space Exploration
Surendra Sharma, NASA Ames Research Center

Space Operations and Support
Shirley Tseng, Tseng, LLC

Space Resources Utilization Symposium
Julie Kleinhenz, NASA Glenn Research Center

Spacecraft Structures
Matthew Santer, Imperial College London

Structural Dynamics
Zahra Sotoudeh, Rensselaer Polytechnic Institute

Structures
John Zipay, NASA Johnson Space Center

Student Paper Competition – AD&S
Olesya Zhupanska, University of Arizona

Survivability
Steven Broussard, The Boeing Company

Systems Engineering
John Hsu, California State University, Long Beach

Terrestrial Energy
Ahsan Choudhuri, University of Texas at El Paso

Thermophysics
Micah Howard, Sandia National Laboratories

Unique and Transformational Flight Systems
Virginia Stouffer, LMI

Unmanned Systems
Richard Stansbury, Embry-Riddle Aeronautical University

Wind Energy Symposium
Matthew Churchfield, National Renewable Energy Laboratory

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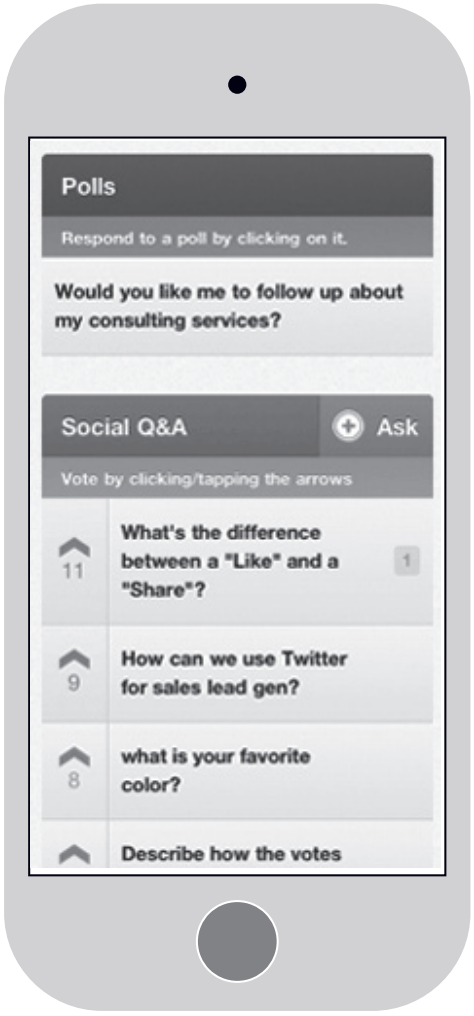

Getting Your Question Answered is as EASY as 1-2-3!

1. Click the "Ask" button to submit a question.
2. Check out the questions that other attendees are asking.
3. If you see a question that you want answered, click on the arrow on the left. The most popular questions automatically rise to the top.

Participate in Session Polls

1. If Polls are available they will appear at the top of the page. Simply click/tap on a Poll to respond.
2. Choose your response(s) and hit "submit".
3. After responding you will be able to see the results on your own device!*

   ** Some Poll results may be hidden*

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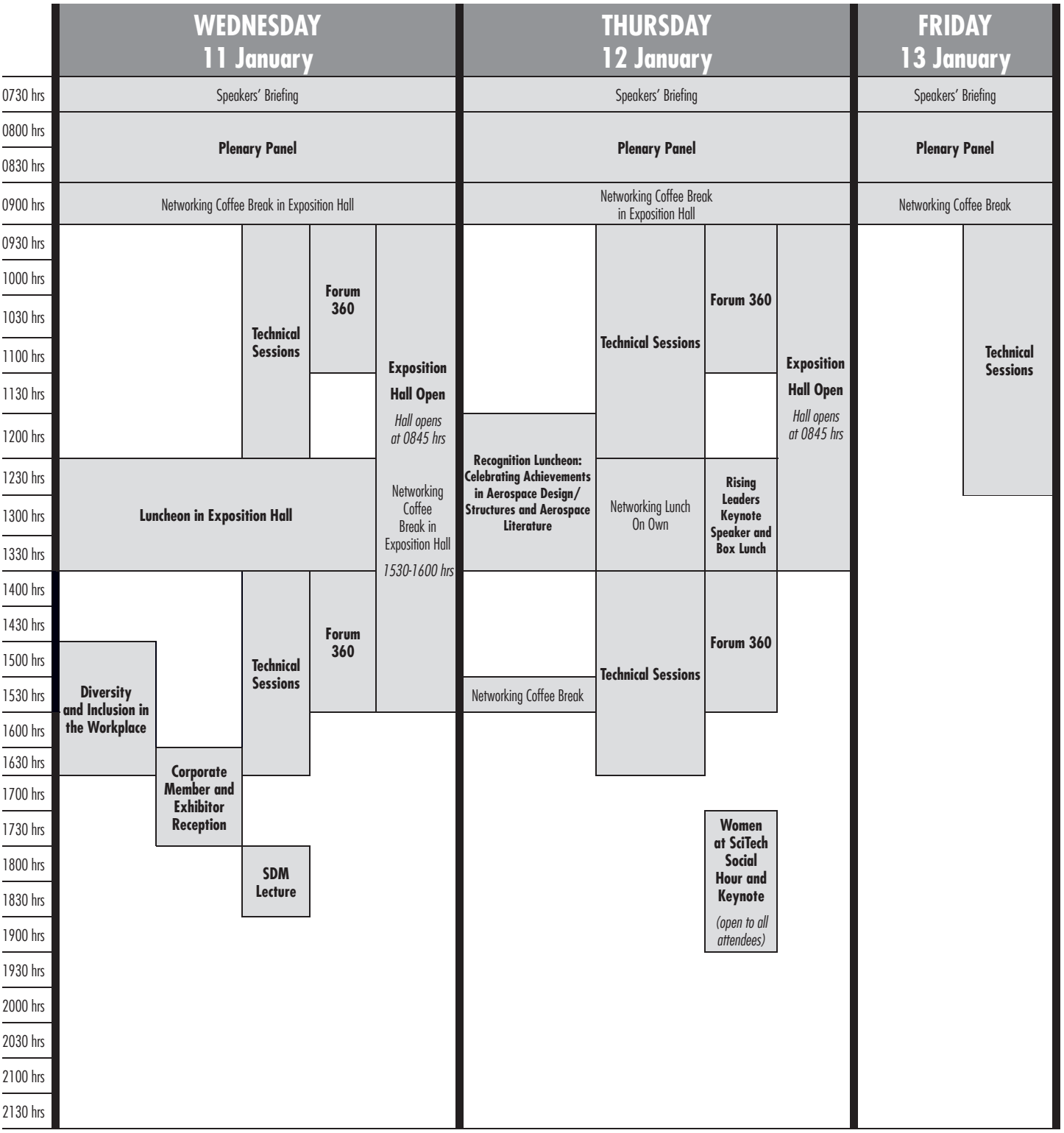
AIAA
Shaping the Future of Aerospace

Forum Overview

	SATURDAY/SUNDAY 7–8 January	MONDAY 9 January			TUESDAY 10 January		
0730 hrs		Speakers' Briefing			Speakers' Briefing		
0800 hrs	**Continuing Education Courses and Workshops 0800–1700 hrs** *Saturday and Sunday* *(See p. 11 for more information)*	**Opening Plenary Panel**			**Keynote**		
0830 hrs							
0900 hrs		Networking Coffee Break			Networking Coffee Break		
0930 hrs		**NDA Lecture**	**Technical Sessions**	**Forum 360**	**ASC Lecture and Special Presentation**	**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: Celebrating Achievements in Aerospace Sciences and Information Systems**	Networking Lunch on Own	**Exposition Hall Open** (Ice Cream Break 1530–1600 hrs)
1300 hrs							
1330 hrs							
1400 hrs		**SCS Lecture and Panel**	**Technical Sessions**	**Forum 360**		**Technical Sessions**	**Forum 360**
1430 hrs							
1500 hrs	**Meet the Employers** *Sunday*						
1530 hrs		Networking Coffee Break			Networking Coffee Break in Exposition Hall		
1600 hrs					**Rising Leaders Leadership Exchange and Speed Mentoring**		
1630 hrs							
1700 hrs	**International Student Conference Student Briefing** *Sunday*			**AIAA Town Hall Meeting (Governance and Open Access)**			
1730 hrs					**Dryden Lecture in Research**		
1800 hrs	**Student Welcome Reception** *Sunday* *All students welcome*						
1830 hrs		**Associate Fellows Reception**			**Opening Reception in the Exposition Hall** *Hall opens at 1815 hrs*		
1900 hrs			**Rising Leaders in Aerospace Reception**				
1930 hrs		**AIAA Associate Fellows Dinner (Tickets Required)**					
2000 hrs							
2030 hrs							
2100 hrs							
2130 hrs							
2200 hrs							
2230 hrs							

Career Workshop: Tools to Ensure Your Career Success will occur 0930–1230 hrs and 1400–1600 hrs. See p. 19 for more information.

Forum Overview



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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.

Courses

7–8 January, 0800–1700 hrs **Texas 1**

NEW COURSE! Introduction to Shock-Wave/ Boundary-Layer Interactions (Instructor: Holger Babinsky)

This new course introduces the basics of shock-wave/ boundary-layer interactions (SBLIs). Exercises during the course reinforce the key learning points and enable feedback. Professionals and students new to, or wishing to move into, applications/research areas affected by SBLIs and who need a thorough introduction should take this course.

7–8 January, 0800–1700 hrs **Texas 5**

Six-Degrees-of-Freedom Modeling of Missile and Aircraft Simulations (Instructor: Peter Zipfel)

This course takes you into the inner workings of six-degrees-of-freedom modeling—from aerodynamics and propulsion, to guidance and control. Engineers tasked to employ, modify, or develop detailed aerospace vehicle simulations and to conduct performance evaluations would find this course invaluable.

7–8 January, 0800–1700 hrs **Texas 4**

Liquid Atomization, Spray, and Fuel Injection in Aircraft Gas Turbine Engines (Instructor: Bruce Chehroudi)

This course provides an understanding of the processes of liquid atomization and spray formation and relates

this understanding to fuel injection systems and emission of pollutants in modern engines. Engineers working on the design of components for high efficiency and performance of combustion engines will highly benefit from this course.

8 January, 0800–1700 hrs **Texas 2**

NEW COURSE! Hypersonics Test (Instructor: Dan Marren)

This new course introduces the concept of hypersonic flight and describes the critical physics that is encountered at this unique and formidable speed regime. Anyone in the engineering field who has an interest in high-speed systems would benefit from taking this course.

Workshops

7–8 January, 0800–1700 hrs **Texas 3**

2nd AIAA Sonic Boom Prediction Workshop

This workshop will cover both the state of the art for predicting near-field sonic boom signatures with CFD as well as propagation of the near-field pressures to the ground.

Sunday, 8 January

1500–1700 hrs **Grapevine B**

Meet the Employers

AIAA's Meet the Employers event offers students and young professional attendees the opportunity to meet AIAA corporate members. This is a fun and dynamic environment where students and professionals interact with organizations regarding employment opportunities.

The first hour will consist of 8-minute briefs where participating companies/organizations will present an organizational overview and opportunities available. The second hour will be roundtable meet-and-greet sessions, with organizations hosting a table and attendees switching every 10 minutes.

Following the event, AIAA will hold its Student Welcome Reception. There is no charge to participate in either the recruiting event or the reception. All students and young professionals are invited to attend. No RSVP is required.

1800–1930 hrs **Mission Plaza**

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 Sandy Magnus will address the attendees, as will a representative from the corporate sponsors.

Members of the AIAA Board of Directors and the Technical Activities Committee 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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Keynote Speakers and Plenary Sessions

Get the big picture on science and technology from the leading authorities in the field during these high-level discussions and presentations.

Monday, 9 January

0800–0900 hrs **Texas Ballroom A&B**

Setting the Landscape — Factors Driving Today's Disruptive Environment

Moderator: **Robie Samanta Roy,** Vice President, Technology Strategy & Innovation, Lockheed Martin Corporation

Panelists:

Chuck Beames, Consultant

Carissa Christensen, Managing Partner, The Tauri Group

David Whelan, Vice President, Engineering & Chief Technologist, Boeing Defense, Space & Security, The Boeing Company

George Whitesides, CEO, Virgin Galactic and The Spaceship Company

1700–1830 hrs **Texas Ballroom C**

AIAA Town Hall Meeting (Governance and Open Access)

This session will include important updates about AIAA's governance transition and open access for journal publication. Please attend to learn more about these items and to understand why they are important to you.

Speakers:

Governance: **James Maser,** AIAA President

Open Access: **Frank Lu,** Vice President, Publications

Tuesday, 10 January

0800–0900 hrs **Texas Ballroom A&B**

Innovation to Enable NASA's Journey to Mars

Speaker: **Dava Newman,** Deputy Administrator, NASA

Wednesday, 11 January

0800–0900 hrs **Texas Ballroom A&B**

Disruptive Policy Issues — Presidential Transitions

Moderator: **Ann Zulkosky,** Director, NASA Programs, Washington Operations, Lockheed Martin Space Systems Company

Panelists:

Russell Chew, Senior Advisor, NEXA Capital Partners

Lt. Gen. Henry "Trey" Obering III, United States Air Force (Ret.), Executive Vice President, Booz Allen Hamilton

Dorothy Robyn, Independent Consultant/Writer; Former Commissioner, GSA, Public Buildings Service; Former Deputy Under Secretary of Defense (Installations and Environment)

Courtney Stadd, Washington Operations, Business Development, TIP Technologies

Thursday, 12 January

0800–0900 hrs **Texas Ballroom A&B**

Disruptive Technology Developments — Breakthroughs that will Transform Aerospace

Moderator: **Samantha Marquart Brainard,** Ph.D. Candidate, George Washington University

Panelists:

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

Neil Gershenfeld, Director, The Center for Bits and Atoms, Massachusetts Institute of Technology

Rob High, Vice President and Chief Technology Officer, IBM Watson

Robert Lutwak, Program Manager, Microsystems Technology Office, DARPA

1730–1930 hrs **Texas Ballroom C**

Women at SciTech Social Hour and Keynote

Speaker: **Mary "Missy" Cummings,** Professor, Pratt School of Engineering, Duke University, and Director, Humans and Autonomy Laboratory, Duke Robotics

Friday, 13 January

0800–0900 hrs **Texas Ballroom A&B**

Next-Generation Workforce

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

Panelists:

Curt Carlson, Founder & CEO, The Practice of Innovation

Ben Marchionna, Lead System Integration & Test Engineer, SkySpecs

Jaiwon Shin, Associate Administrator, Aeronautics Research Mission Directorate, NASA

Dennis Todd, Vice President, Engineering – Services and Support, Boeing Commercial Airplanes

Graham Warwick, Technology Managing Editor, Aviation Week & Space Technology

FORUM 360°

These conversations will cover a spectrum of timely topics including programs, systems, policy, operations, applications, platforms and more!

Monday, 9 January

0930–1130 hrs **Texas Ballroom C**

CREATE: Enabling Innovation Through Computational Prototypes and Supercomputers

Moderator: **Paul Nielsen,** Director and CEO, Software Engineering Institute, Carnegie Mellon University

Panelists:

Edward Kraft, Technical Advisor, Air Force Test Center, Air Force Materiel Command, United States Air Force

Robert L. Meakin, CREATE Air Vehicle Project Manager, High Performance Computing Modernization Program, Department of Defense

Scott A. Morton, CREATE, Kestrel Principal Software Developer, High Performance Computing Modernization Program, Department of Defense

Robert Narducci, Technical Fellow, The Boeing Company

Douglass Post, Associate Director, High Performance Computing Modernization Program, Department of Defense

Brian Smith, Lockheed Martin Fellow, ADP Program and Technology Integration, Lockheed Martin Aeronautics

1400–1600 hrs **Texas Ballroom C**

NASA Langley Centennial – A Storied Legacy, A Soaring Future

Moderator: **James R. Hansen,** Professor of History & Director, The University Honors College, Auburn University

Panelists:

Jeremiah Creedon, Center Director 1996–2002

Delma Freeman, Center Director 2002–2003

Roy Bridges, Center Director 2003–2005

Lesa Roe, Center Director 2005–2014

Steve Jurczyk, Center Director 2014–2015

David Bowles, Center Director 2015–present

Tuesday, 10 January

0930–1130 hrs **Texas Ballroom C**

Future of the Aerospace Industry and Workforce Needs

Moderator: **Michael D. Griffin,** Chairman and CEO, Schafer Corporation

Panelists:

C. Douglas Ebersole, Executive Director, Air Force Research Laboratory

Kevin Parsons, Director, Innovation and Transformation, Northrop Grumman Corporation

Robie Samanta Roy, Vice President, Technology Strategy & Innovation, Lockheed Martin Corporation

Kenneth Sanger, Vice President and General Manager, 787 Airplane Development, Boeing Commercial Airplanes

Lisa Teague, Director, Research and Technology Strategy, Rolls-Royce Corporation

1400–1600 hrs **Texas Ballroom C**

Geoengineering to Mitigate Climate Change — Is There a Role for Aerospace?

Moderator: **Marty Bradley,** Technical Fellow, The Boeing Company

Panelists:

Martin Bunzi, Professor, Department of Philosophy, Rutgers University

William Burns, Co-Director, Forum for Climate Engineering Assessment, American University

Timothy Langenkamp, Partner, Sidley & Austin

Doug MacMartin, Research Professor, Computing + Mathematical Sciences, California Institute of Technology, and Senior Research Associate, Department of Mechanical and Aerospace Engineering, Cornell University

Forum 360

Wednesday, 11 January

0930–1130 hrs **Texas Ballroom C**

Space Traffic Management

Moderator: **Moriba Jah,** Director, Space Object Behavioral Sciences, University of Arizona

Panelists:

Travis Blake, Senior Manager, Advanced Technology Center, Lockheed Martin Space Systems Company

P.J. Blount, Adjunct Professor, Mississippi School of Law

Mike Gazarik, Vice President, Engineering, Ball Aerospace

Donald Greiman, Vice President & General Manager, Commercial Space Situational Awareness, Schafer Corporation

Lt. Gen. Susan Helms, United States Air Force (ret.)

George Nield, Associate Administrator, Commercial Space Transportation, FAA

1400–1600 hrs **Texas Ballroom C**

Transitioning Your Idea from the Lab to Flight Test

Moderator: **Chris Cotting,** Flight Sciences Technical Expert, United States Air Force Test Pilot School

Panelists:

Albion Bowers, Chief Scientist, NASA Armstrong Flight Research Center

James "Buddy" Denham, Senior Scientific Technical Manager, Aeromechanics Division, Naval Air Systems Command

Bill Gray, Chief Pilot, United States Air Force Test Pilot School

John S. Langford, Chairman and Chief Executive Officer, Aurora Flight Sciences Corporation

Shawn Whitcomb, Systems Engineer, Advanced Development Programs, Lockheed Martin Corporation

Craig Woolsey, Professor of Aerospace and Ocean Engineering, Virginia Polytechnic Institute and State University

Thursday, 12 January

0930–1130 hrs **Texas Ballroom C**

Managing Change During the Development of Disruptive Technologies

Moderator: **Joycelyn Harrison,** Program Manager, Air Force Office of Scientific Research

Panelists:

Irene Gregory, Senior Technologist for Advanced Control Theory and Applications, NASA Langley Research Center

Rob High, Vice President and Chief Technology Officer, IBM Watson

Steven Huybrechts, Chief of Staff, Applied Minds LLC

Robert Lutwak, Program Manager, Microsystems Technology Office, DARPA

1400–1600 hrs **Texas Ballroom C**

NASA Innovative Advanced Concepts (NIAC): Enabling Missions from Venus to Alpha Centauri

Moderator: **Alvin Yew,** Program Manager, NASA Innovative Advanced Concepts, Space Technology Mission Directorate, NASA

Panelists:

Geoffrey Landis, Scientist, NASA Glenn Research Center

Mason Peck, Associate Professor, Mechanical and Aerospace Engineering, Cornell University

Jonathan Sauder, Technologist, Technology Infusion Group, NASA Jet Propulsion Laboratory

Forum 360

Rising Leaders are graduate students and professionals who are 35 and younger. They are the people who will become the leaders of tomorrow, the inventors of the next great things, and the people who will accept the mantle from those who have forged the way thus far.

The Rising Leaders in Aerospace multidimensional program features a leadership exchange/speed mentoring, panel session, Q&A with top industry leaders, and multiple opportunities for networking. These exciting and energetic activities aimed at rising leaders in the industry will provide access to top aerospace leaders and their perspectives, with subject matter relevant to your career stage.

Monday, 9 January

1900–2030 hrs **Mission Plaza**

Reception

The reception will kick off the Rising Leaders in Aerospace events and is a perfect opportunity for young leaders to mingle with others that will be participating in AIAA SciTech as an attendee, presenter, or veteran professional. Come meet other participants in a casual environment, all rising leaders are welcome.

Tuesday, 10 January

1600–1730 hrs **Grapevine A**

Leadership Exchange and Speed Mentoring

Young professionals and students can speak with top leaders of AIAA and the aerospace industry. They will provide insight and information about their careers and how they navigated to where they are now. Top professionals from government, academia, and industry will be participating. Get sage advice from people who want to help the next generation of aerospace professionals succeed.

Mentors include:

Nancy Andersen, Johns Hopkins University Applied Physics Laboratory
Allen Arrington, NASA Glenn Research Center
Brad Belcher, Rolls-Royce Corporation
Terry Burress, Lockheed Martin Corporation
Ferdinand Grosveld, Northrop Grumman Corporation
Basil Hassan, Sandia National Laboratories
Timothy Hinerman, Blue Origin
Sandra Magnus, AIAA
Benjamin Marchionna, Skyspecs
Jill Marlowe, NASA Langley Research Center
James Maser, Pratt & Whitney
Dimitri Mavris, Georgia Institute of Technology
David Riley, The Boeing Company
Al Romig, National Academy of Engineering
John Rose, The Boeing Company
Tony Springer, NASA Headquarters
Rob Vermeland, Lockheed Martin Aeronautics
Woodrow Whitlow, Cleveland State University

Wednesday, 11 January

1500–1700 hrs **Grapevine A**

Diversity and Inclusion in the Workplace

The AIAA Young Professional Committee and the Diversity Working Group have teamed up on this program. It will begin with a presentation on diversity in the workplace. A discussion of how things are changing and what can be expected as you enter the workforce will be presented. Everyone will interact with diversity in the workplace. Hear some ideas on what you can expect to see and what you may be able to influence.

There will then be a discussion of what the AIAA Diversity and Inclusion Plan entails: current state, challenges, and goals. Through facilitation and audience participation we hope to elicit inputs from different perspectives: AIAA national, technical and program committees, regions, sections, campuses, and corporations. Help be a part of forging AIAA's diversity plan and its response to diversity in the aerospace industry.

Thursday, 12 January

1230–1400 hrs **Grapevine A**

Rising Leaders Speaker and Box Lunch

A New Era in Aviation

Presenter: **Jaiwon Shin,** Associate Administrator, Aeronautics Research Mission Directorate

Mr. Shin co-chairs the National Science & Technology Council's Aeronautics Science & Technology Subcommittee. He has worked at several NASA centers and has great insight on many different aspects of the industry. Come hear what his thoughts are for rising leaders in the industry.

A limited number of box lunches will be available on a first-come, first-served basis.

Sponsored by: Aurora Flight Sciences

Special Sessions and Events

Monday, 9 January

1230–1400 hrs **Texas Ballroom A&B**

Durand Lecture for Public Service and Luncheon

NSF's 10 Big Ideas: Understanding Science, Discovering Breakthroughs, and Influencing Public Policy

France A. Córdova, Director, National Science Foundation

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

0930–1700 hrs **Pecos 1, Pecos 3, Longhorn D**

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 four consecutive sessions in the categories of Undergraduate, Masters, Team, and Community Outreach.

Reception: 1830–1915 hrs **Texas Ballroom Foyer (no ticket needed)**
Dinner: 1930–2230 hrs **Texas Ballroom A&B (ticket required)**

2017 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 2017 Associate Fellows. The reception is open to all who would like to congratulate the newest members of the Class of 2017. 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).

Tuesday, 10 January

1730–1830 hrs **Texas Ballroom C**

Dryden Lecture in Research

Maturation of Active Flow Control Concepts for Improved Aircraft Performance

Israel J. Wygnanski, Professor, Aerospace Engineering, University of Arizona

The Dryden Lecture in Research, named in honor of Dr. Hugh L. Dryden who was one of America's most prominent aeronautical engineers, showcases research scientists and engineers. The lecture emphasizes the great importance of basic and applied research to the advancement in aeronautics and astronautics, and is open to attendees and the general public.

Wednesday, 11 January

1500–1700 hrs **Grapevine A**

Diversity and Inclusion in the Workplace

The AIAA Young Professional Committee and the Diversity Working Group have teamed up on this program. It will begin with a presentation on diversity in the workplace. A discussion of how things are changing and what can be expected as you enter the workforce will be presented. Everyone will interact with diversity in the workplace. Hear some ideas on what you can expect to see and what you may be able to influence.

There will then be a discussion of what the AIAA Diversity and Inclusion Plan entails: current state, challenges, and goals. Through facilitation and audience participation we hope to elicit inputs from different perspectives: AIAA national, technical and program committees, regions, sections, campuses, and corporations. Help be a part of forging AIAA's diversity plan and its response to diversity in the aerospace industry.

1630–1800 hrs **Exposition Hall; Longhorn E&F**

Corporate Member & Exhibitor Reception

Special Sessions and Events

Wednesday, 11 January

1700-1830 **Dallas 5**

Emerging Technologies Identification Session

The AIAA Emerging Technologies Committee (ETC) identifies emerging technologies, programs, and trends that AIAA should be infusing into its activities. The committee would like to leverage the wisdom of the SciTech crowd to expand its list of topics and to identify high priority areas we should be looking to grow into. Please join the ETC for a relaxed, social brainstorming session that will allow you to voice your opinion about the most important emerging areas you think the Institute should be watching.

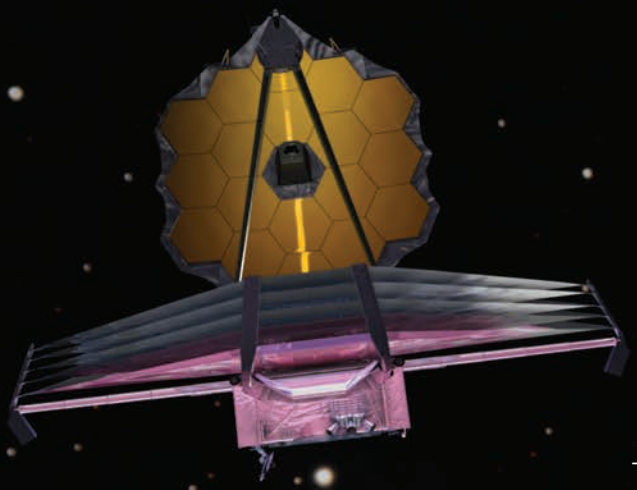
Thursday, 12 January

1730–1930 hrs **Texas Ballroom C**

Women at SciTech Social Hour and Keynote

The Workplace of the Future: Technology Traps and Leadership Challenges

Speaker: **Mary "Missy" Cummings,** Professor, Pratt School of Engineering, Duke University, and Director, Humans and Autonomy Laboratory, Duke Robotics



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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Educational Events

AIAA is committed to keeping aerospace professionals at their technical best, and provides an ongoing source of learning, community, professional connections, and career development. Gain the knowledge you need to excel in your field or to move confidently into a new one. Learn how to interact with students and teachers, and help inspire the next generation of aerospace leaders.

Tuesday, 10 January

0900–1430 hrs **Longhorn D**

Generation STEM: Discovering Aerospace through Experience

Hosted by the Lockeed Martin Corporation and the AIAA Foundation, 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 allowing them to participate in mini design competitions and challenges, view engaging demonstrations from various aerospace companies, learn more about aerospace careers, and 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.

Mustang 4

Career Workshop: Tools to Ensure Your Career Success

Career success in the aerospace field relies more than on just technical knowledge. You will also benefit from strong networks, mentoring opportunities, and interviewing skills to name a few. This workshop addresses ways that both those entering the workforce and those with more experience can manage their career path effectively.

0930–1000 hrs

Networking Effectively

Networking is a vital skillset to help advance your career. This panel session will highlight how to network effectively and include a discussion on how to balance new technologies while building personal connections.

Moderator: **Michael Mohr,** Student, Iowa State University

Networking Introduction Presentation: **Michael Mohr**

Panel on Networking: **Edward Burnett,** Senior Technical Fellow, Lockheed Martin Corporation

Networking Challenge Activity: **Michael Mohr**

1000–1115 hrs

Getting the Most from Mentoring

How do you find the right mentorship relationship? How do you ensure you are getting the most out of the mentorship? This session will include best practices in mentoring and explore how to build a strong partnership between mentee and mentor so that both sides benefit from the process with real-life experiences and observations.

Moderator: **Angela Trego,** Assistant Professor, Utah Valley University, and Structures Director, Practical Aeronautics, Inc.

Panelists:

Kevin Melcher, Team Lead, Systems Health Management Methods for Space Exploration, NASA Glenn Research Center (Northern Ohio Section, mentor)

Abigail Sevier (Northern Ohio section, mentee)

Brett Anderson, Senior Management Leader, Boeing Defense and Space (mentor)

Tuesday, 10 January (continued)

Mustang 4

Career Workshop: Tools to Ensure Your Career Success

1130–1230 hrs

Navigating Your Career When the Unexpected Happens

What happens when something goes wrong in your career and how can you make the most of opportunities? How do you navigate unplanned career changes? How can you expect the unexpected? During this panel discussion, individuals well known in their fields will share their stories.

Moderator: **Jeff Jepson,** Senior Systems Engineer I, GNC / Guidance Design & Performance, Raytheon Missile Systems

Panelists:

Jill Marlowe, Research Director, NASA Langley Research Center

Laura McGill, Vice President, Engineering, Raytheon Missile Systems

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

1400–1530 hrs

Interviewing to Make an Impression

Panel discussion during which HR and hiring managers will address the different aspects of recruiting process within an organization.

Moderator: **Eric Best,** Control Systems Design and Analysis – EV41, Skill Lead, Jacobs ESSSA Group

Panelists:

Samantha Magill, Special Projects, Inclusion & Diversity, Honda Aircraft Company

Cara Lundquist, Director, Talent Acquisition, Lockheed Martin Aeronautics Company

Drew Robbins, Senior Manager, F-35 Utilities and Subsystems, Lockheed Martin Aeronautics Company

1530–1600 hrs

Networking Effectively (continued)

An interactive opportunity to share your experiences with the networking assignment given at the start of the workshop and hear what others learned from it.

Moderator: **Michael Mohr,** Student, Iowa State University

Panelist: **Jenna Eppink,** NASA

Networking Activity Results

Wednesday, 11 January

1800–1930 hrs **Texas Ballroom D**

Design/Build/Fly (DBF) Discussion

In recent years the popularity of and excitement surrounding the AIAA Foundation/Textron Aviation/Raytheon Missile Systems DBF has been growing by leaps and bounds. In the last three years over 100 teams and universities have shown interest in participating each year. And over 600 students have shown up onsite each year to participate in the flyoff.

The organizers of the competition would love to hear your input on how the competition can or should grow over the coming years. They are inviting people who have participated in the past, people participating this year, and students and faculty who might like to participate in the future to join us for a discussion focusing on the competition's past success and future growth. AIAA and the organizers would like to continue this success and expand to be an amazing competition for even more teams. It may take a few iterations of the competition to implement some ideas that come forth, but don't miss this opportunity to provide your meaningful input into this unique competition.

Please note this discussion is about the competition as a whole and will not address this year's rules or previous year's rules/ results.

Networking Events

Understanding the importance of networking with colleagues new and old, a series of activities have been planned that will help you connect with current colleagues and new acquaintances.

Student Welcome Reception

Sunday, 8 January **Mission Plaza**
1800–1930 hrs

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 Sandy Magnus will address the attendees, as will a representative from the corporate sponsors.

Members of the AIAA Board and the Technical Activities Committee 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:

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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, 9 January	**0700, 0900 and 1530 hrs; Meeting Room Foyers**
Tuesday, 10 January	**0700 and 0900 hrs; Meeting Room Foyers and 1530 hrs; Exposition Hall**
	Sponsored by: BASTION TECHNOLOGIES
Wednesday, 11 January	**0700 hrs; Meeting Room Foyers and 0900, 1530 hrs; Exposition Hall**
	Sponsored by: COMSOL
Thursday, 12 January	**0700 and 1530 hrs; Meeting Room Foyers and 0900 hrs; Exposition Hall**
Friday, 13 January	**0700 and 0900 hrs; Meeting Room Foyers**

Ice Cream Break in the Exposition Hall

Tuesday, 10 January
1530–1600 hrs

All attendees are welcome!

Welcome Reception

Tuesday, 10 January **Exposition Hall; Longhorn E & F**
1815–2000 hrs

A welcome reception will be held on Tuesday, 10 January, in the Exposition Hall. 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.

Luncheon in the Exposition Hall

Wednesday, 11 January **Exposition Hall; Longhorn E & F**
1230–1400 hrs

A ticket is required and included in the registration fee where indicated.

#AiaaSciTech Tweet Up

Wednesday, 11 January **Texas Station Sports Bar & Grill**
1730 hrs **(inside the Gaylord)**

Women at SciTech Social Hour and Keynote

Thursday, 12 January **Texas Ballroom C**
1730–1930 hrs

Women are underrepresented in the engineering sciences and industry, and this event will provide an opportunity to meet informally, network, discuss experiences and identify women who are leaders in their fields for possible special recognition by AIAA. The speaker for the event will be Mary "Missy" Cummings of Duke University. There is no charge to attend this event and all attendees are welcome.

Recognition Events

For over 75 years, AIAA has been a champion to make sure that aerospace professionals are recognized for their contributions. Join with us throughout AIAA SciTech Forum as AIAA celebrates our industry's discoveries and achievements from the small but brilliantly simple innovations that affect everyday lives to the major discoveries and missions that fuel our collective human drive to explore and accomplish amazing things.

Monday, 9 January

0930–1030 hrs **Texas Ballroom D**

Non-Deterministic Approaches Lecture

A Perspective on Model Uncertainty

Ali Mosleh, Distinguished Professor, Evelyn Knight Chair in Engineering, University of California, Los Angeles

1400–1530 hrs **Texas Ballroom D**

Spacecraft Structures Lecture and Panel

Bridging the Gap from Technology to Spaceflight

Moderator: **Mark Thomson,** Chief Engineer, Northrop Grumman Astro Aerospace

Panelists:

Hiraku Sakmoto, Associate Professor, Tokyo Institute of Technology

Jeanette Domber, Payload Systems Engineer, Ball Aerospace

Roberta Ewart, Chief Scientist, Space and Missile Systems Center, Air Force Space Command

Reception: 1830–1915 hrs **Texas Ballroom Foyer**
Dinner: 1930–2230 hrs **Texas Ballroom A&B**

2017 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 2017 Associate Fellows. The reception is open to all who would like to congratulate the newest members of the Class of 2017. 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).

Tuesday, 10 January

0930–1130 hrs **Texas Ballroom D**

Adaptive Structures Lecture and Special Presentation

Requirements for Morphing from an Airplane Perspective

Speaker: **Robert D. Gregg,** Chief Aerodynamicist, Boeing Commercial Airplanes

Special Presentation:

Remembrance of the Contributions of Dr. Friedrich Straub

1230–1400 hrs **Texas Ballroom A&B**

Recognition Luncheon: Celebrating Achievements in Aerospace Sciences and Information Systems

Join colleagues and friends to celebrate innovations and achievements! A ticket for the luncheon is required and included in the registration fee where indicated. Additional tickets for guests may be purchased upon registration as space is available.

The following awards will be presented:

Aerospace Software Engineering Award

Lyle N. Long
Distinguished Professor of Aerospace Engineering,
Computational Sciences and Mathematics
The Pennsylvania State University
University Park, Pennsylvania

"For inspiration, innovation, and enormous dedication to modernizing aerospace engineering education and research over several decades."

de Florez Award For Flight Simulation

Joseph F. Horn
Professor of Aerospace Engineering
The Pennsylvania State University
University Park, Pennsylvania

"For pioneering contributions to rotorcraft flight simulation and education, including piloted ship-board landing and real-time simulation of coupled flight dynamics, ship-air wake modeling, and acoustics."

Recognition Events

Tuesday, 10 January (continued)

J. Leland Atwood Award

John L. Crassidis
CUBRC Professor in Space Situational Awareness
Director, Center for Multisource Information Fusion
University at Buffalo
Amherst, New York

"For your commitment to excellence in aerospace engineering education."

Lawrence Sperry Award

Karen T. Berger
Aerospace Engineer
Aerothermodynamics Branch
NASA Langley Research Center
Hampton, Virginia

"For outstanding contributions to hypersonic boundary layer transition through supporting Space Shuttle in-orbit damage assessment and leading the Shuttle Boundary Layer Transition Flight Experiment Project."

Mechanics and Control of Flight Award

Robert E. Skelton
TEES Distinguished Professor
Texas A&M University
College Station, Texas

"For lasting contributions at the interfaces of mechanics and control of flight and leading the world in analysis, design, modeling and control of tensegrity structures."

Abe M. Zarem Award for Distinguished Achievement—Astronautics

Christopher T. Lyne
Vanderbilt University
Nashville, Tennessee

"Design and Test of a 10N Hydrogen-Peroxide Monopropellant Thruster"

Abe M. Zarem Educator Award—Astronautics

Amrutur V. Anilkumar
Professor, Department of Mechanical Engineering
Vanderbilt University
Nashville, Tennessee

Flow Control Conference Best Paper

AIAA 2016-4081, "Aerodynamic Flow Control of Wake Dynamics Coupled to a Moving Bluff Body," Thomas J. Lambert, Bojan Vukasinovic, and Ari Glezer, Georgia Institute of Technology.

Guidance, Navigation and Control Best Paper

AIAA 2016-2099, "Stability Augmentation and Active Flutter Suppression of a Flexible Flying-Wing Drone," David K. Schmidt, University of Colorado-Colorado Springs.

Intelligent Systems Best Paper

AIAA 2016-2133, "Review of Proactive Safety Metrics for Rotorcraft Operations and Improvements Using Model-Based Parameter Synthesis and Data Fusion," Alexia Payan, Alek Gavrilovski, Hernando Jimenez, and Dimitri Mavris, Georgia Institute of Technology.

Modeling and Simulation Technologies Best Paper

AIAA 2016-1180, "Development of Spatial Disorientation Demonstration Scenarios for Commercial Pilot Training," David H. Klyde, Amanda Lampton, and Philip Schultze, Systems Technologies, Inc.

Announcement of Student Paper Competition Winners

Wednesday, 11 January

1800–1900 hrs **Texas Ballroom C**

Structures, Structural Dynamics, and Materials Lecture

Challenges in Integrated Computational Materials Engineering of Aerospace Composites

Anthony M. Waas, Boeing-Egtvedt Endowed Chair; Professor of Aerostructures; Chair, William E. Boeing Department of Aeronautics and Astronautics, University of Washington

Thursday, 12 January

1200–1400 hrs **Texas Ballroom A&B**

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

Speaker: **Walt Downing,** Executive Vice President, Southwest Research Institute

Join colleagues and friends to celebrate innovations and achievements! A ticket for the luncheon is required and included in the registration fee where indicated. Additional tickets for guests may be purchased upon registration as space is available.

The following awards will be presented:

AIAA-ASC James H. Starnes Jr. Award

Anthony M. Waas
Boeing-Egtvedt Endowed Chair
University of Washington
Seattle, Washington

"For impactful contributions to experimental, analytical and computational aspects of composite structural mechanics, commitment to mentoring the next generation, and service to the field."

continued

Recognition Events

Thursday, 12 January (continued)

Ashley Award for Aeroelasticity

Charbel Farhat
Vivian Church Hoff Professor of Aircraft Structures
Chairman, Department of Aeronautics and Astronautics
Stanford University
Stanford, California

"For recent development of powerful reduced-order models that have revolutionized computational aeroelasticity and fluid-structure interaction by allowing the simulation of complete practical aircraft configurations."

Children's Literature Award

Andrea Beaty
Children's Author

For the book: "*Rosie Revere, Engineer*"

History Manuscript Award

Layne Karafantis
Museum Curator, Modern Military Aircraft
Smithsonian National Air & Space Museum
Washington, D.C.

For the manuscript: "*Under Control: Constructing the Nerve Centers of the Cold War*"

Pendray Aerospace Literature Award

Ashwani K. Gupta
Distinguished University Professor
Department of Mechanical Engineering
University of Maryland
College Park, Maryland

"For exemplary contributions to the aerospace literature especially on swirl flows and high temperature combustion technology and for his services as book series editor and associate editor of journals."

ASME/Boeing Best Paper Award

AIAA 2016-0936, "A Coupled Electromechanical Peridynamics Framework For Modeling Carbon Nanotube Reinforced Polymer Composites," Naveen Prakash and Gary Seidel, Virginia Polytechnic Institute and State University.

Collier Research Hypersizer/AIAA Structures Best Paper

AIAA 2016-0733, "Effect of Notch on the Failure Response of Oxide/Oxide Ceramic Composites," Dianyun Zhang, University of Connecticut; Pascal Meyer, University of Michigan; and Anthony Waas, University of Washington.

Announcement of Student Competition Winners

Exposition Hall

The Exposition Hall, located in Longhorn E & F, is the hub of activity during this event—from seeing exhibitor displays to enjoying networking breaks and other functions. Some major networking events are held in the Exposition Hall to give attendees and exhibitors an opportunity to connect with partners, industry thought leaders, and collaborators who can help move your business forward.

Exposition Hall Hours

Tuesday, 10 January	**1300–1630 hrs**
Opening Reception*	**1815–2000 hrs**
Wednesday, 11 January	**0845–1630 hrs**
Luncheon*	**1230–1400 hrs**
Thursday, 12 January	**0845–1400 hrs**

*A ticket is required to attend.

Video Drone Raffle

Enter to win a video drone! Complete the raffle ticket (behind your registration badge) and drop it in the boxes in the Exposition Hall, or drop in a business card. Winner will be notified by email and does not need to be present to win.

AIAA Pavilion

Stop by the AIAA Pavilion, located in the Exposition Hall, to browse publications and merchandise, learn about your membership benefits, and meet AIAA staff.

30% Off All Books at AIAA SciTech Forum

AIAA Publications is offering a special show discount on all titles featured at AIAA SciTech Forum. Attendees can take advantage of a 30% discount off the list price of all books for sale at the AIAA Bookstore located in the AIAA Pavilion. This show special will only be available during the forum! Take advantage of these super savings and visit the AIAA Bookstore!

Meet the Author Sessions

Thomas R. Yechout

Introduction to Aircraft Flight Mechanics, 2nd Edition

Tuesday, 10 January

AIAA Exposition Hall Pavilion

Opening Reception, 1815–2000 hrs

Daniel P. Raymer

Aircraft Design, 5th Edition and RDSW in Student

Wednesday, 11 January

AIAA Exposition Hall Pavilion

Luncheon, 1230–1400 hrs

AIAA Foundation

With our Match a Million program, AIAA will match gifts to the Foundation up to $1 million, doubling the impact of every donation.

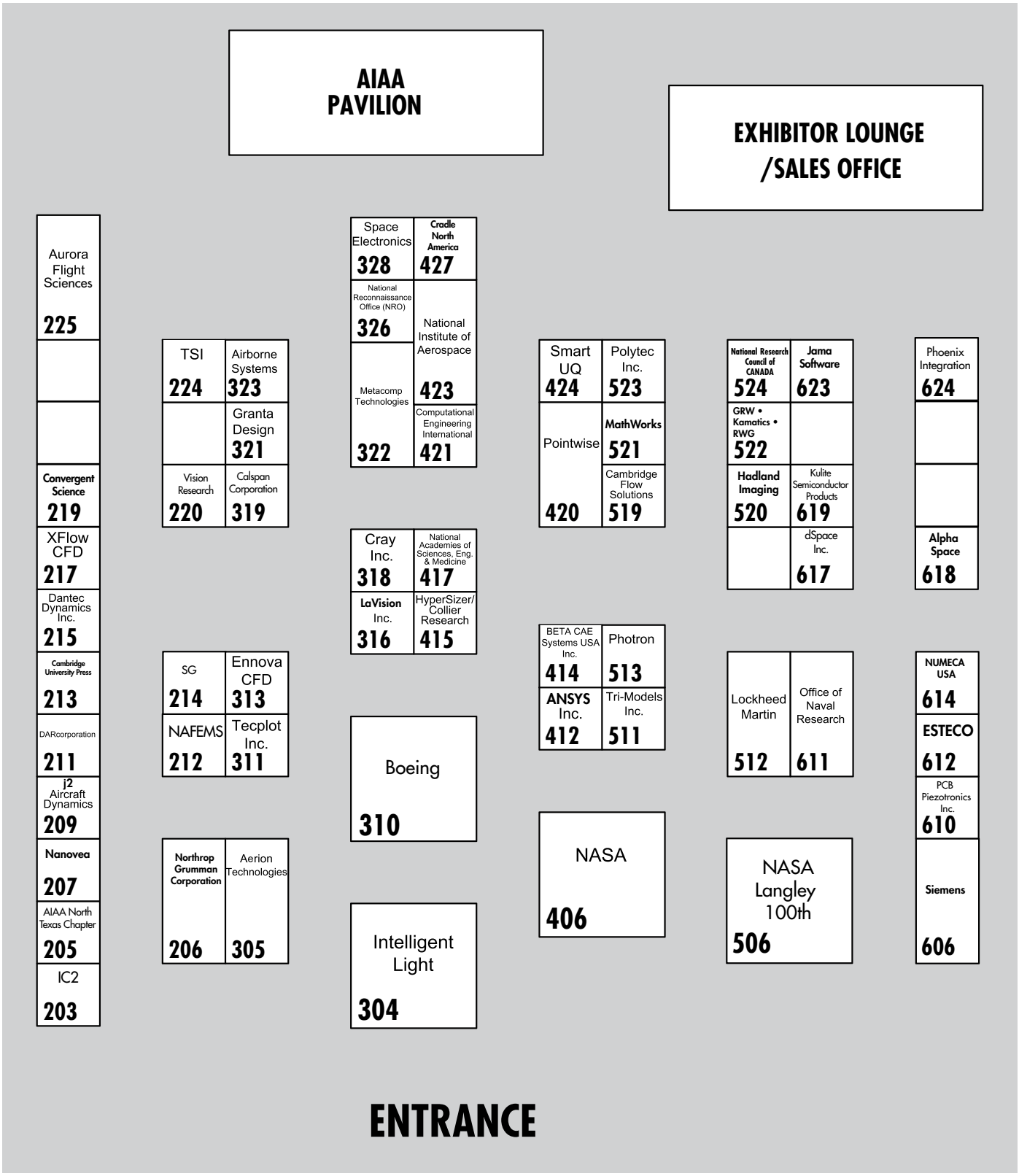
MATCH A MILLION

When you donate to the AIAA Foundation you are investing in the next generation of aerospace professionals through innovative, educational programs and recognition. An investment that will ensure the continuation of our industry's leadership and contributions to global advancement.

In addition, be sure and stop by the booth and check out the silent auction as there are some really cool aerospace items up for bid!

AIAA FOUNDATION
Advancing Aerospace

Exposition Hall



Exposition Hall

Exhibitors by Booth Number (★indicates AIAA Corporate Members)

305	Aerion Technologies (formerly Desktop Aeronautics) ★
205	AIAA North Texas Chapter
323	Airborne Systems ★
618	Alpha Space
412	ANSYS, Inc.
225	Aurora Flight Sciences ★
414	BETA CAE Systems USA Inc.
310	Boeing Technology Services ★
319	Calspan Systems Corporation
519	Cambridge Flow Solutions
213	Cambridge University Press
421	Computational Engineering International (CEI)
219	Convergent Science
427	Cradle North America
318	Cray Inc.
215	Dantec Dynamics, Inc.
211	DARcorporation ★
617	dSPACE Inc. ★
313	Ennova-CFD
612	ESTECO
321	Granta Design
522	GRW • Kamatics • RWG
520	Hadland Imaging
415	Hypersizer - Collier Research Corporation ★
203	IC2
304	Intelligent Light ★
209	j2 Aircraft Dynamics Ltd.
623	Jama Software
619	Kulite Semiconductor Products, Inc.
316	LaVision, Inc.
512	Lockheed Martin ★
521	MathWorks
322	Metacomp Technologies
212	NAFEMS
207	NANOVEA
406	NASA
506	NASA Langley 100th
417	National Academies of Sciences, Engineering, and Medicine
423	National Institute of Aerospace (NIA) ★
326	National Reconnaissance Office (NRO)
524	National Research Council of Canada
206	Northrop Grumman Corporation
614	NUMECA-USA, Inc.
611	Office of Naval Research
610	PCB Piezotronics Inc.
624	Phoenix Integration Inc.
513	Photron
420	Pointwise, Inc. ★
523	Polytec Inc.
214	SG
606	Siemens
424	SmartUQ
328	Space Electronics
311	Tecplot, Inc. ★
511	Tri Models, Inc.
220	Vision Research
224	TSI, Inc.
217	XFlow CFD ★

Exhibitors

Aerion Technologies (formerly Desktop Aeronautics) 305

1900 Embarcadero Road
Suite 101
Palo Alto, CA 94303
www.desktopaero.com
sales@desktopaero.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.

AIAA North Texas Chapter 205

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Fort Worth, TX 76101
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James.sergeant@LMCO.com

The North Texas Section is one of the largest and dynamic sections in AIAA with 800 professional and student members.

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Alpha Space 618

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Alpha Space is a woman-owned company serving the research community with unparalleled access to/from the ISS. Alpha Space owns and operates MISSE, a flight facility affixed to the exterior of the ISS where experiments endure extreme levels of solar and charged-particle radiation, atomic oxygen, hard vacuum, and extreme temperatures. The MISSE platform yields accelerated and accurate testing for experiments ranging from space suits, components and flight hardware to car paint and electronics.

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Exhibitors

Calspan Systems Corporation 319

703 City Center Blvd.
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www.calspan.com

Calspan-Force Measurement Systems develops state of the art internal and external type balances, and model position / motion control systems. Our expert staff specializes in the development, analysis, design, fabrication, instrumentation, calibration and integration of balances and model positioning systems. Our Force type balances offer unique capabilities that other types of balances do not.

Cambridge Flow Solutions 519

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www.cambridgeflowsolutions.com
admin@cambridgeflowsolutions.com

Cambridge Flow Solutions conducts strategic, long-term research with Development Partners. Our work is focussed on BOXER – a fully scalable simulation environment coupling an advanced digital geometry model, mesh generation and CFD – aimed at complex, real-world, conjugate applications. CFS markets BOXERmesh and advanced higher-order LES.

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CEI makes EnSight the leading CFD post-processor for large complex data.

EnSight is easy to use. At SciTech 2017 we will be demonstrating the new EnSight 10.2.

We will also be privately demonstrating the new software, Nexus, a browser-based tool for processing design studies, parameter studies, organizing a company or department CAE workflow, and generating reports.

Convergent Science 219

1619 Common Ste 1204
New Braunfels, TX 78132
convergecfd.com
dlee@convergecfd.com

Convergent Science specializes in modeling flow, spray, heat transfer and combustion using our CONVERGE CFD software. CONVERGE generates an orthogonal mesh automatically at runtime even for complicated and moving geometries. CONVERGE is ideally suited to model all aspects of gas turbine combustion including flame shape, emissions, wall temperatures, lean blowout, ignition and flashback.

Cradle North America, Inc. 427

50 Chestnut Street, Suite A-214
Beavercreek, OH 45440
www.cradle-cfd.com
info@cradle-cfd.com

Software Cradle is a leading provider of Computational Fluid Dynamics (CFD) software including SC/Tetra (general purpose unstructured mesh), scSTREAM (general purpose Cartesian mesh), and HeatDesigner (Cartesian mesh for electronics). Since inception in 1984, Cradle has established itself as a major innovator that is advancing the role of simulation in engineering design.

Cray, Inc. 318

901 Fifth Avenue Suite 1000
Seattle, WA 981642
www.cray.com
info@cray.com

Global supercomputing leader Cray builds innovative systems and solutions enabling researchers in academia, government, and industry to meet existing and future simulation and analytics challenges.

Dantec Dynamics, Inc. 215

750 Blue Point Road
Holtsville, NY 11742
www.dantecdynamics.com
us@dantecdynamics.com

Dantec Dynamics develops and manufactures measurement systems that determine physical properties in fluids and in solid structures. We deliver turnkey as well as customized solutions with user-friendly software. Furthermore, our clients benefit from superior technical application support worldwide. You gain accurate measurement results easily and quickly which help you accelerate the pace of discovery, innovation, quality control or NDT.

Exhibitors

DARcorporation 211

1440 Wakarusa Drive
Suite 500
Lawrence, KS 66049
www.darcorp.com
info@darcorp.com

DARcorporation has been offering aeronautical engineering software and consulting services since 1991. Our projects include single/multi-engine propeller and jet powered aircraft, Business Jets, Very Light Jets (VLJ), Kit, LSA and Experimental aircraft, VTOL aircraft, UAVs for civil and military applications and hybrid air/ground vehicles.

dSPACE Inc. 617

50131 Pontiac Trail
Wixom, MI 48393-2020
www.dspaceinc.com
jbogert@dspace.com

dSPACE is the world's leading provider of hardware and software tools for developing and testing sophisticated electronic control systems. dSPACE tools are used in high-performance engine development, navigation systems, propulsion, real-time flight maneuver simulation and other applications. Learn more at www.dspaceinc.com.

Ennova-CFD 313

2150 Allston Way
Suite 250
Berkeley, CA 94704
www.ennova-cfd.com
info@ennova-cfd.com

Leading edge grid generation software for computational fluid dynamics (CFD). Automated mesh generation for unstructured, structured and hybrid grids for internal and external flows.

ESTECO 612

39555 Orchard Hill Place
Novi, MI 48375
www.esteco.com
marketing@esteco.com

ESTECO is a pioneer in numerical optimization solutions, specializing in the research and development of engineering software for all stages of the simulation-driven design process. ESTECO's top-class products, modeFRONTIER and VOLTA, are used worldwide, helping companies increase efficiency in design simulation and accelerate product innovation.

Granta Design 321

300 Rustat House
62 Clifton Road
Cambridge, Cambridgeshire UK
CB1 7EG
www.grantadesign.com
info@grantadesign.com

Granta helps hundreds of engineering enterprises to manage materials information. Working closely with world-leading aerospace organizations to help them develop and apply material intelligence, making better materials decisions, saving time and money, and reducing risk as they optimize products and services. Granta also provides supporting resources to thousands of university educators worldwide teaching materials or related engineering topics to the next generation of engineers, scientists, and industrial designers about materials, processes, and sustainability.

GRW • Kamatics • RWG 522

1330 Blue Hills Ave
Bloomfield, CT 06002
www.kaman.com/engineered
John.bertolini@kaman.com

GRW, Kamatics & RWG have been designing, testing, and manufacturing the highest performing, self-lubricating and high-precision bearings and flight critical parts in the industry, excelling under the most demanding conditions. We work hand-in-hand with our customers to design and implement application specific bearing solutions that offer an increase in performance, reliability, and extended service life.

Hadland Imaging 520

Hadland Imaging West
1414 Soquel Ave
Suite #200
Santa Cruz CA 95062

Hadland Imaging East
10 Park Place
Suite 507
Butler, NJ 07405
www.hadlandimaging.com

Hadland Imaging - visible & infrared high-speed cameras with offices in California & New Jersey. We are the North American representatives of the Shimadzu HPV-X2 camera (10million FPS) iXcameras, Highest Resolution in Industry, 2048x1536 up to 500k FPS and the Full Line of FLIR high-speed and HD Infrared Cameras. www.HadlandImaging.com

Exhibitors

HyperSizer® - Collier Research Corporation 415

760 Pilot House Dr. Ste. A
Newport News, VA 2366
www.hypersizer.com
info@hypersizer.com

Collier Research Corporation provides software solutions, methods research, and consulting services for the aerospace, wind energy, high speed rail, automotive, and shipbuilding industries with its broad range of structural capabilities.

Our company's flagship product, HyperSizer performs design, stress analysis, and detail sizing optimization for vehicles fabricated with composite or traditional metallic materials. On average, the software reduces the weight of structures by 20-40%.

IC2 203

4647 NW 6th Street
Suite A
Gainesville, FL 32609
www.thinkic2.com
sales@thinkic2.com

IC2 is a developer and manufacturer of MEMS sensors and instrumentation, primarily for aerodynamic and aeroacoustic measurements. IC2 was founded in 2001 to develop high-performance, technologically disruptive instrumentation systems. IC2 technologies include MEMS microphones, direct measurement shear-stress sensors, dynamic pressure sensors, acoustic arrays, and adaptive acoustic liners.

Intelligent Light 304

301 Route 17 North
Rutherford, NJ 07070
www.ilight.com
sales@ilight.com

Intelligent Light provides post-processing, data management and big data visualization capabilities for CFD. Thousands of users rely on the industry leading FieldView Sofware and our custom engineering services to maximize their productivity and effectiveness. Let us help you eliminate bottlenecks and achieve breakthrough results.

j2 Aircraft Dynamics Ltd. 209

Daresbury Innovation Centre
Keckwick Lane
Daresbury, Cheshire
WA4 4FS
United Kingdom
www.j2aircraft.com
info@j2aircraft.com

J2 Aircraft Dynamics Ltd continues to provide commercial off the shelf aircraft design, analysis and modelling software tools built on a single fully supported Framework. Users of j2 software can analyze a much wider array of options/trade-offs rapidly from conceptual design through to detailed engineering stages unlocking more value. J2 validated aircraft models can be 'flown' in desktop to Full Mission Simulators from conceptual design onwards, accelerating the move to certification.

Jama Software 623

135 SW Taylor St. #200
Portland, OR 97204
www.jamasoftware.com
tsmith@jamasoftware.com

Jama Software is the definitive system of record and action for product development. The company's modern requirements and test management solution helps enterprises accelerate development time, mitigate risk, slash complexity and verify regulatory compliance. More than 600 product-centric organizations, including NASA, Thales, and Caterpillar have used Jama to modernize their process for bringing complex products to market. The company is headquartered in Portland, Oregon.

Kulite Semiconductor Products, Inc. 619

One Willow Tree Road
Leonia, NJ 0765
www.kulite.com
info-kulite@kulite.com

Kulite manufactures miniature high frequency pressure transducers, flight qualified pressure transducers, wind tunnel engine pressure probes and turbine blade implants, which are used in the development and manufacture of helicopters, business jets, commuters, commercial and military aircraft. They are designed to operate with electromechanical indicators, ECU, FADEC and EICAS systems and other aircraft circuits, and are considered the most reliable aircraft pressure transducers available.

LaVision, Inc. 316

211 W. Michigan Avenue,
Suite100
Ypilanti, MI 48197
www.lavision.com
info@lavisioninc.com

LaVision provides integrated imaging systems to scientific, industrial and educational markets. LaVision has extensive experience in optical techniques such as 2-D, stereo, and tomographic particle image velocimetry, gaseous and liquid laser induced fluorescence, shadowgraphy for multi-phase flows, digital image correlation for deformation/strain, high-speed and ultra-high-speed imaging, and intensified camera systems.

Lockheed Martin 512

1011 Lockheed Way
Palmdale, CA 935997
www.lockheedmartin.com/us/aeronautics/skunkworks.html
dave.chen@lmco.com

The Skunk Works is focused on the critical aircraft for tomorrow. Advanced technology solutions draw on our world-class capabilities in conceptual design, systems engineering and integration, complex project management, software development and rapid prototyping.

Exhibitors

MathWorks 521

3 Apple Hill Drive
Natick, MA 01760
www.mathworks.com

The MATLAB and Simulink product families are fundamental applied math and computational tools adopted by more than 5000 universities and colleges. MathWorks products help prepare students for careers in industry, where the tools are widely used for data analysis, mathematical modeling, and algorithm development in collaborative research and new product development.

Metacomp Technologies 322

28632 Roadside Drive, Suite 255
Agoura Hills, CA 91301
www.metacomptech.com
info@metacomptech.com

Metacomp Technologies develops and disseminates simulation software and services in multiple physics areas. ICMP (Integral Computational Multi-Physics) is our unified vision for Multi-Physics simulations which simplifies the complexities of the individual disciplines. ICMP provides a single environment for Mesh Generation, CFD and Structural Analyses, and Visualization of results.

NAFEMS 212

130 N Prospect Street
Suite D
Granville, OH 43023
www.nafems.org
americas@nafems.org

NAFEMS is a not-for-profit organization aimed at promoting best practices and fostering education and awareness in the engineering analysis community. In line with its objectives to promote the effective use of simulation technologies, NAFEMS is continually seeking to create awareness of new analysis methodologies, deliver education and training, and stimulate the adoption of best practices and standards by offering a platform for continuous professional development.

NANOVEA 207

6 Morgan
Suite 156
Irvine, CA 92618
www.nanovea.com
info@nanovea.com

Firmly aligned with its vision, Nanovea aims to simplify advanced measurement technologies to stimulate materials engineering for the common good. Ease of use, advanced automation and the dedication to superior accuracy are the driving forces behind its full range of 3D Profilometers, Mechanical Testers and Tribometers.

NASA 406

300 E Street Southwest
Washington, DC 20546
www.nasa.gov
richard.d.rinehart@nasa.gov

Since its inception in 1958, the National Aeronautics and Space Administration (NASA) has sought to reach for new heights and reveal the unknown so that what we do and learn will benefit all humankind. NASA's priorities are: Earth Right Now – Your Planet is Changing. We're on It; Aeronautics– We're with You When You Fly; International Space Station – Off the Earth, For the Earth; Journey to Mars; Solar System and Beyond; and Technology Powering Exploration. For more information, visit us at: www.nasa.gov.

NASA Langley Research Center 506

Mail Stop 151
Hampton, VA 23681-2199
www.nasa.gov/specials/nasalangley100/

NASA Langley Research Center celebrates its Centennial on July 17, 2017. For a century, our employees have been leading innovators in aerospace research and development. Today, we are building on this storied legacy of innovation as we continue to conduct groundbreaking research. As we soar into the future, our work will focus on issues that matter to Americans: being able to fly safely and affordably, protecting and preserving our planet, and getting humans to Mars.

National Academies of Sciences, Engineering, and Medicine 417

500 Fifth Street NW
Washington, DC 20001
www.nationalacademies.org/rap
jdellamo@nas.edu

The National Academies of Sciences, Engineering, and Medicine conducts the NRC Research Associateship Programs that offer awards for postdoctoral, senior, and graduate research in US federal laboratories and affiliated institutions. Awards include competitive stipends, relocation, professional travel and a health insurance plan. Complete information and online applications are on the website.

National Institute of Aerospace (NIA) 423

100 Exploration Way
Hampton, VA 23666
www.nianet.org

The National Institute of Aerospace (NIA) is a non-profit research and graduate education institute created to conduct leading-edge aerospace and atmospheric research, develop new technologies for the nation and help inspire the next generation of scientists and engineers.

Exhibitors

National Reconnaissance Office (NRO) 326

14675 Lee Road
Chantilly, VA 21051
https://acq.westfields.net
dii@nro.mil

NRO's Director's Innovation Initiative invests in advanced technologies, fosters innovation, and provides funding to improve our capabilities. It presents an opportunity for developers not traditionally associated with the NRO to participate in building the NRO of the 21st Century.

National Research Council of Canada 524

Matthew.Tobin@nrc-cnrc.gc.ca

www.nrc-cnrc.gc.ca/eng/solutions/facilities/wind_tunnel_index.html

The National Research Council of Canada (NRC) Aerospace portfolio offers several wind tunnels located in Ottawa, Ontario (Canada). Clients have access to our 5 ft trisonic, 6 × 9 ft, 30 ft low-speed, altitude icing, and 10 × 20 ft icing wind tunnels. These facilities are used to support industry, government, and university clients as part of NRC's Aeronautical Product Development Technologies program. Projects are normally of a customized nature, and extensive efforts are applied to derive innovative approaches in instrumentation, software and operations.

Northrop Grumman Corporation 206

2980 Fairview Park Drive
Falls Church, Virginia
www.northropgrumman.com/media
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Northrop Grumman is a leading global security company providing innovative systems, products and solutions in autonomous systems, cyber, C4ISR, strike, and logistics and modernization to government and commercial customers worldwide. Through its research, development, design and demonstration activities, the company is helping its customers solve their hardest mission problems, particularly those related to protecting freedom and advancing human discovery.

NUMECA-USA, Inc. 614

1044 Larkin Street
San Francisco, CA 94109
www.numeca.com
contact@numeca-usa.com

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 and high-lift devices.

Office of Naval Research 611

875 North Randolph Street
Arlington, VA 22203
www.onr.navy.mil
anna.huff.ctr@navy.mil

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. Visit us at Booth #309.

PCB Piezotronics 610

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PCB Piezotronics Inc. is a designer and manufacturer of microphones, vibration, pressure, force, torque, load, and strain sensors, as well as the pioneer of ICP® technology. This instrumentation is used for flight testing, wind tunnels, modal analysis, satellite testing and acoustics for cabin noise. PCB® stands behind their products with valuable services, including a 24-hour SensorLine, a global distribution network, and the industry's only commitment to Total Customer Satisfaction.

Phoenix Integration Inc. 624

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Suite 2000
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www.phoenix-int.com
aarico@phoenix-int.com

We are the framework for Model-Based Engineering. With ModelCenter® by Phoenix Integration you can integrate your engineering simulation tools, explore your product designs, and organize your engineering knowledge. Achieve a true Model-Based Engineering development process with Phoenix Integration's easy-to-use, flexible set of software applications. Shorten design cycles, reduce errors and development costs, all while improving product performance and quality.

Photron 513

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www.photron.com
image@photron.com

Photron's varied product range makes it the first choice for designers, manufacturers, R&D and test engineers to solve their most challenging motion problems. Photron's digital camera systems can capture thousands of high resolution images for playback and analysis. Markets include military, automotive, broadcast, particle image velocimetry (PIV), digital image correlation (DIC), ballistics testing, and more.

Exhibitors

Pointwise, Inc. 420

213 South Jennings Avenue
Fort Worth, TX 76104
www.pointwise.com
sales@pointwise.com

Pointwise, Inc. is solving the top problem facing engineering analysts today: mesh generation for computational fluid dynamics. Manufacturing firms and research organizations use Pointwise's mesh generation software to create the "digital geometry" enabling computer simulation of a product's performance in a fluid environment. Further information can be obtained from pointwise.com.

Polytec Inc. 523

16400 Bake Parkway
Irvine, CA 92656
www.polytec.com
v.palan@palytec.com

At Polytec, we believe that there is a need to measure vibrations in a non-contact manner. Polytec has addressed this need by designing optical measurement systems. Polytec is the market leader for non-contact, laser based vibration measurement instrumentation since more than 45 years. Polytec vibrometers are utilized in the aerospace field for Engine Testing, Material and Fatigue Testing, Experimental Modal Analysis, Ground Vibration Testing and Shock Testing to name a few applications.

SG 214

6A Aigiidon Street
Athens, Attica Greece 11853
www.sg-incorp.com
info@sg-incorp.com

SG Company provides integrated engineering solutions for air/space-based earth monitoring systems, develops special techniques for UAS (Unmanned Aerial Systems) earth observation applications in various disciplines and offers customized structural technical infrastructure studies. SG-Space & Ground Engineering Solutions has extensive experience in UAS earth monitoring systems such as high resolution mapping, digital elevation modeling (3D-model production/DEM), continuous monitoring of natural disasters, environmental pollution and in technical studies for infrastructure projects such as underground constructions and tunnels studies.

Siemens 606

60 Boradhollow Road
Melville, NY 11747
www.siemens.com/mdx
info@cd-adapco.com

Siemens PLM Software (www.siemens.com/mdx) is a leading global provider of simulation software with a vision for Multidisciplinary Design eXploration. Our simulation tools, including STAR-CCM+®, allow engineers to discover better designs, faster across a wide range of disciplines including Computational Fluid Dynamics, Computational Solid Mechanics, heat transfer, particle dynamics, and reacting flow.

SmartUQ 424

10245 E. Washington Avenue
Suite 210
Madison, WI 53703
www.smartuq.com
contact@smartuq.com

SmartUQ software provides breakthrough analytics and uncertainty quantification solutions for simulation and testing. 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.

Space Electronics 328

81 Fuller Way
Berlin, CT 06037
www.space-electronics.com
sales@space-electronics.com

Space Electronics is the world's leading manufacturer of aerospace mass properties measurement instruments. Our success is based on our instruments providing the highest measurement accuracy along with extraordinary reliability.

Space Electronics also manufactures a wide range of igniter circuit testing products for use in electro-explosive devices. Our Multi-Channel Weapon System Circuit Testers feature extreme safety to guarantee that test current remains less than one one-thousandth of a device's firing current.

Exhibitors

Tecplot, Inc 311

3535 Factoria Blvd SE #550
Bellevue, WA 98006
www.tecplot.com
info@tecplot.com

Tecplot specializes in visual data analysis tools that boost your productivity, integrate into your workflows and cut time in understanding CFD, simulation or experimental results. Fast, reliable, easy-to-use and memory efficient, Tecplot software helps you understand and communicate your results to others. For over 35 years, and with thousands of aerospace customers worldwide, Tecplot has become the trusted name in visual data analysis.

Tri Models Inc. 511

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Huntington Beach, CA 92649
www.trimodels.com
cathaide@trimodels.com

Tri Models is the Premier supplier of Wind Tunnel Models & Ground Test hardware for the global aerospace community. We play a vital role in the development of new systems for the airframe companies. Whether you have a new program or are refining an existing vehicle, Tri Models can help.

TSI, Inc. 224

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Shoreview, MN 55126
www.tsi.com
fluid@tsi.com

For over 50 years, TSI has been providing a complete line of fluid diagnostics systems for air/gas flow research including: Particle Image Velocimetry, TR-Volumetric PIV, Laser Doppler Velocimetry and Hot Wire Anemometry. These systems can be used for measuring supersonic to low speed flows, giving details of the fluid statistics.

Vision Research, Inc. 220

100 Dey Road
Wayne, New Jersey 07470
www.phantomhighspeed.com
info@visionresearch.com

Vision Research designs and manufactures a broad range of high-speed digital imaging systems that are used in all military, industry, academic and entertainment sectors. Marketing under the Phantom® brand, our cameras allow you to analyze physical phenomena when it's too fast to see, and too important not to™. For additional information regarding Vision Research, please visit www.phantomhighspeed.com.

XFlow CFD 217

40 Chellis Street
White River Junction, VT 05001
www.xflowusa.com
info@xflowusa.com.

XFlow™ CFD is the next-generation, meshless CFD package for modeling external aerodynamics of fixed-wing and rotorcraft aircraft. XFlow supports complex motion of complicated moving parts to model dynamic effects of control surface motion in flight, high-lift (take-off and landing) configurations and/or separation of munitions or separable stores.

General Information

AIAA Registration Hours

Sunday, 8 January	**1500–1900 hrs**
Monday, 9 January – Thursday, 12 January	**0700–1700 hrs**
Friday, 13 January	**0700–1300 hrs**

Wi-Fi Internet Access On Site

AIAA is providing limited Wi-Fi service for attendees to use while on site. 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.

Network Name: AIAASciTech

Password: scitech17

1. View Available Wireless Networks
2. Connect to "**AIAASciTech**" Network
3. Enter the Password **scitech17**
4. Open your Web Browser, begin surfing

For assistance, please call our Meeting Room Internet Support at 817.205.8888.

AIAA Livestream Channel

Visit www.livestream.com/aiaa 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.

Sponsored by: AIRBUS

Stay Fit at SciTech

Stay fit while at SciTech with your fellow attendees! Join AIAA staff on Tuesday, 10 January, and Thursday, 12 January, at 0600 hrs at the Gaylord Registration Lobby by the Cocoa Bean Express for a 1–2-mile jog to start off your day! All levels are welcome!

Concessions

The Gaylord Texan will provide breakfast and lunch for purchase in the Longhorn Marble Foyer located on the Convention Center side; Level 1.

Breakfast will be offered Monday to Thursday from 0715 – 0815 hrs.

Lunch will be offered Monday, Tuesday and Thursday from 1230 – 1400 hrs.

Twitter Contest

Ready, Set, Tweet...

Are you ready to win your very own iPad Mini? How about a Visa gift card for $50, or even $100? All you have to do is start tweeting during the conference with #AiaaSciTech.

Prizes:

First Place Prize: iPad Mini

Second Place Prize: $100 VISA gift card

Third Place Prize: $50 VISA gift card

Twitter Contest Rules

To enter our Twitter contest, tweet during AIAA SciTech Forum between 9–13 January 2017. Be sure to include the "#AiaaSciTech" tag. The user with the most tweets wins. Tweets must be substantive in nature and directly related to conference sessions, speakers, events and the aerospace community. Retweets and quoting other users' tweets do not qualify. If you are not able to attend AIAA SciTech, you are still eligible to participate by viewing sessions on our Livestream channel and tweeting about them. The contest will end and the winners will be announced at 0930 hrs on 13 January.

You must be at least 18 years old to participate. When you accept the prize, you're consenting to our use of your information (name, profile, photo) to announce you as a winner. We retain the right to use them in the future on our website or any other communication platform.

Finally, the "legalese": Contest is void where prohibited. All prizes are delivered "as-is" and "with all faults." AIAA is not responsible for human or mechanical errors that adversely affect or delay your entry in the contest, or for force majeure events that force the interruption or cancellation of this contest. No purchase necessary to win.

Certificate of Attendance

Certificates of Attendance are available for attendees who request documentation at the forum itself. Beginning Wednesday, 11 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

Conference Proceedings

Proceedings for the forum will be available online. The cost is included in the registration fee where indicated. Online proceedings will be available on Monday, 9 January.

Instructions to Access Proceedings:

1. To view proceedings, visit www.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, both original and revised manuscripts, 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 Revisions

5. Manuscript revision is open for all presenting authors from 0900 hrs Eastern Time, Monday, 9 January through 2000 hrs Eastern Time, Wednesday, 25 January. Revisions submitted during this period are limited to minor changes only (e.g., typos and the like). Changes to content are not permitted.
6. Revisions submitted for manuscripts already online **will not refresh until after the proceedings have been updated**, which may take up to 15 business days after the last day of the conference.

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 **careercenter.aiaa.org.**

Membership

AIAA is your vital lifelong link to the collective creativity and brainpower of the aerospace profession and a champion for its achievements. Students who are not yet members may apply their registration fee toward their first year's student member dues.

AIAA Foundation

For more than 20 years, the AIAA Foundation has being providing resources that support students and educators at both the K–12 and university level. The AIAA Foundation's initiatives include K–12 STEM education programs including classroom grants and hands-on activities, college scholarships, design competitions, student conferences, and recognition awards. If you would like to join our generous donors with a gift, please visit us at the AIAA Pavilion in 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 **www.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.

General Information

Author and Session Chair Information

Speakers' Briefings 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, 9 January – Friday, 13 January: 0730 hrs

Speakers' Practice Room

Speakers who wish to practice their presentations may do so in the Texas Reg A room located on the Convention Center side next to Texas Ballroom 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 "Canvas Solutions, Inc." The mobile app is free, so please be sure to download it. Detailed instructions will be provided in the session rooms. If you do not have a tablet or a smartphone, simply use the report form as a guide and 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, 13 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.

Specs for the laptops provided in each session room:
Operating System: Windows 10
Software: Office 2016
3) USB Ports (2 USB 3.0, 1 USB 2.0)
1) Card Reader
1) Mini Display Port
Processor: 3rd Generation Intel® Core™ i7-3520M (3.50 GHz, 4MB L3, 1333MHz FSB)
Storage: 500GB (5400rpm)

"No Paper, No Podium" and "No Podium, No Paper" Policy

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.**

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Committee Meetings and Events

Time	Title	Location
	Sunday, 8 January	
0900-1200	**TAC TC/PC Chair Training**	Grapevine 1
0900-1200	**TAC Director/Deputy Director Training**	Grapevine 2
1200-1700	**TAC Workshop**	Grapevine A
1430-1500	**APATC Liaisons Subcommittee**	Pecos 3
1500-1600	**APATC Education Subcommittee**	Del Rio 1
1500-1600	**APATC Honors and Awards Subcommittee**	Mustang 1
1500-1600	**APATC Publicity and Publications Subcommittee**	Pecos 4
1500-1600	**APATC Membership and Nominations Subcommittee**	Hotel Suite 6333
1500-1600	**APATC Planning Subcommittee**	Hotel Suite 6355
1600-1700	**APATC Technical Activities Meeting**	Mustang 1
1600-1700	**GTTC Steering Committee**	Grapevine 5
1600-1800	**SRTC Subcommittee**	Dallas 1
1700-1800	**FDTC High-Order Methods/Algorithms DG**	Appaloosa 2
1700-1800	**GTTC Introduction/Overview**	Grapevine 5
1700-1800	**APATC Steering Committee**	Hotel Suite 6355
1700-1800	**HEP Workshop Debrief & Planning**	Pecos 3
1700-1900	**Journal of Spacecraft and Rockets Editors and Advisory Board**	Del Rio 1
1730-2030	**Structures TC**	Appaloosa 3
1800-1900	**GTTC Program Subcommittee**	Grapevine 5
1800-2100	**TAC Aerospace Design and Structures Group Meeting**	Pecos 4
1800-2100	**TAC Program Committees Group Meeting**	Del Rio 3
1800-2100	**TAC Engineering and Technology Management Group Meeting**	Palomino 3
1800-2100	**TAC Information Systems Group Meeting**	Pecos 2
1800-2100	**Atmospheric Flight Mechanics TC**	Appaloosa 4
1800-2200	**Applied Aerodynamics TC**	Mustang 4
1900-2000	**GTTC Conferences Subcommittee**	Grapevine 5
1900-2030	**FDTC Steering Committee**	Hotel Suite 6333
1900-2200	**TAC Propulsion and Energy Group Meeting**	Mustang 5
1900-2200	**FDTC Transition DG**	Mustang 2
1900-2200	**TAC Aircraft and Atmospheric Systems Group Meeting**	Palomino 1
1900-2200	**TAC Space and Missiles Group Meeting**	Del Rio 2
1930-2130	**Academic Affairs Committee Meeting**	Pecos 1
2000-2100	**GTTC Membership Subcommittee**	Grapevine 5
2000-2200	**AMTTC Conferences Subcommittee**	Bluebonnet Boardroom
	Monday, 9 January	
0800-1200	**Sub-Team #1 Governance**	Austin 5
0900-1000	**ABPTCs Steering Committee**	Texas 5
0900-1600	**GTTC Internal Balance WG**	Grapevine A
0930-1130	**Journals Subcommittee**	Del Rio 1
0930-1600	**National Institute of Aerospace Technical Advisory Committee Meeting**	Del Rio 3
1000-1100	**HSABPTC Steering Committee**	Bluebonnet Boardroom
1000-1100	**INPSITC (ABPSI) Meeting**	Del Rio 2
1030-1200	**RAC I**	Hotel Suite 6333

Committee Meetings and Events

Time	Title	Location
	Monday, 9 January (continued)	
1100-1200	**HSABPTC Meeting**	Pecos 4
1100-1200	**PAW Meeting**	Hotel Suite 6355
1100-1200	**GTETC Meeting**	Del Rio 2
1100-1200	**Books Subcommittee**	Primrose Boardroom
1100-1500	**Systems Engineering TC**	Mustang 5
1200-1400	**TAC Aerospace Sciences Group Meeting**	Pecos 2
1200-1700	**Governance Retreat**	Mustang 4
1300-1400	**ABPTCs Conference & Communications Subcommittee**	Pecos 4
1300-1500	**Education Series Advisory Board**	Bluebonnet Boardroom
1300-1530	**Transformational Flight PC**	Del Rio 2
1400-1500	**ABPTCs Honors and Awards Subcommittee**	Pecos 1
1400-1600	**GTTC Future of Ground Testing WG**	Pecos 3
1500-1600	**HSABPTC WG**	Pecos 4
1500-1600	**ABPTCs Student Engine Design Competition**	Del Rio 1
1500-1700	**GTTC Standards Subcommittee**	Hotel Suite 6333
1500-1700	**Progress Series Editorial Advisory Board**	Primrose Boardroom
1530-1630	**2017 AIAA AVIATION Forum Technical Program Committee**	Longhorn D
1600-1700	**ABPTCs Student Leader Networking Event**	Pecos 1
1600-1800	**Journal of Aircraft Editors and Advisory Board**	Mustang 5
1630-1730	**GEPC Conference Subcommittee**	Del Rio 2
1630-1800	**History TC**	Pecos 2
1700-1800	**FDTC Low Re DG**	Pecos 4
1700-1800	**ABPTCs Working Groups**	Austin 5
1700-1800	**FDTC Turbulent Model Benchmarking DG**	Texas 2
1700-1830	**AIAA Town Hall Meeting (Governance and Open Access)**	Texas C
1700-1900	**APATC Low Boom DG**	Del Rio 1
1700-1900	**Career and Professional Development Committee**	Ft. Worth 7
1700-1900	**AIAA Journal Editors and Advisory Board**	Pecos 3
1700-2000	**Computer Systems TC**	Del Rio 3
1730-1830	**GEPC Leadership Team**	Del Rio 2
1730-1930	**SCSTC Handbook Author's Meeting**	Palomino 1
1800-1900	**GTTC Publications Subcommittee**	Hotel Suite 6333
1800-1930	**FDTC Fundamentals of Flow Phenomena Subcommittee**	Dallas 6
1800-1930	**FDTC Flow Control and Fluid Applications Subcommittee**	Ft. Worth 2
1800-2000	**AMTTC Awards Subcommittee**	Primrose Boardroom
1800-2030	**FDTC CFD Methods Subcommittee**	Ft. Worth 1
1800-2100	**Small Satellite TC**	Pecos 1
1800-2100	**Flight Testing TC**	Bluebonnet Boardroom
1800-2200	**NASA's 2040 Vision Study**	Texas 3
1830-2030	**Michigan Aerospace Engineering Alumni Reception**	Grapevine A
1830-2200	**Propellants and Combustion TC**	Grapevine D
1830-2200	**University of Illinois Alumni Reception**	Austin 3
1900-2000	**GTTC Awards Subcommittee**	Hotel Suite 6333

Committee Meetings and Events

Time	Title	Location
	Monday, 9 January (continued)	
1900-2030	**APATC Collaborative Experiments & Computations DG**	Dallas 1
1900-2100	**Penn State Department of Aerospace Engineering 2017 Alumni Reception**	Riverwalk Terrace
1900-2200	**ABPTCs Meeting**	Mustang 4
1900-2200	**Aircraft Design TC**	Grapevine 1
1900-2200	**Solid Rockets TC**	Austin 5
1900-2200	**Space Resources TC**	Dallas 3
1930-2100	**APATC Flow Control Applications & Impacts DG**	Dallas 4
2000-2100	**GTTC Education and Student Activities Subcommittee**	Hotel Suite 6333
	Tuesday, 10 January	
0730-0900	**International Activities Committee**	Del Rio 3
0730-0900	**Finance Committee**	Del Rio 2
0830-1000	**Publications Ethical Standards Subcommittee**	Pecos 1
0830-1200	**2018 Associate Fellows Committee Kick-off Meeting**	Bluebonnet Boardroom
0900-1200	**Governance Retreat**	Del Rio 2
0900-1700	**GTTC Dual Flow Reference Nozzle WG - Day 1**	Pecos 4
1000-1100	**Publications Awards Subcommittee**	Primrose Boardroom
1000-1200	**TAC New Initiatives Subcommittee**	Pecos 3
1000-1200	**CASE Planning Meeting**	Del Rio 1
1100-1200	**Journal of Propulsion and Power Editors and Advisory Board**	Pecos 2
1100-1200	**P&E Group Coordination Meeting**	Mustang 5
1300-1400	**ASME Structures and Materials TC**	Mustang 5
1300-1500	**Student Activities Committee Meeting**	Pecos 1
1300-1500	**GTTC Uncertainty Analysis WG**	Pecos 2
1400-1600	**AIAA Standards Executive Council (SEC) Meeting**	Primrose Boardroom
1400-1700	**TAC Executive Board**	Pecos 3
1400-1700	**DETC Subcommittee**	Hotel Suite 6333
1400-1900	**Region & Section Activities Committee**	Del Rio 2
1500-1600	**TPTC Best Paper Subcommittee**	Grapevine Reg C
1500-1700	**GTTC Statistically Defensible Test Methods Focus Group**	Texas D
1500-1700	**Aerospace Cybersecurity Working Group**	Del Rio 3
1500-1700	**Journal of Thermophysics and Heat Transfer Editors and Advisory Board**	Hotel Suite 6355
1600-1700	**TPTC Awards Subcommittee**	Green Room Stage Right
1600-1700	**TPTC Education Subcommittee**	Pecos 2
1600-1800	**Emerging Technologies Committee Meeting**	Del Rio 1
1700-1800	**TPTC Conferences Subcommittee**	Primrose Boardroom
1700-1800	**TPTC Publicity Subcommittee**	Austin 6
1700-1900	**Computational Fluid Dynamics CoS**	Austin 5
1700-2200	**Digital Avionics TC**	Bluebonnet Boardroom
1730-1830	**FDTC LES DG**	Hotel Suite 6333
1730-1830	**FDTC Solver Technology for Turbulent Flow DG**	Ft. Worth 3
1730-2030	**Green Engineering PC**	Mustang 5
1800-1900	**TPTC Publications Subcommittee**	San Antonio 3

Committee Meetings and Events

Time	Title	Location
	Tuesday, 10 January (continued)	
1800-1900	**TPTC Nominations Subcommittee**	San Antonio 6
1800-1900	**FDTC Low Speed Flow Control DG**	Pecos 3
1800-1900	**FDTC Non-Equilibrium DG**	Texas 1
1800-1900	**FDTC Modal Decomposition DG**	Dallas 2
1800-2100	**Design Engineering TC**	Pecos 4
1800-2100	**Intelligent Systems TC**	Grapevine 2
1800-2200	**GNCTC Student Paper Competition**	Palomino 2
1830-2200	**Software TC**	Hotel Suite 6355
1900-2000	**FDTC High Speed Flow Control DG**	Hotel Suite 6333
1900-2000	**FDTC Fluid-Structure Interaction DG**	Dallas 7
1900-2030	**Meet the Skunk Works - Recruiting and Information Session**	Texas 2
1900-2100	**Plasmadynamics and Lasers TC**	Pecos 1
1900-2200	**Adaptive Structures TC**	Ft. Worth 2
1900-2200	**Unmanned Systems PC**	Pecos 2
1900-2200	**Thermophysics TC**	Texas 4
1900-2200	**Aeroacoustics TC**	Del Rio 3
1900-2200	**Aerospace Department Chair Association (ADCA)**	Grapevine A
1900-2200	**Pressure Gain Combustion PC**	Dallas 5
1900-2200	**Meshing, Visualization and Computational Environments TC**	Dallas 6
1900-2300	**Aerodynamic Measurement Technology TC**	Grapevine 1
1930-2130	**Recent Events in the Evolution of NASA's Aerosciences Capability**	Texas C
1930-2230	**Materials TC**	Texas 1
1930-2230	**Structures TC**	Texas 3
	Wednesday, 11 January	
0800-1200	**GTTC Dual Flow Reference Nozzle WG - Day 2**	Hotel Suite 6355
0830-1200	**Honors and Awards Committee**	Mustang 5
0900-1200	**Publications Committee**	Del Rio 2
0900-1600	**GTTC Wind Tunnel Flow Quality WG**	Pecos 3
1000-1100	**SciTech 2018 Technical Program Committee Planning Meeting**	Mustang 4
1000-1100	**RAC IV Meeting**	Primrose Boardroom
1000-1400	**Public Policy Committee Meeting**	Pecos 2
1000-1600	**Technical Activities Committee**	Longhorn D
1100-1400	**Space Operations and Support TC**	Del Rio 3
1200-1330	**GNCTC Undergraduate Conference Experience**	Hotel Suite 6333
1300-1700	**GTTC ONR WG**	Mustang 4
1330-1630	**Foundation Board of Trustees**	Del Rio 1
1330-1630	**Region & Section Activities Committee**	Pecos 4
1400-1600	**FDTC Active Flow Control Documentation Project**	Mustang 5
1400-1600	**Journal Editors in Chief and CrossMark Workshop**	Hotel Suite 6355
1430-1630	**Corporate Member Committee Meeting**	Del Rio 2
1600-1800	**Publications Review Subcommittee**	Pecos 2
1600-1800	**Journal of Guidance, Control, and Dynamics Editors and Advisory Board**	Pecos 1

Committee Meetings and Events

Time	Title	Location
	Wednesday, 11 January (continued)	
1630-1800	**LM Aeronautics Meeting**	Longhorn D
1700-1800	**FDTC Mixing Layer Control DG**	Bluebonnet Boardroom
1700-1800	**AMTTC Nominations Subcommittee**	Primrose Boardroom
1700-1830	**APATC Missile & Projectile Aeroprediction DG**	Mustang 5
1700-1830	**Emerging Technologies Identification Session**	Dallas 5
1700-1900	**Plasma Aerodynamics DG**	Pecos 3
1700-2000	**Energy Optimized Aircraft and Equipment Systems PC**	Del Rio 3
1700-2000	**Pointwise Meet & Greet**	Dallas 6
1730-1900	**APATC CFD Transition Modeling DG**	Austin 1
1800-1900	**FDTC Future of Fluids**	Pecos 4
1800-1930	**Design/Build/Fly Discussion**	Texas D
1800-2000	**AMTTC Update Presentation/Student Event**	Texas 3
1800-2000	**SETC Digital Systems Integration WG**	Palomino 3
1800-2000	**APATC Aeropropulsive Interactions DG**	Del Rio 2
1800-2100	**V/STOL Aircraft Systems TC**	Hotel Suite 6355
1800-2100	**Spacecraft Structures TC**	Mustang 4
1830-2000	**AIAA Publications--Book Authors Appreciation Reception**	Del Rio 1
1830-2130	**Survivability TC**	Pecos 1
1830-2130	**Multidisciplinary Design Optimization TC**	Ft. Worth 7
1830-2200	**NPAT Mini-Facility User's Meeting (FUM)**	Grapevine 3
1900-2000	**HyTASP PC Steering Committee**	Primrose Boardroom
1900-2200	**Society and Aerospace Technology TC**	Bluebonnet Boardroom
1900-2200	**Fluid Dynamics TC**	Texas 2
1900-2200	**ASME Wind Energy TC**	Mustang 5
1900-2200	**Non-Deterministic Approaches TC**	Grapevine 1
1900-2200	**Space Logistics TC**	Pecos 2
1900-2200	**Terrestrial Energy Systems TC**	Palomino 2
1900-2200	**Structural Dynamics TC**	Mustang 2
1930-2130	**Alumni and Friends of UC**	Appaloosa 1
2000-2200	**HyTASP PC**	Texas 5
	Thursday, 12 January	
0800-1200	**GTTC Future of Ground Test WG**	Pecos 1
0900-1200	**Board of Directors Meeting**	Longhorn D
0900-1700	**AIAA Resource Working Group**	Pecos 2
1200-1600	**GTTC WT Model Attitude and Deformation Measurement WG**	Mustang 5
1300-1700	**GTTC Industry WG**	Del Rio 1
1415-1545	**HEP Workshop Results & Recommendations**	Mustang 4
1530-1630	**RAC V Meeting**	Bluebonnet Boardroom
1730-2030	**Ground Testing TC**	Texas 6
1800-2000	**APATC Rotorcraft Simulations & Performance Predictions DG**	Texas 1
1800-2300	**Guidance, Navigation and Control TC**	Grapevine 1
1900-2200	**MVCE Meshing Subcommittee**	Del Rio 3
1900-2200	**Modeling and Simulation TC**	Pecos 3

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Aeroacoustics				
7-AA-1	**Aeroacoustics Jet Noise I**	9-Jan	0930 hrs	1230 hrs	Grapevine B
60-AA-2	**Aeroacoustics Jet Noise II**	9-Jan	1400 hrs	1700 hrs	Grapevine B
69-APA-8/AA-3	**Special Session: Low Boom Activities II**	9-Jan	1400 hrs	1700 hrs	Dallas 6
119-AA-4	**Computational Aeroacoustics I**	10-Jan	0930 hrs	1230 hrs	Grapevine B
173-AA-5	**Aeroacoustics Jet Noise III**	10-Jan	1400 hrs	1700 hrs	Grapevine B
234-AA-6	**Computational Aeroacoustics II**	11-Jan	0930 hrs	1230 hrs	Grapevine B
235-AA-7	**Aeroacoustics - Advanced Measurement and Experiment**	11-Jan	0930 hrs	1230 hrs	Grapevine 3
288-AA-8	**Aeroacoustics - Fan Noise, Open Rotor**	11-Jan	1400 hrs	1700 hrs	Grapevine B
289-AA-9	**Aeroacoustics - Airframe and Community Noise**	11-Jan	1400 hrs	1700 hrs	Grapevine 3
	Air Breathing Propulsion Systems Integration				
344-ABPSI-1	**High-Speed Inlets and Scramjets**	12-Jan	0930 hrs	1230 hrs	Dallas 1
399-ABPSI-2	**Inlet Distortion and Characterization**	12-Jan	1400 hrs	1700 hrs	Dallas 1
456-ABPSI-3	**Nozzles and Propulsion Design**	13-Jan	0930 hrs	1300 hrs	Dallas 1
	Aircraft Design				
8-ACD-1	**Aircraft Design Tools and Methods I**	9-Jan	0930 hrs	1230 hrs	San Antonio 1
9-ACD-2	**Unmanned Aircraft Design I**	9-Jan	0930 hrs	1230 hrs	San Antonio 3
61-ACD-3	**Aircraft Design Tools and Methods II**	9-Jan	1400 hrs	1700 hrs	San Antonio 1
62-ACD-4	**Unmanned Aircraft Design II**	9-Jan	1400 hrs	1700 hrs	San Antonio 3
120-ACD-5	**Aircraft Design Tools and Methods III**	10-Jan	0930 hrs	1230 hrs	San Antonio 1
174-ACD-6	**Aircraft Design Tools and Methods IV**	10-Jan	1400 hrs	1700 hrs	San Antonio 1
290-ACD-7	**Electric Aircraft Design**	11-Jan	1400 hrs	1700 hrs	San Antonio 5
345-ACD-8	**Innovative Aircraft Design Concepts I**	12-Jan	0930 hrs	1230 hrs	Grapevine 3
400-ACD-9	**Innovative Aircraft Design Concepts II**	12-Jan	1400 hrs	1700 hrs	Grapevine 3
401-ACD-10	**CADWG: Concept Design Tools and Processes for Manufacturing and Certification of Aircraft**	12-Jan	1400 hrs	1700 hrs	San Antonio 4
457-ACD-11	**Special Purpose Aircraft**	13-Jan	0930 hrs	1300 hrs	Pecos 3
	Atmospheric Flight Mechanics				
10-AFM-1	**Aeroservoelastic (ASE) Control, Modeling, Simulation, and Optimization**	9-Jan	0930 hrs	1230 hrs	Grapevine 5
63-AFM-2	**Launch Vehicle, Atmospheric Entry, Hypersonic Flight and Aeroassist Technology I**	9-Jan	1400 hrs	1700 hrs	Grapevine 5
121-AFM-3	**Launch Vehicle, Atmospheric Entry, Hypersonic Flight and Aeroassist Technology II**	10-Jan	0930 hrs	1230 hrs	Grapevine 5
175-AFM-4	**Flight Test and System Identification I**	10-Jan	1400 hrs	1700 hrs	Grapevine 5
236-AFM-5	**Flight Test and System Identification II**	11-Jan	0930 hrs	1230 hrs	Grapevine 5
291-AFM-6	**Aircraft Flight Dynamics, Handling Qualities, and Performance I**	11-Jan	1400 hrs	1700 hrs	Grapevine 5
346-AFM-7	**Special Session: Performance Adaptive Aeroelastic Wing**	12-Jan	0930 hrs	1230 hrs	Grapevine 4
347-AFM-8	**Aircraft Flight Dynamics, Handling Qualities, and Performance II**	12-Jan	0930 hrs	1230 hrs	Grapevine 5
402-AFM-9	**Small/Mini/Micro Aerial Vehicles**	12-Jan	1400 hrs	1700 hrs	Grapevine 4
403-AFM-10	**Aircraft Flight Dynamics, Handling Qualities, and Performance III**	12-Jan	1400 hrs	1700 hrs	Grapevine 5
458-AFM-11	**Aircraft Flight Dynamics, Handling Qualities, and Performance IV**	13-Jan	0930 hrs	1300 hrs	Grapevine 5
459-AFM-12	**Aerodynamic Prediction Methods**	13-Jan	0930 hrs	1300 hrs	Grapevine 4

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Aerodynamic Measurement Technology				
11-AMT-1	**Velocimetry: Applications I**	9-Jan	0930 hrs	1230 hrs	Grapevine 6
12-AMT-2	**Temperature Measurements and Applications**	9-Jan	0930 hrs	1230 hrs	Grapevine 4
64-AMT-3	**Velocimetry: Development and Implementation Challenges**	9-Jan	1400 hrs	1700 hrs	Grapevine 6
65-AMT-4	**Laser Tagging and Fluorescence Techniques**	9-Jan	1400 hrs	1700 hrs	Grapevine 4
122-AMT-5	**Velocimetry: Applications II**	10-Jan	0930 hrs	1230 hrs	Grapevine 6
123-AMT-6	**Wall-Based Sensors and Applications**	10-Jan	0930 hrs	1230 hrs	Grapevine D
124-AMT-7/GT-3	**Force Measurements**	10-Jan	0930 hrs	1230 hrs	Grapevine 4
176-AMT-8	**Pressure Determination Techniques and Applications**	10-Jan	1400 hrs	1700 hrs	Grapevine 6
237-AMT-9	**Deformation, Displacement, and Object-Tracking Measurements**	11-Jan	0930 hrs	1230 hrs	Grapevine D
260-GT-6/AMT-10	**Test Technique and Data Analysis Improvements at the NASA Ames Unitary Plan Wind Tunnels I (Invited)**	11-Jan	0930 hrs	1230 hrs	Ft. Worth 6
312-GT-7/AMT-11	**Test Technique and Data Analysis Improvements at the NASA Ames Unitary Plan Wind Tunnels II (Invited)**	11-Jan	1400 hrs	1700 hrs	Ft. Worth 6
348-AMT-12	**Launch Vehicle Buffet (Invited)**	12-Jan	0930 hrs	1230 hrs	Grapevine 2
349-AMT-13	**Rayleigh Scattering Measurements**	12-Jan	0930 hrs	1230 hrs	Grapevine B
404-AMT-14	**Simultaneous and/or Multidimensional Measurements**	12-Jan	1400 hrs	1700 hrs	Grapevine B
	Applied Aerodynamics				
13-APA-1	**Aerodynamic Design: Analysis, Methodologies and Optimization Techniques I**	9-Jan	0930 hrs	1230 hrs	Dallas 1
14-APA-2	**Special Session: Low Boom Activities I**	9-Jan	0930 hrs	1230 hrs	Dallas 2
15-APA-3	**Environmentally Friendly/Efficient Aerodynamics and Enabling Technology I**	9-Jan	0930 hrs	1230 hrs	Dallas 3
16-APA-4	**Propeller/Rotorcraft/Wind Turbine Aerodynamics I: Coaxial and Open Rotor**	9-Jan	0930 hrs	1230 hrs	Dallas 4
47-SD-1/APA-46	**Special Session: Aerothermoelasticity of, and Dynamic Response in, High Speed Vehicles and in High Speed Flow I**	9-Jan	0930 hrs	1230 hrs	Appaloosa 2
101-SD-4/APA-47	**Special Session: Aerothermoelasticity of, and Dynamic Response in, High Speed Vehicles and in High Speed Flow II**	9-Jan	1400 hrs	1700 hrs	Appaloosa 2
66-APA-5	**Hypersonic Aerodynamics**	9-Jan	1400 hrs	1700 hrs	Dallas 2
67-APA-6	**Airfoil/Wing/Configuration Aerodynamics I**	9-Jan	1400 hrs	1700 hrs	Dallas 3
68-APA-7	**Special Session: CFD Applied to Real World Problems**	9-Jan	1400 hrs	1700 hrs	Dallas 4
69-APA-8/AA-3	**Special Session: Low Boom Activities II**	9-Jan	1400 hrs	1700 hrs	Dallas 6
70-APA-9	**Environmentally Friendly/Efficient Aerodynamics and Enabling Technology II**	9-Jan	1400 hrs	1700 hrs	Dallas 1
71-APA-10	**Special Session: CREATE-AV HPC Multiphysics I**	9-Jan	1400 hrs	1700 hrs	Dallas 5
125-APA-11	**Flow Control Applications and Demonstrations (Active and Passive) I**	10-Jan	0930 hrs	1230 hrs	Dallas 1
126-APA-12	**Aerodynamic/Propulsive Interactions - Panel Discussion**	10-Jan	0930 hrs	1130 hrs	Dallas 3
127-APA-13	**Unsteady Aerodynamics I**	10-Jan	0930 hrs	1230 hrs	Dallas 2
128-APA-14	**Bio-Inspired Flows**	10-Jan	0930 hrs	1230 hrs	Dallas 4
129-APA-15	**Low Speed, Low Reynolds Number Aerodynamics**	10-Jan	0930 hrs	1230 hrs	Dallas 5
177-APA-16	**Aerodynamic Design: Analysis, Methodologies, and Optimization Techniques II**	10-Jan	1400 hrs	1700 hrs	Dallas 3
178-APA-17	**Flow Control Applications and Demonstrations (Active and Passive) II**	10-Jan	1400 hrs	1700 hrs	Dallas 1
179-APA-18	**Unsteady Aerodynamics II**	10-Jan	1400 hrs	1700 hrs	Dallas 2
180-APA-19	**Aerodynamic Design: Design Tools and Propeller Integration**	10-Jan	1400 hrs	1700 hrs	Dallas 4

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Applied Aerodynamics (continued)				
181-APA-20	**Propeller/Rotorcraft/Wind Turbine Aerodynamics II: Low-Rn Propellers**	10-Jan	1400 hrs	1700 hrs	Dallas 5
238-APA-21	**Flow Control Applications and Demonstrations (Active and Passive) III**	11-Jan	0930 hrs	1230 hrs	Dallas 1
239-APA-22	**Unsteady Aerodynamics III**	11-Jan	0930 hrs	1230 hrs	Dallas 2
240-APA-23/FD-31	**Vortical Flows & Wake Control**	11-Jan	0930 hrs	1230 hrs	Dallas 3
241-APA-24	**DPW-6 Results and Comparisons I**	11-Jan	0930 hrs	1230 hrs	Dallas 4
242-APA-26	**Special Session: CREATE-AV HPC Multiphysics II**	11-Jan	0930 hrs	1230 hrs	Dallas 5
292-APA-27	**Special Session: CREATE-AV HPC Multiphysics III**	11-Jan	1400 hrs	1700 hrs	Dallas 1
293-APA-28	**Special Session: Sensitivity Analysis and Uncertainty Quantification Evaluation for Realistic Problems I**	11-Jan	1400 hrs	1700 hrs	Dallas 2
294-APA-29	**Weapons Aerodynamics**	11-Jan	1400 hrs	1700 hrs	Dallas 3
295-APA-30	**DPW-6 Results and Comparisons II**	11-Jan	1400 hrs	1700 hrs	Dallas 4
296-APA-31	**High Angle-of-Attack Aerodynamics**	11-Jan	1400 hrs	1630 hrs	Dallas 5
297-APA-32	**Aerodynamic Results from Ground Test or Flight Test**	11-Jan	1400 hrs	1630 hrs	Dallas 6
350-APA-33	**Aerodynamic Design: Transonic/Supersonic**	12-Jan	0930 hrs	1230 hrs	Ft. Worth 2
351-APA-34	**Aerodynamic-Structural Dynamic Interactions I**	12-Jan	0930 hrs	1230 hrs	Dallas 5
352-APA-35	**Airfoil/Wing/Configuration Aerodynamics II: Multifidelity Methods**	12-Jan	0930 hrs	1230 hrs	Dallas 3
353-APA-36	**Applied CFD I: Boundary Layer and Solver Methodologies**	12-Jan	0930 hrs	1230 hrs	Dallas 4
354-APA-37	**Special Session: Simulation of Rotor in Hover I**	12-Jan	0930 hrs	1230 hrs	Dallas 2
355-APA-38	**Transonic/Supersonic Aerodynamics**	12-Jan	0930 hrs	1230 hrs	Dallas 6
405-APA-39	**Aerodynamic-Structural Dynamic Interactions II**	12-Jan	1400 hrs	1700 hrs	Dallas 5
406-APA-40	**Special Session: Sensitivity Analysis and Uncertainty Quantification Evaluation for Realistic Problems II**	12-Jan	1400 hrs	1700 hrs	Ft. Worth 3
407-APA-41	**Airfoil/Wing/Configuration Aerodynamics III: Airfoil and Wing Optimization**	12-Jan	1400 hrs	1700 hrs	Dallas 3
408-APA-42	**Applied CFD II: Configuration Evaluation**	12-Jan	1400 hrs	1700 hrs	Dallas 4
409-APA-43	**Special Session: Simulation of Rotor in Hover II**	12-Jan	1400 hrs	1700 hrs	Dallas 2
410-APA-44/FD-53	**Special Session: Sensitivity Analysis of High-Fidelity Rotorcraft Computations**	12-Jan	1400 hrs	1700 hrs	Dallas 6
460-APA-45	**Special Session: Simulation of Rotor in Hover III**	13-Jan	0930 hrs	1300 hrs	Dallas 2
	Adaptive Structures				
17-ASC-1	**Adaptive and Morphing Aircraft and Aeroelasticity**	9-Jan	0930 hrs	1230 hrs	Palomino 3
72-ASC-2	**Adaptive and Morphing Aircraft and Aeroelasticity, Adaptive Skins, Biomimetics**	9-Jan	1400 hrs	1700 hrs	Palomino 3
182-ASC-3	**Smart and Multifunctional Materials**	10-Jan	1400 hrs	1700 hrs	Palomino 3
411-ASC-4	**Smart and Multifunctional Materials, Structural Health Monitoring and Damage Detection and Integrity**	12-Jan	1400 hrs	1700 hrs	Palomino 3
356-ASC-5	**Active Noise and Vibration Control, Smart Sensor and Actuator Device Design**	12-Jan	0930 hrs	1230 hrs	Palomino 3
461-ASC-6	**Modeling, Simulation, and Optimization of Adaptive Structures, Space and Planetary Systems and Subsystems**	13-Jan	0930 hrs	1300 hrs	Palomino 3
	Computer Systems				
18-CMS-1	**Communication Systems**	9-Jan	0930 hrs	1230 hrs	Ft. Worth 1
	Digital Avionics				
19-DA-1	**Digital Avionics**	9-Jan	0930 hrs	1230 hrs	Grapevine 1

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Design Engineering				
73-EDU-2/DE-1	**Advancing Aerospace Education I**	9-Jan	1400 hrs	1700 hrs	Dallas 7
130-DE-2	**Innovative Aerospace Designs, Processes, and Tools**	10-Jan	0930 hrs	1230 hrs	Palomino 3
243-DE-3	**Design Processes and Tools**	11-Jan	0930 hrs	1230 hrs	Palomino 3
	Education				
73-EDU-2/DE-1	**Advancing Aerospace Education I**	9-Jan	1400 hrs	1700 hrs	Dallas 7
131-EDU-3	**Advancing Aerospace Education II**	10-Jan	0930 hrs	1230 hrs	Dallas 7
244-EDU-1	**Educating the Engineer of the 2030**	11-Jan	0930 hrs	1230 hrs	Grapevine A
	Fluid Dynamics				
21-FD-1	**Boundary Layer Stability and Transition I**	9-Jan	0930 hrs	1230 hrs	Texas 1
22-FD-2	**Cartesian and Overset CFD Methods**	9-Jan	0930 hrs	1230 hrs	Texas 2
23-FD-3	**CFD Applications**	9-Jan	0930 hrs	1230 hrs	Texas 3
24-FD-4	**CFD Methods for Compressible Flows I**	9-Jan	0930 hrs	1230 hrs	Texas 4
25-FD-6	**Experiments and Numerical Simulations of Shock Dominated Flows**	9-Jan	0930 hrs	1230 hrs	Austin 1
26-FD-7	**Low-Re and Bio-Inspired Flows I: Applications**	9-Jan	0930 hrs	1230 hrs	Grapevine C
75-FD-8	**Boundary Layer Stability and Transition II**	9-Jan	1400 hrs	1700 hrs	Texas 1
76-FD-9	**CFD Methods for Compressible Flows II**	9-Jan	1400 hrs	1700 hrs	Texas 4
77-FD-11	**RANS/LES for High-Speed Flows**	9-Jan	1400 hrs	1700 hrs	Texas 3
78-FD-12	**Special Session: CRM High-Lift Project**	9-Jan	1400 hrs	1700 hrs	Texas 6
79-FD-13	**Synthetic Jets**	9-Jan	1400 hrs	1630 hrs	Texas 2
80-FD-14	**Low-Re and Bio-Inspired Flows II: Unsteady Wings**	9-Jan	1400 hrs	1700 hrs	Grapevine C
133-FD-15	**High-Order Methods I**	10-Jan	0930 hrs	1230 hrs	Texas 1
134-FD-16	**High-Speed Flows I**	10-Jan	0930 hrs	1230 hrs	Texas 2
135-FD-17	**Honoring Gino Moretti**	10-Jan	0930 hrs	1230 hrs	Texas 3
136-FD-18	**Modeling and Optimization Methods**	10-Jan	0930 hrs	1230 hrs	Texas 4
137-FD-19	**Numerical Simulations of Shock Boundary Layer Interactions**	10-Jan	0930 hrs	1230 hrs	Texas 5
138-FD-20	**RANS/LES Applications**	10-Jan	0930 hrs	1230 hrs	Texas 6
139-FD-22	**Low-Re and Bio-Inspired Flows III: Wing Analysis and Design**	10-Jan	0930 hrs	1230 hrs	Grapevine C
184-FD-23	**CFD Methods on Unstructured Meshes**	10-Jan	1400 hrs	1700 hrs	Austin 1
185-FD-24	**High-Order Methods II**	10-Jan	1400 hrs	1700 hrs	Texas 2
186-FD-25	**High-Speed Flows II**	10-Jan	1400 hrs	1700 hrs	Texas 3
187-FD-26	**RANS/LES Modeling of Jet Flows**	10-Jan	1400 hrs	1700 hrs	Texas 4
188-FD-27	**Novel CFD Methods**	10-Jan	1400 hrs	1700 hrs	Texas 5
189-FD-28	**Shock Boundary Layer Interactions I**	10-Jan	1400 hrs	1700 hrs	Texas 1
190-FD-29	**Stability and Transition over Cones**	10-Jan	1400 hrs	1700 hrs	Texas 6
191-FD-30	**Experimental Aerodynamics**	10-Jan	1400 hrs	1700 hrs	Grapevine C
240-APA-23/FD-31	**Vortical Flows & Wake Control**	11-Jan	0930 hrs	1230 hrs	Dallas 3
246-FD-32	**RANS and LES Methods**	11-Jan	0930 hrs	1230 hrs	Texas 3
247-FD-33	**Shock Boundary Layer Interactions II**	11-Jan	0930 hrs	1230 hrs	Texas 1
248-FD-34	**Special Session: Low Reynold's Number Flows**	11-Jan	0930 hrs	1230 hrs	Texas 2
249-FD-35	**Turbulence Modeling: RANS/LES**	11-Jan	0930 hrs	1230 hrs	Texas 4
250-FD-36	**Unsteady Measurements**	11-Jan	0930 hrs	1230 hrs	Texas 5
251-FD-37	**LES**	11-Jan	0930 hrs	1230 hrs	Texas 6
252-FD-38	**Other Topics in Fluid Dynamics I**	11-Jan	0930 hrs	1230 hrs	Grapevine C

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Fluid Dynamics (continued)				
299-FD-39	**CFD Methods for Fast Computing**	11-Jan	1400 hrs	1700 hrs	Texas 6
300-FD-41	**Special Session: Wall Models for Large Eddy Simulation**	11-Jan	1400 hrs	1700 hrs	Texas 2
301-FD-42	**Transition Open Forum**	11-Jan	1400 hrs	1700 hrs	Texas 3
302-FD-43	**Turbulent, Compressible CFD Applications and Validations**	11-Jan	1400 hrs	1700 hrs	Texas 4
303-FD-44	**CFD Modeling**	11-Jan	1400 hrs	1700 hrs	Texas 5
304-FD-45	**Other Topics in Fluid Dynamics II**	11-Jan	1400 hrs	1700 hrs	Grapevine C
414-FD-5	**Experimental Measurements in Stability and Transition**	12-Jan	1400 hrs	1700 hrs	Grapevine 2
359-FD-46	**Boundary Layer Separation Control**	12-Jan	0930 hrs	1230 hrs	Texas 1
360-FD-47	**Internal Flow Control**	12-Jan	0930 hrs	1230 hrs	Texas 2
361-FD-48	**Boundary Layers and Shear Layers I**	12-Jan	0930 hrs	1230 hrs	Texas 4
362-FD-49	**Multiphase Flows I**	12-Jan	0930 hrs	1230 hrs	Texas 3
363-FD-50	**Reacting Flows**	12-Jan	0930 hrs	1230 hrs	Texas 5
364-FD-51	**Cavity Flows**	12-Jan	0930 hrs	1230 hrs	Texas 6
365-FD-52	**LES/DES Simulations**	12-Jan	0930 hrs	1230 hrs	Grapevine C
410-APA-44/FD-53	**Special Session: Sensitivity Analysis of High-Fidelity Rotorcraft Computations**	12-Jan	1400 hrs	1700 hrs	Dallas 6
415-FD-54	**Static and Dynamic Stall Control**	12-Jan	1400 hrs	1700 hrs	Texas 1
416-FD-55	**Jet-Based Flow Control**	12-Jan	1400 hrs	1700 hrs	Texas 2
417-FD-56	**Boundary Layers and Shear Layers II**	12-Jan	1400 hrs	1700 hrs	Texas 4
418-FD-57	**Multiphase Flows II**	12-Jan	1400 hrs	1700 hrs	Texas 3
419-FD-58	**Vortex Flows**	12-Jan	1400 hrs	1700 hrs	Texas 5
420-FD-59	**Turbulence and Transition**	12-Jan	1400 hrs	1700 hrs	Texas 6
462-FD-10	**Flow Stability Analysis**	13-Jan	0930 hrs	1230 hrs	Pecos 4
463-FD-60	**Control of High Speed Flows**	13-Jan	0930 hrs	1300 hrs	Texas 1
464-FD-61	**Jet Flow Experiments**	13-Jan	0930 hrs	1300 hrs	Texas 2
465-FD-62	**Multiphase Flows III**	13-Jan	0930 hrs	1300 hrs	Texas 3
	Green Engineering				
27-GEPC-1	**Hybrid Wing Body**	9-Jan	0930 hrs	1230 hrs	Texas 6
81-GEPC-2	**Hybrid Propulsion Concept Development for Transport Class Aircraft**	9-Jan	1400 hrs	1700 hrs	Texas 5
	Guidance, Navigation, and Control				
253-GNC-1	**Missile Intercept and Evasion Guidance**	11-Jan	0930 hrs	1230 hrs	Austin 1
254-GNC-2	**Loss of Control and Protections**	11-Jan	0930 hrs	1230 hrs	Austin 6
255-GNC-3	**Aircraft GNC Control Applications**	11-Jan	0930 hrs	1230 hrs	Grapevine 4
256-GNC-4	**Navigation Methods**	11-Jan	0930 hrs	1230 hrs	Austin 2
257-GNC-5	**Spacecraft and Launch Controls**	11-Jan	0930 hrs	1230 hrs	Grapevine 6
258-GNC-6	**Control of Micro Air Vehicles**	11-Jan	0930 hrs	1230 hrs	Austin 4
259-GNC-7	**Spacecraft Robotics**	11-Jan	0930 hrs	1230 hrs	Austin 5
305-GNC-8	**Missile GNC**	11-Jan	1400 hrs	1700 hrs	Austin 1
306-GNC-9	**Trajectory Optimization**	11-Jan	1400 hrs	1700 hrs	Grapevine D
307-GNC-10	**Adaptive Control for Aircraft GNC**	11-Jan	1400 hrs	1700 hrs	Austin 6
308-GNC-11	**Aircraft GNC Control Methods**	11-Jan	1400 hrs	1700 hrs	Austin 5
309-GNC-12	**Estimation and Tracking Methods**	11-Jan	1400 hrs	1700 hrs	Austin 2
310-GNC-13	**Spacecraft and Launch Guidance**	11-Jan	1400 hrs	1700 hrs	Grapevine 6

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Guidance, Navigation, and Control (continued)				
311-GNC-14	**Control of Innovative Micro Air Vehicle Configurations**	11-Jan	1400 hrs	1700 hrs	Austin 4
366-GNC-15	**Airflow Mechanosensing for Aircraft Navigation and Control**	12-Jan	0930 hrs	1230 hrs	Grapevine 1
367-GNC-16	**Verification and Validation of Adaptive Systems I**	12-Jan	0930 hrs	1230 hrs	Austin 2
368-GNC-17	**Entry, Descent and Landing GNC Technology I**	12-Jan	0930 hrs	1230 hrs	Austin 4
369-GNC-18	**Control Theory, Analysis and Design I**	12-Jan	0930 hrs	1230 hrs	Austin 5
370-GNC-19	**Missile Guidance**	12-Jan	0930 hrs	1230 hrs	Austin 1
371-GNC-20	**Predictive Control Methods**	12-Jan	0930 hrs	1230 hrs	Grapevine D
372-GNC-21	**Spacecraft and Launch Navigation**	12-Jan	0930 hrs	1230 hrs	Grapevine 6
373-GNC-22	**Aerospace Robotics Control**	12-Jan	0930 hrs	1230 hrs	Austin 6
421-GNC-23	**Verification and Validation of Adaptive Systems II**	12-Jan	1400 hrs	1700 hrs	Austin 2
422-GNC-24	**Elastic Aircraft and Load Alleviation**	12-Jan	1400 hrs	1700 hrs	Austin 1
423-GNC-25	**ATM and Operations**	12-Jan	1400 hrs	1700 hrs	Grapevine D
424-GNC-26	**Spacecraft and Launch Trajectory and Planning**	12-Jan	1400 hrs	1700 hrs	Grapevine 6
425-GNC-27	**Control Theory, Analysis and Design II**	12-Jan	1400 hrs	1700 hrs	Austin 5
426-GNC-28	**Aerospace Robotics Guidance and Navigation**	12-Jan	1400 hrs	1700 hrs	Austin 6
466-GNC-29	**Verification and Validation of Adaptive Systems III**	13-Jan	0930 hrs	1300 hrs	Austin 2
467-GNC-30	**Entry, Descent and Landing GNC Technology II**	13-Jan	0930 hrs	1300 hrs	Austin 4
468-GNC-31	**Spacecraft and Launch Estimation and Sensors**	13-Jan	0930 hrs	1300 hrs	Grapevine 6
469-GNC-32	**Emerging Micro Air Vehicle Capabilities**	13-Jan	0930 hrs	1300 hrs	Austin 5
470-GNC-33	**Aerospace Robotics**	13-Jan	0930 hrs	1300 hrs	Austin 6
471-GNC-34	**Intelligent and Cooperative Control in AE Applications**	13-Jan	0930 hrs	1300 hrs	Austin 1
	Ground Testing				
28-GT-1	**Design, Calibration and Performance of Ground Test Facilities and Subsystems**	9-Jan	0930 hrs	1230 hrs	Ft. Worth 6
82-GT-2	**Experimental and Computational Fluid Dynamics Studies**	9-Jan	1400 hrs	1700 hrs	Ft. Worth 6
83-GT-11	**High Reynolds Number Aerodynamics and Testing (Invited)**	9-Jan	1400 hrs	1700 hrs	Austin 1
124-AMT-7/GT-3	**Force Measurements**	10-Jan	0930 hrs	1230 hrs	Grapevine 4
140-GT-4	**Advances in Test Techniques and Test Management**	10-Jan	0930 hrs	1230 hrs	Ft. Worth 6
192-GT-5	**Design, Calibration and Performance of Ground Test Facilities**	10-Jan	1400 hrs	1700 hrs	Ft. Worth 6
260-GT-6/AMT-10	**Test Technique and Data Analysis Improvements at the NASA Ames Unitary Plan Wind Tunnels I (Invited)**	11-Jan	0930 hrs	1230 hrs	Ft. Worth 6
312-GT-7/AMT-11	**Test Technique and Data Analysis Improvements at the NASA Ames Unitary Plan Wind Tunnels II (Invited)**	11-Jan	1400 hrs	1700 hrs	Ft. Worth 6
374-GT-8	**Real-Time Control, Data Acquisition and Analysis**	12-Jan	0930 hrs	1230 hrs	Ft. Worth 6
375-GT-9	**Selected Papers from the 10th International Symposium on Strain-Gauge Balances Held at CARDC (Invited)**	12-Jan	0930 hrs	1230 hrs	San Antonio 5
	Gas Turbine Engines				
29-GTE-1	**Turbomachinery Technologies**	9-Jan	0930 hrs	1230 hrs	Ft. Worth 2
84-GTE-2	**New Engine Architectures I**	9-Jan	1400 hrs	1700 hrs	Ft. Worth 2
141-GTE-3	**Experimental Tools**	10-Jan	0930 hrs	1230 hrs	Austin 5
193-GTE-4	**Combustion Technologies, Emissions I**	10-Jan	1400 hrs	1700 hrs	San Antonio 4
194-GTE-5	**Numerical Tools I**	10-Jan	1400 hrs	1700 hrs	Grapevine 3

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Gas Turbine Engines (continued)				
261-GTE-6	**Combustion Technologies, Emissions II**	11-Jan	0930 hrs	1230 hrs	San Antonio 4
313-GTE-7	**Advanced Turbine Cooling I**	11-Jan	1400 hrs	1700 hrs	San Antonio 4
376-GTE-8	**Advanced Turbine Cooling II**	12-Jan	0930 hrs	1230 hrs	San Antonio 4
427-GTE-9/PGC-6	**Pressure Gain Combustion for Gas Turbines**	12-Jan	1400 hrs	1700 hrs	Grapevine C
472-GTE-10	**New Engine Architectures II**	13-Jan	0930 hrs	1300 hrs	Grapevine 2
473-GTE-11	**Numerical Tools II**	13-Jan	0930 hrs	1300 hrs	Grapevine 3
	History				
30-HIS-1	**History of Aerospace**	9-Jan	0930 hrs	1230 hrs	Dallas 7
	High Speed Air Breathing Propulsion				
31-HSABP-1	**Scramjet Design and Optimization**	9-Jan	0930 hrs	1230 hrs	San Antonio 4
85-HSABP-2	**Scramjet Combustors**	9-Jan	1400 hrs	1700 hrs	San Antonio 4
142-HSABP-3	**Computational Investigations of Scramjets**	10-Jan	0930 hrs	1230 hrs	San Antonio 4
195-HSABP-4/PGC-3	**Pressure Gain Combustion - Rotating Detonation Engines I**	10-Jan	1400 hrs	1700 hrs	Ft. Worth 3
262-HSABP-5/PGC-4	**Pressure Gain Combustion - Rotating Detonation Engines II**	11-Jan	0930 hrs	1230 hrs	Ft. Worth 3
314-HSABP-6/PGC-5	**Pressure Gain Combustion - Rotating Detonation Engines III**	11-Jan	1400 hrs	1700 hrs	Ft. Worth 3
377-HSABP-7	**Experimental Investigations of Scramjets**	12-Jan	0930 hrs	1230 hrs	Ft. Worth 3
474-HSABP-9/PGC-8	**Pressure Gain Combustion - Rotating and Pulse Detonation Engines**	13-Jan	0930 hrs	1300 hrs	San Antonio 2
	Information and Command & Control Systems				
315-ICC-1	**Information and Command and Control Systems**	11-Jan	1400 hrs	1700 hrs	Ft. Worth 2
	Intelligent Systems				
86-IS-1	**Student Paper Competition**	9-Jan	1400 hrs	1700 hrs	Ft. Worth 1
143-IS-2	**Run-Time Assurance for Adaptive and Intelligent Systems (Invited)**	10-Jan	0930 hrs	1230 hrs	Ft. Worth 1
196-IS-3	**Learning, Reasoning, and Data Driven Systems**	10-Jan	1400 hrs	1700 hrs	Ft. Worth 1
263-IS-4	**Adaptive and Intelligent Control Systems**	11-Jan	0930 hrs	1230 hrs	Ft. Worth 1
316-IS-5	**Integrated Systems Health Management (ISHM)**	11-Jan	1400 hrs	1530 hrs	Ft. Worth 1
317-IS-6	**Human Automation Interaction**	11-Jan	1400 hrs	1700 hrs	Ft. Worth 1
378-IS-7	**Establishing Trust in Autonomous Systems**	12-Jan	0930 hrs	1100 hrs	Ft. Worth 1
396-IS-8	**New Developments in ISHM for NASA Ground, Launch, and Flight Systems**	12-Jan	1100 hrs	1230 hrs	Ft. Worth 1
428-IS-9	**Probabilistic Rule-Based Systems**	12-Jan	1400 hrs	1700 hrs	Ft. Worth 1
	International Student Conference				
32-ISC-1	**International Student Conference-Undergraduate Category**	9-Jan	0930 hrs	1300 hrs	Pecos 1
33-ISC-2	**International Student Conference-Masters Category**	9-Jan	0930 hrs	1300 hrs	Longhorn Hall D
34-ISC-3	**International Student Conference-Team Category**	9-Jan	0930 hrs	1230 hrs	Pecos 3
87-ISC-4	**International Student Conference-Community Outreach Category**	9-Jan	1400 hrs	1700 hrs	Longhorn Hall D

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Materials				
36-MAT-1	**Multifunctional Materials I**	9-Jan	0930 hrs	1230 hrs	Palomino 2
89-MAT-2	**Multifunctional Materials II**	9-Jan	1400 hrs	1700 hrs	Palomino 1
90-MAT-3	**Materials Testing and Characterization**	9-Jan	1400 hrs	1700 hrs	Palomino 2
145-MAT-4	**Multiscale Modeling and Materials Design**	10-Jan	0930 hrs	1230 hrs	Palomino 2
197-MAT-5	**Nanostructured Materials**	10-Jan	1400 hrs	1700 hrs	Palomino 2
318-MAT-6	**Fatigue and Fracture**	11-Jan	1400 hrs	1700 hrs	Palomino 2
333-SUR-2/MAT-7	**Materials/Materials for Survivability**	11-Jan	1400 hrs	1700 hrs	Palomino 3
379-MAT-8	**Materials for Additive Manufacturing**	12-Jan	0930 hrs	1230 hrs	Palomino 2
	Multidisciplinary Design Optimization				
37-MDO-1	**Aircraft Design Optimization I**	9-Jan	0930 hrs	1230 hrs	Mustang 1
57-TP-13/MDO-13	**Hyperloop and Future High-Speed Transportation Concepts**	9-Jan	0930 hrs	1230 hrs	Dallas 5
38-MDO-2	**Multifidelity Optimization**	9-Jan	0930 hrs	1230 hrs	Mustang 2
91-MDO-3	**Aerodynamic Shape Optimization**	9-Jan	1400 hrs	1700 hrs	Mustang 1
146-MDO-4	**Aeroelastic Optimization**	10-Jan	0930 hrs	1230 hrs	Mustang 1
150-NDA-2/MDO-5	**Optimization Under Uncertainty I**	10-Jan	0930 hrs	1230 hrs	Mustang 2
198-MDO-6	**Aero-Structures Optimization**	10-Jan	1400 hrs	1700 hrs	Mustang 1
264-MDO-7	**Aircraft Design Optimization II**	11-Jan	0930 hrs	1230 hrs	Mustang 1
319-MDO-8	**Topology and Structural Optimization**	11-Jan	1400 hrs	1700 hrs	Mustang 1
320-MDO-9	**Emerging Methods and Algorithms in Optimization**	11-Jan	1400 hrs	1700 hrs	Mustang 3
380-MDO-10	**Integrated Computational Materials Engineering (ICME)**	12-Jan	0930 hrs	1230 hrs	Mustang 1
429-MDO-11	**Aircraft Design Optimization III**	12-Jan	1400 hrs	1700 hrs	Mustang 1
475-MDO-12/NDA-10	**Optimization Under Uncertainty II**	13-Jan	0930 hrs	1300 hrs	Mustang 1
	Modeling and Simulation Technologies				
147-MST-1	**Modeling and Simulation of Aeroelasticity and Structural Dynamics**	10-Jan	0930 hrs	1230 hrs	San Antonio 3
148-MST-2	**Modeling and Simulation of Uninhabited Aerial Vehicles I**	10-Jan	0930 hrs	1230 hrs	San Antonio 2
199-MST-3	**Modeling and Simulation of Air Traffic Management I**	10-Jan	1400 hrs	1700 hrs	San Antonio 3
200-MST-4	**Modeling and Simulation of Uninhabited Aerial Vehicles II**	10-Jan	1400 hrs	1700 hrs	San Antonio 2
265-MST-5	**Aviation Simulation Scenario Development I**	11-Jan	0930 hrs	1230 hrs	San Antonio 2
266-MST-6	**Human Factors, Perception, Cueing I**	11-Jan	0930 hrs	1230 hrs	San Antonio 1
267-MST-7	**Modeling and Simulation of Air Traffic Management II**	11-Jan	0930 hrs	1230 hrs	San Antonio 3
321-MST-8	**Aviation Simulation Scenario Development II**	11-Jan	1400 hrs	1700 hrs	San Antonio 2
322-MST-9	**Human Factors, Perception, Cueing II**	11-Jan	1400 hrs	1700 hrs	San Antonio 1
323-MST-10	**Modeling and Simulation of Air Traffic Management III**	11-Jan	1400 hrs	1700 hrs	San Antonio 3
381-MST-11	**Model and Simulation Design, Development, Testing, and Validation**	12-Jan	0930 hrs	1230 hrs	San Antonio 1
382-MST-12	**Modeling and Simulation of Space Vehicle Dynamics, Systems, and Environments**	12-Jan	0930 hrs	1230 hrs	Ft. Worth 7
383-MST-14	**Modeling and Simulation of Uninhabited Aerial Vehicles III**	12-Jan	0930 hrs	1230 hrs	San Antonio 2
430-MST-15	**Modeling and Simulation of Air Vehicle Dynamics, Systems, and Environments**	12-Jan	1400 hrs	1700 hrs	San Antonio 1
431-MST-16	**Modeling and Simulation in Education/Special Topics in Modeling and Simulation**	12-Jan	1400 hrs	1700 hrs	Ft. Worth 7
432-MST-17	**Modeling and Simulation Integration and Architectures**	12-Jan	1400 hrs	1700 hrs	Ft. Worth 6
476-MST-18	**Modeling and Simulation of Propulsion Systems**	13-Jan	0930 hrs	1300 hrs	Ft. Worth 6

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Meshing, Visualization, and Computational Environments				
39-MVC-1	**Visualization/Geometry Representation**	9-Jan	0930 hrs	1230 hrs	Grapevine 3
92-MVC-2	**1st AIAA Geometry and Mesh Generation Workshop/High Lift Prediction Workshop**	9-Jan	1400 hrs	1700 hrs	Grapevine D
149-MVC-3	**Meshing Techniques**	10-Jan	0930 hrs	1230 hrs	Grapevine 3
201-MVC-4	**Computational Environments and the NASA CFD Vision 2030 Goals**	10-Jan	1400 hrs	1700 hrs	Grapevine D
477-MVC-5	**Solution Adaptive Meshing and Error Estimation**	13-Jan	0930 hrs	1300 hrs	Palomino 1
	Non-Deterministic Approaches				
93-NDA-1	**Reliability Analysis Methods and Applications**	9-Jan	1400 hrs	1700 hrs	Mustang 2
150-NDA-2/MDO-5	**Optimization Under Uncertainty I**	10-Jan	0930 hrs	1230 hrs	Mustang 2
151-NDA-3	**Uncertainty Quantification I**	10-Jan	0930 hrs	1230 hrs	Mustang 3
202-NDA-4	**Special Session: Non-Deterministic Approaches for Integrated Computational Materials Engineering**	10-Jan	1400 hrs	1700 hrs	Mustang 2
268-NDA-5	**Special Session: DARPA Efficient Quantification of Uncertainty in Physical Systems (EQUiPS) Program I**	11-Jan	0930 hrs	1230 hrs	Mustang 2
269-NDA-6	**Special Session: Non-Deterministic Approaches for Aerospace Human-in-the-Loop Related Missions**	11-Jan	0930 hrs	1230 hrs	Mustang 3
324-NDA-7	**Special Session: DARPA Efficient Quantification of Uncertainty in Physical Systems (EQUiPS) Program II**	11-Jan	1400 hrs	1700 hrs	Mustang 2
384-NDA-8	**Special Session: Uncertainty Quantification and Management for the Digital Thread and Twin**	12-Jan	0930 hrs	1230 hrs	Mustang 2
433-NDA-9	**Model Calibration, Verification, and Validation**	12-Jan	1400 hrs	1700 hrs	Mustang 2
475-MDO-12/NDA-10	**Optimization Under Uncertainty II**	13-Jan	0930 hrs	1300 hrs	Mustang 1
478-NDA-11	**Uncertainty Quantification II**	13-Jan	0930 hrs	1300 hrs	Mustang 2
	Space Operations and Support				
325-OPS-1	**Intelligent and Autonomous Systems for Improving Space Operation**	11-Jan	1400 hrs	1700 hrs	Grapevine 4
	Pressure Gain Combustion				
94-PC-5/PGC-2	**Pressure Gain Combustion Detonative Propulsion Physics**	9-Jan	1400 hrs	1700 hrs	Ft. Worth 3
195-HSABP-4/PGC-3	**Pressure Gain Combustion - Rotating Detonation Engines I**	10-Jan	1400 hrs	1700 hrs	Ft. Worth 3
262-HSABP-5/PGC-4	**Pressure Gain Combustion - Rotating Detonation Engines II**	11-Jan	0930 hrs	1230 hrs	Ft. Worth 3
314-HSABP-6/PGC-5	**Pressure Gain Combustion - Rotating Detonation Engines III**	11-Jan	1400 hrs	1700 hrs	Ft. Worth 3
427-GTE-9/PGC-6	**Pressure Gain Combustion for Gas Turbines**	12-Jan	1400 hrs	1700 hrs	Grapevine C
474-HSABP-9/PGC-8	**Pressure Gain Combustion - Rotating and Pulse Detonation Engines**	13-Jan	0930 hrs	1300 hrs	San Antonio 2
	Propellants and Combustion				
40-PC-2	**Combustion Modeling and Simulation I**	9-Jan	0930 hrs	1230 hrs	San Antonio 6
41-PC-3	**Alternate Aviation Fuels I**	9-Jan	0930 hrs	1230 hrs	San Antonio 5
42-PC-4	**Combustion Diagnostics I: Applications**	9-Jan	0930 hrs	1230 hrs	San Antonio 2
94-PC-5/PGC-2	**Pressure Gain Combustion Detonative Propulsion Physics**	9-Jan	1400 hrs	1700 hrs	Ft. Worth 3
95-PC-6	**Combustion Modeling and Simulation II**	9-Jan	1400 hrs	1700 hrs	San Antonio 6
96-PC-7	**Alternate Aviation Fuels II**	9-Jan	1400 hrs	1700 hrs	San Antonio 5
97-PC-8	**Combustion Diagnostics II: Spectroscopy and Absorption**	9-Jan	1400 hrs	1700 hrs	San Antonio 2
98-PC-9	**Advanced Combustion Concepts I**	9-Jan	1400 hrs	1700 hrs	Grapevine 3
152-PC-10	**Detonations, Explosions, and Supersonic Combustion**	10-Jan	0930 hrs	1230 hrs	Ft. Worth 3
153-PC-11	**Combustion Modeling and Simulation III**	10-Jan	0930 hrs	1230 hrs	San Antonio 6
154-PC-12	**Chemical Kinetics for Multi-Component Fuels**	10-Jan	0930 hrs	1230 hrs	San Antonio 5
203-PC-13	**Combustion Dynamics I**	10-Jan	1400 hrs	1700 hrs	Dallas 7

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Propellants and Combustion (continued)				
204-PC-14	**Spray and Droplet Combustion**	10-Jan	1400 hrs	1700 hrs	Grapevine 4
205-PC-15	**Solid Rockets**	10-Jan	1400 hrs	1700 hrs	San Antonio 6
206-PC-16	**Combustion Chemistry**	10-Jan	1400 hrs	1700 hrs	San Antonio 5
270-PC-17	**Combustion Dynamics II**	11-Jan	0930 hrs	1230 hrs	Dallas 7
271-PC-18	**Super-Critical Combustion**	11-Jan	0930 hrs	1230 hrs	San Antonio 6
272-PC-19	**Model Validation for Propulsion Workshop: Opening Session**	11-Jan	0930 hrs	1230 hrs	San Antonio 5
326-PC-20	**Combustion Dynamics III**	11-Jan	1400 hrs	1700 hrs	Dallas 7
385-PC-22	**Combustion Dynamics IV**	12-Jan	0930 hrs	1230 hrs	Dallas 7
386-PC-23	**Model Validation for Propulsion Workshop I**	12-Jan	0930 hrs	1230 hrs	San Antonio 6
434-PC-24	**Advanced Combustion Concepts II**	12-Jan	1400 hrs	1700 hrs	Grapevine 1
435-PC-25	**Turbulent Combustion: Flow/Chemistry interactions**	12-Jan	1400 hrs	1700 hrs	Dallas 7
436-PC-26	**Soot/Pyrolysis**	12-Jan	1400 hrs	1700 hrs	Ft. Worth 2
437-PC-27	**Model Validation for Propulsion Workshop II**	12-Jan	1400 hrs	1700 hrs	San Antonio 6
438-PC-28	**Shock Tubes**	12-Jan	1400 hrs	1700 hrs	Austin 4
439-PC-29	**Laminar Flames I**	12-Jan	1400 hrs	1700 hrs	San Antonio 3
479-PC-30	**Flame Stabilization/Blow Out**	13-Jan	0930 hrs	1300 hrs	San Antonio 1
480-PC-31	**Jets in Cross-Flow**	13-Jan	0930 hrs	1300 hrs	Austin 3
481-PC-32	**Laminar Flames II**	13-Jan	0930 hrs	1300 hrs	San Antonio 3
482-PC-33	**Combustor Advances Enabled by Advanced Manufacturing**	13-Jan	0930 hrs	1130 hrs	Grapevine 1
483-PC-34	**Model Validation for Propulsion Workshop: Closing Session**	13-Jan	0930 hrs	1230 hrs	Palomino 2
	Plasmadynamics and Lasers				
43-PDL-1	**Plasma Aerodynamics I**	9-Jan	0930 hrs	1230 hrs	Ft. Worth 4
99-PDL-2	**Plasma Aerodynamics II**	9-Jan	1400 hrs	1700 hrs	Ft. Worth 4
155-PDL-3	**Diagnostics for Plasmas and Gases I**	10-Jan	0930 hrs	1230 hrs	Ft. Worth 4
207-PDL-4	**Diagnostics for Plasmas and Gases II**	10-Jan	1400 hrs	1700 hrs	Ft. Worth 4
208-PDL-5	**Computational Methods**	10-Jan	1400 hrs	1700 hrs	Ft. Worth 5
273-PDL-6	**Plasma-Based Flow Control: Lessons Learned and Prospects I (Invited)**	11-Jan	0930 hrs	1230 hrs	Ft. Worth 4
274-PDL-7	**Plasma and Laser Physics I**	11-Jan	0930 hrs	1230 hrs	Ft. Worth 5
327-PDL-8	**Plasma-Based Flow Control: Lessons Learned and Prospects II (Invited)**	11-Jan	1400 hrs	1700 hrs	Ft. Worth 4
328-PDL-9	**Plasma and Laser Propulsion**	11-Jan	1400 hrs	1700 hrs	Ft. Worth 5
387-PDL-10	**DBD Plasma Actuators I**	12-Jan	0930 hrs	1230 hrs	Ft. Worth 4
388-PDL-11	**Plasma Assisted Combustion and Ignition I**	12-Jan	0930 hrs	1230 hrs	Ft. Worth 5
440-PDL-12	**DBD Plasma Actuators II**	12-Jan	1400 hrs	1700 hrs	Ft. Worth 4
441-PDL-13	**Diagnostics and Experimental Techniques**	12-Jan	1400 hrs	1700 hrs	Ft. Worth 5
484-PDL-14	**Plasma and Laser Physics II**	13-Jan	0930 hrs	1300 hrs	Ft. Worth 5
485-PDL-15	**Plasma Assisted Combustion and Ignition II**	13-Jan	0930 hrs	1300 hrs	Ft. Worth 4
	Small Satellites				
44-SATS-1	**Small Satellite Missions**	9-Jan	0930 hrs	1230 hrs	Austin 4
45-SATS-2	**Small Satellite Subsystems**	9-Jan	0930 hrs	1230 hrs	Austin 6
100-SATS-3	**Small Satellite Software and Systems**	9-Jan	1400 hrs	1700 hrs	Austin 6
156-SATS-4	**Small Satellite Mission Design**	10-Jan	0930 hrs	1230 hrs	Austin 6
209-SATS-5	**Small Satellites - Fusion**	10-Jan	1400 hrs	1700 hrs	Austin 6

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Spacecraft Structures				
46-SCS-1	**Deployable Booms and Flexures**	9-Jan	0930 hrs	1230 hrs	Palomino 1
157-SCS-2	**Small Satellite Deployable Structures**	10-Jan	0930 hrs	1230 hrs	Palomino 1
210-SCS-3	**Quantitative Determination of the Behavior of Deployable Structures**	10-Jan	1400 hrs	1700 hrs	Palomino 1
275-SCS-4	**Membrane-Based Deployable Systems**	11-Jan	0930 hrs	1230 hrs	Palomino 1
329-SCS-5	**Deployable Apertures and Novel Structural Concepts**	11-Jan	1400 hrs	1700 hrs	Palomino 1
	Structural Dynamics				
47-SD-1/APA-46	**Special Session: Aerothermoelasticity of, and Dynamic Response in, High Speed Vehicles and in High Speed Flow I**	9-Jan	0930 hrs	1230 hrs	Appaloosa 2
48-SD-2	**Special Topics in Structural Dynamics and Aeroelasticity I**	9-Jan	0930 hrs	1230 hrs	Appaloosa 3
49-SD-3	**Special Session: Aeroelastic Prediction I**	9-Jan	0930 hrs	1230 hrs	Appaloosa 4
101-SD-4/APA-47	**Special Session: Aerothermoelasticity of, and Dynamic Response in, High Speed Vehicles and in High Speed Flow II**	9-Jan	1400 hrs	1700 hrs	Appaloosa 2
102-SD-5	**Special Topics in Structural Dynamics and Aeroelasticity II**	9-Jan	1400 hrs	1700 hrs	Appaloosa 3
103-SD-6	**Special Session: Aeroelastic Prediction II**	9-Jan	1400 hrs	1700 hrs	Appaloosa 4
158-SD-7	**Piezoelectric Materials for Active and Passive Vibration Control**	10-Jan	0930 hrs	1230 hrs	Appaloosa 2
159-SD-8	**Vehicle and Component Response to Gust, Impact, and Thermal Loads**	10-Jan	0930 hrs	1230 hrs	Appaloosa 3
160-SD-9	**Special Session: Aeroelastic Prediction III**	10-Jan	0930 hrs	1230 hrs	Appaloosa 4
211-SD-10	**Computational Aero-, Servo-, Thermo- Elasticity**	10-Jan	1400 hrs	1700 hrs	Appaloosa 2
212-SD-11	**Structural Health Monitoring and Prognosis, Model Uncertainty**	10-Jan	1400 hrs	1700 hrs	Appaloosa 3
213-SD-12	**Special Session: Aeroelastic Prediction IV**	10-Jan	1400 hrs	1700 hrs	Appaloosa 4
276-SD-13	**Flutter and Aeroelastic Analysis I**	11-Jan	0930 hrs	1230 hrs	Appaloosa 2
277-SD-14	**Dynamic Testing Techniques and System Identification I**	11-Jan	0930 hrs	1230 hrs	Appaloosa 3
278-SD-15	**Dynamics and Structural Dynamics of Launch Vehicles**	11-Jan	0930 hrs	1230 hrs	Appaloosa 4
330-SD-16	**Aeroelastic Analysis**	11-Jan	1400 hrs	1700 hrs	Appaloosa 2
331-SD-17	**Large-Deformation Nonlinear Dynamics, Flexible Multibody Dynamics, Contact/Constraint Modeling**	11-Jan	1400 hrs	1700 hrs	Appaloosa 3
332-SD-18	**Flutter and Aeroelastic Analysis II**	11-Jan	1400 hrs	1700 hrs	Appaloosa 4
389-SD-19	**Special Session: Adaptive Aeroelastic Wing Shaping Control I**	12-Jan	0930 hrs	1230 hrs	Appaloosa 2
390-SD-20	**Dynamic Loads, Response, Vibration, and Stability of Aerospace Vehicles I**	12-Jan	0930 hrs	1230 hrs	Appaloosa 3
391-SD-21	**Reduced Order Modeling**	12-Jan	0930 hrs	1230 hrs	Appaloosa 4
442-SD-22	**Special Session: Adaptive Aeroelastic Wing Shaping Control II**	12-Jan	1400 hrs	1700 hrs	Appaloosa 2
443-SD-23	**Dynamic Loads, Response, Vibration, and Stability of Aerospace Vehicles II**	12-Jan	1400 hrs	1700 hrs	Appaloosa 3
444-SD-24	**Dynamic Testing Techniques and System Identification II**	12-Jan	1400 hrs	1700 hrs	Appaloosa 4
486-SD-25	**Active/Passive Vibration Control, Isolation, Stability Augmentation, Damping**	13-Jan	0930 hrs	1300 hrs	Appaloosa 3
487-SD-26	**Structural Dynamic Modeling of Beams, Cables, Membranes, Plates and Shells**	13-Jan	0930 hrs	1300 hrs	Appaloosa 4
	Systems Engineering				
161-SE-1	**Systems Engineering I**	10-Jan	0930 hrs	1230 hrs	Dallas 6
214-SE-2	**Systems Engineering II**	10-Jan	1400 hrs	1700 hrs	Dallas 6

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Sensor Systems				
162-SEN-1	**Novel Aerospace Sensor Systems**	10-Jan	0930 hrs	1230 hrs	Ft. Worth 2
215-SEN-2	**Fusion of Networked Sensor and Systems**	10-Jan	1400 hrs	1700 hrs	Ft. Worth 2
279-SEN-3	**Applications of Sensor and Information Fusion**	11-Jan	0930 hrs	1230 hrs	Ft. Worth 2
	Software Systems				
50-SOF-1	**Verification vs Certification for Software Intense Systems**	9-Jan	0930 hrs	1230 hrs	Ft. Worth 7
104-SOF-2	**Formal Methods for Software Verification**	9-Jan	1400 hrs	1630 hrs	Ft. Worth 7
163-SOF-3	**Open Systems Architecture - Best Practices, Verification, and Security**	10-Jan	0930 hrs	1230 hrs	Ft. Worth 7
216-SOF-4	**Software Challenges in Aerospace**	10-Jan	1400 hrs	1700 hrs	Ft. Worth 7
	Space Resources Utilization				
51-SRE-1	**ISRU Technologies**	9-Jan	0930 hrs	1230 hrs	Ft. Worth 5
105-SRE-2	**ISRU Mission Concepts**	9-Jan	1400 hrs	1700 hrs	Ft. Worth 5
164-SRE-3	**Resource Harvesting**	10-Jan	0930 hrs	1230 hrs	Ft. Worth 5
	Structures				
52-STR-1	**Composite Damage and Failure Prediction Methods I**	9-Jan	0930 hrs	1230 hrs	Mustang 3
53-STR-2	**Aircraft Structural Design, Test and Analysis**	9-Jan	0930 hrs	1230 hrs	Appaloosa 1
106-STR-3	**Other Topics in Structures I**	9-Jan	1400 hrs	1700 hrs	Mustang 3
107-STR-4	**Composite Structure Design, Test and Analysis**	9-Jan	1400 hrs	1700 hrs	Appaloosa 1
165-STR-5	**Composite Damage and Failure Prediction Methods II**	10-Jan	0930 hrs	1230 hrs	Appaloosa 1
217-STR-6	**Buckling, Fatigue and Fracture of Structures I**	10-Jan	1400 hrs	1700 hrs	Mustang 3
218-STR-7	**Composite Laminate and Structures Optimization**	10-Jan	1400 hrs	1700 hrs	Appaloosa 1
280-STR-8	**Buckling, Fatigue and Fracture of Structures II**	11-Jan	0930 hrs	1230 hrs	Appaloosa 1
392-STR-10	**Challenges in the Design of Joined Wings and Structural Joints**	12-Jan	0930 hrs	1230 hrs	Appaloosa 1
445-STR-11	**Other Topics in Structures II**	12-Jan	1400 hrs	1700 hrs	Appaloosa 1
488-STR-12	**Failure Analysis and Prediction**	13-Jan	0930 hrs	1300 hrs	Appaloosa 1
	Survivability				
281-SUR-1	**Survivability**	11-Jan	0930 hrs	1230 hrs	Palomino 2
333-SUR-2/MAT-7	**Materials/Materials for Survivability**	11-Jan	1400 hrs	1700 hrs	Palomino 3
	Terrestrial Energy				
393-TES-1	**Fossil Fuel Power Technologies I**	12-Jan	0930 hrs	1230 hrs	Mustang 3
446-TES-2	**Fossil Fuel Power Technologies II**	12-Jan	1400 hrs	1700 hrs	Mustang 3
447-TES-3	**Emerging Energy Technologies I**	12-Jan	1400 hrs	1700 hrs	Palomino 1
489-TES-4	**Emerging Energy Technologies II**	13-Jan	0930 hrs	1300 hrs	Mustang 3
	Thermophysics				
55-TP-1	**Aerothermodynamics I**	9-Jan	0930 hrs	1230 hrs	Austin 2
57-TP-13/MDO-13	**Hyperloop and Future High-Speed Transportation Concepts**	9-Jan	0930 hrs	1230 hrs	Dallas 5
56-TP-2	**Heat Transfer I**	9-Jan	0930 hrs	1230 hrs	Austin 3
108-TP-3	**Ablation**	9-Jan	1400 hrs	1700 hrs	Austin 2
109-TP-4	**Experimental Heat Transfer**	9-Jan	1400 hrs	1700 hrs	Austin 3
166-TP-5	**Aerothermodynamics II**	10-Jan	0930 hrs	1230 hrs	Austin 2
167-TP-6	**Heat Transfer II**	10-Jan	0930 hrs	1230 hrs	Austin 3
219-TP-7	**Thermal Protection Systems**	10-Jan	1400 hrs	1700 hrs	Austin 2
220-TP-8	**Heat Pipes/Other Thermophysics Topics**	10-Jan	1400 hrs	1700 hrs	Austin 3

Sessions at a Glance

Abbreviation	Title	Date	Start Time	End Time	Location
	Thermophysics (continued)				
282-TP-9	**Aerothermodynamics III**	11-Jan	0930 hrs	1230 hrs	Austin 3
334-TP-10	**Nonequilibrium Radiation**	11-Jan	1400 hrs	1700 hrs	Austin 3
394-TP-11	**Nonequilibrium Flows and Radiation**	12-Jan	0930 hrs	1230 hrs	Austin 3
448-TP-12	**Direct Simulation Monte Carlo Methods**	12-Jan	1400 hrs	1700 hrs	Austin 3
	Unmanned Systems				
58-UMS-1	**UAS Integration into Urban Environments**	9-Jan	0930 hrs	1230 hrs	Grapevine 2
110-UMS-2	**Special Session: Safe Autonomous Urban Flight I**	9-Jan	1400 hrs	1700 hrs	Grapevine 1
168-UMS-4	**Special Session: Safe Autonomous Urban Flight II**	10-Jan	0930 hrs	1230 hrs	Grapevine 1
169-UMS-5	**UAS Autonomy and Path Planning I**	10-Jan	0930 hrs	1230 hrs	Grapevine 2
221-UMS-6	**UAS Self-Separation and Collision Avoidance I**	10-Jan	1400 hrs	1700 hrs	Grapevine 1
222-UMS-7	**UAS Safety and Certification/UAS Autonomy and Planning II**	10-Jan	1400 hrs	1700 hrs	Grapevine 2
283-UMS-8	**UAS Self-Separation and Collision Avoidance II**	11-Jan	0930 hrs	1230 hrs	Grapevine 1
284-UMS-9	**UAS Technologies and Applications I**	11-Jan	0930 hrs	1230 hrs	Grapevine 2
335-UMS-10	**UAS Technologies and Applications II**	11-Jan	1400 hrs	1700 hrs	Grapevine 2
	Wind Energy				
111-WE-1	**Wind Turbine Aeroelastics and Wakes**	9-Jan	1400 hrs	1700 hrs	Austin 4
170-WE-2	**Wind Turbine Extreme Loads Analysis**	10-Jan	0930 hrs	1230 hrs	Austin 4
223-WE-3	**Wind Turbine Airfoils and Aerodynamics Investigations**	10-Jan	1400 hrs	1700 hrs	Austin 4
224-WE-4	**Offshore Wind Energy Applications**	10-Jan	1400 hrs	1700 hrs	Austin 5
285-WE-5	**Atmospheric Inflow and Turbulence for Wind Energy**	11-Jan	0930 hrs	1230 hrs	Texas D
286-WE-6	**Wind Turbine Structural Dynamics and Damage**	11-Jan	0930 hrs	1230 hrs	Ft. Worth 7
336-WE-8	**Wind Turbine Rotor and Blade Innovations**	11-Jan	1400 hrs	1700 hrs	Ft. Worth 7
395-WE-9	**Wind Energy Control and Optimization I**	12-Jan	0930 hrs	1230 hrs	Texas D
449-WE-10	**Wind Energy Control and Optimization II**	12-Jan	1400 hrs	1700 hrs	Texas D
490-WE-11	**Computational Methods for Wind Turbine Aerodynamics**	13-Jan	0930 hrs	1300 hrs	Dallas 7

Sunday

Sunday, 8 January 2017		
1-NW-1 1500 - 1700 hrs	Meet the Employers	Grapevine B

Sunday, 8 January 2017		
2-NW-2 1800 - 1930 hrs	Student Welcome Reception	Mission Plaza
All students welcome		

Monday

Monday, 9 January 2017		
3-NW-3 0700 - 0730 hrs	Monday Early Morning Networking Coffee Break	Session Room Foyers

Monday, 9 January 2017		
4-SB-1 0730 - 0800 hrs	Monday Morning Speakers' Briefing	Session Rooms

Monday, 9 January 2017		
5-PLNRY-1 0800 - 0900 hrs	Monday Morning Plenary: Setting the Landscape - Factors Driving Today's Disruptive Environment	Texas A & B

Moderator: Robie Samanta Roy, Vice President, Technology Strategy & Innovation, Lockheed Martin Corporation

Panelists:

Chuck Beames
Consultant

Carissa Christensen
Managing Partner
The Tauri Group

David Whelan
Vice President, Engineering & Chief Technologist
Boeing Defense, Space & Security
The Boeing Company

George Whitesides
CEO
Virgin Galactic and The Spaceship Company

Monday, 9 January 2017		
6-NW-4 0900 - 0930 hrs	Monday Morning Networking Coffee Break	Session Room Foyers

Monday, 9 January 2017						
7-AA-1	Aeroacoustics Jet Noise I					Grapevine B
Chaired by: K. AHUJA, Georgia Institute of Technology and A. LYRINTZIS						
0930 hrs AIAA-2017-0001 **Modeling of Noise Reduction in Complex Multistream Jets** D. Papamoschou, University of California, Irvine, Irvine, CA	1000 hrs AIAA-2017-0002 **Temperature effects on the aerodynamic and acoustic fields of a rectangular supersonic jet** R. Gojon, Royal Institute of Technology (KTH), Stockholm, Sweden; F. Baier, E. Gutmark, University of Cincinnati, Cincinnati, OH; M. Mihaescu, Royal Institute of Technology (KTH), Stockholm, Sweden	1030 hrs AIAA-2017-0003 **Mach wave suppression by a pair of subsonic helical modes in a supersonic jet** D. Watanabe, University of Toyama, Toyama, Japan; H. Maekawa, University of Electro-Communications, Chofu, Japan	1100 hrs AIAA-2017-0004 **An Investigation of Effects of Jet Temperature on Twin-Jet Flow and Acoustic Fields** J. Cluts, C. Kuo, M. Samimy, Ohio State University, Columbus, OH	1130 hrs AIAA-2017-0005 **Investigation of Isolated and Installed Three-Stream Jets from Offset Nozzles** V. Phong, D. Papamoschou, University of California, Irvine, Irvine, CA	1200 hrs AIAA-2017-0006 **Flow and Noise Characteristics of Under- and Over-expanded Supersonic Rectangular Jets** R. Johnson, K. Viswanath, A. Corrigan, K. Kailasanath, Naval Research Laboratory, Washington, D.C.; P. Mora , F. Baier, University of Cincinnati, Cincinnati, OH; et al.	

Monday, 9 January 2017						
8-ACD-1	**Aircraft Design Tools and Methods I**					**San Antonio 1**
Chaired by: R. VOS, TU Delft fac. Aerospace Engineering and J. MERRET, Gulfstream Aerospace Corporation						
0930 hrs AIAA-2017-0007 **An Introduction to the Impact of Pilot Techniques Upon "Certified" Field Performance** T. Takahashi, D. Wood, Arizona State University, Tempe, AZ; L. Bays, DragonFly Aeronautics, LLC, Kennesaw, GA	1000 hrs AIAA-2017-0008 **Generalized Methodology for Sizing Unconventional Propulsion and Configuration Aircraft** G. Bucsan, K. Collins, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2017-0009 **Initial Weight Estimate of Advanced Transport Aircraft Concepts Considering Aeroelastic Effects** G. P. Chiozzotto, German Aerospace Center (DLR), Göttingen, Germany	1100 hrs AIAA-2017-0010 **A Business-Driven Optimization Methodology Applied to Commercial Aviation Programs** F. Burgaud, M. Pokhrel, D. Mavris, Georgia Institute of Technology, Atlanta, GA			

Monday, 9 January 2017						
9-ACD-2	**Unmanned Aircraft Design I**					**San Antonio 3**
Chaired by: Z. MIAN, United Technologies Research Center and D. WELLS, NASA Langley Research Center						
0930 hrs AIAA-2017-0011 **A Variable Forward-Sweep Wing Design for Enhanced Perching in Micro Aerial Vehicles** Z. Manchester, Harvard University, Cambridge, MA; J. Lipton, Massachusetts Institute of Technology, Cambridge, MA; R. Wood, S. Kuindersma, Harvard University, Cambridge, MA	1000 hrs AIAA-2017-0012 **Design, Construction, and Flight Testing of the World's Fastest Micro-Scale Quadcopter** R. Bramlette, T. Johnston, R. Barrett-Gonzalez, University of Kansas, Lawrence, Lawrence, KS	1030 hrs AIAA-2017-0013 **Conceptual Design of a Man-Portable Ornithopter** A. Moodie, A. Gallaher, Army Aviation and Missile Research Development and Engineering Center, Redstone Arsenal, AL	1100 hrs AIAA-2017-0014 **Design Methodology for Small Scale Unmanned Quadrotors** J. Winslow, V. Hrishikeshavan, I. Chopra, University of Maryland, College Park, College Park, MD	1130 hrs AIAA-2017-0015 **Robust Design of Small-Scale Unmanned Helicopter for Hover Performance using Taguchi Method** A. D. R., R. Ganguli, D. Harursampath, Indian Institute of Science, Bengaluru, India; P. Friedmann, University of Michigan, Ann Arbor, Ann Arbor, MI		

Monday, 9 January 2017						
10-AFM-1	**Aeroservoelastic (ASE) Control, Modeling, Simulation, and Optimization**					**Grapevine 5**
Chaired by: T. ALEXEEV, University of California, San Diego and A. DA RONCH, University of Southampton						
0930 hrs AIAA-2017-0016 **Multidimensional discrete gust loads of a large civil flexible aircraft** G. Dussart, M. Lone, S. Guo, Cranfield University, Cranfield, United Kingdom	1000 hrs AIAA-2017-0017 **Control surface modelling for fast simulation of large flexible aircraft** A. Pontillo, G. Dussart, M. Lone, D. Fleischmann, Cranfield University, Cranfield, United Kingdom; E. Coetzee, Airbus, Bristol, United Kingdom	1030 hrs AIAA-2017-0018 **Real Time Modal Identification of a Flexible Unmanned Aerial Vehicle** P. Schulze, B. Danowsky, P. Yang, Systems Technology, Inc., Hawthorne, CA; C. Harris, Air Force Test Center, Edwards AFB, CA	1100 hrs AIAA-2017-0019 **Aeroservoelastic Modeling of Body Freedom Flutter for Control System Design** J. Ouellette, NASA Armstrong Flight Research Center, Edwards, CA	1130 hrs AIAA-2017-0020 **Redesign of a Human Powered Aircraft using the Boxplane Concept** A. Collazo Garcia, L. Gonzalez-Linero, Embry-Riddle Aeronautical University, Daytona Beach, FL	1200 hrs AIAA-2017-0021 **Impact of Rotor Blade Aeroelasticity on Rotorcraft Flight Dynamics** S. Weber, Airbus, Kidlington, United Kingdom; L. Ramos Valle, X. Barral, D. Hayes, M. Lone, A. Cooke, Cranfield University, Cranfield, United Kingdom	

Monday, 9 January 2017						
11-AMT-1	**Velocimetry: Applications I**					**Grapevine 6**
Chaired by: K. LOWE, Virginia Tech and P. LAVOIE, University of Toronto						
0930 hrs AIAA-2017-0022 **Three-Component Velocity Measurements in a Turbine Engine Exhaust** T. Jenkins, C. Hess, R. Morgan, MetroLaser, Inc., Laguna Hills, CA; J. Seitzman, S. Adusumilli, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2017-0023 **Comparison of stereo-PIV and plenoptic-PIV measurements on the wake of a cylinder in NASA ground test facilities.** T. Fahringer, B. Thurow, Auburn University, Auburn, AL; W. Humphreys, S. Bartram, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2017-0024 **"Postage-Stamp PIV:" Small Velocity Fields at 400 kHz for Turbulence Spectra Measurements** S. Beresh, J. Henfling, R. Spillers, Sandia National Laboratories, Albuquerque, NM	1100 hrs AIAA-2017-0025 **Two-Dimensional Krypton Tagging Velocimetry (KTV) Investigation of Shock Wave/Turbulent Boundary-Layer Interaction** M. Mustafa, M. Hunt, N. Parziale, Stevens Institute of Technology, Hoboken, NJ; M. Smith, Aerospace Testing Alliance, Silver Spring, MD; E. Marineau, Arnold Engineering Development Complex, Silver Spring, MD	1130 hrs AIAA-2017-0026 **FLEET Velocimetry Measurements on a Transonic Airfoil** R. Burns, P. Danehy, NASA Langley Research Center, Hampton, VA		

Monday, 9 January 2017						
12-AMT-2	**Temperature Measurements and Applications**					**Grapevine 4**
Chaired by: C. DEDIC, Iowa State University and J. MILLER, USAF/AFRL/RQTC						
0930 hrs AIAA-2017-0027 **Temperature measurements in a wall stabilized steady flame using CARS** K. Sesha Giri, D. Lacoste, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; J. Damazo, E. Kwon, The Boeing Company, Seattle, WA; W. Roberts, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia	1000 hrs AIAA-2017-0028 **Spatially correlated temperature, oxygen, and fuel measurements in a plasma-assisted hydrogen diffusion flame by one-dimensional fs/ps rotational CARS imaging** J. Retter, G. Elliott, University of Illinois, Urbana-Champaign, Urbana, IL; S. Kearney, Sandia National Laboratories, Albuquerque, NM	1030 hrs AIAA-2017-0029 ***See-through-wall* Radar REMPI for Spatially Localized Temperature Measurements in a Well-Stirred Reactor** Y. Wu, M. Gragston, Z. Zhang, University of Tennessee, Knoxville, Knoxville, TN; R. Stachler, J. Heyne, S. Stouffer, University of Dayton, Dayton, OH; et al.	1100 hrs AIAA-2017-0030 **Investigation of energy distributions behind a microscale gas-phase detonation tube using hybrid fs/ps coherent anti-Stokes Raman scattering** C. Dedic, J. Michael, Iowa State University, Ames, IA; T. Meyer, Purdue University, West Lafayette, IN	1130 hrs AIAA-2017-0031 **Two-Beam Femtosecond Rotational CARS for One-Dimensional Thermometry in a Turbulent, Sooting Jet Flame** D. Richardson, S. Roy, Spectral Energies, LLC, Dayton, OH; J. Gord, Air Force Research Laboratory, Wright-Patterson AFB, OH; S. Kearney, Sandia National Laboratories, Albuquerque, NM	1200 hrs AIAA-2017-0032 **Femtosecond Chirped-Probe-Pulse Coherent Anti-Stokes Raman Scattering Thermometry of Nitrogen in a Piloted Spray Burner** L. Thomas, Purdue University, West Lafayette, IN; A. Lowe, University of Sydney, Sydney, Australia; A. Satija, R. Lucht, Purdue University, West Lafayette, IN; A. Masri, University of Sydney, Sydney, Australia	

Monday, 9 January 2017						
13-APA-1	**Aerodynamic Design: Analysis, Methodologies and Optimization Techniques I**					**Dallas 1**
Chaired by: N. HALL, Lockheed Martin and K. KONTIS, University of Glasgow						
0930 hrs AIAA-2017-0033 **Wing Optimization using Dual Number Automatic Differentiation in MachUp** J. Hodson, D. Hunsaker, R. Spall, Utah State University, Logan, UT	1000 hrs AIAA-2017-0034 **Numerical Investigation of the Effect of Geometric Design Parameters on Swirl Brake Performance** N. Matula, P. Cizmas, Texas A&M University, College Station, TX	1030 hrs AIAA-2017-0035 **Efficient variable-fidelity multi-point aerodynamic shape optimization based on hierarchical kriging** M. Huang, X. Yang, Northwestern Polytechnical University, Xi'an, China; X. Peng, Midea Global Innovation Center, FoShan, China	1100 hrs AIAA-2017-0036 **Three-Dimensional Subdivision Parameterisation for Aerodynamic Shape Optimisation** D. Masters, University of Bristol, Bristol, United Kingdom; N. Taylor, MBDA, Bristol, United Kingdom; T. Rendall, C. Allen, University of Bristol, Bristol, United Kingdom	1130 hrs AIAA-2017-0037 **An Efficient Reduced-Order-Model for Accurate Projection of Adjoint Sensitivities** A. Kaminsky, R. Djeddi, K. Ekici, University of Tennessee, Knoxville, Knoxville, TN		

Monday, 9 January 2017						
14-APA-2	**Special Session: Low Boom Activities I**					**Dallas 2**
Chaired by: K. WAITHE, Boom Technology Inc and G. CARRIER, ONERA/DAAP						
0930 hrs AIAA-2017-0038 **Near Field Sonic Boom Analysis with HUNS3D Solver** B. Ma, G. Wang, J. Ren, Z. Ye, Northwestern Polytechnical University, Xi'an, China; G. Zha, University of Miami, Coral Gables, FL	1000 hrs AIAA-2017-0039 **Wing Planform Optimization Method for Low-Boom and Low-Drag Aircraft** Y. Kasuga, University of Tokyo, Kashiwa, Japan; K. Yoshida, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; H. Ishikawa, ASIRI Corporation, Chiyoda, Japan	1030 hrs AIAA-2017-0040 **Impact of Aeroelastic Uncertainties on Sonic Boom Signature of a Commercial Supersonic Transport Configuration** M. Nikbay, National Institute of Aerospace, Hampton, VA; B. Stanford, T. West, NASA Langley Research Center, Hampton, VA; S. Rallabhandi, National Institute of Aerospace, Hampton, VA	1100 hrs AIAA-2017-0041 **Nozzle Plume/Shock Interaction Sonic Boom Test Results from the NASA Ames 9- by 7-Foot Supersonic Wind Tunnel** D. Durston, S. Cliff, M. Denison, D. Dalle, NASA Ames Research Center, Moffett Field, CA; R. Castner, NASA Glenn Research Center, Cleveland, OH; A. Elmiligui, NASA Langley Research Center, Hampton, VA; et al.	1130 hrs AIAA-2017-0042 **Computational Evaluations of Experimental Data for Sonic Boom Models with Nozzle Jet Flow Interactions** J. Jensen, M. Denison, Science and Technology Corporation, Moffett Field, CA; S. Cliff, NASA Ames Research Center, Moffett Field, CA	1200 hrs AIAA-2017-0043 **Retroreflective Background-Oriented Schlieren Imaging Results from the NASA Ames Plume-Shock Interaction Test** N. Smith, AerospaceComputing, Inc., Moffett Field, CA; D. Durston, J. Heineck, NASA Ames Research Center, Moffett Field, CA	

Monday, 9 January 2017						
15-APA-3	**Environmentally Friendly/Efficient Aerodynamics and Enabling Technology I**					**Dallas 3**
Chaired by: G. DALE, U.S. Air Force Research Laboratory and P. MCCLURE, Lockheed Martin Aeronautics						
0930 hrs AIAA-2017-0044 **Prospects for the Application of Practical Drag Reduction Technologies to Legacy Transport Aircraft** W. Felder, Stevens Institute of Technology, Hoboken, NJ; G. Dale, Air Force Research Laboratory, Dayton, OH; C. Cash, Ohio Aerospace Institute, Cleveland, OH; M. Chang, General Atomics, Palmdale, CA	1000 hrs AIAA-2017-0045 **Viscous Drag Measurements on Non-Smooth Surfaces** J. Naughton, E. DeMillard, University of Wyoming, Laramie, Laramie, WY; G. Dale, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2017-0046 **Development of an Elastomeric Balance for Evaluation of Drag Reduction Materials** J. Crafton, J. Webb, R. Forlines, Innovative Scientific Solutions, Inc., Dayton, OH	1100 hrs AIAA-2017-0047 **Riblet Microfabrication Method for Drag Reduction** H. Bilinsky, MicroTau Pty., Ltd., Sydney, Australia	1130 hrs AIAA-2017-0048 **Design and Testing of Conventional Riblets and 3-D Riblets with Streamwise Variable Height** P. McClure, B. Smith, W. Baker, P. Yagle, Lockheed Martin Corporation, Fort Worth, TX	1200 hrs AIAA-2017-0049 **Evaluation of Structured Roughness for Separation Control and Drag Reduction** B. Smith, W. Baker, P. Yagle, Lockheed Martin Aeronautics Company, Fort Worth, TX	

Monday, 9 January 2017						
16-APA-4	**Propeller/Rotorcraft/Wind Turbine Aerodynamics I: Coaxial and Open Rotor**					**Dallas 4**
Chaired by: J. RAULEDER, Technical University of Munich and R. RAMAMURTI, Naval Research Laboratory						
0930 hrs AIAA-2017-0050 **Real-Time Simulation of Dynamic Inflow Using Rotorcraft Flight Dynamics Coupled With a Lattice-Boltzmann Based Fluid Simulation** J. Bludau, J. Rauleder, L. Friedmann, M. Hajek, Technical University of Munich, Munich, Germany	1000 hrs AIAA-2017-0051 **Application of Vortex Methods to Coaxial Rotor Wake and Load Calculations** P. Singh, P. Friedmann, University of Michigan, Ann Arbor, Ann Arbor, MI	1030 hrs AIAA-2017-0052 **Computations of Torque-Balanced Coaxial Rotor Flows** S. Yoon, W. Chan, T. Pulliam, NASA Ames Research Center, Moffett Field, CA	1100 hrs AIAA-2017-0053 **Initial Development of Physics-Based Aeroanalysis Methods for Open Rotor Conceptual Design** T. Quackenbush, A. Boschitsch, M. Yu, Continuum Dynamics, Inc., Ewing, NJ			

Monday, 9 January 2017						
17-ASC-1	**Adaptive and Morphing Aircraft and Aeroelasticity**					**Palomino 3**
Chaired by: D. MCGOWAN, NASA Langley Research Center and R. BOTEZ, Ecole de Technologie Superieure						
0930 hrs AIAA-2017-0054 **Design optimization toward a shape memory alloy-based bio-inspired morphing wing** P. Leal, R. Petterson, D. Hartl, Texas A&M University, College Station, TX	1000 hrs AIAA-2017-0055 **A novel span-wise morphing trailing edge concept** Q. Ai, P. Weaver, University of Bristol, Bristol, United Kingdom	1030 hrs AIAA-2017-0056 **Aerodynamic Step Input Response of Electro-Active Membrane Wings** I. Barbu, R. de Kat, B. Ganapathisubramani, University of Southampton, Southampton, United Kingdom	1100 hrs AIAA-2017-0057 **Experimental Verification of a Semi-Active Piezoelectric Pitch Link for Helicopter Vibration Attenuation** M. Clementino, University of São Paulo, São Carlos, Brazil; F. Nitzsche, Carleton University, Ottawa, Canada; C. De Marqui, University of São Paulo, São Carlos, Brazil	1130 hrs AIAA-2017-0058 **Novel growing micro unmanned air vehicle: sizing process and spanning actuation** A. Quintana, M. Hassanalian, A. Abdelkefi, New Mexico State University, Las Cruces, NM	1200 hrs AIAA-2017-0059 **Design, Analysis and Experimental Testing of a Morphing Wing** J. Martinez, Technical University of Madrid, Madrid, Spain; D. Scopelliti, Technical University of Turin, Turin, Italy; C. Bil, R. Carrese, P. Marzocca, RMIT University, Melbourne, Australia	

Monday, 9 January 2017						
18-CMS-1	**Communication Systems**					**Ft. Worth 1**
Chaired by: D. PONCHAK, NASA Glenn Research Center						
0930 hrs AIAA-2017-0060 **Performance Based Link Restart Concept for Aeronautical Telecommunications Network (ATN) Performance Improvement** D. Zeng, J. Gonda, MITRE Corporation, McLean, VA	1000 hrs AIAA-2017-0061 **Investigating Encrypted IEEE 802.15.4 and DigiMesh Communications for Small Unmanned Systems** M. Leccadito, B. Yemaneberhane, C. Nimo, T. Bakker, R. Klenke, Virginia Commonwealth University, Richmond, VA	1030 hrs AIAA-2017-0062 **Achieving Agreement In Three Rounds With Bounded-Byzantine Faults** M. Malekpour, NASA Langley Research Center, Hampton, VA				

Monday, 9 January 2017						
19-DA-1	**Digital Avionics**					**Grapevine 1**
Chaired by: D. ABERNATHY, Lockheed Martin Aeronautics and M. UIJT DE HAAG, Ohio University						
0930 hrs AIAA-2017-0063 **Exploring a Model Predictive Control Law to Design Four-Dimensional Trajectories for Interval Management** X. Bai, Rutgers University, Piscataway, NJ; L. Weitz, MITRE Corporation, McLean, VA	1000 hrs AIAA-2017-0064 **A Tripartite Concept of a Remote-Copilot Center for Commercial Single-Pilot Operations** D. Schmid, B. Korn, German Aerospace Center (DLR), Braunschweig, Germany	1030 hrs AIAA-2017-0065 **Experience with Sensed and Derived Angle of Attack Estimation Systems in a General Aviation Airplane** B. Jackson, K. Hoffler, Adaptive Aerospace Group, Inc., Hampton, VA; D. Sizoo, W. Ryan, Federal Aviation Administration, Kansas City, MO				

Monday, 9 January 2017		
20-F360-1 0930 - 1130 hrs	CREATE: Enabling Innovation Through Computational Prototypes and Supercomputers	Texas C

Moderator: Paul Nielsen, Director and Chief Executive Officer, Software Engineering Institute, Carnegie Mellon University

Panelists:

Edward Kraft
Technical Advisor, Air Force Test Center
Air Force Material Command
U.S. Air Force

Robert L. Meakin
CREATE Air Vehicles Project Manager
High Performance Computing
Modernization Program
Department of Defense

Scott A. Morton
CREATE, Kestrel Principal Software Developer
High Performance Computing
Modernization Program
Department of Defense

Robert Narducci
Technical Fellow
The Boeing Company

Douglass Post
Chief Scientist
High Performance Computing
Modernization Program
Department of Defense

Brian Smith
Fellow, ADP Program and Technology Integration
Lockheed Martin Aeronautics

Monday, 9 January 2017						
21-FD-1	Boundary Layer Stability and Transition I					Texas 1
Chaired by: A. SESCU, Mississippi State University and P. PAREDES, NASA Langley Research Center						
0930 hrs AIAA-2017-0066 **Transient Growth and Streak Instabilities on a Hypersonic Blunt Body** P. Paredes, M. Choudhari, F. Li, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2017-0067 **Direct Numerical Simulation of Hypersonic Turbulent Boundary Layers inside an Axisymmetric Nozzle** J. Huang, C. Zhang, L. Duan, Missouri University of Science and Technology, Rolla, MO; M. Choudhari, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2017-0068 **Boundary-Layer Transition Measurements in the Boeing/AFOSR Mach-6 Quiet Tunnel** K. Gray, B. Chynoweth, J. Edelman, G. McKiernan, M. Wason, S. Schneider, Purdue University, West Lafayette, IN	1100 hrs AIAA-2017-0069 **Non-Equilibrium Effects on the Stability of a Mach 10 Flat-Plate Boundary Layer** X. Wang, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1130 hrs AIAA-2017-0070 **Real gas effects on receptivity to kinetic fluctuations** L. Edwards, A. Tumin, University of Arizona, Tucson, Tucson, AZ		

Monday, 9 January 2017						
22-FD-2	Cartesian and Overset CFD Methods					Texas 2
Chaired by: M. GALBRAITH and J. BENEK, Air Force Research Lab AFRL/RQ						
0930 hrs AIAA-2017-0071 **Isolating Flow-field Discontinuities while Preserving Monotonicity and High-order Accuracy on Cartesian Meshes** N. Mundis, ERC, Inc., Edwards AFB, CA; C. Lietz, Sierra Lobo, Inc., Edwards AFB, CA; K. Brown, V. Sankaran, Air Force Research Laboratory, Edwards AFB, CA	1000 hrs AIAA-2017-0072 **An Effcient, High-Order, Hybrid Unstructured and Adaptive Cartesian Mesh Approach for External Aerodynamics** K. Puri, S. Frankel, Technion–Israel Institute of Technology, Haifa, Israel	1030 hrs AIAA-2017-0073 **Optimal multi-block mesh generation for CFD** Z. Ali, P. Dhanasekaran, P. Tucker, R. Watson, Cambridge University, Cambridge, United Kingdom; S. Shahpar, Rolls-Royce Group plc, Derby, United Kingdom	1100 hrs AIAA-2017-0074 **Validation of High-Order Methods of Three-Dimensional Strand Grids with an Overset Cartesian Grid** D. Work, Y. Yanagita, A. Katz, Utah State University, Logan, UT			

Monday, 9 January 2017						
23-FD-3	CFD Applications					Texas 3
Chaired by: K. SREENIVAS, SimCenter: Center for Excellence in Applied Computational Science and Engineering and L. WANG, National Institute of Aerospace						
0930 hrs AIAA-2017-0075 **Frequency Domain Approach for Transonic Aerodynamic Modelling Applied to a Viscous Wing** A. Poncet-Montanges, D. Jones, A. Gaitonde, J. Cooper, University of Bristol, Bristol, United Kingdom; Y. Lemmens, Siemens, Leuven, Belgium	1000 hrs AIAA-2017-0076 **Application of Exact Error Transport Equations and Adjoint Error Estimation to AIAA Workshops** J. Derlaga, M. Park, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2017-0077 **Stabilized Finite Elements in FUN3D** W. Anderson, NASA Langley Research Center, Hampton, VA; J. Newman, Univerisity of Tennessee at Chattanooga, Chattanooga, TN; S. Karman, Pointwise, Inc., Fort Worth, TX	1100 hrs AIAA-2017-0078 **Numerical Investigation of Helicopter Blade Section Undergoing Time-Periodic Motions** G. Wen, A. Gross, New Mexico State University, Las Cruces, NM	1130 hrs AIAA-2017-0079 **Recent Advances in Scaling Up Complex Fluid-Structure Interaction Simulations** R. Lohner, F. Mut, F. Camelli, George Mason University, Fairfax, VA; J. Baum, O. Soto, F. Togashi, Applied Simulations, Inc., McLean, VA; et al.	1200 hrs AIAA-2017-0080 **A Non-Linear Harmonic Balance Method for Turbomachinery Applications** G. Cvijetic, H. Jasak, University of Zagreb, Zagreb, Croatia; G. Contento, G. Lupieri, University of Trieste, Trieste, Italy	

Monday, 9 January 2017						
24-FD-4	**CFD Methods for Compressible Flows I**					**Texas 4**
Chaired by: R. SINGH, General Electric Global Research and H. NISHIKAWA, National Institute of Aerospace						
0930 hrs AIAA-2017-0081 **Hyperbolic Navier-Stokes Method for High-Reynolds-Number Boundary Layer Flows** H. Nishikawa, Y. Liu, National Institute of Aerospace, Hampton, VA	1000 hrs AIAA-2017-0082 **An hp-Adaptive Unstructured Finite Volume Solver for Compressible Aerodynamic Flows** A. Jalali, C. Ollivier Gooch, University of British Columbia, Vancouver, Canada	1030 hrs AIAA-2017-0083 **An Oscillation-Suppressing Inviscid Compressible Flow Solver Based on a CE/SE Inspired Second-Order Spacetime Cell-Vertex Scheme** S. Tu, Q. Pang, Jackson State University, Jackson, MS	1100 hrs AIAA-2017-0084 **Entropy stable Discontinuous Galerkin Scheme for the compressible Navier-Stokes Equations** M. Zakerzadeh, G. May, RWTH Aachen University, Aachen, Germany	1130 hrs AIAA-2017-0085 **Finite-Element Formulation of a Jacobian-free Solver for Supersonic Viscous Flows on Hybrid Grids** S. Gao, W. Habashi, M. Fossati, McGill University, Montréal, Canada; D. Isola, G. Baruzzi, ANSYS, Inc., Montréal, Canada		

Monday, 9 January 2017						
25-FD-6	**Experiments and Numerical Simulations of Shock Dominated Flows**					**Austin 1**
Chaired by: J. LARSSON, University of Maryland and M. GAMBA, University of Michigan						
0930 hrs AIAA-2017-0086 **Dimensionless scaling of heat-release-induced planar shock waves in near-critical CO2** M. Migliorino, C. Scalo, Purdue University, West Lafayette, IN	1000 hrs AIAA-2017-0087 **Unsteadiness characteristics and three-dimensional leading shock structure of a Mach 2.0 shock train** R. Hunt, J. Driscoll, M. Gamba, University of Michigan, Ann Arbor, Ann Arbor, MI	1030 hrs AIAA-2017-0088 **Periodic forcing of a shock train in Mach 2.0 flow** R. Hunt, J. Driscoll, M. Gamba, University of Michigan, Ann Arbor, Ann Arbor, MI	1100 hrs AIAA-2017-0089 **Simulation of Blast Wave Propagation and Mushroom Cloud formation by a Bomb Explosion** J. Kim, BOOLT Simulation Technology, Seoul, South Korea	1130 hrs AIAA-2017-0090 **Characteristics of Self-Sustained-Shock Pulsation around a Forward-Facng Concave with Spike** T. Mizukaki, Tokai University, Hiratsuka, Japan; K. Yamada, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1200 hrs AIAA-2017-0091 **On The Interaction of Oblique Shocks and Laminar Mixing Layers** D. Martinez-Ruiz, National Center for Scientific Research (CNRS), Marseille, France; C. Huete, Charles III University of Madrid, Leganes, Spain; A. Sanchez, F. Williams, University of California, San Diego, La Jolla, CA	

Monday, 9 January 2017						
26-FD-7	**Low-Re and Bio-Inspired Flows I: Applications**					**Grapevine C**
Chaired by: M. GREEN, Syracuse University and K. MULLENERS, EPFL						
0930 hrs AIAA-2017-0092 **Nonlinear Hydrodynamic Interaction in Fish Swimming** M. Khalid, I. Akhtar, National University of Sciences and Technology, Rawalpindi, Pakistan; H. Dong, University of Virginia, Charlottesville, Charlottesville, VA; H. Imtiaz, National University of Sciences and Technology, Rawalpindi, Pakistan	1000 hrs AIAA-2017-0093 **Effects of Altitude on the Flight Performance of Monarch Butterflies** C. Kang, M. Sridhar, D. Landrum, Y. Nakamura, University of Alabama, Huntsville, Huntsville, AL; H. Aono, Tokyo University of Science, Tokyo, Japan	1030 hrs AIAA-2017-0094 **Wake Structure Induced by Seal Whisker: Effects of Cross-section Rotation Angle** A. Rinehart, W. Zhang, Cleveland State University, Cleveland, OH; V. Shyam, NASA Glenn Research Center, Cleveland, OH	1100 hrs AIAA-2017-0095 **Singularity Methods for Modeling Airfoil Flows with Dynamic Stall and Fast Flap Deflections** N. Laws, B. Epps, Dartmouth College, Hanover, NH; A. Medina, M. Ol, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2017-0096 **The effects of advance ratio and blade number on the forward flight efficiency of cycloidal rotor** Y. Hu, G. Wang, H. Zhang, Northwestern Polytechnical University, Xi'an, China; J. Liu, Xi'an Jiaotong University, Xi'an, China; X. Yang, B. Zhu, Northwestern Polytechnical University, Xi'an, China		

Monday, 9 January 2017						
27-GEPC-1	**Hybrid Wing Body**					**Texas 6**
Chaired by: D. CHAN, NASA-Langley Research Center and R. PLUMLEY						
0930 hrs AIAA-2017-0097 **Revolutionary Configurations: Technology Convergence Point** R. Plumley, C. Zeune, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs Oral Presentation **Recent Progress Towards the Lockheed Martin Hybrid Wing Body Airlifter Concept** A. Wick, J. Hooker, Lockheed Martin Corporation, Marietta, GA	1030 hrs AIAA-2017-0098 **Transonic Semispan Aerodynamic Testing of the Hybrid Wing Body with Over Wing Nacelles in the National Transonic Facility** D. Chan, NASA Langley Research Center, Hampton, VA; J. Hooker, A. Wick, Lockheed Martin Corporation, Marietta, GA; R. Plumley, C. Zeune, M. Ol, Air Force Research Laboratory, Wright-Patterson AFB, OH; et al.	1100 hrs AIAA-2017-0099 **Hybrid Wing Body Performance Validation at the National Transonic Facility** A. Wick, J. Hooker, J. Walker, Lockheed Martin Corporation, Marietta, GA; D. Chan, NASA Langley Research Center, Hampton, VA; R. Plumley, C. Zeune, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2017-0100 **Powered Low Speed Testing of the Hybrid Wing Body** A. Wick, J. Hooker, C. Clark, Lockheed Martin Corporation, Marietta, GA; R. Plumley, C. Zeune, Air Force Research Laboratory, Wright-Patterson AFB, OH	1200 hrs AIAA-2017-0101 **Structural Layout of a Hybrid Wing Body Transport** J. Action, Lockheed Martin Corporation, Marietta, GA	

Monday, 9 January 2017

28-GT-1 — Design, Calibration and Performance of Ground Test Facilities and Subsystems — Ft. Worth 6

Chaired by: J. MICOL, NASA-Langley Research Center and M. RIVERS, NASA Langley Research Center

0930 hrs	1000 hrs	1030 hrs	1100 hrs	1130 hrs	1200 hrs
AIAA-2017-0102	AIAA-2017-0103	AIAA-2017-0104	AIAA-2017-0105	AIAA-2017-0106	AIAA-2017-0107
AFRL Ludwieg Tube Initial Performance	**The Supersonic Combustion Facility ACT-2**	**Design, Build, and Test of a Thrust Test Stand**	**Design fabrication and performances of a closed circuit subsonic wind tunnel**	**Estimating Balance Uncertainty By Monte Carlo Simulation on a High-Speed Parallel architecture.**	**Assessment of calibration data using the JAXA automatic balance calibration machine**
R. Kimmel, M. Borg, J. Jewell, K. Lam, Air Force Research Laboratory, Wright-Patterson AFB, OH; R. Bowersox, R. Srinivasan, Texas A&M University, College Station, TX; et al.	D. Baccarella, Q. Liu, T. Lee, University of Illinois, Urbana-Champaign, Urbana, IL; H. Do, Seoul National University, Seoul, South Korea	J. Mondragon, J. Hubbard, University of Maryland, College Park, College Park, MD	E. Rubino, T. Ioppolo, Southern Methodist University, Dallas, TX	P. Bidgood, Council for Scientific and Industrial Research, Pretoria, South Africa	M. Kohzai, N. Sudani, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan

Monday, 9 January 2017

29-GTE-1 — Turbomachinery Technologies — Ft. Worth 2

Chaired by: S. SUBRAMANIAN, QuEST Global, Inc.

0930 hrs	1000 hrs	1030 hrs	1100 hrs
AIAA-2017-0108	AIAA-2017-0109	AIAA-2017-0110	AIAA-2017-0111
Computational Investigation of Secondary Flow Structures in Low Pressure Turbines	**A Computational Study of Combustor Dilution Flow Interaction with Turbine Vanes**	**From Conceptual 1D Design Towards Full 3D Optimization of a Highly Loaded Turbine Stage**	**Using of low-pressure compressor to design the concept of the air brake system**
J. Sharpe, P. Bear, M. Wolff, Wright State University, Dayton, OH; C. Marks, R. Sondergaard, Air Force Research Laboratory, Wright-Patterson AFB, OH	K. Muirhead, S. Lynch, Pennsylvania State University, University Park, PA	P. Juangphanich, C. De Maesschalck, G. Paniagua, Purdue University, West Lafayette, IN	G. Popov, O. Baturin, Y. Novikova, E. Goriachkin, A. Novikov, Samara University, Samara, Russia

Monday, 9 January 2017

30-HIS-1 — History of Aerospace — Dallas 7

Chaired by: R. HALLION

0930 hrs	1000 hrs	1030 hrs	1100 hrs	1130 hrs
AIAA-2017-0112	AIAA-2017-0113	AIAA-2017-0114	AIAA-2017-0115	**Flight Since the 'Great War'- Reflections and Perspectives**
Germany and the Invention of the All-Metal Cantilever Airplane, 1915-1925: A Historical Review	**The Sky Was No Limit: The Story of Claire Egtvedt and the Boeing Company**	**Let No New Improvement Pass Us By: The History of the Kirsten-Boeing Engineering Company**	**Nevada Military Aviation and the Cold War**	Chaired by Richard P. Hallion, Florida Poly Panelists: **Mark J. Lewis** — Past President, AIAA and Director, Science & Technology Policy of the Institute for Defense Analyses **John Tylko** — Aurora Flight Sciences **Cam Martin** — NASA Armstrong Flight Research Center **James Hansen** — Department of History, Auburn University
R. Hallion, Florida Polytechnic University, Lakeland, FL	J. Lee, The Boeing Company, Seattle, WA	J. Lee, The Boeing Company, Seattle, WA; A. Bruckner, University of Washington, Seattle, Seattle, WA	L. Cuevas, University of Nevada, Las Vegas, Las Vegas, NV	

Monday, 9 January 2017

31-HSABP-1 — Scramjet Design and Optimization — San Antonio 4

Chaired by: T. SMITH, Boeing Engineering Operations & Technology and A. DRAKE, Orbital Sciences Corporation

0930 hrs	1000 hrs	1030 hrs	1100 hrs	1130 hrs	1200 hrs
AIAA-2017-0116	AIAA-2017-0117	AIAA-2017-0118	AIAA-2017-0119	AIAA-2017-0120	AIAA-2017-0121
Reducing Edney Type-IV Cowl Shock-On-Lip Heating Via Leading Edge Geometry Optimization	**The Design and Performance Evaluation of Scramjets Derived from Quasi-1D Flowfields**	**Modeling an Active and Passive Thermal Protection System for a Hypersonic Vehicle**	**Transient computational fluid dynamic modeling of baffled tube ram accelerator**	**The Effects of Scaling on the Design and Performance of the Brayton-Gluhareff Pressure Jet Engine**	**Pressure Control of Cold Air Testing Plant with Delay Resistant Closed-loop Reference Model Adaptive Control**
P. Rodi, Lockheed Martin Corporation, Houston, TX	F. Ferguson, I. Osei Dwumah, M. Dhanasar, North Carolina A&T State University, Greensboro, NC	C. Marley, J. Driscoll, University of Michigan, Ann Arbor, Ann Arbor, MI	N. Daneshvaran, C. Knowlen, University of Washington, Seattle, Seattle, WA	R. Bramlette, R. Barrett-Gonzalez, C. Depcik, University of Kansas, Lawrence, Lawrence, KS; I. Gluhareff, Gluhareff Helicopters, San Francisco, CA	A. Alan, Y. Yildiz, Bilkent University, Ankara, Turkey; U. Poyraz, ROKETSAN Missile Industries, Inc., Ankara, Turkey

Monday, 9 January 2017						
32-ISC-1	**International Student Conference-Undergraduate Category**					**Pecos 1**
Chaired by: L. HANSEN, HRP Systems, Inc.						
0930 hrs AIAA-2017-2004 **Design and Test of a Radio-Frequency Electrothermal Thruster** A. Cervelloni, J. Kepron, Worcester Polytechnic Institute, Worcester, MA	1000 hrs AIAA-2017-2005 **Simultaneous Orbital and Attitude Propagation of Satellites in Low-Earth Orbit using CUDA for Aerodynamics Simulation** K. Omar, University of Alabama, Huntsville, Huntsville, AL	1030 hrs AIAA-2017-2006 **Development of a New Wind Measurement Tool based on a Hovering Drone** D. Pendleton, W. Zhang, Cleveland State University, Cleveland, OH	1100 hrs AIAA-2017-2007 **Tunable Bistability of Origami-based Mechanical Metamaterials** M. Lee, University of Washington, Seattle, Seattle, WA	1130 hrs AIAA-2017-2008 **Subsonic Aerodynamic Evaluation of Heat Shield Roughness Effects on the SpaceX Dragon Crew Capsule** D. Kirkpatrick, C. McGinley, U.S. Air Force Academy, Colorado Springs, CO	1200 hrs AIAA-2017-2009 **Performance Measurements of Meso-Scale Cyclodial Rotors in Hover** B. Himmelberg, M. Benedict, Texas A&M University, College Station, TX	1230 hrs AIAA-2017-2010 **Development of a Diaphragmless, Miniature, Liquid-Piston Shock Tube** R. McCormack, University of New South Wales at the Australian Defence Force Academy, Canberra, Australia

Monday, 9 January 2017						
33-ISC-2	**International Student Conference-Masters Category**					**Longhorn Hall D**
Chaired by: S. CORBETS, Lockheed Martin Corporation						
0930 hrs AIAA-2017-2011 **Magnetically Levitating Low-Friction Test Stand for the Measurement of Micro-Thruster Performance Characteristics** A. Patel, University of Alabama, Huntsville, Huntsville, AL	1000 hrs AIAA-2017-2012 **Transmission Spectroscopy of Electric Propulsion Sputtered Plumes from Small Bodies** T. Leps, C. Hartzell, University of Maryland, College Park, College Park, MD	1030 hrs AIAA-2017-2013 **Mission Planning for Information Gathering Using Solar-Powered Unmanned Ground Vehicles** N. Kingry, Y. Liu, Iowa State University, Ames, IA	1100 hrs AIAA-2017-2014 **Development and Flight Testing of a Meso-Scale Cyclopter** C. Runco, M. Benedict, Texas A&M University, College Station, TX	1130 hrs AIAA-2017-2015 **Evaluating Nonlinear Reduced Order Models' Ability to Predict Dynamic Snap Through of Curved Structures** C. VanDamme, M. Allen, University of Wisconsin, Madison, Madison, WI	1200 hrs AIAA-2017-2016 **Design and Experimental Investigation of a Continuously Rotating Detonation Engine Initiated by Azimuthally Sequential Sparking and Radial Injection of Reactants** J. Boening, J. Heath, University of Washington, Seattle, Seattle, WA	1230 hrs AIAA-2017-2017 **Early and Robust Detection of Oscillatory Failure Cases (OFC) in the Flight Control System: A Data Driven Technique** S. Urbano, Higher Institute of Aeronautics and Space, Toulouse, France

Monday, 9 January 2017						
34-ISC-3	**International Student Conference-Team Category**					**Pecos 3**
Chaired by: J. CORBETS						
0930 hrs AIAA-2017-2018 **High Altitude Atmospheric Research Balloon** A. Blum, A. Dymit, M. Grohs, T. Smeddal, Norwich University, Northfield, VT	1000 hrs AIAA-2017-2019 **Attenuation of Vortex Noise Generated by UAV Propellers at Low Reynolds Numbers** N. Intravartolo, T. Sorrells, N. Ashkharian, R. Kim, University of Southern California, Los Angeles, CA	1030 hrs AIAA-2017-2020 **In-Situ Sample Collection Tool Design and Analysis** A. Case, P. DeTrempe, S. Macenski, University of Illinois, Urbana-Champaign, Urbana, IL	1100 hrs AIAA-2017-2021 **Project ELSA: Europa Lander for Science Acquisition** D. Combs, G. Frank, S. Grandone, C. Hall, D. Johnson, T. Luke, University of Colorado, Boulder, Boulder, CO; et al.	1130 hrs AIAA-2017-2022 **Design, Construction, and Flight of a High Power Rocket Vehicle and Autonomous Payload** D. Hunter, W. Hill, University of Alabama, Huntsville, Huntsville, AL		

Monday, 9 January 2017		
35-LEC-1 **0930 - 1030 hrs**	**Non-Deterministic Approaches Lecture**	**Texas D**

A Perspective on Model Uncertainty
Ali Mosleh
Distinguished Professor, Evelyn Knight Chair in Engineering
University of California, Los Angeles

Monday, 9 January 2017						
36-MAT-1	**Multifunctional Materials I**					**Palomino 2**
Chaired by: R. FERTIG, University of Wyoming and G. SEIDEL, Virginia Polytechnic Institute and State Universit						
0930 hrs AIAA-2017-0122 **Application of Piezoresistive Nanocomposite Binders for Real Time Embedded Sensing of Strain and Damage in Energetic Materials** E. Sengezer, G. Seidel, Virginia Polytechnic Institute and State University, Blacksburg, VA	1000 hrs AIAA-2017-0123 **Characterization of Hybrid Carbon Fiber Composites using Photoluminescence Spectroscopy** A. Selimov, R. Hoover, Q. Fouliard, A. Manero, University of Central Florida, Orlando, FL; P. Dackus, D. Carolan, Imperial College London, London, United Kingdom; et al.	1030 hrs AIAA-2017-0124 **Investigation of the Effects of Porosity on the Overall Thermomechanical Properties of Graded Metal-Ceramic Composites** P. Deierling, University of Iowa, Iowa City, Iowa City, IA; O. Zhupanska, University of Arizona, Tucson, Tucson, AZ; C. Pasiliao, Air Force Research Laboratory, Eglin AFB, FL	1100 hrs AIAA-2017-0125 **Developing a Numerical Scheme to Capture the Piezoresistivity of CNF/CNTs Hybrid Nanofibers** J. Cai, M. Naraghi, Texas A&M University, College Station, TX	1130 hrs AIAA-2017-0126 **Coupled Electromechanical Peridynamic Modeling of Strain and Damage Sensing in Granular Energetic Materials** N. Prakash, G. Seidel, Virginia Polytechnic Institute and State University, Blacksburg, VA		

Monday, 9 January 2017						
37-MDO-1	**Aircraft Design Optimization I**					**Mustang 1**
Chaired by: E. ALYANAK, AFRL/RQVC and B. STANFORD, NASA Langley Research Center						
0930 hrs AIAA-2017-0127 **Aircraft Design Optimization for Commercial Air Travel Under Multi-Domain Uncertainties** S. Roy, W. Crossley, N. Davendralingam, P. Govindaraju, Purdue University, West Lafayette, IN	1000 hrs AIAA-2017-0128 **Multidisciplinary Aerodynamic Shape Optimization of a Composite Blended Wing Body Aircraft** C. Boozer, M. Van Tooren, University of South Carolina, Columbia, Columbia, SC; A. Elham, Delft University of Technology, Delft, The Netherlands	1030 hrs AIAA-2017-0129 **Delaunay-based optimization in CFD leveraging multivariate adaptive polyharmonic splines (MAPS)** S. Alimohammadi, P. Beyhaghi, T. Bewley, University of California, San Diego, San Diego, CA	1100 hrs AIAA-2017-0130 **A Discrete Adjoint Approach for Jet-Flap Interaction Noise Reduction** B. Zhou, T. Albring, N. Gauger, Technical University of Kaiserslautern, Kaiserslautern, Germany; C. Ilario da Silva, T. Economon, J. Alonso, Stanford University, Stanford, CA			

Monday, 9 January 2017						
38-MDO-2	**Multifidelity Optimization**					**Mustang 2**
Chaired by: S. CHOI, Virginia Tech and A. KO, Phoenix Integration, Inc.						
0930 hrs AIAA-2017-0131 **Comparison of Unifed and Sequential-Approximate Approaches to Multifdelity Optimization** D. Bryson, M. Rumpfkeil, University of Dayton, Dayton, OH	1000 hrs AIAA-2017-0132 **Multilevel-Multifidelity Acceleration of PDE-Constrained Optimization** J. Monschke, M. Eldred, Sandia National Laboratories, Albuquerque, NM	1030 hrs AIAA-2017-0133 **Bayesian Low-Fidelity Correction Approach to Multi-Fidelity Aerospace Design** C. Fischer, R. Grandhi, Wright State University, Dayton, OH; P. Beran, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2017-0134 **Automated Selection of Low-Fidelity Models for Rapid Aerodynamic Shape Optimization Using Physics-Based Surrogates** S. Koziel, Reykjavik University, Reykjavik, Iceland; L. Leifsson, Iowa State University, Ames, IA	1130 hrs AIAA-2017-0135 **Simple Alternative to Bayesian Multi-Fidelity Surrogate Framework** C. Park, R. Haftka, N. Kim, University of Florida, Gainesville, Gainesville, FL	1200 hrs AIAA-2017-0136 **A Multi-Objective Multi-Fidelity framework for global optimization** S. Kontogiannis, A. Savill, T. Kipouros, Cranfield University, Cranfield, United Kingdom	

Monday, 9 January 2017						
39-MVC-1	**Visualization/Geometry Representation**					**Grapevine 3**
Chaired by: J. MASTERS, ATA and K. VOGIATZIS, ENGILITY						
0930 hrs AIAA-2017-0137 **DNS Study on Three Vortex Identification Methods** Y. Dong, Y. Yang, C. Liu, University of Texas, Arlington, Arlington, TX	1000 hrs AIAA-2017-0138 **The Creation of a Static BRep Model Given a Cloud of Points** J. Dannenhoffer, Syracuse University, Syracuse, NY	1030 hrs AIAA-2017-0139 **Using Design-Parameter Sensitivities in Adjoint-Based Design Environments** J. Dannenhoffer, Syracuse University, Syracuse, NY; R. Haimes, Massachusetts Institute of Technology, Cambridge, MA	1100 hrs AIAA-2017-0140 **A Thermodynamic Application Program Interface for CFD and Analysis** G. Power, C. Robinson, J. Morris, R. Bond, Aerospace Testing Alliance, Arnold AFB, TN			

Monday, 9 January 2017						
40-PC-2	**Combustion Modeling and Simulation I**					**San Antonio 6**
Chaired by: V. RAMAN, University of Michigan and H. IM, King Abdullah University of Science and Technology						
0930 hrs AIAA-2017-0141 **Turbulent Mixing and Combustion of Supercritical Coflowing and Transverse Jets** S. Chong, V. Raman, University of Michigan, Ann Arbor, Ann Arbor, MI	1000 hrs AIAA-2017-0142 **Large-Eddy Simulation of the HIFiRE Direct Connect Rig Scramjet Combustor** Z. Vane, G. Lacaze, J. Oefelein, Sandia National Laboratories, Livermore, CA	1030 hrs AIAA-2017-0143 **Numerical framework for transcritical real-fluid reacting flow simulations using the flamelet progress variable approach** P. Ma, D. Banuti, Stanford University, Stanford, CA; J. Hickey, University of Waterloo, Waterloo, Canada; M. Ihme, Stanford University, Stanford, CA	1100 hrs AIAA-2017-0144 **Interface Tracking Simulations of Liquid Oxygen/Gaseous Hydrogen Coaxial Combustions at Subcritical Pressures** H. Tani, Y. Umemura, Y. Daimon, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan			

Monday, 9 January 2017						
41-PC-3	**Alternate Aviation Fuels I**					**San Antonio 5**
Chaired by: M. GUPTA and M. COLKET, United Technologies Research Center						
0930 hrs AIAA-2017-0145 **Year 2 of the National Jet Fuels Combustion Program: Towards a Streamlined Alternative Jet Fuels Certification Process** J. Heyne, University of Dayton, Dayton, OH; M. Colket, Self, Avon, CT; M. Gupta, A. Jardines, Federal Aviation Administration, Washington, D.C.; J. Moder, NASA Glenn Research Center, Cleveland, OH; J. Edwards, Air Force Research Laboratory, Wright-Patterson AFB, OH; et al.	1000 hrs AIAA-2017-0146 **Reference Jet Fuels for Combustion Testing** J. Edwards, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2017-0147 **Non-premixed Ignition of Alternative Jet Fuels** B. Sforzo, S. Wei, J. Seitzman, Georgia Institute of Technology, Atlanta, GA	1100 hrs AIAA-2017-0148 **Spray Characteristics and Flame Structure of Jet A and Alternative Jet Fuels** E. Mayhew, C. Mitsingas, B. McGann, University of Illinois, Urbana-Champaign, Urbana, IL; T. Hendershott, S. Stouffer, University of Dayton, Dayton, OH; P. Wrzesinski, Air Force Research Laboratory, Wright-Patterson AFB, OH; et al.	1130 hrs AIAA-2017-0149 **Flame Spread Measurements of Alternative Aviation fuels** V. Goyal, R. Lucht, J. Gore, Purdue University, West Lafayette, IN	1200 hrs AIAA-2017-0150 **Investigation of Engine Performance at Altitude Using Selected Alternative Fuels for the National Jet Fuels Combustion Program** P. Canteenwalla, W. Chishty, National Research Council Canada, Ottawa, Canada	

Monday, 9 January 2017						
42-PC-4	**Combustion Diagnostics I: Applications**					**San Antonio 2**
Chaired by: C. CADOU, University of Maryland and B. EMERSON						
0930 hrs Oral Presentation **Invited Review: Continuing Advances in High-Speed, Multidimensional Imaging** J. Gord, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2017-0151 **High-speed chemiluminescence measurements of alternative jet fuels at engine relevant ambient conditions** J. Temme, V. Coburn, C. Kweon, Army Research Laboratory, Aberdeen Proving Ground, MD	1030 hrs AIAA-2017-0152 **Simultaneous High Speed (5 kHz) Fuel-PLIE, OH-PLIF and Stereo PIV Imaging of Pressurized Swirl-Stabilized Flames using Liquid Fuels** I. Chterev, N. Rock, H. Ek, B. Emerson, J. Seitzman, T. Lieuwen, Georgia Institute of Technology, Atlanta, GA; et al.	1100 hrs AIAA-2017-0153 **Experimental and Numerical Study of Chemiluminescence Characteristics in Premixed Counterflow Flames of Methane based Fuel blends** Y. Liu, G. Vourliotakis, Y. Hardalupas, A. Taylor, Imperial College London, London, United Kingdom			

Monday, 9 January 2017						
43-PDL-1	**Plasma Aerodynamics I**					**Ft. Worth 4**
Chaired by: S. LEONOV, University of Notre Dame and L. RAJA, University of Texas at Austin						
0930 hrs AIAA-2017-0154 **Measurement of Plasma Induced Flow Perturbations Affecting a Mach 4.5 Corner Separation Zone** B. Hedlund, A. Houpt, S. Gordeyev, S. Leonov, University of Notre Dame, Notre Dame, IN	1000 hrs AIAA-2017-0155 **Numerical Study of Acceleration of the Hydrogen Ions in the Penning Discharge at Pressures Around 1 Torr** S. Surzhikov, Russian Academy of Sciences, Moscow, Russia	1030 hrs AIAA-2017-0156 **Measurement of Velocity Induced by a Propagating Arc Magneto-hydrodynamic Plasma Actuator** Y. Choi, M. Gray, J. Sirohi, L. Raja, University of Texas, Austin, Austin, TX	1100 hrs AIAA-2017-0157 **Nonequilibrium Radiation NO in Shocked Air** S. Surzhikov, Russian Academy of Sciences, Moscow, Russia; P. Kozlov, Moscow State University, Moscow, Russia	1130 hrs AIAA-2017-0158 **Experimental Investigation of the Internal Structure and Dynamic Behavior of the Rail Plasma Actuator Arc** M. Gray, Y. Choi, J. Sirohi, L. Raja, University of Texas, Austin, Austin, TX	1200 hrs AIAA-2017-0159 **Characterization of the Formation Process of Cathodic-Arc-Jet in Atmospheric Pressure Gas** I. Kronhaus, L. van Rossum, Technion–Israel Institute of Technology, Haifa, Israel	

Monday, 9 January 2017						
44-SATS-1	**Small Satellite Missions**					**Austin 4**
Chaired by: J. STRAUB, North Dakota University						
0930 hrs AIAA-2017-0160 **SRMSAT-2: Study of the Lunar Sub-Surface and Deep-Space Environment Using a Micro-Satellite Platform** K. Barad, A. Mody, S. Namdeo, A. Ratheesh, K. Naik, SRM University, Chennai, India	1000 hrs AIAA-2017-0161 **Development of a Low-Flying CubeSat Mission for F-Region Characterization** J. Black, A. Wolosik, Virginia Polytechnic Institute and State University, Blacksburg, VA	1030 hrs AIAA-2017-0162 **Preliminary analysis of 'BALLET' - Ballistic Lunar Low Energy Transfer design for SRMSAT-2** A. Prakash, K. Barad, SRM University, Chennai, India	1100 hrs AIAA-2017-0163 **Nanosat Orbit Raising and Rendezvous Using a Continuous-Thrust Controller** K. Zhang, N. Gatsonis, J. Blandino, M. Demetriou, Worcester Polytechnic Institute, Worcester, MA	1130 hrs AIAA-2017-0164 **Development of an Earth Smallsat Flight Test to Demonstrate Viability of Mars Aerocapture** M. Werner, B. Woollard, A. Tadanki, R. Braun, Georgia Institute of Technology, Atlanta, GA; R. Lock, A. Nelessen, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; et al.		

Monday, 9 January 2017						
45-SATS-2	**Small Satellite Subsystems**					**Austin 6**
Chaired by: A. SANTANGELO						
0930 hrs AIAA-2017-0165 **Attitude Determination and Control System Design for Srmsat-2: A Micro Class Lunar Orbiter** A. Mody, T. Sharma, P. Tekriwal, G. Subraminian, A. Ratheesh, K. Barad, SRM University, Chennai, India	1000 hrs AIAA-2017-0166 **CubeSat Attitude Determination Using Low-Cost Sensors and Magnetic Field Time Derivative** A. Walker, M. Kumar, University of Cincinnati, Cincinnati, OH	1030 hrs AIAA-2017-0167 **Development of Stereo Camera System for Accurate Observation of Deployable Membranes onboard CubeSat** Y. Shimoda, K. Watanabe, N. Sakamoto, T. Kuratomi, N. Hidaka, WEL Research Company, Ltd., Ichihara, Japan; M. Ogawa, Tokyo Institute of Technology, Meguro, Japan; et al.	1100 hrs AIAA-2017-0168 **Validation of a Low-Cost Avionics Package for Small Spacecraft via Rocket-Based Field Tests** M. Sorgenfrei, D. Kemp, NASA Ames Research Center, Moffett Field, CA; A. Harness, University of Colorado, Boulder, Boulder, CO; M. Nehrenz, NASA Ames Research Center, Moffett Field, CA	1130 hrs AIAA-2017-0169 **Hall Effect Thruster Characterization Through Potential, Magnetic, and Optical Measurements** N. Hyatt, Air Force Institute of Technology, Wright-Patterson AFB, OH	1200 hrs AIAA-2017-0170 **Thrust Coefficient Losses in Additively Manufactured Low Thrust Nozzles** C. Tommila, C. Hartsfield, Air Force Institute of Technology, Wright-Patterson AFB, OH	

Monday, 9 January 2017						
46-SCS-1	**Deployable Booms and Flexures**					**Palomino 1**
Chaired by: M. SILVER, MIT Lincoln Laboratory						
0930 hrs AIAA-2017-0171 **TRAC Boom Structural Mechanics** T. Murphey, D. Turse, L. Adams, Roccor, LLC, Longmont, CO	1000 hrs AIAA-2017-0172 **Characterization of Ultra-Thin Composite Triangular Rollable and Collapsible Booms** C. Leclerc, L. Wilson, S. Pellegrino, California Institute of Technology, Pasadena, CA	1030 hrs AIAA-2017-0173 **A Multifunctional Tape Spring Boom with Embedded Gas Lines and Flexible Printed Circuit Boards** A. Brinkmeyer, J. Reveles, V. Gurusamy, Oxford Space Systems, Oxford, United Kingdom; A. Pirrera, P. Weaver, University of Bristol, Bristol, United Kingdom; M. Lawton, Oxford Space Systems, Oxford, United Kingdom	1100 hrs AIAA-2017-0174 **Experimental and Analytical Characterization of a Slit-Lock™ Composite Boom** A. Rakow, Composite Technology Development, Inc., Lafayette, CO; J. Banik, Air Force Research Laboratory, Kirtland AFB, NM; G. Sanford, C. Griffee, LoadPath, LLC, Albuquerque, NM	1130 hrs AIAA-2017-0175 **Deployment Dynamics of Self-deployable Truss Structure Consisting of Bi-convex Booms** A. Tamura, S. Inoue, D. Kawarabayashi, M. Yamazaki, Y. Miyazaki, Nihon University, Funabashi, Japan	1200 hrs AIAA-2017-0176 **Design and Testing of a Space Deployable Mechanism** Q. Chen, Z. Yao, Y. Hou, H. Fang, Shanghai YS Information Technology Company, Ltd., Shanghai, China	

Monday, 9 January 2017						
47-SD-1/APA-46	**Special Session: Aerothermoelasticity of, and Dynamic Response in, High Speed Vehicles and in High Speed Flow I**					**Appaloosa 2**
Chaired by: J. MCNAMARA, The Ohio State University and N. FALKIEWICZ, MIT Lincoln Laboratory						
0930 hrs AIAA-2017-0177 **Interplay of Surface Deformation and Shock-Induced Separation in Shock/Boundary Layer Interactions** K. Brouwer, A. Gogulapati, J. McNamara, Ohio State University, Columbus, OH	1000 hrs AIAA-2017-0178 **Rapid Simulation of a Hypersonic Vehicle Through Singular Value Decomposition** R. Klock, C. Cesnik, University of Michigan, Ann Arbor, Ann Arbor, MI	1030 hrs AIAA-2017-0179 **A Construction of Thermal Basis Functions for Coupled Structural - Thermal Reduced Order Models** R. Murthy, X. Wang, A. Matney, M. Mignolet, Arizona State University, Tempe, AZ	1100 hrs AIAA-2017-0180 **Full and Reduced Order Aerothermoelastic Modeling of Built- Up Aerospace Panels in High-Speed Flows** A. Gogulapati, K. Brouwer, Ohio State University, Columbus, OH; X. Wang, R. Murthy, Arizona State University, Tempe, AZ; J. McNamara, M. Mignolet, Ohio State University, Columbus, OH	1130 hrs AIAA-2017-0181 **Nonlinear Geometric Thermoelastic Response of Structures with Uncertain Thermal and Structural Properties** P. Song, X. Wang, A. Matney, R. Murthy, M. Mignolet, Arizona State University, Tempe, AZ	1200 hrs AIAA-2017-0182 **Multi-Discipline Modeling of Complete Hypersonic Vehicles Using CFD Surrogates** E. Dreyer, B. Grier, J. McNamara, Ohio State University, Columbus, OH; R. Klock, C. Cesnik, University of Michigan, Ann Arbor, Ann Arbor, MI	

Monday, 9 January 2017						
48-SD-2	**Special Topics in Structural Dynamics and Aeroelasticity I**					**Appaloosa 3**
Chaired by: D. KUMAR, MSC Software and K. SINGH, Miami Univeristy						
0930 hrs AIAA-2017-0183 **Elastic Deformations Control of Highly Flexible Aircraft in Trimmed Flight and Gust Encounter** L. Yagil, D. Raveh, M. Idan, Technion–Israel Institute of Technology, Haifa, Israel	1000 hrs AIAA-2017-0184 **Optimizing Stiffness and Damping of Filled Cellular Lattice Structures using Response Surface Methods** M. DiPalma, F. Gandhi, Rensselaer Polytechnic Institute, Troy, NY	1030 hrs AIAA-2017-0185 **Integration of Structural Uncertainty and Robust Control** H. Briggs, ATA Engineering, Inc., San Diego, CA; D. Kammer, University of Wisconsin, Madison, Madison, WI; A. White, D. Schwartz, ATA Engineering, Inc., San Diego, CA	1100 hrs AIAA-2017-0186 **Investigation of UAS Ingestion into High-Bypass Engines, Part 1: Bird vs. Drone** Y. Song, B. Horton, J. Bayandor, Virginia Polytechnic Institute and State University, Blacksburg, VA	1130 hrs AIAA-2017-0187 **Investigation of UAS Ingestion into High-Bypass Engines, Part 2: Parametric Drone Study** K. Schroeder, Y. Song, B. Horton, J. Bayandor, Virginia Polytechnic Institute and State University, Blacksburg, VA		

Monday, 9 January 2017						
49-SD-3	**Special Session: Aeroelastic Prediction I**					**Appaloosa 4**
Chaired by: A. SCOTTI, Pilatus Aircraft Ltd and E. BLADES, ATA Engineering, Inc.						
0930 hrs AIAA-2017-0188 **Plans and Suggestions of a Verification Case to the AIAA Aeroelastic Prediction Workshop** C. Spode, E. Molina, R. Silva, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; C. Silva, Stanford University, Stanford, CA	1000 hrs AIAA-2017-0189 **Analysis of Resolved Turbulent Scales of Motion in Aeroelastic Problems** M. Righi, Zürich University of Applied Sciences, Winterthur, Switzerland; A. Da Ronch, F. Mazzacchi, University of Southampton, Southampton, United Kingdom	1030 hrs AIAA-2017-0190 **Numerical Investigations of the Benchmark Supercritical Wing in Transonic Flow** P. Chwalowski, J. Heeg, R. Biedron, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2017-0191 **Investigating the transonic flutter boundary of the Benchmark Supercritical Wing** J. Heeg, P. Chwalowski, NASA Langley Research Center, Hampton, VA	1130 hrs AIAA-2017-0192 **Aeroelastic Simulations Using ANSYS Multiphysics Software** B. Sasanapuri, K. Zore, E. Bish, ANSYS, Inc., Pune, India		

Monday, 9 January 2017		
50-SOF-1 **0930 - 1230 hrs**	**Verification vs Certification for Software Intense Systems**	**Ft. Worth 7**

Panelists:

Natasha Neogi	**Kristin Rozier**	**Virginie Wiels**	**André Platzer**
National Institute of Aerospace	Iowa State University	ONERA/DTIM	Carnegie Mellon University

Monday, 9 January 2017						
51-SRE-1	**ISRU Technologies**					**Ft. Worth 5**
Chaired by: L. GERTSCH, Missouri University of Science and Technology						
0930 hrs Oral Presentation **The Advanced Explorations Systems ISRU Technology Development Project** D. Linne, NASA Glenn Research Center, Cleveland, OH; G. Sanders, NASA Johnson Space Center, Houston, TX; S. Starr, NASA Kennedy Space Center, Cape Canaveral, FL; N. Suzuki, NASA Headquarters, Washington, D.C.; T. O'Malley, NASA Glenn Research Center, Cleveland, OH	1000 hrs AIAA-2017-0193 **Measurement of Cohesion in Asteroid Regolith Materials** J. Kleinhenz, J. Gaier, D. Waters, NASA Glenn Research Center, Cleveland, OH; R. Harvey, Z. Zeszut, B. Carreno, Case Western Reserve University, Cleveland, OH; et al.	1030 hrs AIAA-2017-0194 **Meteoroid Impact Detection for Exploration of Asteroids (MIDEA): A Small Satellite Concept for Asteroid Characterization** N. Lee, S. Close, Stanford University, Stanford, CA	1100 hrs AIAA-2017-0195 **Robotic Ultrasonic Pulse Velocity Sensing for Planetary Material Characterization and Exploration Objectives** T. Evans, West Virginia Robotic Technology Center, Fairmont, WV; D. Goodman, West Virginia University, Morgantown, WV; M. Campbell, C. Panther, West Virginia Robotic Technology Center, Fairmont, WV; A. Noble, B. Mishra, West Virginia University, Morgantown, WV			

Monday, 9 January 2017						
52-STR-1	**Composite Damage and Failure Prediction Methods I**					**Mustang 3**
Chaired by: I. RAJU, NASA-Langley Research Center and C. BISAGNI, TU Delft						
0930 hrs AIAA-2017-0196 **Data Requirements for Progressive Damage Analysis of Composite Structures** C. Rouseau, S. Engelstad, Lockheed Martin Corporation, Fort Worth, TX; S. Clay, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2017-0197 **Peridynamic Modeling of Thermo-Oxidative Damage Evolution in a Composite Lamina** E. Madenci, University of Arizona, Tucson, Tucson, AZ; S. Oterkus, University of Strathclyde, Glasgow, United Kingdom	1030 hrs AIAA-2017-0198 **Fracture-Based Mesh Size Requirements for Matrix Cracks in Continuum Damage Mechanics Models** F. Leone, C. Davila, NASA Langley Research Center, Hampton, VA; G. Mabson, M. Ramnath, The Boeing Company, Seattle, WA; I. Hyder, The Boeing Company, North Charleston, SC	1100 hrs AIAA-2017-0199 **Exploration of Surrogate Models for Inverse Identification of Delamination Cracks in Composites using Electrical Resistance Tomography** P. Diaz Montiel, L. Escalona, S. Venkataraman, San Diego State University, San Diego, CA	1130 hrs AIAA-2017-0200 **Intra-inter Crack Band Model (I2CBM) for Progressive Damage and Failure Analysis of Joints** A. Joseph, P. Davidson, A. Waas, University of Washington, Seattle, Seattle, WA	1200 hrs AIAA-2017-0201 **A Physics-Based Combined Creep and Fatigue Methodology for Fiber-Reinforced Polymer Composites** F. Bhuiyan, R. Fertig, University of Wyoming, Laramie, Laramie, WY	

Monday, 9 January 2017						
53-STR-2	**Aircraft Structural Design, Test and Analysis**					**Appaloosa 1**
Chaired by: P. MURTHY, NASA Glenn Research Center and B. BEDNARCYK, NASA Glenn Research Center						
0930 hrs AIAA-2017-0202 **Aeroelastic Optimization of Generalized Tube and Wing Aircraft Concepts using HCDstruct Version 2.0** J. Quinlan, F. Gern, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2017-0203 **Structural Design Exploration of an Electric Powered Multi-propulsor Wing Configuration** J. Moore, S. Cutright, J. Viken, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2017-0204 **Study for Effectiveness of Idealized Theory for Fuselage Section Through Finite Element Analysis** C. Sachdeva, PEC University of Technology, Chandigarh, India; J. Miglani, Virginia Polytechnic Institute and State University, Blacksburg, VA; S. Padhee, Indian Institute of Technology, Ropar, Ropar, India	1100 hrs AIAA-2017-0205 **Structural Loads Analysis of a Hybrid Wing Body Transport** B. Flansburg, Lockheed Martin Corporation, Marietta, GA	1130 hrs AIAA-2017-0206 **Honeycomb Core Buckling Due to Transverse Compression** H. Soliman, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA	1200 hrs AIAA-2017-0207 **Determination of Load paths in Plates and Shells Using Load Path Function** K. Gharibi, J. Hurley, A. Tamijani, Embry-Riddle Aeronautical University, Daytona Beach, FL	

Monday, 9 January 2017						
54-TFPC-1	**Unique and Transformational Flight**					**Dallas 6**
Chaired by: B. SEELEY, Sustainable Aviation Foundation, Inc. and M. PATTERSON, NASA Langley Research Center						
0930 hrs AIAA-2017-0208 **Regional Sky Transit III: The Primacy of Noise** B. Seeley, Sustainable Aviation Foundation, Inc., Santa Rosa, CA	1000 hrs AIAA-2017-0209 **Comparison of Aero-Propulsive Performance Predictions for Distributed Propulsion Configurations** N. Borer, J. Derlaga, K. Deere, M. Carter, S. Viken, M. Patterson, NASA Langley Research Center, Hampton, VA; et al.	1030 hrs AIAA-2017-0210 **A Modular Unmanned Aerial System For Missions Requiring Distributed Aerial Presence or Payload Delivery** M. Patterson, J. Quinlan, W. Fredericks, NASA Langley Research Center, Hampton, VA; E. Tse, Georgia Institute of Technology, Atlanta, GA; I. Bakhle, Purdue University, West Lafayette, IN	1100 hrs AIAA-2017-0211 **Analytical Forms of the Range Performance of Hybrid and Electric Turboprop Aircraft, for Design Optimization Studies.** M. Marwa, B. Martos, S. Martin, R. Anderson, Embry-Riddle Aeronautical University, Daytona Beach, FL			

Monday, 9 January 2017						
55-TP-1	**Aerothermodynamics I**					**Austin 2**
Chaired by: R. BOND, Arnold Engineering Development Complex						
0930 hrs AIAA-2017-0212 **Study of the Afterbody Radiation during Mars Entry in an Expansion Tube** S. Gu, R. Morgan, T. McIntyre, University of Queensland, Brisbane, Australia	1000 hrs AIAA-2017-0213 **Novel Approach for CO2 State-To-State Modeling and Application to Multidimensional Entry Flows** A. Sahai, B. Lopez, University of Illinois, Urbana-Champaign, Urbana, IL; C. Johnston, NASA Langley Research Center, Hampton, VA; M. Panesi, University of Illinois, Urbana-Champaign, Urbana, IL	1030 hrs AIAA-2017-0214 **Numerical Investigation and Modeling of Thermoacoustic Shock Waves** P. Gupta, C. Scalo, Purdue University, West Lafayette, IN; G. Lodato, National Institute of Applied Sciences (INSA), Saint-Étienne-du-Rouvray, France	1100 hrs AIAA-2017-0215 **Modeling Laser Attenuation in Reacting Flows Using Adaptive Finite Elements** P. Bauman, T. Adowski, State University of New York, Buffalo, NY			

Monday, 9 January 2017						
56-TP-2	**Heat Transfer I**					**Austin 3**
Chaired by: M. KIO, National Space Research & Development Agency and G. SCHNEIDER, University of Waterloo						
0930 hrs AIAA-2017-0216 **Characterization of a Method for Inverse Heat Conduction Using Real and Simulated Thermocouple Data** M. Pizzo, Old Dominion University, Norfolk, VA; D. Glass, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2017-0217 **Investigation of the Effects of Shear on Arc-Electrode Erosion Using a Modified Arc-Electrode Mass Loss Model** B. Webb, Aerospace Testing Alliance, Arnold AFB, TN; J. Sheeley, National Aerospace Solutions, LLC, Arnold AFB, TN	1030 hrs AIAA-2017-0218 **Numerical Investigation on the Infrared Signature of Shock Vector Controlling Nozzle** W. Cheng, L. Zhou, J. Shi, Z. Wang, Northwestern Polytechnical University, Xi'an, China	1100 hrs AIAA-2017-0219 **EHD-Enhanced Heat Transfer in a Vertical Tube** Y. Birhane, Addis Ababa University, Addis Ababa, Ethiopia; S. Lin, National Taiwan University of Science and Technology, Taipei, Taiwan; F. Lai, University of Oklahoma, Norman, Norman, OK	1130 hrs AIAA-2017-0220 **Numerical Studies on Direct Contact Condensation (DCC) of Subsonic Vapor/Gas Jets in Subcooled Flowing Liquid** J. K N, A. Roy, P. Ghosh, Indian Institute of Technology Kharagpur, Kharagpur, India		

Monday, 9 January 2017						
57-TP-13/MDO-13	**Hyperloop and Future High-Speed Transportation Concepts**					**Dallas 5**
Chaired by: C. PEKARDAN and J. CHIN, NASA Glenn Research Center						
0930 hrs Oral Presentation **Hyperloop: Transforming The Way We Move** J. Giegel, C. Karla, K. Hosseini, Hyperloop One, Los Angeles, CA	1000 hrs Oral Presentation **Past and Future Ground Level Aeronautics: Hyperloop Technology Convergence** J. Chin, NASA Glenn Research Center, Cleveland, OH	1030 hrs Oral Presentation **Hyperloop Commercial Feasibility Analysis: A High Level Economic Overview** C. Taylor, Department of Transportation, Cambridge, MA	1100 hrs AIAA-2017-0221 **Conceptual Sizing and Feasibility Study for a Magnetic Plane Concept** K. Decker, Georgia Institute of Technology, Atlanta, GA; J. Chin, NASA Glenn Research Center, Cleveland, OH; A. Peng, Yale University, New Haven, CT; C. Summers, University of Washington, Seattle, Seattle, WA; G. Nguyen, Georgia Institute of Technology, Atlanta, GA; A. Oberlander, Brown University, Providence, RI; et al.			

Monday, 9 January 2017						
58-UMS-1	**UAS Integration into Urban Environments**					**Grapevine 2**
Chaired by: M. LOGAN, NASA Langley Research Center						
0930 hrs AIAA-2017-0222 **Fail-Safe Navigation for Autonomous Urban Multicopter Flight** C. Ochoa, E. Atkins, University of Michigan, Ann Arbor, Ann Arbor, MI	1000 hrs AIAA-2017-0223 **Concept of Operations (ConOps) for Traffic Management of Unmanned Aircraft Systems (TM-UAS) in Urban Environment** M. Mohamed Salleh, K. Low, Nanyang Technological University, Singapore, Singapore	1030 hrs AIAA-2017-0224 **A Modular Design Approach to A Reconfigurable Unmanned Aerial Vehicle** V. Maldonado , P. Sarker, University of Texas, San Antonio, San Antonio, TX; S. Chowdhury, State University of New York, Buffalo, NY	1100 hrs AIAA-2017-0225 **Requirements, Platform Specifications, and System Architectures for Future Unmanned Traffic Management Systems** A. Vetrella, R. Fontanella, G. Fasano, D. Accardo, S. Rosario, L. Angrisani, University of Naples "Federico II", Naples, Italy	1130 hrs AIAA-2017-0226 **Impact of Varied Power Setting on Thrust of Multi-Rotor VTOL sUAS in Ground Effect** G. Eberhart, J. Wilhelm, Ohio University, Athens, OH		

Monday, 9 January 2017		
59-LUNCH-1 **1230 - 1400 hrs**	**Durand Lecture for Public Service and Luncheon** **NSF's 10 Big Ideas: Understanding Science, Discovering Breakthroughs, and Influencing Public Policy**	**Texas A & B**
France A. Córdova Director National Science Foundation First Come, First Serve Seating for 200		

Monday, 9 January 2017						
60-AA-2	**Aeroacoustics Jet Noise II**					**Grapevine B**
Chaired by: P. MORRIS, Pennsylvania State University and W. SCHUSTER, Honeywell International, Inc.						
1400 hrs AIAA-2017-0227 **Near-field and Far-field Event Associations in Supersonic Jet Flow** G. Starke, J. Lewalle, M. Glauser, Syracuse University, Syracuse, NY	1430 hrs AIAA-2017-0228 **Near-Field Acoustic Radiations in a Two-Stream Supersonic Jet Flow** P. Kan, Syracuse University, Syracuse, NY; C. Ruscher, Spectral Energies, LLC, Dayton, OH; J. Lewalle, M. Glauser, Syracuse University, Syracuse, NY; S. Gogineni, Spectral Energies, LLC, Dayton, OH; B. Kiel, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2017-0229 **The Near-Field Acoustics of Supersonic Single and Dual Impinging Jets with Correlations to Far-Field Noise** S. Hromisin, L. Myers, P. Morris, D. McLaughlin, Pennsylvania State University, University Park, PA	1530 hrs AIAA-2017-0230 **The Very Near Pressure Field of Single- and Multi-Stream Jets** D. Papamoschou, V. Phong, University of California, Irvine, Irvine, CA	1600 hrs AIAA-2017-0231 **Nearfield Characterization of Low Supersonic Single Expansion Ramp Nozzles with Extended Ramps** B. Malla, E. Gutmark, University of Cincinnati, Cincinnati, OH	1630 hrs AIAA-2017-0232 **Sound Propagation of a Mach 0.75 Jet in Crossflow** P. Souza, O. de Almeida, Federal University of Uberlândia, Uberlândia, Brazil; C. Ilario da Silva, Embraer, São José dos Campos, Brazil	

Monday, 9 January 2017						
61-ACD-3	**Aircraft Design Tools and Methods II**					**San Antonio 1**
Chaired by: D. LEVY, Textron Aviation and D. BENCHERGUI, Bombardier Inc						
1400 hrs AIAA-2017-0233 **Selection of Future Technologies during Aircraft Conceptual Design** C. Jouannet, K. Amadori, E. Bäckström, Saab, Linköping, Sweden	1430 hrs AIAA-2017-0234 **SUAVE: An Open-Source Environment Enabling Unconventional Vehicle Designs through Higher Fidelity** T. MacDonald, E. Botero, J. Vegh, A. Variyar, J. Alonso, Stanford University, Stanford, CA; T. Orra, Embraer, São José dos Campos, Brazil; et al.	1500 hrs AIAA-2017-0235 **Optimizing Engine Placement on an Aircraft Wing using Bio-mimetic optimization and FlightStream™** V. Ahuja, R. Hartfield, J. Burkhalter, Research in Flight, Auburn, AL	1530 hrs AIAA-2017-0236 **Modeling the Propeller Slipstream Effect on Lift and Pitching Moment** T. Bouquet, R. Vos, Delft University of Technology, Delft, The Netherlands	1600 hrs AIAA-2017-0237 **Local class shape transformation parameterization (*l*-CST) for airfoils** G. Mura, N. Qin, University of Sheffield, Sheffield, United Kingdom	1630 hrs AIAA-2017-0238 **Utilization of Geometry Definition Tools in Aircraft Design: Need for Paradigm Shift** L. Iqbal, National University of Sciences and Technology, Islamabad, Pakistan	

Monday, 9 January 2017						
62-ACD-4	**Unmanned Aircraft Design II**					**San Antonio 3**
Chaired by: M. LOGAN, NASA Langley Research Center and D. CARTER, Air Force Research Laboratory						
1400 hrs AIAA-2017-0239 **Defining a conceptual design for a tilt-rotor micro air vehicle for a well-defined mission** R. Salazar, M. Hassanalian, A. Abdelkefi, New Mexico State University, Las Cruces, NM	1430 hrs AIAA-2017-0240 **Conceptual design and analysis of separation flight for an unmaned air vehicle to five micro air vehicles** M. Hassanalian, A. Abdelkefi, New Mexico State University, Las Cruces, NM	1500 hrs AIAA-2017-0241 **The Trim Condition of a Hovering Insect-like Flapping-wing Micro Air Vehicle in Asymmetric Condition** D. Ha, J. Kim, S. Choi, J. Han, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1530 hrs AIAA-2017-0242 **The Analysis and Design of a Highly-Gyroscopic VTOL MAV** L. Whitcher, E. Johnson, Georgia Institute of Technology, Atlanta, GA	1600 hrs AIAA-2017-0243 **Design and Flight Testing of a Convertible Quadcopter for Maximum Flight Speed** R. Bramlette, R. Barrett-Gonzalez, University of Kansas, Lawrence, Lawrence, KS	1630 hrs AIAA-2017-0244 **Optimizing Endurance and Stability of a Modular UAV Design** C. Larsen, Chalmers University of Technology, Göteborg, Sweden; S. Paul, University at Buffalo, Buffalo, NY; A. Svensson, Chalmers University of Technology, Göteborg, Sweden; S. Chowdhury, University at Buffalo, Buffalo, NY	

Monday, 9 January 2017						
63-AFM-2	**Launch Vehicle, Atmospheric Entry, Hypersonic Flight and Aeroassist Technology I**					**Grapevine 5**
Chaired by: K. DORSETT, Lockheed Martin Aeronautics and S. DUTTA, NASA Langley Research Center						
1400 hrs AIAA-2017-0245 **Comparison of the Effects of Velocity and Range Triggers on Trajectory Dispersions for the Mars 2020 Mission** S. Dutta, D. Way, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2017-0246 **A Gauss Pseudospectral Collocation for Rapid Trajectory Prediction and Guidance** B. Burchett, Rose-Hulman Institute of Technology, Terre Haute, IN	1500 hrs AIAA-2017-0247 **Optimal Hypersonic Trajectory Strategies for Supersonic Retropropulsion at Mars** C. Lorenz, Z. Putnam, University of Illinois, Urbana-Champaign, Urbana, IL	1530 hrs AIAA-2017-0248 **Hypersonic Trajectory Optimization by Sequential Semidefinite Programming** Z. Wang, M. Grant, Purdue University, West Lafayette, IN			

Monday, 9 January 2017						
64-AMT-3	**Velocimetry: Development and Implementation Challenges**					**Grapevine 6**
Chaired by: C. SLABAUGH, Purdue University and M. REEDER, Air Force Institute of Technology						
1400 hrs AIAA-2017-0250 **Dynamic Leading Edge Stagnation Point Determination Utilizing an Array of Hot-Film Sensors with Unknown Calibration** J. Ellsworth, NASA Armstrong Flight Research Center, Edwards, CA	1430 hrs AIAA-2017-0251 **Instrument for In-Flight Boundary Layer Rake Measurements** R. Westphal, R. Schelley, California Polytechnic State University, San Luis Obispo, San Luis Obispo, CA; D. Frame, Self, Richland, WA	1500 hrs AIAA-2017-0252 **Measurements of Ship Air Wake Using Airborne Anemometers** C. Mallon, B. Muthig, K. Gamagedara, K. Patil, C. Friedman, T. Lee, George Washington University, Washington, D.C.; et al.	1530 hrs AIAA-2017-0253 **Validation of PSV for Turbulence Measurements and Modeling** J. Harris , Z. Berger , C. Truong, S. Hinkle, Pennsylvania State University, University Park, PA	1600 hrs AIAA-2017-0254 **PIV/BOS Synthetic Image Generation in Variable Density Environments for Error Analysis and Experiment Design** L. Rajendran, B. Singh, Purdue University, West Lafayette, IN; M. Giarra, Virginia Polytechnic Institute and State University, Blacksburg, VA; S. Bane, P. Vlachos, Purdue University, West Lafayette, IN	1630 hrs AIAA-2017-0255 **Particle Size Measurements in an Arcjet Erosion Test Facility** D. Plemmons, N. Galyen, Arnold Engineering Development Complex, Arnold AFB, TN	

Monday, 9 January 2017						
65-AMT-4	**Laser Tagging and Fluorescence Techniques**					**Grapevine 4**
Chaired by: P. DANEHY, NASA Langley Research Center and T. JENKINS, MetroLaser Inc						
1400 hrs AIAA-2017-0256 **Characterizing the accuracy of FLEET velocimetry using comparison with hot wire anemometry** Y. Zhang, R. Miles, Princeton University, Princeton, NJ	1430 hrs AIAA-2017-0257 **Modeling of the FLEET Filament Interaction with a Nonuniform Gas Flow** M. New-Tolley, M. Shneider, R. Miles, Princeton University, Princeton, NJ	1500 hrs AIAA-2017-0258 **Mixture Fraction Imaging Using Femtosecond TPLIF of Krypton** Y. Wang, W. Kulatilaka, Texas A&M University, College Station, TX	1530 hrs AIAA-2017-0259 **Sodium two-photon laser-induced fluorescence characterization with nanosecond and femtosecond excitation** J. Michael, K. Zhu, C. Dedic, Iowa State University, Ames, IA	1600 hrs AIAA-2017-0260 **Examination of NO Tag Formation for Unseeded Molecular Tagging Velocimetry** W. Bearden, C. Hall, R. Pitz, Vanderbilt University, Nashville, TN		

Monday, 9 January 2017						
66-APA-5	**Hypersonic Aerodynamics**					**Dallas 2**
Chaired by: M. CONWAY, The Aerospace Corporation and K. VANDEN, USAF						
1400 hrs AIAA-2017-0261 **A Demonstration of Hypersonic Pitching Control in the TUSQ Hypersonic Wind Tunnel** D. Buttsworth, N. Stern, R. Choudhury, University of Southern Queensland, Toowoomba, Australia	1430 hrs AIAA-2017-0262 **The Investigation of Shock-Wave Interaction with Aerodynamic Models** M. Kotov, I. Kryukov, L. Ruleva, S. Solodovnikov, Russian Academy of Sciences, Moscow, Russia	1500 hrs AIAA-2017-0263 **Aerodynamic Heating Prediction of an Inflatable Reentry Vehicle in a Hypersonic Wind Tunnel** M. Matsunaga, Y. Takahashi, N. Oshima, Hokkaido University, Sapporo, Japan; K. Yamada, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1530 hrs AIAA-2017-0264 **Comparisons of Measured and Modeled Aero-thermal Distributions for Complex Hypersonic Configurations** D. Sagerman, M. Rumpfkeil, University of Dayton, Dayton, OH; B. Hellman, N. Dasque, Air Force Research Laboratory, Wright-Patterson AFB, OH			

Monday, 9 January 2017						
67-APA-6	**Airfoil/Wing/Configuration Aerodynamics I**					**Dallas 3**
Chaired by: M. GHOREYSHI, United States Air Force Academy and K. MULLENERS, EPFL						
1400 hrs AIAA-2017-0265 **Modified Lee's Transonic Buffet Mechanism Inspired with Fast-framing Focusing-schlieren Visualization** T. Kouchi, S. Yamaguchi, Y. Yamashita, S. Yanase, Okayama University, Okayama, Japan; S. Koike, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan	1430 hrs AIAA-2017-0266 **Critical Mach Number Prediction on Swept Wings** J. Kirkman, T. Takahashi, Arizona State University, Tempe, AZ	1500 hrs AIAA-2017-0267 **Effects of Speed on Coupled Sweep and Camber in Morphing Wings** L. Gamble, A. Moosavian, D. Inman, University of Michigan, Ann Arbor, Ann Arbor, MI	1530 hrs AIAA-2017-0268 **Part II: Winglet Design and Optimization for a Low-speed Subsonic UAV Wing** J. Masud, Z. Toor, Air University, Islamabad, Pakistan; F. Akram, National University of Sciences and Technology, Islamabad, Pakistan; Z. Abbas, U. Ahsun, King Saud University, Riyadh, Saudi Arabia	1600 hrs AIAA-2017-0269 **Composite Analysis and Characterization of Exhaust Effects on Aerodynamic Behavior of a Supersonic Aircraft** J. Masud, A. Sayani, Z. Toor, Air University, Islamabad, Pakistan		

Monday, 9 January 2017						
68-APA-7	**Special Session: CFD Applied to Real World Problems**					**Dallas 4**
Chaired by: M. JURKOVICH, US Air Force and P. MORGAN, Ohio Aerospace Institute						
1400 hrs AIAA-2017-0270 **Studies on Aircraft Store with Rotating Tail** R. Kumar, M. Qumar, Defence Research and Development Organisation, Bengaluru, India; V. T, ANSYS, Inc., Bengaluru, India	1430 hrs AIAA-2017-0271 **Applications of Computational Fluid Dynamics in Support of Aircraft Instrumentation Installations** K. Bhamidipati, C. Vatcher, U.S. Air Force, Edwards, CA; J. Lechniak, NASA Armstrong Flight Research Center, Edwards, CA; D. Reasor, Air Force Research Laboratory, Eglin AFB, FL	1500 hrs AIAA-2017-0272 **AEDC Computational Modeling and Simulation Support to Integrated Test and Evaluation (IT&E)** R. Knapke, Arnold Engineering Development Complex, Arnold AFB, TN	1530 hrs AIAA-2017-0273 **Analysis of height stability and dynamic characteristics of a WIG craft** L. Chen, X. Liu, Nanjing University of Aeronautics and Astronautics, Nanjing, China	1600 hrs AIAA-2017-0274 **The Shock Characteristics of a Two Blade Turbofan System** A. Soueidan, R. LeBeau, Saint Louis University, St. Louis, MO	1630 hrs AIAA-2017-0275 **CFD Modeling of US Army UAVs using NASA's OVERFLOW CFD Code** Z. Hall, Army Aviation and Missile Research Development and Engineering Center, Redstone Arsenal, AL	

Monday, 9 January 2017						
69-APA-8/AA-3	**Special Session: Low Boom Activities II**					**Dallas 6**
Chaired by: L. BANGERT, NASA Langley Research Center and L. OZOROSKI, NASA Langley Research Center						
1400 hrs AIAA-2017-0276 **DLR Simulations of the First AIAA Sonic Boom Prediction Workshop Cases** J. Kirz, R. Rudnik, German Aerospace Center (DLR), Braunschweig, Germany	1430 hrs AIAA-2017-0277 **Prediction, Minimization and Propagation of Sonic Boom from Supersonic Bodies** J. Li, J. Krampf, J. Mitchell, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1500 hrs AIAA-2017-0278 **Numerical Evauation of Effect of Atmospheric Turbulence on Sonic Boom Observed in D-SEND#2 Flight Test** M. Kanamori, T. Takahashi, Y. Naka, Y. Makino, H. Takahashi, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; H. Ishikawa, ASIRI Corporation, Chiyoda, Japan	1530 hrs AIAA-2017-0279 **Characteristic Scales of Atmospheric Turbulence Responsible for Sonic Boom Propagation** H. Takahashi, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan; M. Kanamori, Y. Naka, Y. Makino, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan	1600 hrs AIAA-2017-0280 **Effects of Uncertainties in Atmospheric Turbulence and Weather Predictions on Sonic Boom** K. Fujino, R. Kikuchi, K. Shimoyama, S. Obayashi, Tohoku University, Sendai, Japan; Y. Makino, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan	1630 hrs AIAA-2017-0281 **Comparing anisotropic adaptive strategies on the 2nd AIAA sonic boom workshop geometry** A. Loseille, L. Frazza, F. Alauzet, French Institute for Research in Computer Science and Control (INRIA), Saclay, France	

Monday, 9 January 2017						
70-APA-9	**Environmentally Friendly/Efficient Aerodynamics and Enabling Technology II**					**Dallas 1**
Chaired by: W. FELDER, Stevens Institute of Technology and E. FELTROP, Textron Aviation						
1400 hrs AIAA-2017-0282 **Designing Superhydrophobic Coatings for Aircraft Drag Avoidance** C. Ellis-Terrell, V. Poenitzsch, G. Musgrove, J. Simpson, R. Wei, K. Coulter, Southwest Research Institute, San Antonio, TX	1430 hrs AIAA-2017-0283 **Drag Reduction using Hairy Chemical Coating on NACA 0012 Airfoil in Turbulent Airflow** M. Hasegawa, H. Sakaue, University of Notre Dame, Notre Dame, IN	1500 hrs AIAA-2017-0284 **Rotorcraft Fuselage Drag Reduction Using Dielectric Barrier Discharge Plasma Actuators** D. Coleman, SURVICE Engineering, Eglin AFB, FL; F. Thomas, University of Notre Dame, Notre Dame, IN	1530 hrs AIAA-2017-0285 **Drag Reduction Initial Conditions on Various Legacy Fleet Aircraft: Surface Roughness Measurements** A. Moyes, H. Kostak, C. Cox, T. Kocian, W. Saric, H. Reed, Texas A&M University, College Station, TX; et al.			

Monday, 9 January 2017						
71-APA-10	**Special Session: CREATE-AV HPC Multiphysics I**					**Dallas 5**
Chaired by: N. HARIHARAN, CREATE-AV and R. MEAKIN						
1400 hrs AIAA-2017-0286 **CFD Based Model Building of the F-16XL Static and Dynamic Loads Using Kestrel** S. Morton, CREATE Kestrel Team, Lorton, VA; D. McDaniel, University of Alabama, Birmingham, Birmingham, AL	1430 hrs AIAA-2017-0287 **An Assessment of the Dual Mesh Paradigm Using Different Near-Body Solvers in Helios** A. Wissink, Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA; B. Jayaraman, NASA Ames Research Center, Moffett Field, CA; J. Sitaraman, Parallel Geometric Algorithms LLC, Moffett Field, CA	1500 hrs AIAA-2017-0288 **Progress in Strand Mesh Generation and Domain Connectivity for Dual-Mesh CFD simulations** J. Sitaraman, Parallel Geometric Algorithms LLC, Sunnyvale, CA; V. Lakshminarayan, B. Roget, Science and Technology Corporation, Moffett Field, CA; A. Wissink, Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA	1530 hrs AIAA-2017-0289 **Results from HPCMP CREATE™-AV COFFE and KCFD Solvers for the 6th AIAA Drag Prediction Workshop Cases** J. Erwin, R. Glasby, University of Tennessee, Knoxville, Knoxville, TN; S. Karman, Pointwise, Inc., Fort Worth, TX; D. Stefanski, University of Tennessee, Knoxville, Knoxville, TN	1600 hrs AIAA-2017-0290 **Full Potential Revisited: A Medium Fidelty Aerodynamic Analysis Tool** M. Galbraith, S. Allmaras, R. Haimes, Massachusetts Institute of Technology, Cambridge, MA	1630 hrs AIAA-2017-0291 **Creating High-Fidelity CFD Geometry Using CREATE-AV DaVinci 4.0** W. McGough, B. Smith, ASRC Federal Inuteq LLC, Beltsville, MD	

Monday, 9 January 2017						
72-ASC-2	**Adaptive and Morphing Aircraft and Aeroelasticity, Adaptive Skins, Biomimetics**					**Palomino 3**
Chaired by: G. REICH and H. SODANO, University of Michigan, Ann Arbor						
1400 hrs AIAA-2017-0292 **Design of Self-Twisting Rotor Blades for High-Speed Compound Rotorcraft** E. Ward, I. Chopra, A. Datta, University of Maryland, College Park, College Park, MD	1430 hrs AIAA-2017-0293 **Shape Adaptation of Wing Structures by Chiral Structures Undergoing Elastic Instability** F. Runkel, G. Molinari, Swiss Federal Institute of Technology, Zürich, Switzerland; A. Arrieta, Purdue University, West Lafayette, IN; P. Ermanni, Swiss Federal Institute of Technology, Zürich, Switzerland	1500 hrs AIAA-2017-0294 **Smart Morphing Wing: Optimization of Distributed Piezoelectric Actuation** A. Henry, Purdue University, West Lafayette, IN; G. Molinari, Swiss Federal Institute of Technology, Zürich, Switzerland; A. Arrieta, Purdue University, West Lafayette, IN	1530 hrs AIAA-2017-0295 **Smart structures for wind energy turbines** H. Monner, O. Huxdorf, M. Pohl, J. Riemenschneider, German Aerospace Center (DLR), Braunschweig, Germany; T. Homeyer, M. Hölling, University of Oldenburg, Oldenburg, Germany	1600 hrs AIAA-2017-0296 **Effects of birds' wing color on their flight performance for biomimetics purposes** M. Hassanalian, H. Abdelmoula, S. Ben Ayed, A. Abdelkefi, New Mexico State University, Las Cruces, NM		

Monday, 9 January 2017						
73-EDU-2/DE-1	**Advancing Aerospace Education I**					**Dallas 7**
Chaired by: H. BRIGGS, ATA Engineering, Inc.						
1400 hrs AIAA-2017-0297 **Applying the IMPULSE Method to Second and Fourth Year Aerospace Engineering Courses** C. Merrett, Carleton University, Ottawa, Canada	1430 hrs AIAA-2017-0298 **Teaching Product Design & Development and Aircraft Design Courses Together : Lessons to Share** L. Iqbal, National University of Sciences and Technology, Islamabad, Pakistan	1500 hrs AIAA-2017-0299 **Use of a Full-motion Flight Simulator for Teaching Aircraft Performance and Dynamics** J. Dannenhoffer, M. Green, Syracuse University, Syracuse, NY	1530 hrs AIAA-2017-0300 **Turbopump Design, Build, and Testing at Purdue University** E. Abdou, A. Carvalhar, M. Klein, S. Otto, R. White, J. Harry, Purdue University, West Lafayette, IN; et al.	1600 hrs AIAA-2017-0301 **Electronic Controller Design and Fabrication for Full-Scale Helicopter Flight Simulator at CCSU** D. Broderick, F. Wei, J. Ciccio, M. Bufalini, Central Connecticut State University, New Britain, CT		

Monday, 9 January 2017		
74-F360-2 **1400 - 1600 hrs**	**NASA Langley Centennial—A Storied Legacy, A Soaring Future**	**Texas C**

Moderator: James R. Hansen, Professor of History and Director, The University Honors College, Auburn University

Panelists:

Jeremiah Creedon	Delma Freeman	Roy Bridges	Lesa Roe	Steve Jurczyk	David Bowles
Center Director 1996-2002	Center Director 2002-2003	Center Director 2003-2005	Center Director 2005-2014	Center Director 2014-2015	Center Director 2015-present

Monday, 9 January 2017						
75-FD-8	**Boundary Layer Stability and Transition II**					**Texas 1**
Chaired by: D. RIZZETTA, USAF/RQVA and R. GRAVES, Air Force Research Laboratory						
1400 hrs AIAA-2017-0302 **Effect of Freestream Turbulence on Laminar Separation Bubbles and Flow Transition on an SD7003 Airfoil at Low Reynolds Numbers** J. Zilli, D. Sutton, P. Lavoie, University of Toronto, Toronto, Canada	1430 hrs AIAA-2017-0303 **Roughness induced transition in low pressure turbines** A. Sengupta, N. Vadlamani, P. Tucker, University of Cambridge, Cambridge, United Kingdom	1500 hrs AIAA-2017-0304 **Effect of Compressibility on Plasma-Based Transition Control for a Wing with Leading-Edge Excrescence** D. Rizzetta, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2017-0305 **Stereo Particle Velocimetry Measurements of Transition Downstream of a Backward-Facing Step in a Swept-Wing Boundary Layer** J. Eppink, C. Yao, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2017-0306 **Stereo Particle Image Velocimetry Measurements of Transition Downstream of a Foward-Facing Step in a Swept-Wing Boundary Layer** J. Eppink, NASA Langley Research Center, Hampton, VA	1630 hrs AIAA-2017-0307 **On the Mechanics and Control of Boundary Layer Transition induced by Discrete Roughness Elements** S. Suryanarayanan, D. Goldstein, University of Texas, Austin, Austin, TX; G. Brown, Princeton University, Princeton, NJ; A. Berger, E. White, Texas A&M University, College Station, TX	

Monday, 9 January 2017						
76-FD-9	**CFD Methods for Compressible Flows II**					**Texas 4**
Chaired by: S. SHERER, AFRL/RQVA and B. AHRABI, University of Wyoming						
1400 hrs AIAA-2017-0308 **Weighted Upwinding Compact Scheme for Shock Capturing** H. Aldujaly, Y. Yang, C. Liu, University of Texas, Arlington, Arlington, TX	1430 hrs AIAA-2017-0309 **Large Eddy Simulations of Wall-Mounted Cylinder in Supersonic Flow Using OVERFLOW** S. Sherer, P. Morgan, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2017-0310 **Reconstructed Discontinuous Galerkin Methods for Diffusion Using a First-Order Hyperbolic System Formulation** J. Lou, X. Liu, H. Luo, North Carolina State University, Raleigh, NC; H. Nishikawa, National Institute of Aerospace, Hampton, VA	1530 hrs AIAA-2017-0311 **Development of Discontinuous Galerkin method for Hypersonic Heating Prediction** E. Ching, Y. Lv, M. Ihme, Stanford University, Stanford, CA	1600 hrs AIAA-2017-0312 **Edge-Based Finite Element Modeling of Electromagnetic Effects in the Hypersonic Regime** W. Zhang, W. Habashi, McGill University, Montréal, Canada; N. Ben Salah, L'École Nationale Supérieure des Ingénieurs de Tunis, Tunis, Tunisia; M. Fossati, University of Strathclyde, Glasgow, United Kingdom; D. Isola, G. Baruzzi, ANSYS, Montreal, Canada	1630 hrs AIAA-2017-0313 **A Gaskinetic Model For Background Flow Effects On Rarefied Jet Flow** C. Cai, Michigan Technological University, Houghton, MI	

Monday, 9 January 2017						
77-FD-11	**RANS/LES for High-Speed Flows**					**Texas 3**
Chaired by: C. BARNES, AFRL/RQVA and D. GONZALEZ, Naval Surface Warfare Center						
1400 hrs AIAA-2017-0314 **Characterizing and Improving Predictive Accuracy in Shock-Turbulent Boundary Layer Interactions Using Data-driven Models** A. Singh, K. Duraisamy, S. Pan, University of Michigan, Ann Arbor, Ann Arbor, MI	1430 hrs AIAA-2017-0315 **High-Mach-Number Turbulence Modeling using Machine Learning and Direct Numerical Simulation Database** J. Huang, L. Duan, Missouri University of Science and Technology, Rolla, MO; J. Wang, R. Sun, H. Xiao, Virginia Polytechnic Institute and State University, Blacksburg, VA	1500 hrs AIAA-2017-0316 **Large-Eddy Simulation of a Compressible Mixing Layer and the Significance of Inflow Turbulence** M. Mankbadi, J. DeBonis, N. Georgiadis, NASA Glenn Research Center, Cleveland, OH	1530 hrs AIAA-2017-0317 **Turbulence Modeling of High Speed Compressible Flows** S. Shuai, T. Wray, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1600 hrs AIAA-2017-0318 **Transition and turbulence in a wall-bounded channel flow at high Mach number** S. Pradhan, Indian Institute of Science, Bengaluru, India		

Monday, 9 January 2017						
78-FD-12	**Special Session: CRM High-Lift Project**					**Texas 6**
Chaired by: J. LIN, NASA-Langley Research Center and E. WHALEN, Boeing						
1400 hrs AIAA-2017-0319 **CRM High Lift Model for Wind Tunnel Testing: an Active Flow Control Perceptive** J. Lin, S. Viken, L. Pack Melton, M. Andino, M. Koklu, J. Hannon, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2017-0320 **Computational Fluid Dynamics Analyses for the High-Lift Common Research Model Using the USM3D and FUN3D Flow Solvers** M. Rivers, C. Hunter, V. Vatsa, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2017-0321 **System-Level Trade Studies for Transonic Transports with Active Flow Control (AFC) Enhanced High-Lift Systems** P. Hartwich, P. Camacho, K. El-Gohary, A. Gonzales, E. Lawson, A. Shmilovich, The Boeing Company, Huntington Beach, CA	1530 hrs Oral Presentation **Traverse Actuation Method for High Lift** A. Shmilovich, Y. Yadlin, The Boeing Company, Huntington Beach, CA	1600 hrs AIAA-2017-0322 **Development of an Active Flow Control Technique for an Airplane High-Lift Configuration** A. Shmilovich, Y. Yadlin, E. Dickey, P. Hartwich, A. Khodadoust, The Boeing Company, Huntington Beach, CA		

Monday, 9 January 2017						
79-FD-13	**Synthetic Jets**					**Texas 2**
Chaired by: D. BRZOZOWSKI, The Boeing Company and S. JEE, Gwangju Institute of Science and Technology						
1400 hrs AIAA-2017-0323 **Novel Design of a Synthetic Jet Actuator for Flow Control** K. Bauer, Saarland University, Saarbrücken, Germany; C. Karch, A. Heilmann, M. Blechschmidt, Airbus, Munich, Germany	1430 hrs AIAA-2017-0324 **Reduction of Skin Friction Drag in a Turbulent Boundary Layer Using Circular Synthetic Jets** E. Spinosa, S. Zhong, University of Manchester, Manchester, United Kingdom	1500 hrs AIAA-2017-0325 **Effects of vortex-induced velocity on the streamwise evolution of synthetic jets in cross-flow** T. Berk, G. Gomit, B. Ganapathisubramani, University of Southampton, Southampton, United Kingdom	1530 hrs AIAA-2017-0326 **Effects of Synthetic Jet Actuator (SJA) on Flow Topology of Blunt-Edged UTM VFE2 Wing Model** S. Mat, M. Abdullah, M. Dahalan, M. Said, S. Mansor, A. Abdul-Latif, University of Technology, Johor Bahru, Malaysia; et al.			

Monday, 9 January 2017						
80-FD-14	**Low-Re and Bio-Inspired Flows II: Unsteady Wings**					**Grapevine C**
Chaired by: M. OL, US Air Force Reseach Laboratory						
1400 hrs AIAA-2017-0327 **Proper Orthogonal Decomposition Analysis of Flapping Hovering Wings** C. Li, Ohio State University, Columbus, OH; J. Wang, H. Dong, University of Virginia, Charlottesville, Charlottesville, VA	1430 hrs AIAA-2017-0328 **Marsbee - Can a Bee Fly on Mars?** J. Bluman, C. Kang, D. Landrum, F. Fahimi, B. Mesmer, University of Alabama, Huntsville, Huntsville, AL	1500 hrs AIAA-2017-0329 **Quasi-steady versus Navier-Stokes Solutions of Flapping Wing Aerodynamics** J. Salmon, J. Bluman, C. Kang, University of Alabama, Huntsville, Huntsville, AL	1530 hrs AIAA-2017-0330 **Low Reynolds Number Surge Response of a Flat Plate Wing at 90 Degrees Incidence** S. Corkery, R. Stevens, H. Babinsky, University of Cambridge, Cambridge, United Kingdom	1600 hrs AIAA-2017-0331 **Analytical Aerodynamic Model of Spanwise Flexible Flapping Wings in Forward Flight** D. Kodali, C. Kang, University of Alabama, Huntsville, Huntsville, AL; H. Aono, Tokyo University of Science, Katsushika, Japan		

Monday, 9 January 2017						
81-GEPC-2	**Hybrid Propulsion Concept Development for Transport Class Aircraft**					**Texas 5**
Chaired by: N. MADAVAN, NASA-Ames Research Center and A. PROVENZA						
1400 hrs Oral Presentation **Conceptual Design and Performance Evaluation of a Parallel Hybrid Gas Electric Geared Turbofan for N+3 Single Aisle Aircraft** C. Lents, United Technologies Corporation, East Hartford, CT	1430 hrs Oral Presentation **High Speed, High Frequency Air-core Machine and Drive** K. Haran, University of Illinois, Urbana-Champaign, Urbana, IL	1500 hrs Oral Presentation **10 MW Ring Motor for Aircraft Power** C. Cantemir, Ohio State University, Columbus, OH	1530 hrs Oral Presentation **SiC MW Converter for Hybrid Propulsion** D. Zhang, General Electric Company, Niskayuna, NY	1600 hrs Oral Presentation **Ultra-light Highly Efficient MW-Class Cryogenically-Cooled Inverter** S. Liu, The Boeing Company, Seattle, WA	1630 hrs Oral Presentation **Modular and Scalable High Efficiency Power Inverters for Extreme Power Density Applications** R. Pilawa-Podgurski, University of Illinois, Urbana-Champaign, Urbana, IL	

Monday, 9 January 2017						
82-GT-2	**Experimental and Computational Fluid Dynamics Studies**					**Ft. Worth 6**
Chaired by: C. JORGENS, The Boeing Company and A. CHOU, NASA Langley Research Center						
1400 hrs AIAA-2017-0332 **High-speed Wind Tunnel Test of the CAE-AVM in DNW-HST for CFD Validation Purposes** R. Gebbink, German-Dutch Wind Tunnels, Marknesse, The Netherlands; G. Wang, M. Zhong, Chinese Aeronautical Establishment, Beijing, China	1430 hrs AIAA-2017-0333 **Air Data System Calibration Methodology over Cylindrical Bodies** A. Karns, J. Strike, R. Kumar, Florida State University, Tallahassee, FL; B. Dickinson, Air Force Research Laboratory, Eglin AFB, FL	1500 hrs AIAA-2017-0334 **Numerical Analysis of Water-cooling Deflector for a High-power Rocket Engine Test Stand** M. Li, T. Luo, R. Liu, S. Yang, Beijing Institute of Aerospace Testing Technology, Beijing, China				

Monday, 9 January 2017						
83-GT-11	**High Reynolds Number Aerodynamics and Testing (Invited)**					**Austin 1**
Chaired by: H. QUIX, European Transonic Windtunnel and R. PARYZ						
1400 hrs Oral Presentation **Productivity Improvements at the European Transonic Windtunnel (Invited)** H. Quix, European Transonic Windtunnel, Cologne, Germany	1430 hrs AIAA-2017-0335 **Investigation of a Pressure Sensitive Paint Technique for ETW (Invited)** D. Yorita, Y. Deisuke, V. Ondruss, U. Beifuss, German Aerospace Center (DLR), Cologne, Germany; A. Hensch, J. Quest, European Transonic Windtunnel, Cologne, Germany; et al.	1500 hrs AIAA-2017-0336 **Application of Carbon Nanotubes and Temperature Sensitive Paint for the Detection of Boundary Layer Transition under Cryogenic Conditions (Invited)** C. Klein, U. Henne, Y. Deisuke, V. Ondruss, U. Beifuss, A. Hensch, German Aerospace Center (DLR), Göttingen, Germany; et al.	1530 hrs Oral Presentation **Velocity measurements in unseeded cryogenic flows using FLEET (Invited)** P. Danehy, R. Burns, NASA Langley Research Center, Hampton, VA	1600 hrs Oral Presentation **Development of Shape Memory Alloy Based Active Wind Tunnel Models and Cryogenic Testing at European Transonic Windtunnel (ETW) and NASA Langley Transonic Cryogenic Tunnel (TCT) (Invited)** T. Calkins, M. Sleppy, B. Griffiths, The Boeing Company, Seattle, WA	1630 hrs Oral Presentation **High Reynolds Testing of a Sweeping Jet Configuration in a Semi-Span Supercritical Wing (Invited)** G. Jones, W. Milholen, D. Chan, S. Goodliff, L. Pack Melton, NASA Langley Research Center, Hampton, VA	

Monday, 9 January 2017						
84-GTE-2	**New Engine Architectures I**					**Ft. Worth 2**
Chaired by: M. RICKLICK, Embry Riddle Aeronautical University						
1400 hrs AIAA-2017-0337 **Continued Analysis of an Inverse Brayton Cycle Based UAV Propulsion System** J. Wilhite, K. Yellugari, E. Gutmark, University of Cincinnati, Cincinnati, OH	1430 hrs AIAA-2017-0338 **A Parametric Study of Hybrid Electric Gas Turbine Propulsion as a Function of Aircraft Size Class and Technology Level** J. Gladin, C. Perullo, J. Tai, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1500 hrs Oral Presentation **Emission free propulsion system with an hydrogen fuel cell hybrid for a 4 seater aircraft** J. Kallo, German Aerospace Center (DLR), Stuttgart, Germany				

Monday, 9 January 2017						
85-HSABP-2	**Scramjet Combustors**					**San Antonio 4**
Chaired by: J. EDWARDS and J. FULTON						
1400 hrs AIAA-2017-0339 **Hybrid Reynolds-Averaged and Large-Eddy Simulations of Combustion in a Supersonic Cavity Flameholder** D. Peterson, Innovative Scientific Solutions, Inc., Dayton, OH; E. Hassan, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2017-0340 **Radiance of Select Species in a Scramjet Cavity** S. Okhovat, T. Ombrello, M. Resor, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2017-0341 **Three-Dimensional Visualization of Flow and Flame in a Model Scramjet in Mach 4.5 Flows** Q. Liu, D. Baccarella, T. Lee, University of Illinois, Urbana-Champaign, Urbana, IL; C. Carter, Air Force Research Laboratory, Wright-Patterson AFB, OH; H. Do, Seoul National University, Seoul, South Korea	1530 hrs AIAA-2017-0342 **Pressure Treatment in the Flamelet Modeling of Turbulent Supersonic Combustion** F. Ladeinde, Z. Lou, Stony Brook University, Stony Brook, NY			

Monday, 9 January 2017						
86-IS-1	**Student Paper Competition**					**Ft. Worth 1**
Chaired by: K. MELCHER, NASA Glenn Research Center and T. YUCELEN, Missouri University of Science & Technology						
1400 hrs AIAA-2017-0343 **Towards Adaptive Training of Agent-Based Sparring Partners for Fighter Pilots** B. Israelsen, N. Ahmed, University of Colorado, Boulder, Boulder, CO; K. Center, R. Green, Orbit Logic, Inc., Greenbelt, MD; W. Bennett, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2017-0344 **Human Automation Interaction Issue Detection Using a Generalized Fuzzy Hidden Markov Model** H. Lyu, J. Suraj Nandiganahalli, I. Hwang, Purdue University, West Lafayette, IN	1500 hrs AIAA-2017-0345 **Flight Deck Mode Confusion Detection using Intent-based Probabilistic Model Checking** J. Suraj Nandiganahalli, S. Lee, I. Hwang, Purdue University, West Lafayette, IN				

Monday, 9 January 2017						
87-ISC-4	**International Student Conference-Community Outreach Category**					**Longhorn Hall D**
Chaired by: R. DOWDY						
1400 hrs Oral Presentation **UAH AIAA Community Outreach** A. Scharfenberg, K. Dutour, University of Alabama, Huntsville, Huntsville, AL	1430 hrs Oral Presentation **AIAA-UT Arlington Student Branch Community Outreach: Fort Worth Regional Science Fair** I. Marks, University of Texas, Arlington, Arlington, TX	1500 hrs Oral Presentation **Daedalus Astronautics at ASU: Outreach Program** W. Templeton, Arizona State University, Tempe, AZ	1530 hrs Oral Presentation **Physics behind Light and Black Holes using Darth Vader's Lightsaber** S. Raghu, Pennsylvania State University, University Park, PA	1600 hrs Oral Presentation **Aero Outreach Program** A. Phillips, U.S. Air Force Academy, Colorado Springs, CO		

Monday, 9 January 2017						
88-LEC-2 1400 - 1530 hrs	Spacecraft Structures Lecture and Panel					Texas D

Bridging the Gap from Technology to Spaceflight
Mark Thomson
Chief Engineer
Northrop Grumman Astro Aerospace

Panelists:

Hiraku Sakmoto
Associate Professor
Tokyo Institute of Technology

Jeanette Domber
Payload Systems Engineer
Ball Aerospace

Roberta Ewart
Chief Scientist, Space and Missile Systems Center
Air Force Space Command

Monday, 9 January 2017						
89-MAT-2	Multifunctional Materials II					Palomino 1
Chaired by: S. ARNOLD, NASA Glenn Research Center and M. NARAGHI, Texas A & M university						
1400 hrs AIAA-2017-0347 **Ablative Polymer Nanocomposites – Further Review** J. Koo, M. Natali, KAI, LLC, Austin, TX; K. Schellhase, B. Lisco, J. Langston, University of Texas, Austin, Austin, TX	1430 hrs AIAA-2017-0348 **Multiscale Modeling of Effective Piezoresistivity and Damage Response in Nanocomposite Bonded Explosives** K. Talamadupula, A. Chaurasia, G. Seidel, Virginia Polytechnic Institute and State University, Blacksburg, VA	1500 hrs AIAA-2017-0349 **Size dependent modeling of electrostatically actuated functionally graded nanobeams** M. Shaat, A. Abdelkefi, New Mexico State University, Las Cruces, NM	1530 hrs AIAA-2017-0350 **3D Printed Strain Gauge Geometry and Orientation for Embedded Sensing** J. Gooding, T. Fields, University of Missouri, Kansas City, Kansas City, MO	1600 hrs AIAA-2017-0351 **Galvanic Series of Recent Aerospace Materials in Salt Water** T. Morimoto, Japan Aerospace Exploration Agency (JAXA), Mitaka, Japan		

Monday, 9 January 2017						
90-MAT-3	Materials Testing and Characterization					Palomino 2
Chaired by: R. NAIK, Pratt & Whitney and J. RANSOM, NASA-Langley Research Center						
1400 hrs AIAA-2017-0352 **Landing Gear Design Impact on Aircraft Tire Life** A. Zakrajsek, 96 TG/OL-ACL Landing Gear Test Facility, Wright-Patterson AFB, OH; R. Vogel, Air Force Life Cycle Management Center, Wright-Patterson AFB, OH; S. Naboulsi, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Bohun, 96 TG/OL-ACL Landing Gear Test Facility, Wright-Patterson AFB, OH	1430 hrs AIAA-2017-0353 **Performance and Wear Tests of Icephobic Nanocoatings to Prevent Ice Accretion on Aerofoils** Z. Janjua, B. Turnbull, J. Liu, X. Hou, K. Choi, University of Nottingham, Nottingham, United Kingdom	1500 hrs AIAA-2017-0354 **High Strain Rate Material Characterization of Al 7075-T651 by Modified Taylor Impact Test and Velocity Interferometry** L. Kesemen, TUBITAK, Ankara, Turkey; A. Kayran, Middle East Technical University, Ankara, Turkey	1530 hrs AIAA-2017-0355 **Non-Destructive Evaluation of Defects in Polymer Matrix Composites for Aerospace Applications Using X-ray Talbot-Lau Interferometry and Micro CT** S. Senck, University of Applied Sciences, Wels, Austria; M. Scheerer, Aerospace & Advanced Composites GmbH, Wiener Neustadt, Austria; V. Revol, Swiss Center for Electronics and Microtechnology (CSEM), Alpnach Dorf, Switzerland; K. Dobes, RUAG Group, Vienna, Austria; B. Plank, J. Kastner, University of Applied Sciences, Wels, Austria	1600 hrs AIAA-2017-0356 **Insitu Ablation and Thermal Sensing of a 3D Carbon/Phenolic Composite for Computer Modeling and Simulation** B. Lisco, J. Lewis, C. Kassem, K. Moser, J. Koo, University of Texas, Austin, Austin, TX; M. Berdoyes, Airbus, Le Haillan, France; et al.		

Monday, 9 January 2017						
91-MDO-3	Aerodynamic Shape Optimization					Mustang 1
Chaired by: J. GRAY, NASA Glenn Research Center and F. ENGELSEN, The Boeing Company						
1400 hrs AIAA-2017-0357 **An Efficient Parallel Overset Method for Aerodynamic Shape Optimization** G. Kenway, A. Mishra, N. Secco, K. Duraisamy, J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1430 hrs AIAA-2017-0358 **Simulation-based Design Optimization by Adaptive Field Correction of Multi-fidelity Models** L. Leifsson, Iowa State University, Ames, IA; S. Koziel, Reykjavik University, Reykjavik, Iceland	1500 hrs AIAA-2017-0359 **Aerodynamic Shape Optimization Using Symbolic Sensitivity Analysis** A. Elham, Delft University of Technology, Delft, The Netherlands	1530 hrs AIAA-2017-0360 **Objective Function and Constraints for Robust Transonic Aerofoil Optimization** D. Poole, C. Allen, T. Rendall, University of Bristol, Bristol, United Kingdom			

Monday, 9 January 2017						
92-MVC-2	**1st AIAA Geometry and Mesh Generation Workshop/High Lift Prediction Workshop**					**Grapevine D**
Chaired by: J. CHAWNER, Pointwise, Inc. and T. MICHAL, Boeing Engineering Operations & Technology						
1400 hrs AIAA-2017-0361 **Generation of Mixed Element Unstructured Meshes for the 3rd High Lift Prediction Workshop** P. Li, J. Gallegos, T. Michal, The Boeing Company, St. Louis, MO	1430 hrs AIAA-2017-0362 **Best Practices on Overset Structured Mesh Generation for the High-Lift CRM Geometry** W. Chan, NASA Ames Research Center, Moffett Field, CA	1500 hrs AIAA-2017-0363 **Mesh Generation for the NASA High Lift Common Research Model (HL-CRM)** E. Gantt, C. Woeber, N. Wyman, Pointwise, Inc., Fort Worth, TX	1530 hrs AIAA-2017-0364 **Mesh generation for high-lift geometry configuration using Capstone** S. Dey, Naval Research Laboratory, Washington, D.C.; R. Aubry, B. Karamete, E. Mestreau, J. Dean, Sotera Defense Solutions, Herndon, VA	1600 hrs Panel Lessons Learned from Generating Baseline Meshes for 3rd AIAA High Lift Prediction Workshop The objective of the moderated discussion is to evaluate the utility of the meshing guidelines and the geometry models provided by the workshop organizers; assess the capability to adhere to these guidelines; identify the best practices and current shortcomings; and finally, review and document the required/desired capabilities and lessons learned. It is hoped that the technical interchange between the meshing community, simulation practitioners, researchers, and software developers will help to illuminate the path for geometry and mesh generation research and tool development to meet future workshop requirements. Moderated by: Hugh Thornburg, Engility Panelists: **Ed Alyanak** AFRL; **William Jones** NASA; **Jeffrey Slotnick** The Boeing Company; **Carl Ollivier-Gooch** UBC		

Monday, 9 January 2017						
93-NDA-1	**Reliability Analysis Methods and Applications**					**Mustang 2**
Chaired by: S. MULANI, The University of Alabama and Y. LING						
1400 hrs AIAA-2017-0365 **Improved Neumann Expansion Method Using Partial Bivariate Subspaces** H. Bae, Wright State University, Dayton, OH	1430 hrs AIAA-2017-0366 **A New Approach of Mixed Uncertainty Quantification and its application to structural analysis with corrosion degradation** C. Xie, G. Li, F. Wei, F. Wang, China Academy of Engineering Physics, Mianyang, China	1500 hrs AIAA-2017-0367 **Adaptively Sampling Multi-Fidelity Probabilistic Functions with Adjoints** A. Wendorff, J. Alonso, Stanford University, Stanford, CA; B. Whitehead, S. Bieniawski, The Boeing Company, Seattle, WA	1530 hrs AIAA-2017-0368 **Reliability Analysis Considering Tail Dependence over Space and Time** Z. Hu, S. Mahadevan, Vanderbilt University, Nashville, TN	1600 hrs AIAA-2017-0369 **Uncertainty Aggregation in Reliability Analysis** S. Nannapaneni, Z. Hu, S. Mahadevan, Vanderbilt University, Nashville, TN		

Monday, 9 January 2017						
94-PC-5/PGC-2	**Pressure Gain Combustion Detonative Propulsion Physics**					**Ft. Worth 3**
Chaired by: J. HOKE, Innovative Scientific Solutions Incorporated and T. OMBRELLO, Air Force Research Laboratory						
1400 hrs AIAA-2017-0370 **Mid-Infrared Imaging of an Optically Accessible Non-Premixed Hydrogen-Air Rotating Detonation Engine** B. Rankin, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Codoni, K. Cho, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2017-0371 **Design & Development of a Hypersonic Combustor for Oblique Detonation Wave Stabilization** J. Sosa, K. Ahmed, University of Central Florida, Orlando, FL	1500 hrs AIAA-2017-0372 **Deflagration-to-Detonation Transition in Nitrous Oxide-Ethylene Mixtures and its Application to Pulsed Propulsion Systems** P. Bangalore Venkatesh, T. Graziano, S. Bane, S. Meyer, Purdue University, West Lafayette, IN; M. Grubelich, Sandia National Laboratories, Albuquerque, NM	1530 hrs AIAA-2017-0373 **Effects of Lateral Relief of Detonation in a Thin Channel** K. Cho, J. Codoni, B. Rankin, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2017-0374 **Effect of Equivalence Ratio and Turbulence Fluctuations on the Propagation of Detonations** D. Masselot, R. Fiévet, V. Raman, University of Michigan, Ann Arbor, Ann Arbor, MI	1630 hrs AIAA-2017-0375 **Self-Excited, Multi-kHz Dynamics in a Linear, Semi-Bounded Detonation Channel** K. Schwinn, B. Kan, S. Sardeshmukh, R. Gejji, S. Heister, C. Slabaugh, Purdue University, West Lafayette, IN	

Monday, 9 January 2017						
95-PC-6	**Combustion Modeling and Simulation II**					**San Antonio 6**
Chaired by: M. ANAND, Rolls-Royce Corp and C. LI, Air Force Office of Scientific Research						
1400 hrs AIAA-2017-0376 **Droplet Flame Generated Manifolds for use in Large Eddy Simulations of Two-phase Reacting Flows** P. DesJardin, B. Bojko, State University of New York, Buffalo, NY	1430 hrs AIAA-2017-0377 **Grid Convergence Studies of Bluff Body Stabilized Turbulent Premixed Combustion** A. Comer, Air Force Institute of Technology, Wright-Patterson AFB, OH; S. Sardeshmukh, Purdue University, West Lafayette, IN; B. Rankin, M. Harvazinski, V. Sankaran, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2017-0378 **Exploration of POD-Galerkin Techniques for Developing Reduced Order Models of Nonlinear Euler Equations** C. Huang, W. Anderson, C. Merkle, Purdue University, West Lafayette, IN	1530 hrs AIAA-2017-0379 **Large Eddy Simulations of a Premixed Jet Combustor Using Flamelet-Generated Manifolds: Effects of Heat Loss and Subgrid-Scale Models** F. Hernandez Perez, B. Lee, H. Im, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; A. Fancello, A. Donini, J. van Oijen, Eindhoven University of Technology, Eindhoven, The Netherlands; et al.			

Monday, 9 January 2017						
96-PC-7	**Alternate Aviation Fuels II**					**San Antonio 5**
Chaired by: M. ROQUEMORE and S. VASU, University of Central Florida						
1400 hrs AIAA-2017-0380 **Impacts of Fuel Properties on Combustor Performance, Operability and Emissions Characteristics** E. Corporan, J. Edwards, Air Force Research Laboratory, Wright-Patterson AFB, OH; S. Stouffer, M. DeWitt, Z. West, C. Klingshirn, University of Dayton, Dayton, OH; et al.	1430 hrs AIAA-2017-0381 **Jet Fuel Thermal Stability Investigations using Ellipsometry** L. Nash, University of Central Florida, Orlando, FL; J. Klettlinger, NASA Glenn Research Center, Cleveland, OH; S. Vasu, University of Central Florida, Orlando, FL	1500 hrs AIAA-2017-0382 **Investigation of Combustion Emissions from Conventional and Alternative Aviation Fuels in a Well-Stirred Reactor** R. Stachler, J. Heyne, S. Stouffer, University of Dayton, Dayton, OH; J. Miller, M. Roquemore, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2017-0383 **The effect of fuel composition on swirling kerosene flames** J. Sidey, P. Allison, E. Mastorakos, University of Cambridge, Cambridge, United Kingdom			

Monday, 9 January 2017						
97-PC-8	**Combustion Diagnostics II: Spectroscopy and Absorption**					**San Antonio 2**
Chaired by: J. TISHKOFF, Air Force Office of Scientific Research and C. DENNIS, Naval Air Warfare Center						
1400 hrs AIAA-2017-0384 **Sensitivity, Stability, and Precision of Quantitative ns-LIBS-Based Fuel-Air Ratio Measurements for High-Pressure Methane-Air Flames** M. Gragston, Y. Wu, Z. Zhang, University of Tennessee, Knoxville, Knoxville, TN; P. Hsu, A. Patnaik, S. Roy, Spectral Energies, LLC, Dayton, OH; et al.	1430 hrs AIAA-2017-0385 **Characterization of Emissions from Metalized Energetic Formulations Using Laser-Induced Breakdown Spectroscopy** M. O'Neil, N. Niemiec, A. Demko, E. Petersen, W. Kulatilaka, Texas A&M University, College Station, TX	1500 hrs AIAA-2017-0386 **Infrared Absorption Measurements of Saturated Vapor-Phase Jet A-1** P. Chang, J. Li, C. Teo, L. Li, B. Khoo, National University of Singapore, Singapore, Singapore	1530 hrs AIAA-2017-0387 **Spectrally resolved measurements of absorption of broadband UV light-emitting diodes by combustion radicals** L. White, M. Gamba, University of Michigan, Ann Arbor, Ann Arbor, MI	1600 hrs AIAA-2017-0388 **Spectroscopic Characterization of Reactions Involving Counter-WMD Simulants** N. Niemiec, K. Campbell, T. Sikes, E. Petersen, W. Kulatilaka, Texas A&M University, College Station, TX		

Monday, 9 January 2017						
98-PC-9	**Advanced Combustion Concepts I**					**Grapevine 3**
Chaired by: R. PITZ, Vanderbilt University and Y. HARDALUPAS, Imperial College London						
1400 hrs Oral Presentation **Opportunities and Challenges in Miniature Combustion Systems** C. Cadou, University of Maryland, College Park, College Park, MD	1430 hrs AIAA-2017-0389 **Power Loss Pathways and Energy Balance of a Small Four-Stroke Internal Combustion Engine** J. Blantin, J. Ausserer, M. Polanka, Air Force Institute of Technology, Wright-Patterson AFB, OH; P. Litke, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Baranski, Innovative Scientific Solutions, Inc., Dayton, OH	1500 hrs AIAA-2017-0390 **Design Strategy for Product Migration from a Circumferential Combustion Cavity** E. Hornedo Rodriquez, A. Cottle, C. Schmiedel, B. Bohan, M. Polanka, Air Force Institute of Technology, Wright-Patterson AFB, OH; L. Goss, Innovative Scientific Solutions, Inc., Dayton, OH	1530 hrs AIAA-2017-0391 **A Model for Plasma-Combustion Coupling and its Effect on the Ignition of a Dielectric-Barrier Discharge Actuated Hydrogen Jet** L. Massa, Virginia Polytechnic Institute and State University, Blacksburg, VA; J. Freund, University of Illinois, Urbana-Champaign, Urbana, IL	1600 hrs AIAA-2017-0392 **Inert state of fuel tank during aircraft ascent** M. Frank, D. Drikakis, University of Strathclyde, Glasgow, United Kingdom		

Monday, 9 January 2017						
99-PDL-2	**Plasma Aerodynamics II**					**Ft. Worth 4**
Chaired by: S. BANE, Purdue University- Sch of Aero and Astro						
1400 hrs Oral Presentation **Quasi-DC Discharge in Supersonic Airflow** S. Leonov, University of Notre Dame, Notre Dame, IN	1430 hrs AIAA-2017-0394 **Characterization of a 50kW Inductively Coupled Plasma Torch for Testing of Ablative Thermal Protection Materials** B. Greene, N. Clemens, P. Varghese, University of Texas, Austin, Austin, TX; S. Bouslog, S. Del Papa, NASA Johnson Space Center, Houston, TX	1500 hrs AIAA-2017-0395 **A Comparison Between Corona and DBD Plasma Actuators for Separation Control on an Airfoil** F. Messanelli, M. Belan, Technical University of Milan, Milan, Italy	1530 hrs AIAA-2017-0396 **Quantitative Mean Flow Measurements Downstream of a Plasma Actuated Grid** P. Audier, N. Benard, National Center for Scientific Research (CNRS), Poitiers, France; A. Mizuno, University of Toyohashi, Toyohashi, Japan; E. Moreau, National Center for Scientific Research (CNRS), Poitiers, France	1600 hrs AIAA-2017-0397 **Characterization of Transient Operation of a Quasi-DC Electrical Discharge in Supersonic Flow** A. Houpt, B. Hedlund, S. Leonov, S. Elliot, University of Notre Dame, Notre Dame, IN; T. Ombrello, C. Carter, Air Force Research Laboratory, Wright-Patterson AFB, OH		

Monday, 9 January 2017						
100-SATS-3	**Small Satellite Software and Systems**					**Austin 6**
Chaired by: A. SANTANGELO						
1400 hrs AIAA-2017-0398 **Autonomous Real-Time Optimal Control and Tracking for Micro-Satellite Proximity Operations** K. Nastasi, D. Thomas, K. Tetreault, J. Black, Virginia Polytechnic Institute and State University, Blacksburg, VA	1430 hrs AIAA-2017-0399 **The Implementation of 'App on Demand' Functionality for CubeSats and Other Small Satellites and Its Application to Educational Applications** C. Hansen, J. Straub, University of North Dakota, Grand Forks, Grand Forks, ND	1500 hrs AIAA-2017-0400 **Probabilistic Methods for Nanosatellite Systems Engineering: A Lasercom Case Study** E. Clements, K. Cahoy, Massachusetts Institute of Technology, Cambridge, MA	1530 hrs AIAA-2017-0401 **4The LinkStar System, A Globalstar Based Radio And Flight System For Satellites In LEO – Architecture And Test Results** A. Santangelo, sci_Zone, Inc., Rio Rancho, NM			

Monday, 9 January 2017						
101-SD-4/APA-47	**Special Session: Aerothermoelasticity of, and Dynamic Response in, High Speed Vehicles and in High Speed Flow II**					**Appaloosa 2**
Chaired by: J. MCNAMARA, The Ohio State University and N. FALKIEWICZ, MIT Lincoln Laboratory						
1400 hrs AIAA-2017-0402 **Fluid-Structure Interactions on a Slender Cone under Quiet Flow Conditions at Mach 6** K. Casper, Sandia National Laboratories, Albuquerque, NM	1430 hrs AIAA-2017-0403 **Big Data Algorithms and Workflow Needed to Assess Highly Maneuverable, Flexible Vehicles** A. Vanderwyst, V. Sharma, C. Martin, Leidos, Eglin AFB, FL	1500 hrs AIAA-2017-0404 **Study on Shock-Induced Panel Flutter in 3-D Inviscid Flow** N. Boyer, J. McNamara, Ohio State University, Columbus, OH; C. Barnes, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2017-0405 **High Speed Vehicle Fluid-Structure-Jet Interaction Analysis and Modeling** R. Kitson, C. Cesnik, University of Michigan, Ann Arbor, Ann Arbor, MI	1600 hrs AIAA-2017-0406 **Aeroelastic Stability of High-Speed Cylindrical Vehicles** R. Klock, C. Cesnik, University of Michigan, Ann Arbor, Ann Arbor, MI		

Monday, 9 January 2017						
102-SD-5	**Special Topics in Structural Dynamics and Aeroelasticity II**					**Appaloosa 3**
Chaired by: K. SPAK, Exponent and S. RAGHAVAN, University of Central Florida						
1400 hrs AIAA-2017-0407 **Stick Model Development of Aircraft Structures for Dynamic Analysis** U. Hayirli, Turkish Aerospace Industries, Inc., Ankara, Turkey; A. Kayran, Middle East Technical University, Ankara, Turkey	1430 hrs AIAA-2017-0408 **Optimized Angular Acceleration Profile of Flexible Satellite for Minimum Residual Vibration** Z. Hou, Y. Geng, S. Huang, Harbin Institute of Technology, Harbin, China	1500 hrs AIAA-2017-0409 **Entropy for Nonconservative Vibrating Systems** D. Tufano, Z. Sotoudeh, Rensselaer Polytechnic Institute, Troy, NY	1530 hrs AIAA-2017-0410 **Entropy for Nonlinear Oscillators** D. Tufano, Z. Sotoudeh, Rensselaer Polytechnic Institute, Troy, NY	1600 hrs AIAA-2017-0411 **3D-Printed Wind Tunnel Flutter Model** A. Pankonien, G. Reich, N. Lindsley, B. Smyers, Air Force Research Laboratory, Wright-Patterson AFB, OH		

Monday, 9 January 2017						
103-SD-6	Special Session: Aeroelastic Prediction II					Appaloosa 4
Chaired by: J. HEEG, NASA-Langley Research Center and K. GRIFFIN, Southwest Research Institute						
1400 hrs AIAA-2017-0412 **Uncertainty Analysis of Flutter Predictions With Focus on the AGARD 445.6 Wing** S. Wu, E. Livne, University of Washington, Seattle, Seattle, WA	1430 hrs AIAA-2017-0413 **Aeroelastic Analysis of a Distributed Electric Propulsion Wing** S. Massey, C. Wieseman, B. Stanford, J. Heeg, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2017-0414 **Accurate Rational Function Approximation for Time-Domain Gust Analysis** Z. Wang, P. Chen, ZONA Technology, Inc., Scottsdale, AZ	1530 hrs AIAA-2017-0415 **Flutter Boundary Prediction for a Flying-Wing Model Exhibiting Body Freedom Flutter** C. Huang, Z. Wu, C. Yang, Y. Dai, Beihang University, Beijing, China	1600 hrs AIAA-2017-0416 **Aeroelastic Response of the AGARD 445.6 Wing with Freeplay Nonlinearity** R. Carrese, N. Joseph, P. Marzocca, RMIT University, Bundoora, Australia; O. Levinski, Department of Defence, Melbourne, Australia	1630 hrs AIAA-2017-0417 **Aeroelastic Analysis of High Aspect Ratio Wings Using Joined 3D Finite Elements and Variational Asymptotic Beam Models** H. Hoseini, D. Hodges, Georgia Institute of Technology, Atlanta, GA	

Monday, 9 January 2017						
104-SOF-2	Formal Methods for Software Verification					Ft. Worth 7
Chaired by: E. ATKINS, University of Michigan and J. PAUNICKA, Boeing						
1400 hrs Oral Presentation **Towards the Validation and Verification of Complex Aerospace Systems (Invited)** M. Davies, NASA Ames Research Center, Moffett Field, CA; T. Kahsai, Carnegie Mellon University, Moffett Field, CA; C. Teubert, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA	1430 hrs Oral Presentation **TOIF: Extending Static Code Analysis Coverage** B. Calloni, Lockheed Martin Corporation, Fort Worth, TX	1500 hrs AIAA-2017-0418 **Formal Framework and Models for Validation and Verification of Software-Intensive Aerospace Systems** S. Guarro, M. Yau, ASCA, Inc., Redondo Beach, CA; U. Ozguner, T. Aldemir, A. Kurt, M. Hejase, Ohio State University, Columbus, OH; et al.	1530 hrs AIAA-2017-0419 **Towards Intelligent System Health Management using Runtime Monitoring** C. Torens, F. Adolf, German Aerospace Center (DLR), Braunschweig, Germany; P. Faymonville, S. Schirmer, Saarland University, Saarbrücken, Germany			

Monday, 9 January 2017						
105-SRE-2	ISRU Mission Concepts					Ft. Worth 5
Chaired by: D. LINNE, NASA Glenn						
1400 hrs AIAA-2017-0421 **Solar System Exploration Augmented by In-Situ Resource Utilization: Human Planetary Base Issues for Mercury and Saturn** B. Palaszewski, NASA Glenn Research Center, Cleveland, OH	1430 hrs AIAA-2017-0422 **An Integrated Economics Model for ISRU in Support of a Mars Colony--Initial Results Report** R. Shishko, R. Fradet, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; S. Saydam, C. Tapia-Cortez, A. Dempster, J. Coulton, University of New South Wales, Sydney, Australia; et al.	1500 hrs AIAA-2017-0423 **An ISRU propellant production system for a fully fueled Mars Ascent Vehicle** J. Kleinhenz, NASA Glenn Research Center, Cleveland, OH; A. Paz, NASA Johnson Space Center, Houston, TX	1530 hrs AIAA-2017-0424 **Design Study of a Mars Ascent Vehicle for Sample Return Using In-Situ Generated Propellant** G. Landis, S. Oleson, NASA Glenn Research Center, Cleveland, OH; T. Packard, Vantage Partners, Cleveland, OH; D. Linne, J. Woytach, M. Martini, NASA Glenn Research Center, Cleveland, OH; et al.			

Monday, 9 January 2017						
106-STR-3	Other Topics in Structures I					Mustang 3
Chaired by: B. WILLIS, Jacobs Technology and S. CLAY, Air Force Research Laboratory						
1400 hrs AIAA-2017-0425 **Node-dependent kinematics, refined zig-zag and multi-line beam theories for the analysis of composite structures** E. Carrera, M. Filippi, A. Pagani, E. Zappino, Technical University of Turin, Turin, Italy	1430 hrs AIAA-2017-0426 **Evaluation of Strain Measurement Devices for Inflatable Structures** D. Litteken, NASA Johnson Space Center, Houston, TX	1500 hrs AIAA-2017-0427 **Shape Sensing of Aerospace Structures by Coupling Isogeometric Analysis and Inverse Finite Element Method** A. Kefal, E. Oterkus, University of Strathclyde, Glasgow, United Kingdom	1530 hrs AIAA-2017-0428 **Electromagnetic Modeling of Large Phased Arrays of Structurally Embedded Waveguides** N. Albertson, R. Canfield, Virginia Polytechnic Institute and State University, Blacksburg, VA			

Monday, 9 January 2017						
107-STR-4	**Composite Structure Design, Test and Analysis**					**Appaloosa 1**
Chaired by: M. SCHULTZ, NASA Langley Research Center and V. RANATUNGA, Air Force Research Laboratory						
1400 hrs AIAA-2017-0429 **Automation of Composite Failure Analysis for Fiber Breaks** J. Miglani, Virginia Polytechnic Institute and State University, Blacksburg, VA; C. Sachdeva, PEC University of Technology, Chandigarh, India; S. Padhee, Indian Institute of Technology, Ropar, India	1430 hrs AIAA-2017-0430 **Repeated Impact Response of Woven Carbon Composites at Room and Arctic Temperatures** A. Castellanos, P. Prabhakar, University of Texas, El Paso, El Paso, TX	1500 hrs AIAA-2017-0431 **Continuum Decohesive Finite Element Modeling of Fiber-Reinforced Polymer Composites: Mesh-Objectivity and Sensitivity Studies** N. Nguyen, A. Waas, University of Washington, Seattle, Seattle, WA	1530 hrs AIAA-2017-0432 **Hybrid Laminates for Efficient Composite Bolted Joints** M. Falugi, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2017-0433 **Effects of Size and Location of a Circular Cutout on Buckling and Failure of a Cylindrical Shell in Bending** M. Celebi, National Defense University, Istanbul, Turkey; Z. Gürdal, B. Tatting, University of South Carolina, Columbia, Columbia, SC; A. Blom-Schieber, M. Rassaian, S. Wanthal, The Boeing Company, Seattle, WA	1630 hrs AIAA-2017-0434 **On the Contact Force Measurement for Small Mass Impact of Composite Laminate and the Delamination Event Identification** Z. Yu, W. Ye, J. Xia, Shanghai Jiao Tong University, Shanghai, China	

Monday, 9 January 2017						
108-TP-3	**Ablation**					**Austin 2**
Chaired by: A. MARTIN, University of Kentucky and E. STERN, NASA Ames Research Center						
1400 hrs AIAA-2017-0435 **Temporally and Spatially Resolved Emission of Pyrolizing Species from a Carbon Phenolic Ablator** J. Meyers, C. Tillson, D. Fletcher, University of Vermont, Burlington, Burlington, VT	1430 hrs AIAA-2017-0436 **Spatially Resolved Measurements of Simulated Pyrolysis Gases** R. Herrmann-Stanzel, L. Allen, J. Meyers, D. Fletcher, University of Vermont, Burlington, Burlington, VT	1500 hrs AIAA-2017-0437 **Investigation of Pyrolyzing Ablators Using a Gas Injection Probe** N. Martin, J. Meyers, D. Fletcher, University of Vermont, Burlington, Burlington, VT; D. Dang, I. Boyd, University of Michigan, Ann Arbor, Ann Arbor, MI	1530 hrs AIAA-2017-0438 **High fidelity and multi-scale thermal response modeling of an Avcoat-like TPS.** S. Sawant, Z. Li, D. Levin, University of Illinois, Urbana-Champaign, Urbana, IL	1600 hrs AIAA-2017-0439 **Development of a Coupled Elastic Solver for Ablation Problems** R. Fu, H. Weng, J. Wenk, A. Martin, University of Kentucky, Lexington, Lexington, KY		

Monday, 9 January 2017						
109-TP-4	**Experimental Heat Transfer**					**Austin 3**
Chaired by: D. PYTEL, Lockheed Martin Space Systems and S. AKKERMAN, WVU						
1400 hrs AIAA-2017-0440 **Experimental analysis of Carbon Monoxide production within a high temperature ablative boundary layer** S. McGuire, C. Laux, National Center for Scientific Research (CNRS), Châtenay-Malabry, France	1430 hrs AIAA-2017-0441 **Development of Bakelite-Based Temperature Sensitive Paint for High Speed Wind Tunnel Applications** S. Claucherty, H. Sakaue, University of Notre Dame, Notre Dame, IN	1500 hrs AIAA-2017-0442 **An Experimental Study on the Dynamics of Water Droplets Impingement onto a Goose Feather** L. Ma, H. Li, H. Hu, Iowa State University, Ames, IA	1530 hrs AIAA-2017-0443 **Visualization and Thermometry in Hypersonic Wedge and Leading-Edge Separated Flows** T. Kaseman, L. Le Page, S. O'Byrne, S. Gai, University of New South Wales, Canberra, Australia	1600 hrs AIAA-2017-0444 **Stagnation Temperature Measurements in a Shock-Tunnel Facility using Laser-Induced Grating Spectroscopy** C. Selcan, T. Sander, F. Koroll, C. Mundt, University of the German Federal Armed Forces, Neubiberg, Germany		

Monday, 9 January 2017						
110-UMS-2	**Special Session: Safe Autonomous Urban Flight I**					**Grapevine 1**
Chaired by: K. KRISHNAKUMAR, NASA-Ames Research Center, TI and C. IPPOLITO, NASA Ames Research Center						
1400 hrs AIAA-2017-0445 **Safe Autonomous Flight Environment (SAFE50) for the Notional Last "50 ft" of Operation of "55 lb" Class of UAS** K. Krishnakumar, P. Kopardekar, C. Ippolito, J. Melton, V. Stepanyan, S. Sankararaman, NASA Ames Research Center, Moffett Field, CA; et al.	1430 hrs AIAA-2017-0446 **Towards A Computational Framework for Autonomous Decision-Making in Unmanned Aerial Vehicles** S. Sankararaman, NASA Ames Research Center, Moffett Field, CA	1500 hrs AIAA-2017-0447 **Developing a Generalized Trajectory Modeling Framework for Small UAS Performance in the Presence of Wind** S. D'Souza, NASA Ames Research Center, Moffett Field, CA	1530 hrs AIAA-2017-0448 **3D LiDAR SLAM Integration with GPS/INS for UAVs in Urban GPS-Degraded Environments** S. Hening, C. Ippolito, K. Krishnakumar, V. Stepanyan, NASA Ames Research Center, Moffett Field, CA; M. Teodorescu, University of California, Santa Cruz, Santa Cruz, CA	1600 hrs AIAA-2017-0449 **Concepts of Airspace Structures and System Analysis for UAS Traffic flows for Urban Areas** D. Jang, Korea Advanced Institute of Science and Technology, Daejeon, South Korea; C. Ippolito, S. Sankararaman, V. Stepanyan, NASA Ames Research Center, Moffett Field, CA		

Monday, 9 January 2017						
111-WE-1	Wind Turbine Aeroelastics and Wakes					Austin 4
Chaired by: J. JONKMAN, National Renewable Energy Laboratory						
1400 hrs AIAA-2017-0450 **Design Tool for Aeroelastic Analysis of Wind Turbine Blades Based on Geometrically Exact Beam Theory and Lifting Surface Method** J. Chen, X. Shen, P. Liu, X. Zhu, Z. Du, Shanghai Jiao Tong University, Shanghai, China	1430 hrs AIAA-2017-0451 **Experiments on Dynamic Aeroelastic Response of Wind Turbine Blades** R. Long, E. White, Texas A&M University, College Station, TX	1500 hrs AIAA-2017-0452 **Evaluation and comparison of two codes for aeroelastic VAWT simulation** D. Marten, I. Paraschivoiu, École Polytechnique de Montréal, Montréal, Canada; J. Saverin, J. Wendler, G. Pechlivanoglou, C. Paschereit, Technical University of Berlin, Berlin, Germany	1530 hrs AIAA-2017-0453 **Benchmarking of a Free Vortex Wake Model for Prediction of Wake Interactions** K. Shaler, K. Kecskemety, J. McNamara, Ohio State University, Columbus, OH	1600 hrs AIAA-2017-0454 **Development of FAST.Farm: A New Multi-Physics Engineering Tool for Wind-Farm Design and Analysis** J. Jonkman, J. Annoni, G. Hayman, B. Jonkman, A. Purkayastha, National Renewable Energy Laboratory, Golden, CO	1630 hrs AIAA-2017-0455 **Uncertainty Quantification of Wind Turbine Wake Measurements with a Scanning Lidar** T. Herges, D. Maniaci, B. Naughton, Sandia National Laboratories, Albuquerque, NM; S. Schreck, M. Churchfield, A. Clifton, National Renewable Energy Laboratory, Boulder, CO; et al.	

Monday, 9 January 2017		
112-NW-5 1530 - 1600 hrs	Monday Afternoon Networking Coffee Break	Session Room Foyers

Monday, 9 January 2017		
113-PLNRY-2 1700 - 1830 hrs	AIAA Town Hall Meeting (Governance and Open Access)	Texas C
James Maser AIAA President	**Frank Lu** AIAA Vice President, Publications	

Monday, 9 January 2017		
114-NW-6 1900 - 2030 hrs	Rising Leaders in Aerospace Reception	Mission Plaza
All attendees welcome		

Tuesday

Tuesday, 10 January 2017		
115-NW-7 0700 - 0730 hrs	Tuesday Early Morning Networking Coffee Break	Session Room Foyers

Tuesday, 10 January 2017		
116-SB-2 0730 - 0800 hrs	Tuesday Morning Speakers' Briefing	Session Rooms

Tuesday, 10 January 2017		
117-PLNRY-3 0800 - 0900 hrs	Tuesday Morning Plenary: Disruptive Business Models	Texas A & B
Innovation to Enable NASA's Journey to Mars **Dava Newman** Deputy Administrator NASA		

Tuesday, 10 January 2017		
118-NW-8 0900 - 0930 hrs	Tuesday Morning Networking Coffee Break	Session Room Foyers

Tuesday, 10 January 2017						
119-AA-4	**Computational Aeroacoustics I**					**Grapevine B**
Chaired by: S. ARUNAJATESAN, Sandia National Labs and K. AHUJA, Georgia Institute of Technology						
0930 hrs AIAA-2017-0456 **Validating a Monotonically-Integrated Large Eddy Simulation Code for Subsonic Jet Acoustics** D. Ingraham, J. Bridges, NASA Glenn Research Center, Cleveland, OH	1000 hrs AIAA-2017-0457 **Large Eddy Simulation of the Flight Effects on Single Stream Heated Jets** Z. Wang, I. Naqavi, P. Tucker, University of Cambridge, Cambridge, United Kingdom	1030 hrs AIAA-2017-0458 **Numerical Investigations of Bio-Inspired Blade Designs to Reduce Broadband Noise in Aircraft Engines and Wind Turbines** A. Bodling, B. Agrawal, A. Sharma, Iowa State University, Ames, IA; I. Clark, W. Alexander, W. Devenport, Virginia Polytechnic Institute and State University, Blacksburg, VA	1100 hrs AIAA-2017-0459 **Evaluating Source Terms of the Generalized Acoustic Analogy using the Jet Engine Noise REduction (JENRE) Code** S. Leib, Ohio Aerospace Institute, Cleveland, OH; D. Ingraham, J. Bridges, NASA Glenn Research Center, Cleveland, OH	1130 hrs AIAA-2017-0460 **Towards Impedance Characterization of Carbon-Carbon Ultrasonically Absorptive Coatings via the Inverse Helmholtz Problem** D. Patel, P. Gupta, C. Scalo, Purdue University, West Lafayette, IN; T. Rothermel, M. Kuhn, German Aerospace Center (DLR), Stuttgart, Germany		

Tuesday, 10 January 2017						
120-ACD-5	**Aircraft Design Tools and Methods III**					**San Antonio 1**
Chaired by: W. ANEMAAT, DARcorporation and M. ORR, Boeing Commercial Airplanes						
0930 hrs AIAA-2017-0461 **Effect of Non-Consistent Mesh Movements and Sensitivities on a Discrete Adjoint Based Aerodynamic Optimization** G. Mura, B. Hinchliffe, N. Qin, University of Sheffield, Sheffield, United Kingdom; J. Brezillon, Airbus, Toulouse, France	1000 hrs AIAA-2017-0462 **Requirements Analysis for Design Optimization of Aerobatic Aircraft** D. Sarojini, K. Collins, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2017-0463 **Design and Optimization of Unconventional Aircraft Configurations with Aeroelastic Constraints** A. Variyar, T. Economon, J. Alonso, Stanford University, Stanford, CA	1100 hrs AIAA-2017-0464 **Evaluating the Rationale for Folding Wing Tips Comparing the Exergy and Breguet Approaches** D. Hayes, M. Lone, J. Whidborne, Cranfield University, Cranfield, United Kingdom; E. Coetzee, Airbus, Bristol, United Kingdom	1130 hrs AIAA-2017-0465 **Continuing the Development of a Physics-Based Weight (PBWeight) Prediction Tool for Conceptual Design: Build 1** T. Winter, B. Scheneman, J. Marquez, J. Sidhu, M4 Engineering, Inc., Long Beach, CA	1200 hrs AIAA-2017-0466 **Semi-Analytical Composite Oval Fuselage Weight Estimation** M. Roelofs, R. Vos, Delft University of Technology, Delft, The Netherlands	

Tuesday, 10 January 2017						
121-AFM-3	**Launch Vehicle, Atmospheric Entry, Hypersonic Flight and Aeroassist Technology II**					**Grapevine 5**
Chaired by: J. JEWELL, Air Force Research Laboratory and B. JOLLY, USAF						
0930 hrs AIAA-2017-0467 **Guidance Scheme for Modulation of Drag Devices to Enable Return from Low Earth Orbit** S. Dutta, A. Bowes, A. Dwyer Cianciolo, C. Glass, NASA Langley Research Center, Hampton, VA; R. Powell, Analytical Mechanics Associates, Inc., Hampton, VA	1000 hrs AIAA-2017-0468 **Aerobraking in the Cislunar Economy** N. Campbell, B. Argrow, University of Colorado, Boulder, Boulder, CO; J. Ralph, United Launch Alliance, Centennial, CO	1030 hrs AIAA-2017-0469 **Design of a Novel Hypersonic Inflatable Aerodynamic Decelerator for Mars Entry, Descent, and Landing** N. Skolnik, H. Kamezawa, L. Li, G. Rossman, B. Sforzo, R. Braun, Georgia Institute of Technology, Atlanta, GA	1100 hrs AIAA-2017-0470 **Planetary Probe Entry Atmosphere Estimation Using Synthetic Air Data System** C. Karlgaard, Analytical Mechanics Associates, Inc., Hampton, VA; M. Schoenenberger, NASA Langley Research Center, Hampton, VA	1130 hrs AIAA-2017-0471 **Node Control and Numerical Optimization of Aerogravity-Assist Trajectories** J. Hess, E. Mooij, Delft University of Technology, Delft, The Netherlands		

Tuesday, 10 January 2017						
122-AMT-5	**Velocimetry: Applications II**					**Grapevine 6**
Chaired by: K. CASPER, Sandia National Laboratories and J. WAGNER, Sandia National Laboratories						
0930 hrs AIAA-2017-0472 **Optical Flow for Flight and Wind Tunnel Background Oriented Schlieren Imaging** N. Smith, AerospaceComputing, Inc., Moffett Field, CA; J. Heineck, E. Schairer, NASA Ames Research Center, Moffett Field, CA	1000 hrs AIAA-2017-0473 **Challenges of Optical Flow Analysis in Supersonic Jets** D. Lim, J. Wu, X. Wei, T. New, Nanyang Technological University, Singapore, Singapore; Y. Cui, National University of Singapore, Singapore, Singapore; S. Shi, Shanghai Jiao Tong University, Shanghai, China	1030 hrs AIAA-2017-0474 **Particle Image Velocimetry Particle-Response Study in the AFRL Mach 3 Tunnel** P. Gulotta, M. Reeder, C. Hoskins, Air Force Institute of Technology, Wright-Patterson AFB, OH; B. Hagen, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2017-0475 **Resonance Dynamics in Compressible Cavity Flows using Time-Resolved Particle Image Velocimetry and Pressure Sensitive Paint** J. Wagner, S. Beresh, K. Casper, E. DeMauro, S. Arunajatesan, Sandia National Laboratories, Albuquerque, NM	1130 hrs AIAA-2017-0476 **A tomographic PIV and TSP Study of Leading-Edge Structures on Stall Behaviors of NACA0015** A. Stolt, J. Estevadeordal, Y. Zhang, North Dakota State University, Fargo, ND		

Tuesday, 10 January 2017						
123-AMT-6	**Wall-Based Sensors and Applications**					**Grapevine D**
Chaired by: M. GAMBA, University of Michigan and D. PLEMMONS, Aerospace Testing Alliance (ATA)						
0930 hrs AIAA-2017-0477 **Fabrication and Characterization of a Flush-Mount MEMS Piezoelectric Dynamic Pressure Sensor and Associated Package for Aircraft Fuselage Arrays** T. Reagan, University of Florida, Gainesville, Gainesville, FL; J. Meloy, J. Underbrink, The Boeing Company, Seattle, WA; M. Sheplak, University of Florida, Gainesville, Gainesville, FL	1000 hrs AIAA-2017-0478 **Characterization of a Hydraulically Smooth Wall Shear Stress Sensor for Low-Speed Wind Tunnel Applications** D. Mills, Interdisciplinary Consulting Corporation, Gainesville, FL; C. Barnard, M. Sheplak, University of Florida, Gainesville, Gainesville, FL	1030 hrs AIAA-2017-0479 **Aerodynamic Flow Sensing with Elastic Microfence Structures** A. Saini, T. Kim, Z. Cui, North Carolina State University, Raleigh, NC; B. Schuessler, F. Palmieri, NASA Langley Research Center, Hampton, VA; Y. Lin, National Institute of Aerospace, Hampton, VA; et al.	1100 hrs AIAA-2017-0480 **Heat Flux Measurements on the Impingement Surface of a Jet Operating at an Inclined Angle** J. Crafton, S. Stanfield, S. Palluconi, Innovative Scientific Solutions, Inc., Dayton, OH; T. Lui, J. Montefort, Western Michigan University, Kalamazoo, MI	1130 hrs AIAA-2017-0481 **The Luminescent Oil-Film Flow-Tagging (LOFFT) Skin-Friction Meter Applied to FAITH Hill** N. Husen, Purdue University, West Lafayette, IN; T. Liu, Western Michigan University, Kalamazoo, MI; J. Sullivan, Purdue University, West Lafayette, IN		

Tuesday, 10 January 2017						
124-AMT-7/GT-3	**Force Measurements**					**Grapevine 4**
Chaired by: N. ULBRICH, Jacobs Technology and G. JONES, NASA-Langley Research Center						
0930 hrs AIAA-2017-0482 **Six-Axis Thruster Characterization Technique for Small Satellites** R. Elandt, S. Aslan, M. Peck, Cornell University, Ithaca, NY	1000 hrs AIAA-2017-0483 **A Universal Threshold for the Assessment of Load and Output Residuals of Strain-Gage Balance Data** N. Ulbrich, T. Volden, Jacobs, Moffett Field, CA	1030 hrs AIAA-2017-0484 **Pre-Test Assessment of the Upper Bound of the Drag Coefficient Repeatability of a Wind Tunnel Model** N. Ulbrich, A. L'Esperance, Jacobs, Moffett Field, CA	1100 hrs AIAA-2017-0485 **Developing a Wall Interference Effects Correction Technique for High-Lift and Rotor Configurations in the National Full-Scale Aerodynamics Complex** P. Goulding, C. Nykamp, B. Bartow, National Full-Scale Aerodynamics Complex, Moffett Field, CA	1130 hrs AIAA-2017-0486 **Force Test in a Large-Scale Shock Tunnel** Y. Wang, Y. Liu, C. Luo, Z. Jiang, Chinese Academy of Sciences, Beijing, China		

Tuesday, 10 January 2017						
125-APA-11	**Flow Control Applications and Demonstrations (Active and Passive) I**					**Dallas 1**
Chaired by: L. UKEILEY, University of Florida and B. OSBORNE, The Boeing Company						
0930 hrs AIAA-2017-0487 **Experimental Study on Delayed Feedback Flow Control around a NACA0015 Airfoil using PSJA** K. Ogawara, M. Nomoto, Y. Taguchi, H. Shingin, Yamaguchi University, Ube, Japan	1000 hrs AIAA-2017-0488 **Effects of Feedback Channels and Coanda Surfaces on the Performance of Sweeping Jet Actuator.** B. Slupski, K. Kara, Khalifa University, Abu Dhabi, United Arab Emirates	1030 hrs AIAA-2017-0489 **Transonic Buffet Control by Tangential Jet Blowing** V. Soudakov, A. Petrov, A. Potapchik, K. Abramova, TsAGI, Zhukovsky, Russia	1100 hrs AIAA-2017-0490 **Numerical Investigation on the Oblique Shock and High-speed Vortex Rings Interaction** Y. Dong, X. Dong, Y. Yang, C. Liu, University of Texas, Arlington, Arlington, TX	1130 hrs AIAA-2017-0491 **Active Flow Separation Control Applied at Wing-Pylon Junction of a Wing Section in Landing Configuration** P. Vrchota, Aerospace Research and Test Establishment (VZLÚ), Prague, Czech Republic	1200 hrs AIAA-2017-0492 **The Wavy Leading Edge Performance for a Very Thick Airfoil** A. de Paula, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; J. Meneghini, University of São Paulo, São Paulo, Brazil; V. Kleine, R. Girardi , Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil	

Tuesday, 10 January 2017		
126-APA-12 **0930 - 1130 hrs**	**Aerodynamic/Propulsive Interactions - Panel Discussion**	**Dallas 3**

Panelists:

Andrew Wick	**Frank Lu**	**Paul Hagseth**	**John Latz**	**Brant Ginn**
Lockheed Martin Aeronautics	University of Texas at Arlington	Lockheed Martin Aeronautics	Northrop Grumman	Lockheed Martin Aeronautics

Tuesday, 10 January 2017						
127-APA-13	Unsteady Aerodynamics I					Dallas 2
Chaired by: S. MUPPIDI and J. RAULEDER, Technical University of Munich						
0930 hrs AIAA-2017-0493 **Time domain analytical unsteady aerodynamic modelling for finite wings** J. Boutet, G. Dimitriadis, University of Liège, Liège, Belgium	1000 hrs AIAA-2017-0494 **Transonic Buffet Simulation over NASA-CRM by Unsteady-FaSTAR Code** T. Ishida, A. Hashimoto, Y. Ohmichi, T. Aoyama, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; K. Takekawa, Ryoyu Systems Company, Ltd., Nagoya, Japan	1030 hrs AIAA-2017-0495 **Wall-modeled Large-Eddy Simulation of Transonic Buffet over a Supercritical Airfoil at high Reynolds Number** Y. Fukushima, S. Kawai, Tohoku University, Sendai, Japan	1100 hrs AIAA-2017-0496 **Unsteady base pressure analysis of typical missile configuration in the presence of jet** V. M, V. N S, V. S B, National Aerospace Laboratories, Bengaluru, India	1130 hrs AIAA-2017-0497 **Dynamic Mode Decomposition of High Reynolds Number Supersonic Jet Flows** S. Yamouni, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; C. Junqueira-Junior, J. Azevedo, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil; W. Wolf, University of Campinas, Campinas, Brazil		

Tuesday, 10 January 2017						
128-APA-14	Bio-Inspired Flows					Dallas 4
Chaired by: V. BHAGWANDIN, US Army Research Laboratory and P. ANSELL, University of Illinois at Urbana-Champaign						
0930 hrs AIAA-2017-0498 **Experimental and Numerical Results of a Flapping Wing Four Bar Mechanism** M. Senol, Middle East Technical University, Ankara, Turkey; K. Arikan, Atilim University, Ankara, Turkey; D. Kurtulus, Middle East Technical University, Ankara, Turkey	1000 hrs AIAA-2017-0499 **Forward flight capabilities and performances of bio-inspired flapping wing nano air vehicles** M. Hassanalian, G. Throneberry, A. Abdelkefi, New Mexico State University, Las Cruces, NM	1030 hrs AIAA-2017-0500 **Reduction of Pitching Moment Generation of a Quadrotor UAV in Gust with Slant Rotors** H. Otsuka, K. Nagatani, Tohoku University, Sendai, Japan	1100 hrs AIAA-2017-0501 **Free Flight Observations and Aerodynamic Analysis for Biologically-Inspired Optimization** C. Griffin, P. Browning, S. Hamburg, J. Cox, W. Huebsch, West Virginia University, Morgantown, WV; E. Katzner, Peregrine Fund, Boise, ID; et al.			

Tuesday, 10 January 2017						
129-APA-15	Low Speed, Low Reynolds Number Aerodynamics					Dallas 5
Chaired by: C. TILMANN, AFRL/RQV and L. WANG, National Institute of Aerospace						
0930 hrs AIAA-2017-0502 **A New Gust Generator for a Low Speed Wind Tunnel: Design and Commissioning** K. Wood, R. Cheung, T. Richardson, J. Cooper, University of Bristol, Bristol, United Kingdom; O. Darbyshire, C. Warsop, BAE Systems, Bristol, United Kingdom	1000 hrs AIAA-2017-0503 **Low Reynolds Number Aerodynamic Characteristics of Near Space Solar Unmanned Aerial Vehicle** L. Feng, China Academy of Aerospace Aerodynamics, Beijing, China	1030 hrs AIAA-2017-0504 **Dynamic Measurement of Forces and Moments with the Motion Test Apparatus** J. Sellers, A. Bower, I. Maatz, M. Reeder, Air Force Institute of Technology, Wright-Patterson AFB, OH	1100 hrs AIAA-2017-0505 **PIV Investigation of Self-Adaptive Flap on Low Aspect Ratio Wings** A. Durai, I. Singh, S. P, National Aerospace Laboratories, Bengaluru, India			

Tuesday, 10 January 2017						
130-DE-2	Innovative Aerospace Designs, Processes, and Tools					Palomino 3
Chaired by: G. CREARY, NASA-Langley Research Center and N. HINES, Boeing Commercial Airplanes						
0930 hrs AIAA-2017-0506 **Automated Wingbox Structure Generation Through MATLAB** J. Qian, University of Sydney, Sydney, Australia	1000 hrs AIAA-2017-0507 **Active Subspaces of Airfoil Shape Parameterizations** Z. Grey, P. Constantine, Colorado School of Mines, Golden, CO	1030 hrs AIAA-2017-0508 **Structural Optimization Study of the D8 Double-Bubble Composite Fuselage** J. Chambers, B. Yutko, R. Singh, C. Church, Aurora Flight Sciences, Manassas, VA	1100 hrs AIAA-2017-0509 **Design and Manufacturing of Flapping Wing Mechanisms for Micro Air Vehicles** M. Balta, Technical University of Catalunya, Terrassa, Spain; K. Ahmed, German University in Cairo, Cairo, Egypt; P. Wang, J. McCarthy, H. Taha, University of California, Irvine, Irvine, CA	1130 hrs AIAA-2017-0510 **Analysis of 3D Printed Titanium Rocket Nozzle** T. Fritz, W. Huebsch, West Virginia University, Morgantown, WV; J. Wilhelm, Ohio University, Athens, OH		

Tuesday, 10 January 2017						
131-EDU-3	**Advancing Aerospace Education II**					**Dallas 7**
Chaired by: R. LEBEAU, Saint Louis University						
0930 hrs AIAA-2017-0511 **Building a Mechatronics Design Course Around Quadcopters** T. Fields, University of Missouri, Kansas City, Kansas City, MO	1000 hrs AIAA-2017-0512 **The AUSS FIREfly: A Distributed Sensing and Co-ordination Platform for First-Year Engineering Education** D. Yeo, D. Paley, University of Maryland, College Park, College Park, MD	1030 hrs AIAA-2017-0513 **Employing Unmanned Aircraft Systems to Actively Engage Students and Build Local Aerospace Infrastructure** M. Hatfield, University of Alaska, Fairbanks, Fairbanks, AK	1100 hrs AIAA-2017-0514 **Design and Flight Testing of an Experimental Aircraft for Green Leveraged Energy** D. Landrum, K. Schikore, R. Longchamps, University of Alabama, Huntsville, Huntsville, AL	1130 hrs AIAA-2017-0515 **Monarch Madness: A Cross-curricular Approach to Elementary STEM Education** K. Benson, Cherokee Elementary School, Guntersville, AL; D. Landrum, C. Kang, University of Alabama, Huntsville, Huntsville, AL	1200 hrs AIAA-2017-0516 **Developing a Successful Undergraduate Aerospace Engineering Program within an ME Department framework – a 20-year Perspective** J. Kosmatka, University of California, La Jolla, La Jolla, CA	

Tuesday, 10 January 2017		
132-F360-3 **0930 - 1130 hrs**	**Future of the Aerospace Industry and Workforce Needs**	**Texas C**

Moderator: Michael D. Griffin, Chairman and CEO, Schafer Corporation

Panelists:

C. Doug Ebersole
Executive Director
Air Force Research Laboratory

Kevin Parsons
Director, Innovation and Transformation
Northrop Grumman Corporation

Robie Samanta Roy
Vice President, Technology Strategy and Innovation
Lockheed Martin Corporation

Kenneth Sanger
Vice President and General Manager
787 Airplane Development
Boeing Commercial Airplanes

Lisa Teague
Director, Research and Technology Strategy
Rolls-Royce Corporation

Tuesday, 10 January 2017						
133-FD-15	**High-Order Methods I**					**Texas 1**
Chaired by: R. GLASBY, University of Tennessee and J. ERWIN, University of Tennessee						
0930 hrs AIAA-2017-0517 **Scalable Solution Strategies for Stabilized Finite-Element Flow Solvers on Unstructured Meshes** B. Reza Ahrabi, D. Mavriplis, M. Brazell, University of Wyoming, Laramie, Laramie, WY	1000 hrs AIAA-2017-0518 **New Very High-Order Multilayer Compact Schemes with Spectral-Like Resolution for Flow Simulations** Z. Bai, X. Zhong, University of California, Los Angeles, Los Angeles, CA	1030 hrs AIAA-2017-0519 **A High-Order Flux Reconstruction/ Correction Procedure via Reconstruction Method for Shock Capturing with Space-Time Extension Time Stepping and Adaptive Mesh Refinement** X. Zhang, C. Liang, J. Yang, George Washington University, Washington, D.C.	1100 hrs AIAA-2017-0520 **A New High-order Spectral Difference Method for Simulating Compressible Flows on Unstructured Grids with Mixed Elements** M. Li, George Washington University, Washington, D.C.; Z. Qiu, Northwestern Polytechnical University, Xi'an, China; C. Liang, George Washington University, Washington, D.C.; M. Sprague, National Renewable Energy Laboratory, Golden, CO	1130 hrs AIAA-2017-0521 **High-Order Flux Reconstruction on Stretched and Warped Meshes** W. Trojak, R. Watson, P. Tucker, University of Cambridge, Cambridge, United Kingdom		

Tuesday, 10 January 2017						
134-FD-16	**High-Speed Flows I**					**Texas 2**
Chaired by: J. SEIDEL, USAF Academy and E. STEPHEN						
0930 hrs AIAA-2017-0522 **Stereoscopic PIV Measurements of a Supersonic Axisymmetric Base Flow** J. Favale, R. Hortensius, G. Elliott, J. Dutton, University of Illinois, Urbana-Champaign, Urbana, IL	1000 hrs AIAA-2017-0523 **Mach 3 Boundary Layer Measurement over a Flat Plate Using the PIV and IR Thermography Techniques** H. Lee, Y. Kim, Y. Byun, S. Park, Konkuk University, Seoul, South Korea	1030 hrs AIAA-2017-0524 **Turbulent spots induced by pairs of roughness elements in a blunt-body hypersonic boundary layer** O. Taylor, P. Bruce, Imperial College London, London, United Kingdom	1100 hrs AIAA-2017-0525 **Wall Pressure Unsteadiness on the Aft Deck of a Planar Multi-stream Supersonic Nozzle** C. Tinney, University of Texas, Austin, Austin, TX	1130 hrs AIAA-2017-0526 **Investigation of Secondary Motion in High Speed Flow** B. Rice, Air Force Research Laboratory, Arnold AFB, TN; N. Bisek, Air Force Research Laboratory, Wright-Patterson AFB, OH; S. Peltier, J. Hofferth, Air Force Research Laboratory, Arnold AFB, TN	1200 hrs AIAA-2017-0527 **Dynamic Mode Decomposition applied to a Detached-Eddy Simulation of Separated Nozzle Flow** R. Larusson, M. Olander Burak, N. Andersson, Chalmers University of Technology, Göteborg, Sweden; J. Östlund , GKN Aerospace Engine Systems, Trollhättan, Sweden	

Tuesday, 10 January 2017

135-FD-17 0930 - 1230 hrs	Honoring Gino Moretti	Texas 3

0930-1000 hrs *Gino Moretti: A Man for All Seasons*, Manny Salas

1000-1020 hrs *Gino as a Mentor*, Frank Marconi

1020-1030 hrs *Remarks from Phil Roe*, Nicholas DiZinno

1030-1050 hrs *The Maestro of Gas Dynamics*, Bob MacCormack

1050-1100 hrs *Remarks from Pat Sforza*, Nicholas DiZinno

1100-1120 hrs *The Result of the Gino's Teaching at Sapienza University of Rome*, Marcello Onofri

1120-1140 hrs *Capturing Some Fond Memories of Gino in a Fitting Manner*, Sukumar Chakravarthy

1140-1200 hrs *A Renaissance Man: Personality & Generosity of a Dear Friend*, Maurizio Pandolfi

1200-1230 hrs *On Shock Fitting and Shock Capturing Methods for DNS and LES Computations*, Helen Yee

Tuesday, 10 January 2017

136-FD-18	Modeling and Optimization Methods					Texas 4
Chaired by: K. FIDKOWSKI, University of Michigan and P. BLONIGAN, NASA Ames Research Center						
0930 hrs AIAA-2017-0528 **An ODE-based Wall Model for Turbulent Flow Simulations** M. Berger, New York University, New York, NY; M. Aftosmis, NASA Ames Research Center, Moffett Field, CA	1000 hrs AIAA-2017-0529 **Unsteady Output-Based Adaptation Using Continuous-in-Time Adjoints** K. Fidkowski, University of Michigan, Ann Arbor, Ann Arbor, MI	1030 hrs AIAA-2017-0530 **Tensor-Product Summation-by-Parts Operators** D. Del Rey Fernández, P. Boom, M. Shademan, D. Zingg, University of Toronto, Toronto, Canada	1100 hrs AIAA-2017-0531 **Parameter Estimation for a Turbulent Buoyant Jet using Approximate Bayesian Computation** J. Christopher, C. Lapointe, N. Wimer, T. Hayden, I. Grooms, G. Rieker, University of Colorado, Boulder, Boulder, CO; et al.	1130 hrs AIAA-2017-0532 **A non-intrusive algorithm for sensitivity analysis of chaotic flow simulations** P. Blonigan, NASA Ames Research Center, Moffett Field, CA; Q. Wang, Massachusetts Institute of Technology, Cambridge, MA; E. Nielsen, NASA Langley Research Center, Hampton, VA; B. Diskin, National Institute of Aerospace, Hampton, VA		

Tuesday, 10 January 2017

137-FD-19	Numerical Simulations of Shock Boundary Layer Interactions					Texas 5
Chaired by: N. BISEK, Air Force Reseach Laboratory and D. GONZALEZ, Naval Surface Warfare Center						
0930 hrs AIAA-2017-0533 **Turbulence Structure and Large-Scale Unsteadiness in Shock-Wave / Boundary Layer Interaction** K. Porter, J. Poggie, Purdue University, West Lafayette, IN	1000 hrs AIAA-2017-0534 **Numerical Simulations of a Cylinder-Induced Shock Wave/ Boundary Layer Interaction** S. Lindörfer, C. Combs, P. Kreth, J. Schmisseur, University of Tennessee, Tullahoma, Tullahoma, TN	1030 hrs AIAA-2017-0535 **On the Effect of Test Section Aspect Ratio for Shock Wave - Boundary Layer Interactions** M. Pizzella, S. Warning, M. McQuilling, Saint Louis University, St. Louis, MO; A. Purkey, R. Scharnhorst, M. Mani, The Boeing Company, St. Louis, MO; et al.	1100 hrs AIAA-2017-0536 **Shock Wave Laminar Boundary Layer Interaction at a Hypersonic Flow Over a Blunt Fin-Plate Junction** M. Mortazavi, D. Knight, Rutgers University, Piscataway, NJ			

Tuesday, 10 January 2017

138-FD-20	RANS/LES Applications					Texas 6
Chaired by: A. SESCU, Mississippi State University and J. DUDEK, NASA Glenn Research Center						
0930 hrs AIAA-2017-0537 **Aero-Optic Calculations of A Spherical Turret at Transonic Flow** E. Arad, M. Weidenfeld, Rafael Advanced Defense Systems, Ltd., Haifa, Israel	1000 hrs AIAA-2017-0538 **Wall-Resolved Large-Eddy Simulation of Flow Separation Over NASA Wall-Mounted Hump** A. Uzun, National Institute of Aerospace, Hampton, VA; M. Malik, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2017-0539 **Performance Assessment of High-Order Large Eddy Simulation and Immersed Boundary Method for Rotorcraft Hover** Y. Delorme, S. Frankel, Technion-Israel Institute of Technology, Haifa, Israel; R. Jain, R. Strawn, NASA Ames Research Center, Moffett Field, CA	1100 hrs AIAA-2017-0540 **Simulation of an ethylene flame with turbulence, soot and radiation modeling.** S. Golder, J. Doom, South Dakota State University, Brookings, SD	1130 hrs AIAA-2017-0541 **Evaluation of Full Reynolds Stress Turbulence Models in Fun3D** J. Dudek, NASA Glenn Research Center, Cleveland, OH; J. Carlson, NASA Langley Research Center, Hampton, VA		

Tuesday, 10 January 2017						
139-FD-22	**Low-Re and Bio-Inspired Flows III: Wing Analysis and Design**					**Grapevine C**
Chaired by: D. GARMANN, Air Force Research Laboratory and J. JAWORSKI, Lehigh University						
0930 hrs AIAA-2017-0542 **Review of Fluid Dynamic and Acoustic Performance of Biologically Inspired Passive Flow Control Trailing Edge Devices for Design Applications** T. Wolfe, Naval Surface Warfare Center, Philadelphia, PA	1000 hrs AIAA-2017-0543 **Low Reynolds number wake modification using a Gurney flap** M. Gopalakrishnan Meena, K. Taira, Florida State University, Tallahassee, FL; K. Asai, Tohoku University, Sendai, Japan	1030 hrs AIAA-2017-0544 **Steady and Unsteady Fluid-Structure Interactions with Compliant Membrane Wings** G. Alon Tzezana, K. Breuer, Brown University, Providence, RI	1100 hrs AIAA-2017-0545 **Vorticity Production at the Leading Edge of Flat Plates at High Incidence** F. Manar, A. Jones, University of Maryland, College Park, College Park, MD	1130 hrs AIAA-2017-0546 **Computational Analysis of Thin airfoils Under Low-Reynolds Number Flow Using Block-Structured Cartesian Mesh** D. Iioka, F. Kazuki, M. Okamoto, D. Sasaki, Kanazawa Institute of Technology, Hakusan, Japan; K. Shimoyama, S. Obayashi, Tohoku University, Sendai, Japan		

Tuesday, 10 January 2017						
140-GT-4	**Advances in Test Techniques and Test Management**					**Ft. Worth 6**
Chaired by: D. LEWIS, Aerospace Testing Alliance (ATA) and P. KELLY, Aerospace Testing Alliance (ATA)						
0930 hrs AIAA-2017-0547 **Determining Products of Inertia for Small Scale UAVs** J. Lorenzetti, Purdue University, West Lafayette, IN; L. Bañuelos, California Polytechnic State University, San Luis Obispo, San Luis Obispo, CA; R. Clarke, O. Murillo, A. Bowers, NASA Armstrong Flight Research Center, Edwards, CA	1000 hrs AIAA-2017-0548 **Development Trends and Innovations in Aerospace System Testing Using the Example of High-Lift** K. Jandaurek, RWTH Aachen University, Aachen, Germany; M. Johst, FFT Production Systems Corporation, Bremen, Germany	1030 hrs AIAA-2017-0549 **Flexible FPGA based Hardware In the Loop Simulator for Control, Fault-Tolerant and Cyber-Physical Systems** T. Bakker, M. Leccadito, R. Klenke, Virginia Commonwealth University, Richmond, VA	1100 hrs AIAA-2017-0550 **High-Speed Schlieren and 10-Hz Kr PLIF for the new AFRL Mach-6 Ludwieg Tube Hypersonic Wind Tunnel** K. Lam, Spectral Energies, LLC, Dayton, OH; J. Pickles, V. Narayanaswamy, North Carolina State University, Raleigh, NC; C. Carter, R. Kimmel, Air Force Research Laboratory, Wright-Patterson AFB, OH			

Tuesday, 10 January 2017						
141-GTE-3	**Experimental Tools**					**Austin 5**
Chaired by: S. LYNCH, Penn State						
0930 hrs AIAA-2017-0551 **An Experimental Study of Dynamic Ice Accretion Process on Aero-engine Spinners** L. Li, H. Hu, Iowa State University, Ames, IA	1000 hrs AIAA-2017-0552 **Trends in JetCAT Microturbojet-Compressor Efficiency** N. Grannan, Innovative Scientific Solutions, Inc., Dayton, OH; M. McClearn, P. Litke, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2017-0553 **Time-resolved schlieren POD and aft deck pressure correlations on complex supersonic jet nozzles** M. Berry, A. Magstadt, M. Ali, Syracuse University, Syracuse, NY; C. Ruscher, Spectral Energies, LLC, Dayton, OH; M. Glauser, Syracuse University, Syracuse, NY; S. Gogineni, Spectral Energies, LLC, Dayton, OH				

Tuesday, 10 January 2017						
142-HSABP-3	**Computational Investigations of Scramjets**					**San Antonio 4**
Chaired by: O. POWELL and D. MUSIELAK, University of Texas at Arlington						
0930 hrs AIAA-2017-0554 **Isolator Dynamics and Heat Release during Unstart of a Dual-Mode Scramjet** L. Riley, Ohio State University, Columbus, OH; M. Hagenmaier, J. Donbar, Air Force Research Laboratory, Wright-Patterson AFB, OH; D. Gaitonde, Ohio State University, Columbus, OH	1000 hrs AIAA-2017-0555 **Dynamic Hybrid RANS/LES Simulations of Axisymmetric Scramjet Component Flowpaths** T. Palmer, P. Shah, A. Robinson, ATA Engineering, Inc., San Diego, CA; D. Walters, E. Luke, Mississippi State University, Starkville, MS; E. Hassan, Air Force Research Laboratory, Wright-Patterson AFB, OH; et al.	1030 hrs AIAA-2017-0556 **Studies on Leading Edge Detection in Mechanically- and Combustion-Generated Shock Trains in Dual-Mode Scramjet Engines** F. Ladeinde, SUNY Korea, Incheon, South Korea; Z. Lou, Stony Brook University, Stony Brook, NY; D. Kim, R. Das, Andong National University, Andong, South Korea	1100 hrs AIAA-2017-0557 **Dynamical Features of a Supersonic Multistream Nozzle with an Aft-Deck** C. Stack, D. Gaitonde, Ohio State University, Columbus, OH	1130 hrs AIAA-2017-0558 **Numerical Simulation about Mixing Characteristics of an Inlet-Fueled Scramjet Engine** J. Kim, O. Kwon, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1200 hrs AIAA-2017-0559 **Large-Eddy Simulation of a Dual-Mode Scramjet Combustor Using non-Adiabatic Flamelet Modeling** T. Aksu, S. Uslu, TOBB University of Economics and Technology, Ankara, Turkey	

Tuesday, 10 January 2017						
143-IS-2	**Run-Time Assurance for Adaptive and Intelligent Systems (Invited)**					**Ft. Worth 1**
Chaired by: E. WONG, NASA Glenn Research Center						
0930 hrs AIAA-2017-0560 **The Introduction of Software Runtime Protection for Autonomous Aerospace Systems** J. Schierman, M. DeVore, N. Richards, Barron Associates, Inc., Charlottesville, VA; M. Clark, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2017-0561 **Certifiable Runtime Assurance of Distributed Real-Time Systems** S. Chaki, D. de Niz, Carnegie Mellon University, Pittsburgh, PA	1030 hrs AIAA-2017-0562 **Validation of Convex Optimization Algorithms and Credible Implementation for Model Predictive Control** E. Feron, R. Cohen, Georgia Institute of Technology, Atlanta, GA; G. Davy, P. Garoche, ONERA, Toulouse, France	1100 hrs AIAA-2017-0563 **Reducing V&V Cost of Flight Critical Systems: Myth or Reality** G. Brat, NASA Ames Research Center, Moffett Field, CA	1130 hrs AIAA-2017-0564 **Military Airworthiness Certification of Autonomous Air Vehicles with Adaptive Controllers** M. Dillsaver, M. Clark, Air Force Research Laboratory, Wright-Patterson AFB, OH; X. Zhang, Wright State University, Dayton, OH		

Tuesday, 10 January 2017		
144-LEC-3 **0930 - 1130 hrs**	**Adaptive Structures Lecture and Special Presentation**	**Texas D**

Requirements for Morphing from an Airplane Perspective
Robert D. Gregg
Chief Aerodynamicist
Boeing Commercial Airplanes

Special Presentation
Remembrance of the Contributions of Dr. Friedrich Straub

Tuesday, 10 January 2017						
145-MAT-4	**Multiscale Modeling and Materials Design**					**Palomino 2**
Chaired by: J. MATLIK, Rolls-Royce Corp and G. ODEGARD						
0930 hrs AIAA-2017-0565 **Multiscale Elasto-Plastic and Failure Analysis of Metal Matrix Composite** H. Sertse, W. Yu, Purdue University, West Lafayette, IN	1000 hrs AIAA-2017-0566 **Elasto-plastic deformation mechanisms of thermoset glassy polymers depending on the structural characteristic of hardener: A molecular dynamics study** H. Park, B. Kim, J. Choi, M. Cho, Seoul National University, Seoul, South Korea	1030 hrs AIAA-2017-0567 **Tsai-Wu Analysis of a Thin-Walled 3D-Printed Polylactic Acid (PLA) Structural Bracket** R. Chen, A. Ramachandran, C. Liu, F. Chang, D. Senesky, Stanford University, Stanford, CA	1100 hrs AIAA-2017-0568 **Peridynamics for Predicting Pit-to-Crack Transition** D. De Meo, L. Russo, E. Oterkus, University of Strathclyde, Glasgow, United Kingdom; D. Gunasegaram, I. Cole, Commonwealth Scientific and Industrial Research Organisation (CSIRO), Clayton, Australia			

Tuesday, 10 January 2017						
146-MDO-4	**Aeroelastic Optimization**					**Mustang 1**
Chaired by: M. BHATIA, Mississippi State University and A. NING, BYU						
0930 hrs AIAA-2017-0569 **Optimal Sizing and Placement of Control Surfaces for Active Aeroservoelastic Control** R. Brown, K. Singh, Miami University, Oxford, OH; R. Kolonay, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2017-0570 **SpaRibs Geometry Parameterization for Wings with Multiple Sections using Single Design Space** S. De, M. Jrad, D. Locatelli, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA; M. Baker, M4 Engineering, Inc., Long Beach, CA	1030 hrs AIAA-2017-0571 **Conceptual Design of Complex Transonic Aircraft Configurations with Flutter Prediction** R. Gupta, J. Schetz, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA	1100 hrs AIAA-2017-0572 **Aeroservoelastic Optimisation of an Aerofoil with Active Compliant Flap via Reparametrisation and Variable Selection** J. Broughton-Venner, A. Wynn, R. Palacios, Imperial College London, London, United Kingdom	1130 hrs AIAA-2017-0573 **Similarity Maximization of a Scaled Aeroelastic Flight Demonstrator via Multidisciplinary Optimization** J. Mas Colomer, N. Bartoli, T. Lefebvre, S. Dubreuil, ONERA, Toulouse, France; J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI; E. Benard, Higher Institute of Aeronautics and Space, Toulouse, France; et al.		

Tuesday, 10 January 2017						
147-MST-1	**Modeling and Simulation of Aeroelasticity and Structural Dynamics**					**San Antonio 3**
Chaired by: A. ELMILIGUI, NASA Langley Research Center and P. ZAAL, NASA Ames Research Center						
0930 hrs AIAA-2017-0574 **User subroutine for fatigue modeling of wing structure of flapping micro air vehicle** H. Abdelmoula, M. Hassanalian, A. Abdelkefi, New Mexico State University, Las Cruces, NM	1000 hrs AIAA-2017-0576 **Effects of Engine Placement on Nonlinear Aeroelastic Gust Response of High-Aspect-Ratio Wings** P. Mardanpour, E. Izadpanahi, S. Rastkar, Florida International University, Miami, FL; D. Hodges, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2017-0577 **Modelling Framework for Handling Qualities Analysis of Flexible Aircraft** V. Portapas, S. Yusuf, M. Lone, Cranfield University, Cranfield, United Kingdom; E. Coetzee, Airbus, Bristol, United Kingdom	1100 hrs AIAA-2017-0578 **Structural system identification using degree of freedom-based reduction method and sensor selection algorithm** H. Sung, Seoul National University, Seoul, South Korea; S. Chang, Korea Atomic Energy Research Institute (KAERI), Daejeon, South Korea; M. Cho, Seoul National University, Seoul, South Korea			

Tuesday, 10 January 2017						
148-MST-2	**Modeling and Simulation of Uninhabited Aerial Vehicles I**					**San Antonio 2**
Chaired by: D. KEATING, The Charles Stark Draper Laboratory, Inc. and D. GINGRAS, Bihrle Applied Research Inc.						
0930 hrs AIAA-2017-0579 **Longitudinal Aerodynamic Coefficients of Hydra Technologies UAS-S4 from Geometrical Data** M. Segui, M. Kuitche, R. Botez, University of Québec, Montréal, Canada	1000 hrs AIAA-2017-0580 **Modeling, Simulation, and Control of Modular Vertical Lift Air Vehicles** B. Anderson, J. Warner, J. Rogers, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2017-0581 **Modelling wing wake and tail-wake interaction of a clap-and-peel flapping-wing MAV** S. Armanini, Delft University of Technology, Delft, The Netherlands; J. Caetano, Portuguese Air Force Academy, Sintra, Portugal; C. de Visser, G. de Croon, Delft University of Technology, Delft, The Netherlands				

Tuesday, 10 January 2017						
149-MVC-3	**Meshing Techniques**					**Grapevine 3**
Chaired by: N. WYMAN, Pointwise, Inc. and C. BRUNER, Sandia National Laboratories						
0930 hrs AIAA-2017-0582 **Stitching and Deformation of Non-overlapping Meshes for Unsteady Rotorcraft Aerodynamics** M. Nathoo, W. Habashi, M. Fossati, McGill University, Montréal, Canada	1000 hrs AIAA-2017-0583 **CFD Simulation of a Quad-Rotor UAV with Rotors in Motion Explicitly Modeled Using an LBM Approach with Adaptive Refinement** S. Thibault, Extendsive, Inc., White River Junction, VT; D. Holman, S. Garcia, G. Trapani, Next Limit Dynamics, Madrid, Spain	1030 hrs AIAA-2017-0584 **Automatic high-order mesh generation with Spring-Field and vector-adding:3D domain mesh generation** T. Liu, University of Tennessee, Chattanooga, Chattanooga, TN; C. Hilbert, Branch Technology, Chattanooga, TN	1100 hrs AIAA-2017-0585 **On a robust boundary layer mesh generation process** D. Marcum, Mississippi State University, Starkville, MS; F. Alauzet, A. Loseille, French Institute for Research in Computer Science and Control (INRIA), Saclay, France	1130 hrs AIAA-2017-0586 **Efficient and Exact Mesh Deformation using Multi-Scale RBF Interpolation** L. Kedward, C. Allen, T. Rendall, University of Bristol, Bristol, United Kingdom	1200 hrs AIAA-2017-0587 **An Automatic Parallel Octree Grid Generation Software with an Extensible Solver Framework and a Focus on Urban Simulation** E. Hereth, K. Sreenivas, L. Taylor, D. Nichols, University of Tennessee, Chattanooga, Chattanooga, TN	

Tuesday, 10 January 2017						
150-NDA-2/MDO-5	**Optimization Under Uncertainty I**					**Mustang 2**
Chaired by: J. GRAY, NASA Glenn Research Center and R. GRANDHI, Wright State University						
0930 hrs AIAA-2017-0588 **Effective Operations of Extinction-Reignition with Simple Control of Oxidizer Flux on a Single-Stage Sounding Hybrid Rocket** K. Chiba, University of Electro-Communications, Tokyo, Japan; M. Kanazaki, Tokyo Metropolitan University, Tokyo, Japan; T. Shimada, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1000 hrs AIAA-2017-0589 **A Decision-Support Methodology and Framework to Make Risk/Value Trade-Offs in a Business-Driven Environment** F. Burgaud, J. Durand, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2017-0590 **Horsetail Matching for Optimization Under Probabilistic, Interval and Mixed Uncertainties** L. Cook, J. Jarrett, University of Cambridge, Cambridge, United Kingdom; K. Willcox, Massachusetts Institute of Technology, Cambridge, MA	1100 hrs AIAA-2017-0591 **Probabilistic Characterization of Composite-Aluminum Cocured Joints** N. Phelps, S. TerMaath, University of Tennessee, Knoxville, Knoxville, TN	1130 hrs AIAA-2017-0592 **Probabilistic pipe strength and toughness estimation through information fusion with Bayesian updating** S. Dahire, Y. Liu, Y. Jiao, Arizona State University, Tempe, AZ		

Tuesday, 10 January 2017						
151-NDA-3	Uncertainty Quantification I					Mustang 3
Chaired by: H. BAE, Wright State University and N. KIM, University of Florida						
0930 hrs AIAA-2017-0593 **Non-Deterministic Kriging Framework for Responses with Mixed Uncertainty** D. Clark, H. Bae, Wright State University, Dayton, OH	1000 hrs AIAA-2017-0594 **Efficient Global Sensitivity Analysis for Time-Dependent, Multidisciplinary Models** E. DeCarlo, S. Mahadevan, Vanderbilt University, Nashville, TN; B. Smarslok, Air Force Research Laboratory, Wright-Patterson AFB, OH; D. Sparkman, Universal Technology Corporation, Dayton, OH	1030 hrs AIAA-2017-0595 **Confidence Interval of Bayesian Network and Global Sensitivity Analysis** S. Bae, N. Kim, C. Park, University of Florida, Gainesville, Gainesville, FL	1100 hrs AIAA-2017-0596 **Numerical Analysis of Uncertainty in Crack Growth Prediction in Repaired Aluminum Alloys** B. Heng, S. TerMaath, University of Tennessee, Knoxville, Knoxville, TN	1130 hrs AIAA-2017-0597 **Higher-order moments of generalized polynomial chaos expansions for intrusive and non-intrusive uncertainty quantification** E. Savin, ONERA, Châtillon, France; B. Faverjon, Insa-Lyon, Villeurbanne, France	1200 hrs AIAA-2017-0598 **Efficient Integration Method for Uncertainty Quantification** S. Mulani, University of Alabama, Tuscaloosa, Tuscaloosa, AL; R. Walters, Virginia Polytechnic Institute and State University, Blacksburg, VA	

Tuesday, 10 January 2017						
152-PC-10	Detonations, Explosions, and Supersonic Combustion					Ft. Worth 3
Chaired by: C. BROPHY, Naval Postgraduate School and T. JACKSON, University of Florida						
0930 hrs AIAA-2017-0599 **An Experimental Investigation of Fast Hydrogen-Air Flames and Detonations Using a Turbulence Generating Facility** J. Chambers, K. Ahmed, University of Central Florida, Orlando, FL	1000 hrs AIAA-2017-0600 **Uncertainty Quantification in the Simulation of Explosive Particle Dispersal using an Eulerian/ Lagrangian Formulation** M. Akiki, T. Gallagher, G. Hannebique, S. Menon, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2017-0601 **Numerical Simulation of Supersonic Premixed Turbulent Combustion** T. Nielsen, J. Edwards, North Carolina State University, Raleigh, NC				

Tuesday, 10 January 2017						
153-PC-11	Combustion Modeling and Simulation III					San Antonio 6
Chaired by: J. OEFELEIN, Sandia National Laboratories and G. BORGHESI						
0930 hrs AIAA-2017-0602 **Hybrid Multi-Timescale and G-Scheme Method for Efficient Modeling with Detailed Chemical Kinetics** W. Sun, T. Grenga, Y. Ju, Princeton University, Princeton, NJ	1000 hrs AIAA-2017-0603 **Direct Numerical Simulations of NO_x formation in spatially developing turbulent premixed Bunsen flames with mixture inhomogeneity** S. Luca, A. Attili, F. Bisetti, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia	1030 hrs AIAA-2017-0604 **Effect of the turbulence modeling in large-eddy simulations of nonpremixed flames undergoing extinction and reignition** E. Gonzalez, A. Dasgupta, CSE, Inc., Columbia, MD; S. Arshad, M. Oevermann, Chalmers University of Technology, Göteborg, Sweden	1100 hrs AIAA-2017-0605 **Comparison of Flamelet/Progress-Variable and Finite-Rate Chemistry LES Models in a Preconditioning Scheme** S. Yang, X. Wang, V. Yang, W. Sun, H. Huo, Georgia Institute of Technology, Atlanta, GA	1130 hrs AIAA-2017-0606 **LES Simulation of the Cambridge Stratified Flame Using Optimized Virtual Mechanisms** R. Mercier, Safran Group, Magny-les-Hameaux, France; M. Cailler, B. Fiorina, École Centrale Paris, Châtenay-Malabry, France		

Tuesday, 10 January 2017						
154-PC-12	Chemical Kinetics for Multi-Component Fuels					San Antonio 5
Chaired by: J. HEYNE, University of Dayton and V. KATTA, Innovative Scientific Solutions Incorporated						
0930 hrs AIAA-2017-0607 **A Comparative Study of Combustion Chemistry of Conventional and Alternative Jet Fuels with Hybrid Chemistry Approach** R. Xu, D. Chen, K. Wang, H. Wang, Stanford University, Stanford, CA	1000 hrs AIAA-2017-0608 **Evaluation of Kinetics Models for JP-8 in Predicting Unsteady Flames** V. Katta, Innovative Scientific Solutions, Inc., Dayton, OH; W. Roquemore, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2017-0609 **On the Development of General Surrogate Composition Calculations for Chemical and Physical Properties** D. Bell, J. Heyne, University of Dayton, Dayton, OH; S. Won, F. Dryer, F. Haas, Princeton University, Princeton, NJ; S. Dooley, University of Limerick, Limerick, Ireland	1100 hrs AIAA-2017-0610 **Species Selectivity Ratios from Thermal Pyrolysis of Jet Fuels in a Microflow Tube Reactor: Experimental and Modeling Effor** H. Chelliah, M. Rahimi, U. Shrestha, K. Dang, University of Virginia, Charlottesville, Charlottesville, VA	1130 hrs AIAA-2017-0611 **Temperature Jump Pyrolysis Studies of RP-2 Fuel** O. Pryor, University of Central Florida, Orlando, FL; S. Chambreau, G. Vaghjiani, Air Force Research Laboratory, Edwards AFB, CA; S. Vasu, University of Central Florida, Orlando, FL	1200 hrs AIAA-2017-0612 **Pyrolysis of RP-2 and Surrogate Fuels in a Jet Stirred Reactor Coupled with Synchrotron Photo Ionization Mass Spectrometry** G. Barari, Embry-Riddle Aeronautical University, Prescott, AZ; D. Popolan-Vaida, Lawrence Berkeley National Laboratory, Berkeley, CA; S. Vasu, University of Central Florida, Orlando, FL	

Tuesday, 10 January 2017						
155-PDL-3	Diagnostics for Plasmas and Gases I					Ft. Worth 4
Chaired by: K. XU, University of Alabama in Huntsville						
0930 hrs Oral Presentation **Rayleigh and Raman Scattering Techniques and Application to Plasmas** C. Limbach, Texas A&M University, College Station, TX		1030 hrs Oral Presentation **Microwave plasma diagnostic techinques** A. Shashurin, Purdue University, West Lafayette, IN		1130 hrs Oral Presentation **Cavity Ring-Down Spectroscopy Plasma Diagnostics** A. Yalin, Colorado State University, Fort Collins, CO		

Tuesday, 10 January 2017						
156-SATS-4	Small Satellite Mission Design					Austin 6
Chaired by: J. STRAUB, North Dakota University						
0930 hrs AIAA-2017-0613 **Time-optimal Slew Maneuver Using Single Gimbal Control Moment Gyro for Small Agile satellites** M. Elkhayat, Y. Elhalwagy, A. ElRaffie, G. Elnashar, Egyptian Armed Forces, Cairo, Egypt	1000 hrs AIAA-2017-0614 **Safe, Failure-Tolerant CubeSat Docking Using Passive Magnetic Mechanisms** K. Doyle, M. Peck, Cornell University, Ithaca, NY	1030 hrs AIAA-2017-0615 **Navigation Analysis of WSB Low Energy Lunar Transfer for SRMSAT-2** K. Barad, T. Sharma, SRM University, Chennai, India	1100 hrs AIAA-2017-0616 **BRICSat-D Flight Experiment: Demonstrating the Feasibility of Low Cost Diagnostic Missions** D. Wenberg, J. Pittman, M. Lange, B. Keegan, E. Hanlon, J. Kang, U.S. Naval Academy, Annapolis, MD; et al.	1130 hrs AIAA-2017-0617 **A Nano-Satellite System for Atmospheric Monitoring and Ground Imaging** C. Sachdeva, PEC University of Technology, Chandigarh, India; M. Gupta, Georgia Institute of Technology, Atlanta, GA		

Tuesday, 10 January 2017						
157-SCS-2	Small Satellite Deployable Structures					Palomino 1
Chaired by: S. BRADFORD, Jet Propulsion Laboratory and J. BLACK, Virginia Tech						
0930 hrs AIAA-2017-0618 **Micro-gravity Testing of Boom-Membrane Integrated Deployable Structures for Micro-satellites** H. Furuya, K. Yashima, T. Yokomatsu, H. Sakamoto, Tokyo Institute of Technology, Yokohama, Japan; A. Watanabe, Sakase Adtech Company, Ltd., Fukui, Japan	1000 hrs AIAA-2017-0619 **Membrane Deployment de-orbit System by convex tapes** N. Tada, S. Inoue, Y. Miyazaki, M. Yamazaki, Nihon University, Funabashi, Japan	1030 hrs AIAA-2017-0620 **From Prototype to Flight: Qualifying a Ka-band Parabolic Deployable Antenna (KaPDA) for CubeSats** J. Sauder, N. Chahat, B. Hirsch, R. Hodges, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; Y. Rahmat-Samii, University of California, Los Angeles, Los Angeles, CA; E. Peral, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; et al.	1100 hrs AIAA-2017-0621 **Flight Qualification Testing of a Meter-class CubeSat Deployable Boom** J. Fulton, University of Colorado, Boulder, Boulder, CO; S. Jeon, LoadPath, LLC, Albuquerque, NM; T. Murphey, Roccor, LLC, Longmont, CO	1130 hrs AIAA-2017-0622 **Composite Tube Flexures at Nanosatellite Scale** M. Santer, Imperial College London, London, United Kingdom	1200 hrs AIAA-2017-0623 **Structural Optimization of Composite Spring Tape Hinges** C. Qian, Q. Chen, Y. Hou, H. Fang, Shanghai YS Information Technology Company, Ltd., Shanghai, China	

Tuesday, 10 January 2017						
158-SD-7	Piezoelectric Materials for Active and Passive Vibration Control					Appaloosa 2
Chaired by: D. JOHNSON, NASA Glenn Research Center and C. BARNES, AFRL/RQVA						
0930 hrs AIAA-2017-0624 **Highly Flexible Piezoelectric Multifunctional Wings for Adaptive Vibration Control and Energy Harvesting** N. Tsushima, W. Su, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1000 hrs AIAA-2017-0625 **Analytical modeling and effectiveness of low-frequency piezoelectric energy harvesters with dual magnetic forces** S. Zimmerman, H. Abdelmoula, A. Abdelkefi, New Mexico State University, Las Cruces, NM	1030 hrs AIAA-2017-0626 **On the potential of monostable piezomagnetoelastic energy harvesting from vortex-induced vibrations** R. Naseer, New Mexico State University, Las Cruces, NM; H. Dai, Huazhong University of Science and Technology, Wuhan, China; A. Abdelkefi, New Mexico State University, Las Cruces, NM; L. Wang, Huazhong University of Science and Technology, Wuhan, China	1100 hrs AIAA-2017-0627 **Cross-sectional Stress Analysis of Smart Beam Energy Harvesters** N. Hosking, Z. Sotoudeh, Rensselaer Polytechnic Institute, Troy, NY	1130 hrs AIAA-2017-0628 **Necessity of accurate estimation of the galloping force for efficient design of energy harvesters** U. Javed, A. Abdelkefi, New Mexico State University, Las Cruces, NM	1200 hrs AIAA-2017-0629 **On the Energy Harvesting Potential of an Airfoil-Based Piezoaeroelastic Harvester from Coupled Pitch-Plunge-Leadlag Vibrations** Y. Wu, D. Li, J. Xiang, Beihang University, Beijing, China	

Tuesday, 10 January 2017						
159-SD-8	**Vehicle and Component Response to Gust, Impact, and Thermal Loads**					**Appaloosa 3**
Chaired by: W. SILVA, NASA-Langley Research Center and M. PATIL, Virginia Tech						
0930 hrs AIAA-2017-0630 **Testing of Wing-Tip Spring Device for Gust Loads Alleviation** R. Cheung, A. Castrichini, J. Cooper, University of Bristol, Bristol, United Kingdom	1000 hrs AIAA-2017-0631 **Finite Element Simulation of Three Full-Scale Crash Tests for Cessna 172 Aircraft** B. Mason, J. Warren, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2017-0632 **A Doublet-Lattice Method Correction Approach for High Fidelity Gust Loads Analysis** C. Valente, Siemens, Leuven, Belgium; C. Wales, D. Jones, A. Gaitonde, J. Cooper, University of Bristol, Bristol, United Kingdom; Y. Lemmens, Siemens, Leuven, Belgium	1100 hrs AIAA-2017-0633 **Spacecraft Pyroshock Attenuation in Three Parts** V. Babuska, S. Gomez, S. Smith, C. Hammetter, Sandia National Laboratories, Albuquerque, NM; D. Murphy, University of Georgia, Athens, GA	1130 hrs AIAA-2017-0634 **A Gust Reconstruction Framework Applied to a Nonlinear Reduced Order Model of a Wing Typical Section** S. Simeone, University of Bristol, Bristol, United Kingdom; A. Da Ronch, University of Southampton, Southampton, United Kingdom; T. Rendall, University of Bristol, Bristol, United Kingdom	1200 hrs AIAA-2017-0635 **Wind Tunnel Tests of Whirl Flutter Aeroelastic Demonstrator** J. Cecrdle, P. Malinek, O. Vich, Aerospace Research and Test Establishment (VZLÚ), Prague, Czech Republic	

Tuesday, 10 January 2017						
160-SD-9	**Special session: Aeroelastic Prediction III**					**Appaloosa 4**
Chaired by: D. GRIFFITH and C. SPODE, Embraer S/A						
0930 hrs AIAA-2017-0636 **Gust and Ground Loads Integration for Aircraft Landing Loads Prediction** A. Castrichini, J. Cooper, University of Bristol, Bristol, United Kingdom; T. Benoit, Y. Lemmens, Siemens, Leuven, Belgium	1000 hrs AIAA-2017-0637 **Static and Dynamic Aeroelastic Validation of a Flexible Forward Swept Composite Wing** M. Ritter, J. Dillinger, Y. Meddaikar, German Aerospace Center (DLR), Göttingen, Germany	1030 hrs AIAA-2017-0638 **Towards a Hybrid Time-Frequency Domain Approach for Time-Variant Buffeting Flows** F. Roizner, M. Karpel, Technion-Israel Institute of Technology, Haifa, Israel; R. Carrese, P. Marzocca, RMIT University, Melbourne, Australia	1100 hrs AIAA-2017-0639 **Tiltrotor Whirl-Flutter Stability Predictions using Comprehensive Analysis** A. Kreshock, Army Research Laboratory, Hampton, VA; H. Yeo, Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA	1130 hrs AIAA-2017-0640 **Overset Grid Simulations for the Second AIAA Aeroelastic Prediction Workshop** J. Housman, C. Kiris, NASA Ames Research Center, Moffett Field, CA		

Tuesday, 10 January 2017						
161-SE-1	**Systems Engineering I**					**Dallas 6**
Chaired by: J. EILER, Stellar Solutions, Inc. and D. DRESS, NASA Langley Research Center						
0930 hrs AIAA-2017-0641 **First Steps in Implementing Weapon System Sustainment Model** C. Vono, Self, Ogden, UT	1000 hrs AIAA-2017-0642 **Quantifying Negotiations and Initial Bids through a Weighted Analytical Hierarchy Process** D. Tinker, D. Watkins, Vanderbilt University, Nashville, TN; R. Choate, Western Kentucky University, Bowling Green, KY	1030 hrs AIAA-2017-0643 **Exploiting Pessimism for Fault Tree Completeness** A. Wille, F. Holzapfel, Technical University of Munich, Munich, Germany	1100 hrs AIAA-2017-0644 **Contract-Based Byzantine Resilience in Spacecraft Swarms** M. Sievers, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; A. Madni, University of Southern California, Los Angeles, CA			

Tuesday, 10 January 2017						
162-SEN-1	**Novel Aerospace Sensor Systems**					**Ft. Worth 2**
Chaired by: D. ACCARDO, University of Naples						
0930 hrs AIAA-2017-0645 **Airborne Active Sensing for Pipeline Leak Survey** J. Bartholomew, P. Lyman, C. Weimer, L. Ruppert, Ball Aerospace & Technologies Corporation, Boulder, CO	1000 hrs AIAA-2017-0646 **Distributed High Temperature Measurement for Monitoring Bleed Air Lines and other Aircraft Structures** E. Templeton, M. Davis, J. Pedrazzani, O. Ohanian, Luna Innovations, Inc., Blacksburg, VA	1030 hrs AIAA-2017-0647 **Error Sensitivity Analysis of Small UAS Wind-Sensing Systems** T. Nichols, B. Argrow, University of Colorado, Boulder, Boulder, CO; D. Kingston, Air Force Research Laboratory, Dayton, OH	1100 hrs AIAA-2017-0648 **Estimating the Attitude of an Unmanned Aerial Vehicle through Multiple Low-Cost Ultrasonic Range Sensors** R. Salguero, M. Rhudy, Pennsylvania State University, Reading, PA			

Tuesday, 10 January 2017		
163-SOF-3 0930 - 1230 hrs	Open Systems Architecture - Best practices, Verification, and Security	Ft. Worth 7

Come and hear from experienced OSA practitioners about various aspects of their own OSA efforts that were challenging or risky and which mitigation approaches emerged.

Panelists:

Peter Mehlitz, NASA Ames Research Center
Ron Kohl, R. J. Kohl and Associates
Bryce Meyer, Software Engineering Institute
Misty Davies, NASA Ames Research Center

Tuesday, 10 January 2017						
164-SRE-3	Resource Harvesting					Ft. Worth 5
Chaired by: J. KLEINHENZ, NASA Glenn Research Center						
0930 hrs AIAA-2017-0649 **In-situ Nitrogen Harvesting for the Titan Submarine** P. Meyerhofer, Case Western Reserve University, Cleveland, OH; J. Hartwig, NASA Glenn Research Center, Cleveland, OH	1000 hrs AIAA-2017-0650 **The Use of Lithium Fuel with Planetary In Situ Oxidizers** T. Baker, T. Miller, M. Paul, J. Peters, Pennsylvania State University, University Park, PA	1030 hrs AIAA-2017-0651 **Initial Design and Analysis of a System Extracting and Collecting Water from Temporarily Captured Orbiters** S. Nomura, M. Tomooka, R. Funase, University of Tokyo, Bunkyo, Japan	1100 hrs AIAA-2017-0652 **Producing Volatiles from Asteroid Simulants: Preliminary Results** L. Gertsch, Missouri University of Science and Technology, Rolla, MO; A. Abbud-Madrid, C. Dreyer, Colorado School of Mines, Golden, CO; R. Jedicke, A. Krot, University of Hawaii, Hilo, Hilo, HI; D. Linne, NASA Glenn Research Center, Cleveland, OH; et al.			

Tuesday, 10 January 2017						
165-STR-5	Composite Damage and Failure Prediction Methods II					Appaloosa 1
Chaired by: S. ENGELSTAD, Lockheed Martin Aeronautics and S. WANTHAL, The Boeing Company						
0930 hrs AIAA-2017-0653 **A Numerical Study on the Edgewise Compression Strength of Sandwich Structures with Facesheet-Core Disbonds** A. Bergan, NASA Langley Research Center, Hampton, VA	1000 hrs AIAA-2017-0654 **A nonlocal constitutive model for damageable brittle and quasi-brittle materials** Z. Gao, L. Zhang, W. Yu, Purdue University, West Lafayette, IN	1030 hrs AIAA-2017-0655 **A Multiscale Fatigue Damage Prediction for Notched Composite Components** J. Xiao, X. Fang, J. Lua, Global Engineering and Materials, Inc., Princeton, NJ; R. Li, D. Zhang, University of Connecticut, Storrs, Storrs, CT	1100 hrs AIAA-2017-0656 **Peridynamic Augmented XFEM** M. Dorduncu, A. Barut, E. Madenci, University of Arizona, Tucson, Tucson, AZ; N. Phan, Naval Air Systems Command, Patuxent River, MD	1130 hrs AIAA-2017-0657 **An Integrated Crack Initiation and Propagation Module for Fatigue Damage Prediction of Composite Structures** X. Cui, X. Fang, J. Lua, Global Engineering and Materials, Inc., Princeton, NJ	1200 hrs AIAA-2017-0658 **Multiscale Damage Development in Polymer Composite Laminates** N. Parambil, S. Gururaja, Indian Institute of Science, Bengaluru, India	

Tuesday, 10 January 2017						
166-TP-5	Aerothermodynamics II					Austin 2
Chaired by: D. HASH, NASA - ARC and M. BORG, Air Force Research Laboratory						
0930 hrs AIAA-2017-0659 **State-resolved O_2--N_2 kinetic model at hypersonic temperatures** D. Andrienko, I. Boyd, University of Michigan, Ann Arbor, Ann Arbor, MI	1000 hrs AIAA-2017-0660 **Dissociation and internal excitation of molecular nitrogen due to N2-N collisions using direct molecular simulation** M. Grover, N. Singh, T. Schwartzentruber, University of Minnesota, Minneapolis, Minneapolis, MN; R. Jaffe, NASA Ames Research Center, Moffett Field, CA	1030 hrs AIAA-2017-0661 **Quantal treatment of O_2--Ar vibrational relaxation at hypersonic temperatures** I. Ulusoy, Georgia Institute of Technology, Atlanta, GA; D. Andrienko, I. Boyd, University of Michigan, Ann Arbor, Ann Arbor, MI; R. Hernandez, Johns Hopkins University, Baltimore, MD	1100 hrs AIAA-2017-0662 **Evaluation of Eigenvalues for the Analysis of Combustion and Chemical Non-Equilibrium Flows** V. Naoumov, Central Connecticut State University, New Britain, CT; A. Abdullin, V. Kriukov, Kazan Federal University, Kazan, Russia	1130 hrs AIAA-2017-0663 **Numerical investigation of vibrational relaxation coupling with turbulent mixing** R. Fiévet, University of Michigan, Ann Arbor, Ann Arbor, MI; S. Voelkel, University of Texas, Austin, Austin, TX; V. Raman, University of Michigan, Ann Arbor, Ann Arbor, MI; P. Varghese, University of Texas, Austin, Austin, TX	1200 hrs AIAA-2017-0664 **Double-Cone Flows in Nonequilibrium: Comparison of CFD with Experimental Data** K. Vogiatzis, Engility Corporation, Dayton, OH; E. Josyula, Air Force Research Laboratory, Wright-Patterson AFB, OH; P. Vedula, University of Oklahoma, Norman, Norman, OK	

Tuesday, 10 January 2017						
167-TP-6	**Heat Transfer II**					**Austin 3**
Chaired by: E. SHORT, Raytheon Company and S. SHERIF, University of Florida						
0930 hrs AIAA-2017-0665 **Numerical Simulation of Heat Transfer Flow-Field under Transcritical Condition** T. Toki, S. Teramoto, University of Tokyo, Tokyo, Japan; K. Okamoto, University of Tokyo, Kashiwa, Japan	1000 hrs AIAA-2017-0666 **Uniform Design Correlations for Glaze Ice Accretion and Convective Heat Transfer from an Airfoil** B. Peach, K. Pope, G. Naterer, Memorial University of Newfoundland, St. John's, Canada	1030 hrs AIAA-2017-0667 **Development of a three-dimensional, unstructured material response design tool** J. Schulz, Analytical Mechanics Associates, Inc., Mountain View, CA; E. Stern, NASA Ames Research Center, Moffett Field, CA; S. Muppidi, G. Palmer, Analytical Mechanics Associates, Inc., Mountain View, CA; O. Schroeder, University of Kentucky, Lexington, Lexington, KY	1100 hrs AIAA-2017-0668 **Model of Plume Flowfield from Oxy-Acetylene Torch** N. Diaz, J. Langston, University of Texas, Austin, Austin, TX; M. Salita, Salita Consulting, Phoenix, AZ; F. Stefani, J. Koo, University of Texas, Austin, Austin, TX		

Tuesday, 10 January 2017						
168-UMS-4	**Special Session: Safe Autonomous Urban Flight II**					**Grapevine 1**
Chaired by: V. STEPANYAN, Universities Space Research Association and A. CHAKRABARTY						
0930 hrs AIAA-2017-0669 **Guaranteed Model Reference Adaptive Control Performance in the Presence of Actuator Failures** E. Arabi, B. Gruenwald, T. Yucelen, University of South Florida, Tampa, FL; J. Steck, Wichita State University, Wichita, KS	1000 hrs AIAA-2017-0670 **Estimation, Navigation and Control of Multi-Rotor Drones in an Urban Wind Field** V. Stepanyan, Universities Space Research Association, Moffett Field, CA; K. Krishnakumar, NASA Ames Research Center, Moffett Field, CA	1030 hrs AIAA-2017-0671 **An Integrated System for Autonomous Search and Track with a small Unmanned Aerial Vehicle** A. Chakrabarty, R. Morris, X. Bouyssounouse, R. Hunt, NASA Ames Research Center, Moffett Field, CA	1100 hrs AIAA-2017-0672 **Proportional Navigation Based Guidance Laws for UAV Obstacle Avoidance in Complex Urban Environments** M. Clark, R. Prazenica, Embry-Riddle Aeronautical University, Daytona Beach, FL		

Tuesday, 10 January 2017						
169-UMS-5	**UAS Autonomy and Path Planning I**					**Grapevine 2**
Chaired by: J. WILHELM, Ohio University and K. KOCHERSBERGER, Virginia Polytechnic Institute and State University						
0930 hrs AIAA-2017-0673 **Homography-Based State Estimation for Autonomous UAV Landing** A. Chavez, D. L'Heureux, N. Prabhakar, M. Clark, W. Law, R. Prazenica, Embry-Riddle Aeronautical University, Daytona Beach, FL	1000 hrs AIAA-2017-0674 **Vision Sensor Fusion for Autonomous Landing** T. Nakamura, S. Haviland, D. Bershadsky, E. Johnson, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2017-0675 **Model Predictive Control Based Dynamic Geofence System for Unmanned Aerial Vehicles** S. Zhang, D. Wei, M. Huynh, J. Quek, X. Ma, L. Xie, Nanyang Technological University, Singapore, Singapore	1100 hrs AIAA-2017-0676 **Receding Horizon-based RRT* Algorithm for a UAV Real-time Path Planner** H. Lee, D. Lee, D. Shim, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1130 hrs AIAA-2017-0677 **Implementation & Flight Testing of the IMPACT System for Autonomous ISR** J. Boskovic, J. Jackson, R. Wise, Scientific Systems Company, Inc., Woburn, MA	1200 hrs AIAA-2017-0678 **Optimization of Dynamic Soaring Maneuvers for a Morphing Capable UAV** I. Mir, A. Maqsood, National University of Sciences and Technology, Islamabad, Pakistan; S. Akhtar, College of Aeronautical Engineering, Risalpur, Pakistan	

Tuesday, 10 January 2017						
170-WE-2	**Wind Turbine Extreme Loads Analysis**					**Austin 4**
Chaired by: L. MANUEL, University of Texas at Austin						
0930 hrs Oral Presentation **American perspective on wind energy research aimed at reducing the cost of wind energy through advances in wind-plant flow physics** D. Laird, P. Veers, National Renewable Energy Laboratory, Golden, CO	1000 hrs Oral Presentation **European perspective on wind energy research aimed at reducing the cost of wind energy through advances in wind-plant flow physics modeling and understanding** F. Rasmussen, Technical University of Denmark, Roskilde, Denmark	1030 hrs AIAA-2017-0679 **Adaptive Extreme Load Estimation in Wind Turbines** Q. Pan, E. Byon, University of Michigan, Ann Arbor, Ann Arbor, MI	1100 hrs AIAA-2017-0680 **Advances in the Assessment of Wind Turbine Operating Extreme Loads via More Efficient Calculation Approaches** P. Graf, R. Damiani, K. Dykes, J. Jonkman, National Renewable Energy Laboratory, Golden, CO; A. Ning, Brigham Young University, Provo, UT	1130 hrs AIAA-2017-0681 **Wind Turbine Loads during the Evening Transition Period** N. Lu, University of Texas, Austin, Austin, TX; S. Basu, North Carolina State University, Raleigh, NC; L. Manuel, University of Texas, Austin, Austin, TX	1200 hrs AIAA-2017-0682 **On Simulation of a Rear-Flank Downburst with Non-Stationary Turbulence and its Influence on Wind Turbine Extreme Loads** H. Nguyen, L. Manuel, University of Texas, Austin, Austin, TX	

Tuesday, 10 January 2017		
171-WKSP-1 0930 - 1230 hrs	Career Workshop I	Mustang 4

Tuesday, 10 January 2017		
172-LUNCH-2 1230 - 1400 hrs	Recognition Luncheon: Celebrating Achievements in Aerospace Sciences and Information Systems	Texas A & B

Tuesday, 10 January 2017						
173-AA-5	Aeroacoustics Jet Noise III					Grapevine B
Chaired by: J. MENDOZA, United Technologies Research Center and P. MORRIS, Pennsylvania State University						
1400 hrs AIAA-2017-0683 **Further Development of Supersonic Jet Noise Reduction Using Nozzle Fluidic Inserts** J. Morgan, P. Morris, D. McLaughlin, C. Prasad, Pennsylvania State University, University Park, PA	1430 hrs AIAA-2017-0684 **Modeling Jet Noise using Potential Flow and Simple Acoustic Sources** C. Ruscher, S. Gogineni, Spectral Energies, LLC, Dayton, OH; D. Gaitonde, Ohio State University, Columbus, OH; B. Kiel, A. Giese, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2017-0685 **Acoustic mode and sources in a supersonic jet** S. Unnikrishnan, D. Gaitonde, Ohio State University, Columbus, OH	1530 hrs AIAA-2017-0686 **Wavepacket intermittency and its role in turbulent jet noise** O. Schmidt, T. Colonius, California Institute of Technology, Pasadena, CA; G. Brès, Cascade Technologies, Inc., Palo Alto, CA	1600 hrs AIAA-2017-0687 **Flow and Noise from Septa Nozzles** K. Zaman, J. Bridges, NASA Glenn Research Center, Cleveland, OH	1630 hrs AIAA-2017-0688 **Ideal Gas Effects in Aeroacoustics** J. Joseph, C. Tinney, University of Texas, Austin, Austin, TX; N. Murray, University of Mississippi, Oxford, Oxford, MS	

Tuesday, 10 January 2017						
174-ACD-6	Aircraft Design Tools and Methods IV					San Antonio 1
Chaired by: P. RAJ, Virginia Polytechnic Institute and State University and P. MARZOCCA						
1400 hrs AIAA-2017-0689 **A Method of Static Aeroelastic Analysis Based on Three Dimension Aerodynamic Force and Aeroelastic Correction for Hypersonic Vehicles** X. Wang, Z. Wan, C. Yang, Beihang University, Beijing, China	1430 hrs AIAA-2017-0690 **A Design Optimization Technique for Multi-Robot Systems** J. Durand, F. Burgaud, K. Cooksey, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2017-0691 **Certification Modeling of Composites Fuselage, Considering Effect of Defects from Fiber Placement Manufacturing Processes** F. Abdi, AlphaSTAR Corporation, Long Beach, CA; Z. Gürdal, University of South Carolina, Columbia, Columbia, SC; D. Huang, AlphaSTAR Corporation, Long Beach, CA	1530 hrs AIAA-2017-0692 **An Innovative Total-Flight-Envelope Approach to Teach Configuration Aerodynamics** T. Takahashi, J. Kirkman, A. Verbin, Arizona State University, Tempe, AZ; M. Cotting, U.S. Air Force Test Pilot School, Edwards AFB, CA	1600 hrs AIAA-2017-0693 **A Single Digital Thread Approach to Aircraft Detailed Design** A. Gharbi, D. Sarojini, E. Kallou, D. Harper, V. Petitgenet, D. Rancourt, Georgia Institute of Technology, Atlanta, GA; et al.	1630 hrs AIAA-2017-0694 **Dorsal Fin Design Method: A Low Cost Aerodynamic Solution to Prevent Loss-of-Control** W. Anemaat, A. Karwas, W. Liu, S. Johnson, Design, Analysis and Research Corporation, Lawrence, KS	

Tuesday, 10 January 2017						
175-AFM-4	Flight Test and System Identification I					Grapevine 5
Chaired by: J. SEYMOUR, Lockheed Martin and J. GRAUER, NASA Langley Research Center						
1400 hrs AIAA-2017-0695 **Application of Multivariate Orthogonal Functions to Identify Aircraft Flutter Modes** O. Chavez, S. Yusuf, M. Lone, Cranfield University, Cranfield, United Kingdom	1430 hrs AIAA-2017-0696 **Efficient Testing Combining Design of Experiment and Learn-to-Fly Strategies** P. Murphy, J. Brandon, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2017-0697 **Improved Persistent Excitation for Real Time Parameter Estimation** M. AlAbsi, T. Fields, University of Missouri, Kansas City, Kansas City, MO	1530 hrs AIAA-2017-0698 **In-Flight Thrust Measurement using On-Board Force Sensor** M. Bronz, H. Garcia de Marina, G. Hattenberger, French Civil Aviation University, Toulouse, France	1600 hrs AIAA-2017-0699 **Selected Aeroelastic Modeling Results from the X-56A Stiff Wing Configuration Flight Tests** J. Grauer, NASA Langley Research Center, Hampton, VA; M. Boucher, NASA Armstrong Flight Research Center, Edwards, CA		

Tuesday, 10 January 2017						
176-AMT-8	**Pressure Determination Techniques and Applications**					**Grapevine 6**
Chaired by: J. CRAFTON, Innovative Scientific Solutions Incorporated and X. LIU, San Diego State University						
1400 hrs AIAA-2017-0700 **Mean and Fluctuating pressure estimation from snapshots of planar PIV measurements** J. Van der Kindere, R. de Kat, B. Ganapathisubramani, University of Southampton, Southampton, United Kingdom	1430 hrs AIAA-2017-0701 **Data Processing Tools for Dynamic Pressure-Sensitive Paint** J. Crafton, Innovative Scientific Solutions, Inc., Dayton, OH; J. Gregory, Ohio State University, Columbus, OH; M. Sellers, Aerospace Testing Alliance, Telluhoma, TN; W. Ruyten, Euclidean Optics, Murfreesboro, SD	1500 hrs AIAA-2017-0702 **Improvement of Signal-to-Noise Ratio for Unsteady PSP Measurement** T. Noda, M. Kameda, Tokyo University of Agriculture and Technology, Koganei, Japan; K. Nakakita, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan	1530 hrs AIAA-2017-0703 **Improvement of Lifetime-based PSP Technique for Industrial Wind Tunnel Tests** D. Yorita, U. Henne, C. Klein, German Aerospace Center (DLR), Göttingen, Germany	1600 hrs AIAA-2017-0704 **Pressure-Sensitive Paint Measurement under Transient Plasma in M=2 Airflow.** T. Hayashi, A. Houpt, B. Hedlund, S. Leonov, H. Sakaue, University of Notre Dame, Notre Dame, IN		

Tuesday, 10 January 2017						
177-APA-16	**Aerodynamic Design: Analysis, Methodologies, and Optimization Techniques II**					**Dallas 3**
Chaired by: J. LATZ, Northrop Grumman Aerospace Systems and B. MCGRATH, Johns Hopkins University Applied Physics Laboratory						
1400 hrs AIAA-2017-0705 **Design Optimization by Manifold Mapping Response Correction and Low-Fidelity Model Preconditioning** L. Leifsson, Iowa State University, Ames, IA; S. Koziel, Reykjavik University, Reykjavik, Iceland	1430 hrs AIAA-2017-0706 **Adjoint-Based Nonlinear Output Space Mapping for Accelerated Aerodynamic Shape Optimization** L. Leifsson, Iowa State University, Ames, IA; S. Koziel, Reykjavik University, Reykjavik, Iceland	1500 hrs AIAA-2017-0707 **Short and slim nacelle design for ultra-high BPR engines** M. Robinson, D. MacManus, K. Richards, Cranfield University, Cranfield, United Kingdom; C. Sheaf, Rolls-Royce Group plc, Derby, United Kingdom	1530 hrs AIAA-2017-0708 **An optimisation method for nacelle design** M. Robinson, D. MacManus, A. Heidebrecht, Cranfield University, Cranfield, United Kingdom; N. Grech, Rolls-Royce Group plc, Derby, United Kingdom	1600 hrs AIAA-2017-0709 **A successive gappy proper orthogonal decomposition approach and its application to inverse airfoil design** S. Li, Z. Gao, C. Gao, L. Zhou, Northwestern Polytechnical University, Xi'an, China	1630 hrs AIAA-2017-0710 **Design of Airfoils in Unsteady Viscous Flows Using Hierarchical Kriging Model** C. Song, W. Song, X. Yang, Northwestern Polytechnical University, Xi'an, China	

Tuesday, 10 January 2017						
178-APA-17	**Flow Control Applications and Demonstrations (Active and Passive) II**					**Dallas 1**
Chaired by: M. CALVERT, U.S. Army AMRDEC and J. CODER, University of Tennessee						
1400 hrs AIAA-2017-0711 **A Numerical Study on the Ability of Shock Control Bumps for Buffet Alleviation** R. Mayer, T. Lutz, E. Kraemer, University of Stuttgart, Stuttgart, Germany	1430 hrs AIAA-2017-0712 **On the Separated Flow Using Pulsed Nanosecond DBD Plasma Actuators on an NACA0015 Airfoil** Z. Zhao, Y. Cui, J. Li, J. Zheng, B. Khoo, National University of Singapore, Singapore, Singapore	1500 hrs AIAA-2017-0713 **Transonic Buffet Control by Plasma Actuator with Spark Discharge** V. Soudakov, TsAGI, Zhukovsky, Russia; A. Sidorenko, A. Maslov, A. Budovsky, P. Polivanov, O. Vishnyakov, Russian Academy of Sciences, Novosibirsk, Russia	1530 hrs AIAA-2017-0714 **Diminution of transonic buffet phenomenon by plasma actuators** A. Firsov, Y. Isaenkov, I. Moralev, Russian Academy of Sciences, Moscow, Russia; S. Leonov, University of Notre Dame, Notre Dame, IN; V. Soudakov, TsAGI, Zhukovsky, Russia	1600 hrs AIAA-2017-0715 **Separation Control over a NACA0015 Airfoil Using Nanosecond Pulsed Plasma Actuator** Y. Cui, Z. Zhao, J. Zheng, J. Li, B. Khoo, National University of Singapore, Singapore, Singapore		

Tuesday, 10 January 2017						
179-APA-18	**Unsteady Aerodynamics II**					**Dallas 2**
Chaired by: M. GHOREYSHI, United States Air Force Academy and K. KONTIS, University of Glasgow						
1400 hrs AIAA-2017-0716 **Computational Study of Lift Frequency Responses of Pitching Airfoils at Low Reynolds Numbers** A. Rezaei, H. Taha, University of California, Irvine, Irvine, CA	1430 hrs AIAA-2017-0717 **Effect of a Pitch-Oscillating Canard on Lift Enhancement and Tip Vortex Mitigation** J. Vasile, Army Research Laboratory, Aberdeen Proving Ground, MD	1500 hrs AIAA-2017-0718 **Motion induced unsteady aerodynamic loads with development of vortical flow** S. Wiggen, C. Klein, U. Henne, R. Konrath, W. Sachs, B. Wrede, German Aerospace Center (DLR), Göttingen, Germany; et al.	1530 hrs AIAA-2017-0719 **Reduced Order Modeling of a Flow Past a Cylinder using Sparse Coding** R. Deshmukh, J. McNamara, Ohio State University, Columbus, OH	1600 hrs AIAA-2017-0720 **Effect of Reduced Frequency on Dynamic Stall of a Pitching Airfoil in a Turbulent Wake** A. Gandhi, Arizona State University, Tempe, AZ; B. Merrill, Raytheon Company, Tucson, AZ; Y. Peet, Arizona State University, Tempe, AZ		

Tuesday, 10 January 2017						
180-APA-19	**Aerodynamic Design: Design Tools and Propeller Integration**					**Dallas 4**
Chaired by: E. FELTROP, Textron Aviation and O. KHAN, Tuskegee Univ						
1400 hrs AIAA-2017-0721 **Aerodynamic Design, Analysis and Testing of Propellers for Small Unmanned Aerial Vehicles** W. Anemaat, M. Schuurman, W. Liu, A. Karwas, Design, Analysis and Research Corporation, Lawrence, KS	1430 hrs AIAA-2017-0722 **Research on Airfoil Design Space and the Application of Niching Techniques in Airfoil Design** C. Gao, Z. Gao, S. Li, Northwestern Polytechnical University, Xi'an, China	1500 hrs AIAA-2017-0723 **Comparison of Experimental Data with Computations for a Propeller-Driven Airplane** K. Biber, Bartin University, Bartin, Turkey	1530 hrs AIAA-2017-0724 **Aerodynamic Optimization of a Golf Driver Using Computational Fluid Dynamics** K. Hanquist, University of Michigan, Ann Arbor, Ann Arbor, MI; K. Neitzel, Smart Blue Innovations, Wichita, KS	1600 hrs AIAA-2017-0725 **Theoretical Critical Height for Boundary Layer Transition on Airfoil Leading Edges** R. Robison, E. Loth, University of Virginia, Charlottesville, Charlottesville, VA	1630 hrs AIAA-2017-0726 **Convergence Acceleration of Fluid Dynamics Solvers Using a Reduced-Order-Model** R. Djeddi, A. Kaminsky, K. Ekici, University of Tennessee, Knoxville, Knoxville, TN	

Tuesday, 10 January 2017						
181-APA-20	**Propeller/Rotorcraft/Wind Turbine Aerodynamics II: Low-Rn Propellers**					**Dallas 5**
Chaired by: D. HUNSAKER, Utah State University and R. RAMAMURTI, Naval Research Laboratory						
1400 hrs AIAA-2017-0727 **An Experimental Study on the Transient Ice Accretion Process over a Rotating UAV Propeller** L. Li, Z. Ning, H. Hu, Iowa State University, Ames, IA	1430 hrs AIAA-2017-0728 **Navier-Stokes Equations based Flow Simulations of Low Reynolds Number Propeller for Unmanned Aerial Vehicle** J. Liu, S. Luo, Central South University, Changsha, China					

Tuesday, 10 January 2017						
182-ASC-3	**Smart and Multifunctional Materials**					**Palomino 3**
Chaired by: R. JHA, Mississippi State University and A. CHATTOPADHYAY, Arizona State University						
1400 hrs AIAA-2017-0729 **Design of a Piezoelectric Energy Harvester by Using Cylinder as a Bluff Body** A. Avsar, M. Sahin, Middle East Technical University, Ankara, Turkey	1430 hrs AIAA-2017-0730 **On the nonlinear dynamics and performance of hybrid piezoelectric-inductive energy harvesters subjected to vortex-induced vibrations** U. Javed, H. Abdelmoula, A. Abdelkefi, New Mexico State University, Las Cruces, NM	1500 hrs AIAA-2017-0731 **A Finite Strain Constitutive Model for Martensitic Transformation in Shape Memory Alloys Based on Logarithmic Strain** L. Xu, T. Baxevanis, D. Lagoudas, Texas A&M University, College Station, TX	1530 hrs AIAA-2017-0732 **Experimentation and Computational Analysis of an SMA-Based Slat-Cove Filler For Noise Reduction in a High Lift Wing** W. Scholten, R. Patterson, Texas A&M University, College Station, TX; Q. Chapelon, ENISE, Saint-Etienne, France; D. Hartl, T. Strganac, Texas A&M University, College Station, TX; T. Turner, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2017-0733 **Test rig development and characterization of magnetorheological elastomers** A. Martins, University of Victoria, Victoria, Canada; A. Fereidooni, National Research Council Canada, Ottawa, Canada; A. Suleman, University of Victoria, Victoria, Canada; V. Wickramasinghe, National Research Council Canada, Ottawa, Canada		

Tuesday, 10 January 2017		
183-F360-4 **1400 - 1600 hrs**	**Geoengineering to Mitigate Climate Change – Is there a Role for Aerospace?**	**Texas C**

Moderator: Marty Bradley, Technical Fellow, The Boeing Company

Panelists:

Martin Bunzi
Professor, Department of Philosophy
Rutgers University

Will Burns
Co-Director, Forum for Climate Engineering Assessment
American University

Tracy Hester
Professor
University of Houston Law Center

Doug MacMartin
Research Professor, Computing + Mathematical Sciences at California Institute of Technology/Mechanical and Aerospace Engineering at Cornell University

Tuesday, 10 January 2017						
184-FD-23	**CFD Methods on Unstructured Meshes**					**Austin 1**
Chaired by: R. SINGH, General Electric Global Research and S. TU, Jackson State University						
1400 hrs AIAA-2017-0734 **Reconstruction Map Stability Analysis for Cell Centered Finite Volume Methods on Unstructured Meshes** R. Zangeneh, C. Ollivier Gooch, University of British Columbia, Vancouver, Canada	1430 hrs AIAA-2017-0735 **A Posteriori Stability Analysis and Improvement for Finite Volume Methods on Unstructured Meshes** R. Zangeneh, C. Ollivier Gooch, University of British Columbia, Vancouver, Canada	1500 hrs AIAA-2017-0736 **Output Error Correction and Mesh Adaptation for Unstructured Mesh Finite Volume Method** M. Sharbatdar, C. Ollivier Gooch, University of British Columbia, Vancouver, Canada	1530 hrs AIAA-2017-0737 **A Preconditioned Flux Reconstruction/ Correction Procedure via Reconstruction Formulation for Unsteady Low Mach Number Flows on Dynamic Unstructured Meshes** L. Wang, M. Yu, University of Maryland, Baltimore County, Baltimore, MD			

Tuesday, 10 January 2017						
185-FD-24	**High-Order Methods II**					**Texas 2**
Chaired by: K. FIDKOWSKI, University of Michigan and G. MAY, RWTH Aachen						
1400 hrs AIAA-2017-0738 **Third-Order Inviscid and Second-Order Hyperbolic Navier-Stokes Solvers for Three-Dimensional Unsteady Inviscid and Viscous Flows** Y. Liu, H. Nishikawa, National Institute of Aerospace, Hampton, VA	1430 hrs AIAA-2017-0739 **High-order implicit discontinuous Galerkin scheme for unsteady turbulent flows** H. Asada, S. Kawai, Tohoku University, Sendai, Japan	1500 hrs AIAA-2017-0740 **A Study of Efficiency of Implicit High-Order Spectral Difference Method Implementations** E. Jourdan, F. Moreira, C. Breviglieri, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; J. Azevedo, Aeronautics and Space Institute (IAE), São José dos Campos, Brazil; Z. Wang, University of Kansas, Lawrence, Lawrence, KS	1530 hrs AIAA-2017-0741 **A Hybrid Adjoint/Error Transport Approach to Error Estimation, Adaptation, and Higher-Order Solutions for Computational Fluid Dynamics** W. Tyson, C. Roy, Virginia Polytechnic Institute and State University, Blacksburg, VA	1600 hrs AIAA-2017-0742 **Efficient and affordable high order, high fidelity Large Eddy Simulations for industrial level applications** Y. Lu, A. Demargne, Cambridge Flow Solutions, Ltd., Cambridge, United Kingdom; K. Liu, BoXeR Solutions KK, Kobe, Japan; W. Dawes, Cambridge University, Cambridge, United Kingdom		

Tuesday, 10 January 2017						
186-FD-25	**High-Speed Flows II**					**Texas 3**
Chaired by: S. LAURENCE, University of Maryland, College Park and E. MARINEAU, AEDC/TSTT USAF White Oak						
1400 hrs AIAA-2017-0743 **Transient Startup Simulations for a Large Mach 6 Quiet Ludwieg Tube** J. Jewell, Air Force Research Laboratory, Wright-Patterson AFB, OH; C. Huffman, T. Juliano, University of Notre Dame, Notre Dame, IN	1430 hrs AIAA-2017-0744 **Moving Grid Methods in High Enthalpy Shock Simulations for Electric Arc Shock Tube (EAST) Experiments at NASA Ames** D. Chandel, G. Candler, University of Minnesota, Minneapolis, Minneapolis, MN	1500 hrs AIAA-2017-0745 **Thermo-Acoustic Effects in High-Speed Compressible Transitional and Turbulent Boundary Layers** K. Ritos, I. Kokkinakis, D. Drikakis, University of Strathclyde, Glasgow, United Kingdom; S. Spottswood, Air Force Research Laboratory, Wright Patterson AFB, OH	1530 hrs AIAA-2017-0746 **Numerical Simulation of Supersonic Flow over Segmental-Conical Bodies** N. Palchekovskaya, I. Egorov, TsAGI, Zhukovsky, Russia			

Tuesday, 10 January 2017						
187-FD-26	**RANS/LES Modeling of Jet Flows**					**Texas 4**
Chaired by: B. SMITH, Lockheed Martin Aeronautics and M. MANKBADI, NASA Glenn Research Center						
1400 hrs AIAA-2017-0747 **OpenFOAM based numerical simulation study of an underexpanded supersonic jet.** B. Zang, V. U S, T. New, Nanyang Technological University, Singapore, Singapore	1430 hrs AIAA-2017-0748 **Adaptive Detached Eddy Simulation of Jet in Cross Flow** Z. Yin, P. Durbin, Iowa State University, Ames, IA	1500 hrs AIAA-2017-0749 **Modeling Open Jet Airfoil Interaction Using RANS and Hybrid LES-RANS** A. Sheikh-AlShabab, P. Tucker, University of Cambridge, Cambridge, United Kingdom	1530 hrs AIAA-2017-0750 **Numerical Investigation of Airfoil Placement and Modification in Open Jet Experiments** A. Sheikh-AlShabab, P. Tucker, University of Cambridge, Cambridge, United Kingdom	1600 hrs AIAA-2017-0751 **Simulations of impinging jets with a range of configuration** D. Singh, J. Doom, South Dakota State University, Brookings, SD		

Tuesday, 10 January 2017						
188-FD-27	**Novel CFD Methods**					**Texas 5**
Chaired by: Z. WANG, University of Kansas and G. JACOBS, San Diego State Univ						
1400 hrs AIAA-2017-0752 **A Fast Panel Code for Complex Actuator Disk Flows** S. Gamme, G. de Oliveira, D. Ragni, Delft University of Technology, Delft, The Netherlands; F. Lau, Technical University of Lisbon, Lisbon, Portugal	1430 hrs AIAA-2017-0753 **Explicit Large Time Stepping with A Second-Order Exponential Time Integrator Scheme for Unsteady and Steady Flows** 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	1500 hrs AIAA-2017-0754 **Line Box Relaxation Method and Multigrid Acceleration for Simulation of 2-D Jet Flow in a Channel** J. Tang, Y. Yang, C. Liu, University of Texas, Arlington, Arlington, TX	1530 hrs AIAA-2017-0755 **Development of Machine Learning Models for Turbulent Wall Pressure Fluctuations** J. Ling, Sandia National Laboratories, Livermore, CA; M. Barone, W. Davis, Sandia National Laboratories, Albuquerque, NM; K. Chowdhary, Sandia National Laboratories, Livermore, CA; J. Fike, Sandia National Laboratories, Albuquerque, NM	1600 hrs AIAA-2017-0756 **A convergent and accuracy preserving limiter for the FR/CPR method** Y. Li, Z. Wang, University of Kansas, Lawrence, Lawrence, KS		

Tuesday, 10 January 2017						
189-FD-28	**Shock Boundary Layer Interactions I**					**Texas 1**
Chaired by: J. LITTLE, The University of Arizona and J. POGGIE, Purdue University- Sch of Aero and Astro						
1400 hrs AIAA-2017-0757 **Role of Boundary-Layer on Unsteadiness on a Mach 2 Swept-Ramp Shock/Boundary-Layer Interaction Using 50 kHz PIV** L. Vanstone, M. Saleem, S. Seckin, N. Clemens, University of Texas, Austin, Austin, TX	1430 hrs AIAA-2017-0758 **Effect of Test Article Geometry on Shock Wave-Boundary Layer Interactions in Rectangular Intakes** I. Grossman, P. Bruce, Imperial College London, London, United Kingdom	1500 hrs AIAA-2017-0759 **Three-Dimensional Flow Features of Swept Impinging Oblique Shock/Boundary-Layer Interactions** J. Threadgill, I. Stab, A. Doehrmann, J. Little, University of Arizona, Tucson, Tucson, AZ	1530 hrs AIAA-2017-0760 **Experimental Investigation of a Cylinder-Induced Transitional Shock Wave-Boundary Layer Interaction** E. Lash, C. Combs, P. Kreth, J. Schmisseur, University of Tennessee, Tullahoma, Tullahoma, TN	1600 hrs AIAA-2017-0762 **Gortler-like vortices in the LES Data of a Mach 7 STBLI** C. Helm, M. Martin, University of Maryland, College Park, College Park, MD		

Tuesday, 10 January 2017						
190-FD-29	**Stability and Transition over Cones**					**Texas 6**
Chaired by: M. TUFTS, AFRL/RQHF and M. BORG, Air Force Research Laboratory						
1400 hrs AIAA-2017-0763 **Nonlinear Saturation versus Nonlinear Detuning: Quantification on a Mach 6 Flared Cone** J. Kuehl, Baylor University, Waco, TX	1430 hrs AIAA-2017-0764 **Analysis of Windward Side Hypersonic Boundary Layer Transition on Blunted Cones at Angle of Attack** M. Tufts, R. Kimmel, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2017-0765 **Fundamental Resonance Breakdown for a Flared Cone at Mach 6** C. Hader, H. Fasel, University of Arizona, Tucson, Tucson, AZ	1530 hrs AIAA-2017-0766 **Sharp Cone Boundary-Layer Transition and Stability at Mach 14** E. Marineau, G. Morraru, Arnold Engineering Development Complex, Silver Spring, MD; D. Daniel, Arnold Engineering Development Complex, Arnold AFB, TN	1600 hrs AIAA-2017-0767 **Preliminary Study of the Effect of Environmental Disturbances on Hypersonic Crossflow Instability on the HIFiRE-5 Elliptic Cone** I. Neel, A. Leidy, R. Bowersox, Texas A&M University, College Station, TX	1630 hrs AIAA-2017-0768 **PSE and Spatial Biglobal Instability Analysis of Reduced Scale and Flight HIFiRE-5 Geometry** T. Kocian, A. Moyes, D. Mullen, H. Reed, Texas A&M University, College Station, TX	

Tuesday, 10 January 2017						
191-FD-30	**Experimental Aerodynamics**					**Grapevine C**
Chaired by: A. AHMED, Auburn University and M. OL, US Air Force Reseach Laboratory						
1400 hrs AIAA-2017-0769 **Effect of Velocity Ratio on the Flow Field of a Spatially Oscillating Jet in Crossflow** F. Ostermann, R. Woszidlo, C. Nayeri, C. Paschereit, Technical University of Berlin, Berlin, Germany	1430 hrs AIAA-2017-0770 **Effects of Roughness on the Performance of Fluidic Oscillators** M. Hossain, R. Prenter, L. Agricola, R. Lundgreen, A. Ameri, J. Gregory, Ohio State University, Columbus, OH; et al.	1500 hrs AIAA-2017-0771 **Experimental Study of NACA Symmetric and Camber Airfoils at Low Reynolds Numbers** E. Garcia, V. Durgesh, H. Johari, California State University, Northridge, CA	1530 hrs AIAA-2017-0772 **Aerodynamic Characteristics of Lifting Body HYFLEX under High-Temperature Real-Gas Conditio** H. Tanno, T. Komuro, K. Sato, K. Itoh, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan; S. Shimazaki, M. Matsumoto, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan; et al.			

Tuesday, 10 January 2017						
192-GT-5	**Design, Calibration and Performance of Ground Test Facilities**					**Ft. Worth 6**
Chaired by: T. WAYMAN, Gulfstream Aerospace Corporation and K. BUTLER, AEDC - Arnold Engineering Development Complex						
1400 hrs AIAA-2017-0773 **Assessing Wall Interference Effects on a Medium-Sized Rotor in the National Full-Scale Aerodynamics Complex** P. Goulding, C. Nykamp, B. Bartow, National Full-Scale Aerodynamics Complex, Moffett Field, CA	1430 hrs AIAA-2017-0774 **Balance Evaluation and Installation-Checks using Dead Weight Roll- and Pitch-Polars.** A. Burger, P. Bidgood, Council for Scientific and Industrial Research, Pretoria, South Africa	1500 hrs AIAA-2017-0775 **Development of a Model Double-Roll Mounting System for a Large Transonic Wind Tunnel** D. Belter, A. Krynytzky, D. Holler, R. Parrish, M. Fleming, K. Hanke, The Boeing Company, Tukwila, WA; *et al.*	1530 hrs Oral Presentation **Photogrammetric Measurement Methods for the Static-aeroelasticity Deformation of a Flying Wing** A. Shi, L. Jiang, B. Wan, Northwestern Polytechnical University, Xi'an, China	1600 hrs AIAA-2017-0776 **Developing a Semi-Span Wall Interference Correction Capability in the National Full-Scale Aerodynamics Complex 40- by 80-foot Wind Tunnel** P. Goulding, A. Tupis, National Full-Scale Aerodynamics Complex, Moffett Field, CA		

Tuesday, 10 January 2017						
193-GTE-4	**Combustion Technologies, Emissions I**					**San Antonio 4**
Chaired by: S. DRENNAN, Convergent Science, Inc.						
1400 hrs AIAA-2017-0777 **Development and Testing of a Variable Geometry Diffuser 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-2017-0778 **Experimental investigation of the Effect of Air Diffusive injection on premixing swirl flames** N. Syred, F. Hatem, A. Valera-Medina, P. Bowen, Cardiff University, Cardiff, United Kingdom	1500 hrs AIAA-2017-0779 **Combustion dynamic characteristics identification in a 9-point LDI combustor under choked outlet boundary conditions** Z. He, C. Chang, NASA Glenn Research Center, Cleveland, OH				

Tuesday, 10 January 2017						
194-GTE-5	**Numerical Tools I**					**Grapevine 3**
Chaired by: E. KHALIL, Cairo University						
1400 hrs AIAA-2017-0780 **Modeling Thermoacoustic Rumble and Screech in Bluff-body-stabilized Combustors** E. Gonzalez, Combustion Science & Engineering, Inc., Columbia, MD	1430 hrs AIAA-2017-0781 **Effects of Liner Cooling Momentum on Combustor Performance** A. Briones, S. Stouffer, University of Dayton, Dayton, OH; K. Vogiatzis, Engility Corporation, Chantilly, VA; B. Rankin, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2017-0782 **A Critical Examination of a Correlation-Based Transition Model for Low Pressure Turbines** D. Lefas, J. Cui, P. Tucker, University of Cambridge, Cambridge, United Kingdom	1530 hrs AIAA-2017-0783 **Stall Flutter Simulation of a Transonic Axial Compressor Stage Using a Fully Coupled Fluid-Structure Interaction** J. Gan, University of Miami, Coral Gables, FL; H. Im, Honeywell International, Inc., Torrance, CA; G. Zha, University of Miami, Coral Gables, FL			

Tuesday, 10 January 2017						
195-HSABP-4/PGC-3	**Pressure Gain Combustion - Rotating Detonation Engines I**					**Ft. Worth 3**
Chaired by: D. FERGUSON, National Energy Technology Laboratory and V. TANGIRALA, General Electric						
1400 hrs AIAA-2017-0784 **Recent Developments in the Research on Rotating-Detonation-Wave Engines** K. Kailasanath, Naval Research Laboratory, Washington, D.C.	1430 hrs AIAA-2017-0785 **Development of a Lab-Scale Experimental Testing Platform for Rotating Detonation Engine Inlets** C. Bedick, National Energy Technology Laboratory, Morgantown, WV; A. Sisler, West Virginia University, Morgantown, WV; D. Ferguson, P. Strakey, National Energy Technology Laboratory, Morgantown, WV	1500 hrs AIAA-2017-0786 **Further Experimentation of a Premixed Rotating Detonation Engine** I. Andrus, Air Force Research Laboratory, Wright-Patterson AFB, OH; 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., Centerville, OH	1530 hrs AIAA-2017-0787 **Effectiveness of Detonation Engines for Power Production** R. Bello, F. Lu, University of Texas, Arlington, Arlington, TX	1600 hrs AIAA-2017-0788 **Experimental Characterization of Centerbodiless RDE Emissions** W. Stoddard, V. Anand, R. Driscoll, B. Dolan, A. St. George, R. Villalva Gomez, University of Cincinnati, Cincinnati, OH; *et al.*		

Tuesday, 10 January 2017						
196-IS-3	**Learning, Reasoning, and Data Driven Systems**					**Ft. Worth 1**
Chaired by: A. YUCEL, Lockheed Martin Aeronautics						
1400 hrs AIAA-2017-0789 **Utilizing Energy Metrics and Clustering Techniques to Identify Anomalous General Aviation Operations** T. Puranik, H. Jimenez, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1430 hrs AIAA-2017-0790 **Density Estimation of Moving Targets on a Road Network** Y. Cao, University of Texas, San Antonio, San Antonio, TX; D. Casbeer, Air Force Research Laboratory, Wright-Patterson AFB, OH; N. Ahmed, University of Colorado, Boulder, Boulder, CO; D. Kingston, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2017-0791 **Hierarchically Structured Controllers for Safe UAV Reinforcement Learning Applications** T. Mannucci, E. Van Kampen, C. de Visser, Q. Chu, Delft University of Technology, Delft, The Netherlands	1530 hrs AIAA-2017-0792 **Helicopter Engine State Estimation via Cockpit Audio Analysis** A. Vaidya, S. Shin, I. Hwang, Purdue University, West Lafayette, IN	1600 hrs AIAA-2017-0793 **Kernel Function Evaluation For Gaussian Process Wind Regression** E. Frew, A. Mills, S. Sheahan, University of Colorado, Boulder, Boulder, CO	1630 hrs AIAA-2017-0794 **Extracting and Applying Knowledge with Adaptive Knowledge-Driven Optimization to Architect an Earth Observing Satellite System** N. Hitomi, H. Bang, D. Selva, Cornell University, Ithaca, NY	

Tuesday, 10 January 2017						
197-MAT-5	**Nanostructured Materials**					**Palomino 2**
Chaired by: B. WARDLE, Massachusettes Institute of Technology and S. ROY, The University of Alabama						
1400 hrs AIAA-2017-0795 **Numerical and Experimental Investigation of the Piezoresistive Behavior of Hybrid Carbon Nanotube Sheet - Graphene Nanocomposites** A. Gbaguidi, S. Namilae, D. Kim, Embry-Riddle Aeronautical University, Daytona Beach, FL	1430 hrs AIAA-2017-0796 **Effect of Templating Graphitization on Electrical Conductivity of Electrospun Carbon nanofiber** J. Cai, M. Naraghi, Texas A&M University, College station, TX	1500 hrs AIAA-2017-0797 **Finite element modeling of nanoindentation for FG nanomaterials accounting for surface effects using user subroutine** H. Abdelmoula, M. Shaat, A. Abdelkefi, New Mexico State University, Las Cruces, NM	1530 hrs AIAA-2017-0798 **Experimental and Simulation Studies on Magnetic Nanoparticle Assembly for Scalable Polymer Nanocomposite Fabrication** M. Spencer, D. Gao, N. Yamamoto, Pennsylvania State University, University Park, PA			

Tuesday, 10 January 2017						
198-MDO-6	**Aero-Structures Optimization**					**Mustang 1**
Chaired by: J. MARTINS, University of Michigan and B. STANFORD, NASA Langley Research Center						
1400 hrs AIAA-2017-0799 **Coupled Multiphysics Analysis for Design of Advanced Exhaust Systems** P. Urbanczyk, J. Alonso, Stanford University, Stanford, CA; N. Nigam, X. Qi, P. Chen, Intelligent Automation, Inc., Rockville, MD	1430 hrs AIAA-2017-0800 **Integrated Aircraft Parametric Structural & Outer Mold Line Geometry Modeling Software** N. Love, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA; D. Allison, Optimal Flight Sciences, LLC, Wright-Patterson AFB, OH	1500 hrs AIAA-2017-0801 **CFD-based Aeroelastic Adjoint Sensitivities for Flight Vehicle Weight Minimization Using Sizing and Shape Design Variables** Z. Zhang, ZONA Technology, Inc., Scottsdale, AZ; Q. Wang, Massachusetts Institute of Technology, Cambridge, MA; P. Chen, S. Yang, Z. Wang, ZONA Technology, Inc., Scottsdale, AZ	1530 hrs AIAA-2017-0802 **Toward Wing Aerostructural Optimization Using Simultaneous Analysis and Design Strategy** A. Elham, Delft University of Technology, Delft, The Netherlands; M. Van Tooren, University of South Carolina, Columbia, Columbia, SC			

Tuesday, 10 January 2017						
199-MST-3	**Modeling and Simulation of Air Traffic Management I**					**San Antonio 3**
Chaired by: J. SCHROEDER, Federal Aviation Administration and P. ZAAL, NASA Ames Research Center						
1400 hrs AIAA-2017-0803 **Evaluation of Airport Capacity Optimization Measures** C. Schinwald, Munich Aerospace e.V., Munich, Germany; K. Plötner, Bauhaus Luftfahrt e.V., Ottobrunn, Germany; M. Hornung, Technical University of Munich, Munich, Germany	1430 hrs AIAA-2017-0804 **a EUROCONTROL tower simulator to validate SESAR Routing, guidance and Airport safety nets concepts** M. Ellejmi, M. Bonnier, R. Lane, S. Dubuisson, EUROCONTROL, Brussels, Belgium	1500 hrs AIAA-2017-0805 **ATC Procedures Modeling for Capacity Estimation of Japanese Airspace** K. Kageyama, Electronic Navigation Research Institute, Tokyo, Japan	1530 hrs AIAA-2017-0806 **Human-in-the-Loop Simulation of Trajectory Based Operation Concept for Remotely Piloted Aircraft System Integration** J. Kang, S. Kang, H. Oh, K. Choi, H. Lee, Inha University, Incheon, South Korea; H. Jung, Korea Aerospace University, Goyang, South Korea; et al.			

Tuesday, 10 January 2017						
200-MST-4	**Modeling and Simulation of Uninhabited Aerial Vehicles II**					**San Antonio 2**
Chaired by: R. RUFF and D. KEATING, The Charles Stark Draper Laboratory, Inc.						
1400 hrs AIAA-2017-0807 **New Methodology for Longitudinal Flight Dynamics Modelling of the UAS-S4 Ehecatl towards its Aerodynamics Estimation Modelling** M. Kuitche, M. Segui, R. Botez, G. Ghazi, University of Québec, Montréal, Canada	1430 hrs AIAA-2017-0808 **Sensitivity of Unmanned Aerial Vehicle Model-Aided Navigation** S. D'Urso, J. Gross, West Virginia University, Morgantown, WV	1500 hrs AIAA-2017-0809 **Model-based Implementation of an Onboard STANAG 4586 Vehicle Specific Module for an Air Vehicle** M. Hochstrasser, C. Krause, V. Schneider, F. Holzapfel, Technical University of Munich, Munich, Germany	1530 hrs AIAA-2017-0810 **Integration and Evaluation of UAS Systems: Building a Virtual Engineering Facility** N. Cameron, C. Patchett, K. Vikhorev, K. Lai, L. Wong, D. Bowman, Virtual Engineering Centre, Warrington, United Kingdom	1600 hrs AIAA-2017-0811 **Dynamic Modeling and Hardware-In-Loop Simulation for a Tail-Sitter Unmanned Aerial Vehicle in Hovering Flight** J. Sun, B. Li, L. Shen, Hong Kong Polytechnic University, Hong Kong, Hong Kong; C. Chen, Da-Yeh University, Changhua, Taiwan; C. Wen, Hong Kong Polytechnic University, Hong Kong, Hong Kong		

Tuesday, 10 January 2017				
201-MVC-4	**Computational Environments and the NASA CFD Vision 2030 Goals**			**Grapevine D**
Chaired by: A. LOFTHOUSE, US Air Force Academy and E. DUQUE, Intelligent Light				
1400 hrs AIAA-2017-0812 **Trinity: DataManagement Scheme and Performance** D. Morton, Los Alamos National Laboratory, Los Alamos, NM	1430 hrs AIAA-2017-0813 **The HPCMP CREATE™-AV Kestrel Computational Environment and its Relation to NASA's CFD Vision 2030** D. McDaniel, T. Tuckey, S. Morton, CREATE AV Team, Eglin AFB, FL	1500 hrs AIAA-2017-0814 **A Web-Based Database Approach to CFD Post-Processing** G. Pullan, University of Cambridge, Cambridge, United Kingdom	1530 hrs Panel Panelists will discuss the goals of the NASA CFD Vision 2030 report as they pertain to Computational Environments. Computational Environments is the advancement in the interaction, automation, and computational speed/efficiency of and between pre-processing, computational simulation execution and monitoring, and post-processing as well as between computational simulations across multiple disciplines that increases fidelity and capability. In addition, the advancement in the management and comprehension of trends across multiple solutions, summary of results, discovery of relationships, and management of large volumes of data involved with optimization is included. Moderated by: Andrew Lofthouse, U.S. Air Force and Earl Duque, Intelligent Light Panelists: **David Morton** Los Alamos **David McDaniel** DoD HPCMP CREATE **Jack Harris** Engility **Ed Hoffman** Sandia	

Tuesday, 10 January 2017						
202-NDA-4	**Special Session: Non-Deterministic Approaches for Integrated Computational Materials Engineering**					**Mustang 2**
Chaired by: B. BICHON, Southwest Research Institute and A. CHAUDHURI, Massachusetts Institute of Technology						
1400 hrs AIAA-2017-0815 **Uncertainty Quantification of Microstructural Properties due to Experimental Variations** P. Acar, V. Sundararaghavan, University of Michigan, Ann Arbor, Ann Arbor, MI	1430 hrs AIAA-2017-0816 **Non-Intrusive Stochastic Modeling to Account for Microstructure Variability** S. Niezgoda, M. Yuan, N. Galbincea, Ohio State University, Columbus, OH; A. Salem, J. Shaffer, Materials Resources, LLC, Dayton, OH	1500 hrs AIAA-2017-0817 **Decomposed Multilevel Optimization of a Nano-Enhanced Sandwich Composite Plate under Epistemic Uncertainty** I. Dettwiller, M. Rais-Rohani, Mississippi State University, Mississippi State, MS	1530 hrs AIAA-2017-0818 **Evaluation of a Simple UQ Approach to Compensate for Sparse Stress-Strain Curve Data in Solid Mechanics Applications** V. Romero, J. Dampsey, B. Schroeder, J. Lewis, N. Breivik, G. Orient, Sandia National Laboratories, Albuquerque, NM; et al.	1600 hrs AIAA-2017-0819 **Influence of Textile architecture on Cure induced Stresses and post-cure Stiffness and Strength** R. D'Mello, M. Maiaru, A. Waas, University of Washington, Seattle, Seattle, WA	1630 hrs AIAA-2017-0820 **Micromechanical Finite Element Modeling of Fiber Epoxy Composites Containing Void Defects Part 1: Stiffness Analysis** R. Spoonire, J. Goodsell, Purdue University, West Lafayette, IN	

Tuesday, 10 January 2017						
203-PC-13	**Combustion Dynamics I**					**Dallas 7**
Chaired by: A. STEINBERG, University of Toronto and R. ERICKSON						
1400 hrs AIAA-2017-0821 **Investigation of Self-Excited Combustion Instabilities Generated by Reactions held by a 2D Flameholder fed with Non-Uniform Fuel Distributions** C. Brown, U. Mondragon, V. McDonell, Energy Research Consultants, Laguna Hills, CA; B. Emerson, T. Lieuwen, Georgia Institute of Technology, Atlanta, GA	1430 hrs AIAA-2017-0822 **Driving Mechanisms of Liquid-Propellant Rocket Longitudinal Combustion Instability** T. Nguyen, P. Popov, W. Sirignano, University of California, Irvine, Irvine, CA	1500 hrs AIAA-2017-0823 **Flame Quenching Dynamics of High Velocity Flames in Rectangular Cross-section Channels** A. Mahuthannan, D. Lacoste, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia; J. Damazo, E. Kwon, The Boeing Company, Seattle, WA; W. Roberts, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia	1530 hrs AIAA-2017-0824 **Analysis of intermittent thermoacoustic oscillations in an aeronautical gas turbine combustor** J. Cirtwill, S. Kheirkhah, P. Saini, University of Toronto, Ontario, Canada; K. Venkatesan, General Electric Company, Niskayuna, NY; A. Steinberg, University of Toronto, Ontario, Canada			

Tuesday, 10 January 2017						
204-PC-14	**Spray and Droplet Combustion**					**Grapevine 4**
Chaired by: J. GORE, Purdue University and T. NGUYEN, Aerojet Rocketdyne						
1400 hrs AIAA-2017-0825 **Exploration of Two-Phase Flow Structures in Aerated-Liquid Jets Using Beryllium Nozzles and X-Ray Fluorescence Techniques** K. Lin, Taitech, Inc., Beavercreek, OH; A. Kastengren, Argonne National Laboratory, Argonne, IL; C. Carter, J. Donbar, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2017-0826 **Hot Surface Ignition Temperatures of Hydrocarbon Fuels** V. Goyal, A. Benhidjeb-Carayon, Purdue University, West Lafayette, IN; R. Simmons, Georgia Institute of Technology, Atlanta, GA; S. Meyer, J. Gore, Purdue University, West Lafayette, IN	1500 hrs AIAA-2017-0827 **Liquid Fuel Injection Strategy to Reduce Sensitivity to Liquid Physical Properties** C. Brown, B. Hickey, V. McDonell, Energy Research Consultants, Laguna Hills, CA; E. Baldwin, D. Schmidt, University of Massachusetts, Amherst, Amherst, MA	1530 hrs AIAA-2017-0828 **Spray Measurements at Elevated Pressures and Temperatures Using Phase Doppler Anemometry** A. Bokhart, D. Shin, R. Gejji, P. Sojka, J. Gore, R. Lucht, Purdue University, West Lafayette, IN; et al.	1600 hrs AIAA-2017-0829 **Forced ignition of dispersions of liquid fuel in turbulent air flow** P. de Oliveira, E. Mastorakos, University of Cambridge, Cambridge, United Kingdom		

Tuesday, 10 January 2017						
205-PC-15	**Solid Rockets**					**San Antonio 6**
Chaired by: M. COIL, Orbital Technologies Corporation and A. GNANASKANDAN						
1400 hrs Oral Presentation **Invited Review: Nanoenergetics: Challenges and Future Directions** R. Yetter, Pennsylvania State University, University Park, PA	1430 hrs AIAA-2017-0830 **Temperature Sensitivity of AP/HTPB-Based Rocket Propellants Using a New High-Pressure Strand Burner** C. Dillier, A. Demko, J. Stahl, Texas A&M University, College Station, TX; D. Reid, Helicon Chemical Company, Orlando, FL; E. Petersen, Texas A&M University, College Station, TX	1500 hrs AIAA-2017-0831 **The effects of AP particle size and concentration on ap/htpb composite propellant burning rates** G. Morrow, E. Petersen, Texas A&M University, College Station, TX	1530 hrs AIAA-2017-0832 **Pulsed Microwave-Plasma Coupling to Composite Solid Propellants** S. Barkley, K. Zhu, T. Sippel, J. Michael, Iowa State University, Ames, IA	1600 hrs AIAA-2017-0833 **Study of the Combustion of Pure Bio-Derived Fuels and Bio-Derived Fuels with Additives in Hybrid Propellant Rocket Engine** V. Naoumov, N. Al Masoud, K. Sherman, M. Doolittle, M. Ziegler, D. Thorne, Central Connecticut State University, New Britain, CT		

Tuesday, 10 January 2017						
206-PC-16	**Combustion Chemistry**					**San Antonio 5**
Chaired by: W. SUN, Georgia Institute of Technology and Y. IKEDA, Imagineering, Inc.						
1400 hrs AIAA-2017-0834 **A Unified Reduction of Elementary Kinetic Mechanisms for n-Alkanes, Highly-Branched Alkanes and Cycloalkanes** J. Bellan, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; P. Kourdis, California Institute of Technology, Pasadena, CA	1430 hrs AIAA-2017-0835 **Automated Generation of Chemical Mechanisms for Predicting Extinction Strain Rates with Applications in Flame Stabilization and Combustion Instabilitie** A. Grinberg Dana, S. Gudiyella, W. Green, S. Shanbhogue, D. Michaels, N. Chakroun, Massachusetts Institute of Technology, Cambridge, MA; et al.	1500 hrs AIAA-2017-0836 **Using Global Pathway Selection Method to Understand Chemical Kinetics** X. Gao, W. Sun, Georgia Institute of Technology, Atlanta, GA	1530 hrs AIAA-2017-0837 **Consistent Syngas Chemical Mechanism from Collaborative Data Processing** N. Slavinskaya, J. Starcke, M. Abbasi, A. Mirzayeva, U. Riedel, German Aerospace Center (DLR), Stuttgart, Germany; M. Frenklach, University of California, Berkeley, Berkeley, CA; et al.	1600 hrs AIAA-2017-0838 **Kinetic Modeling of Cyclohexane Oxidation Including PAH Formation** M. Abbasi, N. Slavinskaya, U. Riedel, German Aerospace Center (DLR), Stuttgart, Germany	1630 hrs AIAA-2017-0839 **Theoretical Analysis of the Explosion Limits of Hydrogen-Oxygen System** A. Lidor, D. Weihs, E. Sher, Technion–Israel Institute of Technology, Haifa, Israel	

Tuesday, 10 January 2017						
207-PDL-4	**Diagnostics for Plasmas and Gases II**					**Ft. Worth 4**
Chaired by: K. XU, University of Alabama in Huntsville						
1400 hrs Oral Presentation **Thomson Scattering Techniques in High and Low Pressure Plasmas** C. Limbach, Texas A&M University, College Station, TX		1500 hrs AIAA-2017-0840 **Atomic Oxygen Measurements in a Low Pressure DC and Pulsed Discharge via Radar REMPI** J. Sawyer, Y. Wu, Z. Zhang, University of Tennessee, Knoxville, Knoxville, TN	1530 hrs AIAA-2017-0841 **Characterization of intermediate reactions following femtosecond laser excitation in argon-nitrogen mixtures** Y. Zhang, M. Shneider, R. Miles, Princeton University, Princeton, NJ			

Tuesday, 10 January 2017						
208-PDL-5	**Computational Methods**					**Ft. Worth 5**
Chaired by: D. LEVIN, University of Illinois and M. PANESI, University of Illinois at Urbana Champaign						
1400 hrs AIAA-2017-0842 **Development of Particle-In-Cell Solver for Numerical Simulation of Penning Discharge** A. Dikalyuk, All-Russia Research Institute of Automatics, Moscow, Russia; S. Surzhikov, Russian Academy of Sciences, Moscow, Russia	1430 hrs AIAA-2017-0843 **Fully Implict Magneto-hydrodynamics Simulations of Coaxial Plasma Accelerators** V. Subramaniam, L. Raja, University of Texas, Austin, Austin, TX	1500 hrs AIAA-2017-0844 **Effective Preconditioners for Maxwell's equations on Unstructured Grids for Coupled Plasma-EM Wave Modeling** P. Panneer Chelvam, L. Raja, University of Texas, Austin, Austin, TX	1530 hrs AIAA-2017-0845 **A High-Order Finite-Volume Method with Anisotropic AMR for Ideal MHD Flows** L. Freret, L. Ivan, University of Toronto, Toronto, Canada; H. De Sterck, Monash University, Melbourne, Australia; C. Groth, University of Toronto, Toronto, Canada	1600 hrs AIAA-2017-0846 **Adjoint-based sensitivity analysis of ignition in a turbulent reactive shear layer** J. Capecelatro, University of Michigan, Ann Arbor, Ann Arbor, MI; D. Bodony, J. Freund, University of Illinois, Urbana-Champaign, Urbana, IL		

Tuesday, 10 January 2017						
209-SATS-5	**Small Satellites - Fusion**					**Austin 6**
Chaired by: J. STRAUB, North Dakota University						
1400 hrs AIAA-2017-0847 **Lunar Brightness Temperature and Radiometer Design** S. Namdeo, K. Barad, SRM University, Chennai, India	1430 hrs AIAA-2017-0848 **Expantion and Measurement of Spiral Folded Membrane by Small Satellite** T. Miyashita, H. Yamakawa, Waseda University, Tokyo, Japan; M. Natori, Japan Aerospace Exploration Agency (JAXA), Kanagawa, Japan; N. Katsumata, Muroran Institute of Technology, Tokyo, Japan	1500 hrs AIAA-2017-0849 **Ground Demonstration on the Autonomous Docking of Two 3U CubeSats Using a Novel Permanent Magnet Docking Mechanism** J. Pei, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2017-0850 **Testing and Evaluating Deployment Profiles of the Canisterized Satellite Dispenser (CSD)** S. Tullino, E. Swenson, Air Force Institute of Technology, Wright-Patterson AFB, OH			

Tuesday, 10 January 2017						
210-SCS-3	**Quantitative Determination of the Behavior of Deployable Structures**					**Palomino 1**
Chaired by: R. PAPPA, NASA Langley Research Center and J. FOOTDALE, Load Path, LLC						
1400 hrs AIAA-2017-0851 **An Evaluation of Structural Analysis Methodologies for Space Deployable Structures** M. Mobrem, L. Peterson, V. Cormarkovic, F. Montazersadgh, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1430 hrs AIAA-2017-0852 **Structural Analysis Methodology for Space Deployable Structures using a High Performance Parallel Nonlinear Finite Element Solver** L. Peterson, M. Mobrem, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1500 hrs AIAA-2017-0853 **Large Area Membrane Apertures for Space Applications, Fabrication and Mechanical Testing** D. Beasley, Ball Aerospace & Technologies Corporation, Boulder, CO	1530 hrs AIAA-2017-0854 **Non-Axisymmetric Inflatable Pressure Structure (NAIPS) Full-Scale Pressure Test** T. Jones, W. Doggett, J. Warren, J. Watson, NASA Langley Research Center, Hampton, VA; K. Shariff, NASA Johnson Space Center, Houston, TX; A. Makino, NASA Ames Research Center, Moffett Field, CA; et al.	1600 hrs AIAA-2017-0855 **Inflatable Airlock: Seaming Techniques of Highly Loaded Fabrics** K. Shariff, NASA Johnson Space Center, Houston, TX		

Tuesday, 10 January 2017						
211-SD-10	**Computational Aero-, Servo-, Thermo- Elasticity**					**Appaloosa 2**
Chaired by: W. SCHNEIDER, Lockheed Martin Aeronautics and K. SPAK, Exponent						
1400 hrs AIAA-2017-0856 **New Flutter Analysis Technique for Time-Domain Computational Aeroelasticity** C. Pak, S. Lung, NASA Armstrong Flight Research Center, Edwards, CA	1430 hrs AIAA-2017-0857 **Optimal Actuation of Dielectric Membrane Wings using High-Fidelity Fluid-Structure Modelling** R. Sanchez, R. Palacios, Imperial College London, London, United Kingdom; T. Economon, J. Alonso, Stanford University, Stanford, CA; T. Albring, N. Gauger, Technical University of Kaiserslautern, Kaiserslautern, Germany	1500 hrs AIAA-2017-0858 **Identification and Analysis of Aeroelastic Systems Accounting for the Combined Effects of Aerodynamic and Structural Nonlinearities** M. Candon, R. Carrese, P. Marzocca, H. Ogawa, RMIT University, Melbourne, Australia; O. Levinski, Department of Defence, Melbourne, Australia; W. Silva, NASA Langley Research Center, Hampton, VA; et al.	1530 hrs AIAA-2017-0859 **Fundamental Understanding, Prediction, and Validation of Tiltrotor Dynamic Loads in Transition Flight Using RANS/FEA** W. Staruk, A. Datta, University of Maryland, College Park, College Park, MD	1600 hrs AIAA-2017-0860 **Probabilistic Study of Integrally Bladed Rotor Blends using Geometric Mistuning Models** J. Beck, J. Brown, B. Runyon, O. Scott-Emuakpor, Air Force Research Laboratory, Wright-Patterson AFB, OH	1630 hrs AIAA-2017-0861 **Update on UH-60A Rotor Performance and Loads Correlation at High Advance Ratios using RCAS** G. Bowen-Davies, Science and Technology Corporation, Mountain View, CA; H. Yeo, Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA	

Tuesday, 10 January 2017						
212-SD-11	**Structural Health Monitoring and Prognosis, Model Uncertainty**					**Appaloosa 3**
Chaired by: R. RUSOVICI, Florida Institute of Technology and T. BARTKOWICZ, Boeing Defense, Space & Security						
1400 hrs AIAA-2017-0862 **Longitudinal Crack Damage Detection in a Beam Structure Using Lamb Wave Based Finite Element Simulation** C. Park, Agency for Defense Development, Daejeon, South Korea; A. Palazotto, C. Hale, Air Force Institute of Technology, Wright-Patterson AFB, OH	1430 hrs AIAA-2017-0863 **The Development and use of a Digital Twin Model for Tire Touchdown Health Monitoring** A. Zakrajsek, 96 TG/OL-ACL Landing Gear Test Facility, Wright-Patterson AFB, OH; S. Mall, Air Force Institute of Technology, Wright-Patterson AFB, OH	1500 hrs AIAA-2017-0864 **Fighter Aircraft Buffet Load Prediction using Nonlinear System Idenitication Algorithms** T. Minshall, Imperial College London, London, United Kingdom; M. Candon, R. Carrese, P. Marzocca, RMIT University, Melbourne, Australia; O. Levinski, Department of Defence, Melbourne, Australia	1530 hrs AIAA-2017-0865 **Accurate Strain Gage Limits Through Geometry Mistuning Modeling** D. Gillaugh, Air Force Research Laboratory, Wright-Patterson AFB, OH; A. Kaszynski, Universal Technology Corporation, Dayton, OH; J. Brown, D. Johnston, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Slater, Wright State University, Wright-Patterson AFB, OH	1600 hrs AIAA-2017-0866 **Modal Modeling via Fiber Optic Strain Sensing for Applications in Structural Health Monitoring** B. Martins, J. Kosmatka, University of California, San Diego, La Jolla, CA	1630 hrs AIAA-2017-0867 **A Novel Computational Method Modeling Wave propagation using K-space method and Damage Detection using Adjoint Method** Q. Chang, Y. Liu, Arizona State University, Tempe, AZ	

Tuesday, 10 January 2017						
213-SD-12	**Special Session: Aeroelastic Prediction IV**					**Appaloosa 4**
Chaired by: F. NITZSCHE, Carleton University and M. RIGHI, Zurich University of Applied Sciences						
1400 hrs AIAA-2017-0868 **Finite Volume Based Fluid-Structure Interaction Solver** R. Koomullil, M. Selim, D. McDaniel, University of Alabama, Birmingham, Birmingham, AL	1430 hrs AIAA-2017-0869 **Motion Magnication For Quantifying Aeroelastic Modes From High-Speed Videos** Y. Bao, Vanderbilt University, Nashville, TN; P. Seshadri, University of Cambridge, Cambridge, United Kingdom; S. Mahadevan, Vanderbilt University, Nashville, TN	1500 hrs AIAA-2017-0870 **Development, Verification, and Validation of a Fluid-Structure Interaction Capability and Evaluation of Temporal Coupling Strategies** E. Blades, A. Cornish, ATA Engineering, Inc., Huntsville, AL	1530 hrs AIAA-2017-0871 **Modal Testing Method for Finite Element Validation in Small and Axial Asymmetric Rotors** G. Bin, University of Science and Technology, Xiangtan, China; G. Wang, University of Alabama, Huntsville, Huntsville, AL; H. Li, X. Li, University of Science and Technology, Xiangtan, China			

Tuesday, 10 January 2017						
214-SE-2	**Systems Engineering II**					**Dallas 6**
Chaired by: M. FRENCH, Rolls-Royce Corp and J. MATLIK, Rolls-Royce Corp						
1400 hrs AIAA-2017-0872 **A Collaborative Approach to Complex Systems Engineering using a Web-based Visual Analytics Framework** M. Diaz, D. Fullmer, S. Briceno, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1430 hrs AIAA-2017-0873 **Towards A Reasoning Framework for Digital Clones Using the Digital Thread** Z. Ben Miled, Indiana University-Purdue University Indianapolis, Indianapolis, IN; M. French, Rolls-Royce Group plc, Indianapolis, IN	1500 hrs AIAA-2017-0874 **Integrating ICME Practices into Design Systems and Structural Analysis** M. Sangid, Purdue University, West Lafayette, IN; J. Matlik, A. Keskin, Rolls-Royce Group plc, Indianapolis, IN; B. Thacker, B. Bichon, Southwest Research Institute, San Antonio, TX; D. Ball, Lockheed Martin Corporation, Fort Worth, TX; et al.	1530 hrs AIAA-2017-0875 **Digital Thread and Twin for Systems Engineering: Requirements to Design** J. Zweber, R. Kolonay, P. Kobryn, E. Tuegel, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2017-0876 **Digital Thread and Twin for Systems Engineering: Design to Retirement** E. Tuegel, P. Kobryn, J. Zweber, R. Kolonay, Air Force Research Laboratory, Wright-Patterson AFB, OH		

Tuesday, 10 January 2017						
215-SEN-2	**Fusion of Networked Sensor and Systems**					**Ft. Worth 2**
Chaired by: T. FREY, Lockheed Martin Aeronautics						
1400 hrs AIAA-2017-0877 **Image and Information Fusion Experiments with a Software-Defined Multi-Spectral Imaging System for Aviation and Marine Sensor Networks** S. Siewert, M. Vis, R. Claus, Embry-Riddle Aeronautical University, Prescott, AZ; R. Krishnamurthy, S. Singh, A. Singh, University of Colorado, Boulder, Boulder, CO; et al.	1430 hrs AIAA-2017-0878 **Implementation of a Distributed Flocking Algorithm with Obstacle Avoidance Capability for UAV Swarming** S. Iovino, A. Vetrella, G. Fasano, D. Accardo, University of Naples "Federico II", Naples, Italy; A. Savvaris, Cranfield University, Cranfield, United Kingdom	1500 hrs AIAA-2017-0879 **Autonomous Flight in GPS-Challenging Environments Exploiting Multi-UAV Cooperation and Vision-aided Navigation** A. Vetrella, R. Opromolla, G. Fasano, D. Accardo, M. Grassi, University of Naples "Federico II", Naples, Italy	1530 hrs AIAA-2017-0880 **A O(nm) Heuristic to the Hierarchical Maximum Concurrent Flow Problem** F. Vilas, E. Olinick, D. Matula, Southern Methodist University, Dallas, TX			

Tuesday, 10 January 2017						
216-SOF-4	**Software Challenges in Aerospace**					**Ft. Worth 7**
Chaired by: M. DAVIES, NASA-ARC-TI and J. MURPHY, NASA -Ames Research Center						
1400 hrs AIAA-2017-0881 **An ASTM Standard for Bounding Behavior of Adaptive Algorithms for Unmanned Aircraft Operations (Invited)** S. Cook, Northrop Grumman Corporation, Raleigh-Durham, NC	1430 hrs AIAA-2017-0882 **A Quantitative and Risk Based Framework for UAS Control System Assurance** 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-2017-0883 **Virtual Reality for Enhanced 3D Astronaut Situational Awareness During Robotic Operations in Space** V. Goecks, G. Chamitoff, S. Borissov, A. Probe, N. McHenry, N. Cluck, Texas A&M University, College Station, TX; et al.	1530 hrs AIAA-2017-0884 **Live Blackboxes: Requirements for Tracking and Verifying Aircraft in Motion** Y. Yu, M. Yang, B. Nuseibeh, Open University, Milton Keynes, United Kingdom			

Tuesday, 10 January 2017						
217-STR-6	**Buckling, Fatigue and Fracture of Structures I**					**Mustang 3**
Chaired by: L. HARDAWAY, Ball Aerospace & Technologies Corporation and L. FOSTER, Pratt & Whitney						
1400 hrs AIAA-2017-0885 **Large Deflections of Nonlinear Elastic and Viscoelastic Columns with Follower Loads: the Elastica and Viscoelastica Problems** H. Hilton, University of Illinois, Urbana-Champaign, Urbana, IL; D. de Albuquerque, Federal University of ABC, São Paulo, Brazil	1430 hrs AIAA-2017-0886 **Probabilistic Buckling Analysis of Sandwich Composite Cylindrical Shells based on Measured Imperfections** C. Bisagni, Delft University of Technology, Delft, The Netherlands; M. Alfano, Technical University of Milan, Milan, Italy	1500 hrs AIAA-2017-0887 **Some Observations On Damage Tolerance Analyses in Pressure Vessels** I. Raju, NASA Langley Research Center, Hampton, VA; D. Dawicke, Analytical Services & Materials, Inc., Hampton, VA; R. Hampton , Owl Analytics, Cupertino, CA	1530 hrs AIAA-2017-0888 **Mesoscale Simulation of Corrosion Fatigue by An Integrated Transgranular and Intergranular Crack Growth Method** H. Yuan, W. Zhang, J. Kim, University of Connecticut, Storrs, Storrs, CT; Y. Liu, Arizona State University, Tempe, AZ	1600 hrs AIAA-2017-0889 **Modeling and characterization of particulate nanocomposite micro-beams under axial compressive loads** M. Shaat, A. Abdelkefi, New Mexico State University, Las Cruces, NM	1630 hrs AIAA-2017-0890 **Fatigue Assessment of a Helicopter Rotor Blade Using Uniaxial and Multiaxial Fatigue Criteria** A. Isik, O. Celik, Turkish Aerospace Industries, Inc., Ankara, Turkey	

Tuesday, 10 January 2017						
218-STR-7	**Composite Laminate and Structures Optimization**					**Appaloosa 1**
Chaired by: P. AGGARWAL, NASA Marshall Space Flight Center and D. NORWOOD, Lockheed Martin Aeronautics						
1400 hrs AIAA-2017-0891 **Zig-Zag and Layerwise Models for Variable-Stiffness Composite Laminates Based on the Generalized Unified Formulation** L. Demasi, E. Santarpia, San Diego State University, San Diego, CA; R. Cavallaro, Charles III University of Madrid, Madrid, Spain; G. Biagini, F. Vannucci, San Diego State University, San Diego, CA	1430 hrs AIAA-2017-0892 **Optimal Design of a Composite Plate with Practical Design and Manufacturing Constraints** R. Taylor, D. Polaki, University of Texas, Arlington, Arlington, TX	1500 hrs AIAA-2017-0893 **Maximization of Ultimate Strength of Unidirectional Tapered Composite Structures Considering Different Failure Modes** O. Celik, Middle East Technical University, Ankara, Turkey; L. Parnas, TED University, Ankara, Turkey	1530 hrs AIAA-2017-0894 **A new framework for optimization of variable stiffness plates** D. Barazanchy, M. Van Tooren, University of South Carolina, Columbia, Columbia, SC; A. Elham, Delft University of Technology, Delft, The Netherlands	1600 hrs AIAA-2017-0895 **Stiffness Corrections for Overlaps and Gaps in Steered Composite Panel Optimization** D. Lucas, M. Van Tooren, University of South Carolina, Columbia, Columbia, SC; A. Elham, Delft University of Technology, Delft, The Netherlands		

Tuesday, 10 January 2017						
219-TP-7	**Thermal Protection Systems**					**Austin 2**
Chaired by: M. HOWARD, Sandia National Laboratories						
1400 hrs AIAA-2017-0896 **Validation of Ablation Model of PICA Using Fully Implicit Ablation and Thermal Response Program** J. Langston, C. Wong, N. Diaz, F. Stefani, M. Salita, J. Koo, University of Texas, Austin, Austin, TX	1430 hrs AIAA-2017-0897 **Radiative Transfer in a Low Density Ablative Material under Arcjet Flow Conditions** T. Horiuchi, T. Sakai, T. Suzuki, Nagoya University, Nagoya, Japan; Y. Ishida, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	1500 hrs AIAA-2017-0898 **Design Methodology for Flexible Thermal Protection System Insulation Configuration Selection** G. Rossman, R. Braun, Georgia Institute of Technology, Atlanta, GA	1530 hrs AIAA-2017-0899 **Ablation Sensor Unit for Flight Demonstration on HTV Small Recovery Capsule** K. Fujita, T. Suzuki, T. Ozawa, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan; T. Sakai, Tottori University, Tottori, Japan; Y. Danzuka, Nagoya University, Nagoya, Japan; Y. Ishida, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan; et al.	1600 hrs AIAA-2017-0900 **Computational Analysis of Electron Transpiration Cooling for Hypersonic Vehicles** K. Hanquist, I. Boyd, University of Michigan, Ann Arbor, Ann Arbor, MI		

Tuesday, 10 January 2017						
220-TP-8	**Heat Pipes/Other Thermophysics Topics**					**Austin 3**
Chaired by: E. SILK, NASA-Goddard Space Flight Center						
1400 hrs AIAA-2017-0901 **Heat transfer characteristics of Falling Film over Horizontal Tubes-A Numerical Study** A. Karmakar, S. Acharya, Illinois Institute of Technology, Chicago, IL	1430 hrs AIAA-2017-0902 **Experimental comparison of a traditionally built versus additively manufactured aircraft heat exchanger** D. Saltzman, M. Bichnevicius, S. Lynch, T. Simpson, T. Reutzel, C. Dickman, Pennsylvania State University, University Park, PA; et al.	1500 hrs AIAA-2017-0903 **Opto-Thermal Response Optimization in Laser Processing of Composites** T. Godar, University of Dayton, Dayton, OH; B. Volk, W. Kennedy , G. Ehlert, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2017-0904 **Development of Universal Two-Phase Heat Transfer Correlations for Cryogenic Transfer Line Chilldown** J. Hartwig, NASA Glenn Research Center, Cleveland, OH; S. Darr, J. Chung, University of Florida, Gainesville, Gainesville, FL	1600 hrs AIAA-2017-0905 **Estimates for Cryogenic Pump Transfer Functions** D. Jackson, J. Schwille, J. Gariffo, The Aerospace Corporation, Los Angeles, CA; Z. Spakovszky, Massachusetts Institute of Technology, Boston, MA; C. Lettieri, Delft University of Technology, Delft, The Netherlands; V. Wang, Massachusetts Institute of Technology, Boston, MA		

Tuesday, 10 January 2017						
221-UMS-6	**UAS Self-Separation and Collision Avoidance I**					**Grapevine 1**
Chaired by: G. LARSON, Retired and V. SCHULTZ, NASA Langley Research Center						
1400 hrs AIAA-2017-0906 **Radar-Assisted Three-Dimensional Operating Detect and Avoid System for Small Unmanned Aerial System** C. Ben, I. Martin, N. Voget, D. Moormann, RWTH Aachen University, Aachen, Germany	1430 hrs AIAA-2017-0907 **Experimental Evaluation of PICAS: An Electro-Optical Array for Non-Cooperative Collision Sensing on Unmanned Aircraft Systems** C. Minwalla, K. Ellis, National Research Council Canada, Ottawa, Canada	1500 hrs AIAA-2017-0908 **A Well Clear Recommendation for Small UAS in High-Density, ADS-B-Enabled Airspace** M. Duffield, T. McLain, Brigham Young University, Provo, UT	1530 hrs AIAA-2017-0909 **Flight Test Results of the Collision Avoidance System for a Fixed-Wing UAS using Stereoscopic Vision** S. Bhandari, A. Tan, J. Banuelos, K. Patel, M. Chae, J. Cratsley, California State Polytechnic University, Pomona, Pomona, CA; et al.			

Tuesday, 10 January 2017						
222-UMS-7	**UAS Safety and Certification/UAS Autonomy and Planning II**					**Grapevine 2**
Chaired by: Z. MIAN, United Technologies Research Center						
1400 hrs AIAA-2017-0910 **Risk Informed Safety Case Framework for Unmanned Aircraft System Flight Software Certification** S. Guarro, M. Yau, ASCA, Inc., Redondo Beach, CA; U. Ozguner, T. Aldemir, A. Kurt, M. Hejase, Ohio State University, Columbus, OH; et al.	1430 hrs AIAA-2017-0911 **Sensitivity Analysis for Energy-Aware Path Optimization** A. Mills, S. Sheahan, E. Frew, University of Colorado, Boulder, Boulder, CO	1500 hrs AIAA-2017-0912 **System-level Performance Analysis of a Closed-loop Sense and Avoid System for Unmanned Vehicles in the NAS** J. Jackson, J. Boskovic, D. Diel, Scientific Systems Company, Inc., Woburn, MA	1530 hrs AIAA-2017-0913 **Cooperative Estimation of Moving Target Position Using Unmanned Aerial Vehicles** K. Subbarao, P. Ru, University of Texas, Arlington, Arlington, TX	1600 hrs AIAA-2017-0914 **Characterization of Pilot Profiles Through Non-Parametric Classification of Flight Data** F. Garcia Lorca, S. Gururajan, S. Belt, Saint Louis University, St. Louis, MO		

Tuesday, 10 January 2017						
223-WE-3	Wind Turbine Airfoils and Aerodynamics Investigations					Austin 4
Chaired by: S. SCHRECK, NREL and J. NAUGHTON, University of Wyoming						
1400 hrs AIAA-2017-0915 **Summary of the Blind Test Campaign to predict the High Reynolds number performance of DU00-W-210 airfoil** O. Ceyhan, ECN, Petten, The Netherlands; O. Pires, X. Munduate, CENER, Pamplona, Spain; N. Sorensen, Technical University of Denmark, Roskilde, Denmark; A. Schaffarczyk, T. Reichstein, University of Kiel, Kiel, Germany; et al.	1430 hrs AIAA-2017-0916 **Characterization of the carborundum used in rough airfoil surface tests and modelling with CFD.** B. Mendez, A. Muñoz, O. Pires, X. Munduate, CENER, Sarriguren, Spain	1500 hrs AIAA-2017-0917 **Numerical and experimental study of the unsteady transitional boundary layer on a wind turbine airfoil** D. Zhang, D. Cadel, E. Paterson, K. Lowe, Virginia Polytechnic Institute and State University, Blacksburg, VA	1530 hrs AIAA-2017-0918 **An Experimental Study on Icing Physics for Wind Turbine Icing Mitigation** H. Guo, K. Zhang, R. Waldman, H. Hu, Iowa State University, Ames, IA	1600 hrs AIAA-2017-0919 **Turbulence Structure of the Swirling Axisymmetric Turbulent Wake** M. Holmes, E. DeMillard, J. Naughton, University of Wyoming, Laramie, Laramie, WY	1630 hrs AIAA-2017-0920 **Understanding Unsteady Flow Physics of Two Types of Vertical Axis Wind Turbines with a Fluid-Structure Interaction Approach** K. Liu, M. Yu, W. Zhu, University of Maryland, Baltimore County, Baltimore, MD	

Tuesday, 10 January 2017						
224-WE-4	Offshore Wind Energy Applications					Austin 5
Chaired by: F. RASMUSSEN						
1400 hrs AIAA-2017-0921 **Alternative Mooring Systems for a Very Large Offshore Wind Turbine Supported by a Semi-Submersible Floating Platform** J. Liu, L. Manuel, University of Texas, Austin, Austin, TX	1430 hrs AIAA-2017-0922 **Optimised direct-drive generators for the DTU 10MW Offshore Wind turbine** L. Sethuraman, M. Maness, K. Dykes, National Renewable Energy Laboratory, Golden, CO	1500 hrs AIAA-2017-0923 **Tip and Hub Vortex Interaction and Stability Analysis of a Floating Offshore Wind Turbine Rotor** S. Rodriguez, J. Jaworski, Lehigh University, Bethlehem, PA	1530 hrs AIAA-2017-0924 **Low Mass, Morphing Rotor for Extreme Scale Wind Turbines** C. Noyes, C. Qin, E. Loth, University of Virginia, Charlottesville, Charlottesville, VA			

Tuesday, 10 January 2017		
225-WKSP-2 1400 - 1600 hrs	Career Workshop II	Mustang 4

Tuesday, 10 January 2017		
226-NW-9 1530 - 1600 hrs	Tuesday Afternoon Networking Coffee Break	Longhorn Hall E&F

Tuesday, 10 January 2017		
227-NW-10 1600 - 1730 hrs	Rising Leaders Leadership Exchange and Speed Mentoring	Grapevine A

Tuesday, 10 January 2017		
228-LEC-4 1730 - 1830 hrs	Dryden Lecture in Research Maturation of Active Flow Control Concepts for Improved Aircraft Performance	Texas C
	Israel J. Wygnanski Professor, Aerospace Engineering University of Arizona	

Tuesday, 10 January 2017		
229-NW-11 1830 - 2000 hrs	Opening Reception in the Exposition Hall *Doors open at 6:15pm	Longhorn Hall E&F

Wednesday, 11 January 2017		
230-NW-12 0700 - 0730 hrs	Wednesday Early Morning Networking Coffee Break	Session Room Foyers

Wednesday, 11 January 2017		
231-SB-3 0730 - 0800 hrs	Wednesday Morning Speakers' Briefing	Session Rooms

Wednesday, 11 January 2017		
232-PLNRY-4 0800 - 0900 hrs	Wednesday Morning Plenary: Disruptive Policy Issues - Presidential Transitions	Texas A & B

Moderator: Ann Zulkosky, Director, NASA Programs, Washington Operations, Lockheed Martin Space Systems Company

Panelists:

Russell Chew
Senior Advisor
NEXA Capital Partners

Lt. Gen. Henry "Trey" Obering III
Executive Vice President
Booz Allen Hamilton

Dorothy Robyn
Independent Consultant/Writer
Former Commissioner, GSA, Public Buildings Service
Former Deputy Under Secretary of Defense (Installations and Environment)

Courtney Stadd
Washington Operations, Business Development
TIP Technologies

Wednesday, 11 January 2017		
233-NW-13 0900 - 0930 hrs	Wednesday Morning Networking Coffee Break	Longhorn Hall E&F

Wednesday, 11 January 2017						
234-AA-6	Computational Aeroacoustics II					Grapevine B
Chaired by: A. LYRINTZIS and S. ARUNAJATESAN, Sandia National Labs						
0930 hrs AIAA-2017-0925 **Direct numerical simulation of a temporally-developing subsonic round jet and its sound field** C. Bogey, École Centrale de Lyon, Lyon, France	1000 hrs AIAA-2017-0926 **Similarity Spectra Analysis in Highly Heated Supersonic Jets Using Large-Eddy Simulations** J. Liu, K. Kailasanath, Naval Research Laboratory, Washington, D.C.; E. Gutmark, University of Cincinnati, Cincinnati, OH	1030 hrs AIAA-2017-0927 **Lagrangian Coherent Structures & Their Role in Jet Noise Generation** D. Gonzalez, Naval Surface Warfare Center, Indian Head, MD; D. Gaitonde, Ohio State University, Columbus, OH; M. Lewis, Science and Technology Policy Institute, Washington, D.C.	1100 hrs AIAA-2017-0928 **Hybrid Pressure/Density-Based Overset Discontinuous Galerkin Method for Acoustics Prediction** R. Harris, CFD Research Corporation, Huntsville, AL	1130 hrs AIAA-2017-0929 **Towards Modeling Ultrasonic Thermoacoustics with Bulk Viscosity Effects** J. Lin, Stanford University, Stanford, CA; C. Scalo, Purdue University, West Lafayette, IN; L. Hesselink, Stanford University, Stanford, CA	1200 hrs AIAA-2017-0930 **Investigation of Airship Motion Sensitivity to Geometric Parameters** D. Han, X. Wang, Shanghai Jiao Tong University, Shanghai, China; L. Yan, University of Texas, Arlington, Arlington, TX; G. Yan, D. Duan, Shanghai Jiao Tong University, Shanghai, China	

Wednesday, 11 January 2017						
235-AA-7	Aeroacoustics - Advanced Measurement and Experiment					Grapevine 3
Chaired by: C. BROWN, NASA Glenn and E. NESBITT, Boeing Commercial Airplanes						
0930 hrs AIAA-2017-0931 **Testing and Characterization of Windscreen Design for UAS Mounted Airborne Acoustic Sensing** J. Banks, J. Kidd, Oklahoma State University, Stillwater, OK	1000 hrs AIAA-2017-0932 **Flow Measurements from a Supersonic Rectangular Nozzle Exhausting Over a Flat Surface** F. Baier, P. Mora , E. Gutmark, University of Cincinnati, Cincinnati, OH; K. Kailasanath, Naval Research Laboratory, Washington, D.C.	1030 hrs AIAA-2017-0933 **Acoustic Detection of Faults and Degradation in a High-Bypass Turbofan Engine During VIPR Phase III Testing** D. Boyle, NASA Armstrong Flight Research Center, Edwards, CA				

Wednesday, 11 January 2017						
236-AFM-5	**Flight Test and System Identification II**					**Grapevine 5**
Chaired by: J. SEYMOUR, Lockheed Martin and M. PHILLIPS, NASA						
0930 hrs AIAA-2017-0934 **Low Speed Airship Control using Reinforcement Learning and Expert Demonstrations** O. Daskiran, B. Huff, A. Dogan, University of Texas, Arlington, Arlington, TX	1000 hrs AIAA-2017-0935 **Flight Test Techniques for Quantifying Pitch Rate and Angle of Attack Rate Dependencies** J. Grauer, E. Morelli, D. Murri, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2017-0936 **A Comparison of Model-Based and Data-Driven Methods for Aerodynamic Parameter Estimation from Flight Data** A. Kumar, A. Ghosh, Indian Institute of Technology Kanpur, Kanpur, India	1100 hrs AIAA-2017-0937 **Cessna Citation X Stall Characteristics Identification from Flight Data using Neural Networks** G. Ghazi, M. Bosne, Q. Sammartano, R. Botez, University of Québec, Montréal, Canada	1130 hrs AIAA-2017-0938 **Data Reduction Methods for Dutch-Roll Analysis** J. Laguardia, D. Dutra, R. Pinto, Federal University of Minas Gerais, Belo Horizonte, Brazil	1200 hrs AIAA-2017-0939 **Post-flight Evaluation of the Guidance and Control for D-SEND#2 2nd Drop Test** J. Kawaguchi, H. Suzuki, T. Ninomiya, H. Tomita, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	

Wednesday, 11 January 2017						
237-AMT-9	**Deformation, Displacement, and Object-Tracking Measurements**					**Grapevine D**
Chaired by: H. HU, Iowa State University and T. IOPPOLO, Southern Methodist University						
0930 hrs AIAA-2017-0940 **Non-contact photonic displacement sensor based on the morphology dependent resonances** E. Rubino, T. Ioppolo, Southern Methodist University, Dallas, TX	1000 hrs AIAA-2017-0941 **Photogrammetry for Masking Particle Image Velocimetry Images Near Moving Bodies** P. Nikoueeyan, J. Naughton, University of Wyoming, Laramie, Laramie, WY	1030 hrs AIAA-2017-0942 **Quantification of Dynamic Droplet Impact onto a Solid Surface by using a Digital Image Projection Technique** H. Li, K. Zhang, R. Waldman, H. Hu, Iowa State University, Ames, IA	1100 hrs AIAA-2017-0943 **Surface State Measurement of a Free-Flight Object by Motion-Capturing Method** M. Ishii, National Research Institute of Police Science, Kashiwa, Japan; H. Isokawa, T. Miyazaki, University of Electro-Communications, Chofu, Japan; H. Sakaue, University of Notre Dame, Notre Dame, IN			

Wednesday, 11 January 2017						
238-APA-21	**Flow Control Applications and Demonstrations (Active and Passive) III**					**Dallas 1**
Chaired by: A. VANDERWYST, Leidos and B. MARPLES, Johns Hopkins University Applied Physics Laboratory						
0930 hrs AIAA-2017-0944 **Reduction of Drag on Commercial Trucks via Vehicle Modifications** E. Worthington, M. Tuke, K. Powers, S. Lee, Alfred University, Alfred, NY	1000 hrs AIAA-2017-0945 **Large-Eddy Simulation of MVG Controlled Oblique Shockwave/ Boundary Layer Interaction** G. Yang, J. Fang, Beihang University, Beijing, China; C. Liu, University of Texas, Arlington, Arlington, TX; Y. Yao, Beihang University, Beijing, China	1030 hrs AIAA-2017-0946 **Spectrum analysis of SWBLI under ramp-type MVG control** Y. Yang, S. Tian, X. Dong, C. Liu, University of Texas, Arlington, Arlington, TX	1100 hrs AIAA-2017-0947 **Frequency Response of Aerodynamic Load Control through Mini-tabs** D. Heathcote, D. Cleaver, I. Gursul, University of Bath, Bath, United Kingdom	1130 hrs AIAA-2017-0948 **Control of Low Speed Cavity Flow Using Streamwise Tabs at Leading Edge** A. Sathianarayanan, L. Venkatakrishnan, National Aerospace Laboratories, Bengaluru, India; S. Sharma, Indian Institute of Technology Mumbai, Mumbai, India		

Wednesday, 11 January 2017						
239-APA-22	**Unsteady Aerodynamics III**					**Dallas 2**
Chaired by: D. HUNSAKER, Utah State University and B. CYBYK, Johns Hopkins University Applied Physics Laboratory						
0930 hrs AIAA-2017-0949 **Numerical Study of Coherent Structures Around a Re-entry Capsule using Proper Orthogonal Decomposition** G. Morikami, Tokyo Metropolitan University, Hino, Japan; Y. Ohmichi, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; K. Ishiko, Asahikawa College, Asahikawa, Japan; M. Kanazaki, Tokyo Metropolitan University, Hino, Japan	1000 hrs AIAA-2017-0950 **Exact aerodynamic force decomposition and dynamic force derivatives in non linear flows** M. Ostieri, B. Mele, R. Tognaccini, University of Naples "Federico II", Naples, Italy	1030 hrs AIAA-2017-0951 **Unsteady Coupling Algorithm for Lifting-Line Methods** M. Parenteau, F. Plante, E. Laurendeau, École Polytechnique de Montréal, Montréal, Canada; M. Costes, ONERA, Meudon, France	1100 hrs AIAA-2017-0952 **Reduced order modeling of a dynamically pitching NACA 0018 Airfoil** F. Niel, National Center for Scientific Research (CNRS), Toulouse, France; C. Fagley, J. Seidel, T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO			

Wednesday, 11 January 2017						
240-APA-23/FD-31	**Vortical Flows & Wake Control**					**Dallas 3**
Chaired by: K. TAIRA, Florida State University and B. DETERT, Boeing Commercial Airplanes						
0930 hrs AIAA-2017-0953 **Parametric Investigation of Turbulent Mixing Layer Control using Ns-DBD Plasma Actuators** A. Singh, J. Little, University of Arizona, Tucson, Tucson, AZ	1000 hrs AIAA-2017-0954 **Afterbody Drag Reduction Using Active Flow Control** R. Jackson, Z. Wang, I. Gursul, University of Bath, Bath, United Kingdom	1030 hrs AIAA-2017-0955 **A Passive Method to Control the Wake Flow behind a Circular Cylinder** W. Chen, D. Li, H. Li, Harbin Institute of Technology, Harbin, China; H. Hu, Iowa State University, Ames, IA	1100 hrs AIAA-2017-0956 **Towards Simulating the Evolution of Aircraft Wake Vortices with OVERFLOW** D. Schauerhamer, S. Robinson, University of California, Davis, Davis, CA	1130 hrs AIAA-2017-0957 **Experimental Flight Test of Small UAS Wake Vortex Encounters** Z. Barbeau, J. Jacob, Oklahoma State University, Stillwater, OK	1200 hrs AIAA-2017-0958 **Transition and turbulence in a lid-driven cavity flow at high Mach number** S. Pradhan, Indian Institute of Science, Bengaluru, India	

Wednesday, 11 January 2017						
241-APA-24	**DPW-6 Results and Comparisons I**					**Dallas 4**
Chaired by: C. ROY, Virginia Tech and E. FELTROP, Textron Aviation						
0930 hrs AIAA-2017-0959 **TAS Code, FaSTAR and Cflow Results for the Sixth Drag Prediction Workshop** Y. Ito, M. Murayama, A. Hashimoto, T. Ishida, K. Yamamoto, T. Aoyama, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; et al.	1000 hrs AIAA-2017-0960 **Contributions to the 6th AIAA CFD Drag Prediction Workshop Using Structured Grid Methods** J. Coder, University of Tennessee, Knoxville, Knoxville, TN; T. Pulliam, NASA Ames Research Center, Moffett Field, CA; D. Hue, ONERA, Meudon, France; G. Kenway, University of Michigan, Ann Arbor, Ann Arbor, MI; A. Sclafani, The Boeing Company, Alta Loma, CA	1030 hrs AIAA-2017-0961 **Comparison of Fixed and Adaptive Unstructured Grid Results for Drag Prediction Workshop 6** T. Michal, D. Babcock, The Boeing Company, St. Louis, MO; D. Kamenetskiy, The Boeing Company, Seattle, WA; J. Krakos, M. Mani, The Boeing Company, St. Louis, MO; R. Glasby, University of Tennessee, Knoxville, Knoxville, TN; et al.	1100 hrs AIAA-2017-0962 **DPW-6 Results Using FUN3D With Focus on k-kL-MEAH2015 Turbulence Model** K. Abdol-Hamid, J. Carlson, C. Rumsey, E. Lee-Rausch, M. Park, NASA Langley Research Center, Hampton, VA	1130 hrs AIAA-2017-0963 **Exa PowerFLOW Simulations for the Sixth AIAA Drag Prediction Workshop** B. Konig, A. Ribeiro, E. Fares, Exa Corporation, Stuttgart, Germany	1200 hrs AIAA-2017-0964 **Experimental Investigations on the Common Research Model at ONERA-S1MA – Comparison with DPW Numerical Results** A. Cartieri, D. Hue, Q. Chanzy, O. Atinault, ONERA, Modane, France	

Wednesday, 11 January 2017						
242-APA-26	**Special Session: CREATE-AV HPC Multiphysics II**					**Dallas 5**
Chaired by: N. HARIHARAN, CREATE-AV and S. MORTON, DoD HPCMP						
0930 hrs AIAA-2017-0965 **CFD Analysis of the F/A-18E Super Hornet during Approach to a Generic Ship** B. Green, S. Polsky, Naval Air Systems Command, Patuxent River, MD	1000 hrs AIAA-2017-0966 **Feedback Flow Control on a FlutteringWing using HPCMP CREATE™-AV Kestrel** J. Seidel, C. Fagley, T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO	1030 hrs AIAA-2017-0967 **Simulation of C-130 H/J Troop Doors and Cargo Ramp Flow Fields** K. Bergeron, Army Research, Development and Engineering Command, Natick, MA; M. Ghoreyshi, A. Lofthouse, U.S. Air Force Academy, Colorado Springs, CO	1100 hrs AIAA-2017-0968 **Forced Motions Design for Aerodynamic Identification and Modeling of a Generic Missile Configuration** J. Allen, University of Colorado, Colorado Springs, Colorado Springs, CO; M. Ghoreyshi, A. Lofthouse, U.S. Air Force Academy, Colorado Springs, CO	1130 hrs AIAA-2017-0969 **CFD Analysis of a Maneuvering F/A-18E Super Hornet** B. Green, D. Findlay, Naval Air Systems Command, Patuxent River, MD	1200 hrs AIAA-2017-0970 **Results from HPCMP CREATE™-AV COFFE for 3-D Aircraft Configurations with Higher-Order Meshes Generated by Pointwise, Inc.** J. Erwin, R. Glasby, University of Tennessee, Knoxville, Knoxville, TN; S. Karman, Pointwise, Inc., Fort Worth, TX; D. Stefanski, University of Tennessee, Knoxville, Knoxville, TN	

Wednesday, 11 January 2017						
243-DE-3	**Design Processes and Tools**					**Palomino 3**
Chaired by: J. CUTSHALL, Southwest Research Institute and T. HARRIS, Northrop Grumman						
0930 hrs AIAA-2017-0971 **Whitespace Exploration: The Next Step in Searching the Design Space** A. Ko, J. Daniel, W. Keel, A. Baines, Phoenix Integration, Blacksburg, VA	1000 hrs AIAA-2017-0972 **Mining Multi-Objective Minimal Commitment Decision Significance via Cluster-and-Find-Changes** N. Knerr, D. Selva, Cornell University, Ithaca, NY	1030 hrs AIAA-2017-0973 **Multifidelity, Multiscale System Modeling and Simulation Environment** P. Menegay, D. Notestein, SynaptiCAD, Blacksburg, VA; S. Cornford, S. Wall, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1100 hrs AIAA-2017-0974 **Survey of Technology Forecasting Techniques for Complex Systems** A. Smith, K. Collins, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1130 hrs AIAA-2017-0975 **Uncertainty Propagation in Technology Valuation Process** F. Akram, National University of Sciences and Technology, Islamabad, Pakistan; D. Mavris, Georgia Institute of Technology, Atlanta, GA	1200 hrs AIAA-2017-0976 **Application of Design Thinking in a Rapid Design Study to Further Autonomy Experimental Research** A. McGowan, NASA Langley Research Center, Hampton, VA; C. Bakula, NASA Glenn Research Center, Cleveland, OH	

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244-EDU-1 0930 - 1230 hrs	Educating the Engineer of the 2030	Grapevine A

Technology is advancing tremendously and at a pace that is unparalleled in human history – changing the landscape of human endeavors including the aerospace sector. In aerospace, we see reduced barriers to entry in new and exciting arenas and greatly increased complexity and demands on affordability in the more traditional areas. How should higher education nurture and prepare today's and tomorrow's aerospace engineers to meet the challenges and opportunities that await for them in 2030 and 2050? This panel brings together leaders in aerospace education to tell us how they see the future of aerospace and how higher education must educate today's students to realize the incredible and still unwritten future that awaits for them to create and build.

Moderator: Tom Shih, Purdue University

Panelists:

Penina Axelrad University of Colorado	Rodney Bowersox Texas A&M University	George Lesieutre Pennsylvania State University	Mark Lewis University of Maryland	Tasos Lyrintzis Embry-Riddle Aeronautical University	Achille Messac Howard University	Vigor Yang Georgia Institute of Technology

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245-F360-5 0930 - 1130 hrs	Space Traffic Management	Texas C

Moderator: Moriba Jah, Director, Space Object Behavioral Sciences, University of Arizona

Panelists:

Travis Blake Senior Manager, Advanced Technology Center Lockheed Martin Space Systems Company	P.J. Blount Adjunct Professor Mississippi School of Law	Mike Gazarik Vice President, Engineering Ball Aerospace	Donald Greiman Vice President & General Manager Commercial Space Situational Awareness Schaffer Corporation	Lt. Gen. Susan Helms U.S. Air Force (ret.)	George Nield Associate Administrator Commercial Space Transportation FAA

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246-FD-32	RANS and LES Methods					Texas 3
Chaired by: Q. WANG, MIT and C. REED, Lockheed Martin Corporation						
0930 hrs AIAA-2017-0977 **Hybrid RANS/LES modelling with improved downstream anisotropic eddy viscosity model** W. Zhang, T. Shih, Purdue University, West Lafayette, IN	1000 hrs AIAA-2017-0978 **Anisotropic grid-adaptation in large eddy simulations of wall-bounded and free shear flows** S. Toosi, J. Larsson, University of Maryland, College Park, College Park, MD	1030 hrs AIAA-2017-0979 **A New DES Model Based on Wray-Agarwal Turbulence Model for Simulation of Wall Boundeed Flows** X. Han, T. Wray, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1100 hrs AIAA-2017-0980 **Integral formulation of under-resolved near-wall scales for coarse-grid LES** A. Marques, Q. Wang, Massachusetts Institute of Technology, Cambridge, MA	1130 hrs AIAA-2017-0981 **Modeling and analysis of large-eddy simulations of particle-laden turbulent boundary layer flows** M. Rahman, R. Samtaney, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia	1200 hrs AIAA-2017-0982 **Discontinuous Galerkin-Monte Carlo Solver for Large Eddy Simulation of Compressible Turbulent Flows** S. Sammak, A. Nouri, University of Pittsburgh, Pittsburgh, PA; M. Brazell, D. Mavriplis, University of Wyoming, Laramie, Laramie, WY; P. Givi, University of Pittsburgh, Pittsburgh, PA	

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247-FD-33	Shock Boundary Layer Interactions II					Texas 1
Chaired by: I. LEYVA, AFOSR and P. MARTIN, University of Maryland						
0930 hrs AIAA-2017-0983 **Experimental Study Exploring Unsteadiness Length Scales in a Reflected Shock - Boundary Layer Interaction** P. Rabey, P. Bruce, Imperial College London, London, United Kingdom	1000 hrs AIAA-2017-0984 **Corner Effects in Oblique Shock Wave/ Boundary Layer Interactions in Rectangular Channels** X. Xiang, H. Babinsky, University of Cambridge, Cambridge, United Kingdom	1030 hrs AIAA-2017-0985 **Single Camera 3D Measurement of a Shock Wave-Turbulent Boundary Layer Interaction** J. Bolton, B. Thurow, Auburn University, Auburn, AL; F. Alvi, N. Arora, Florida State University, Tallahassee, FL	1100 hrs AIAA-2017-0986 **Comparison of Unsteady Flow Similarities in Various Shock/ Boundary-Layer Interaction Configurations** J. Threadgill, University of Arizona, Tucson, Tucson, AZ; P. Bruce, Imperial College London, London, United Kingdom	1130 hrs AIAA-2017-0987 **Unsteadiness in Swept-Compression-Ramp Shock/Turbulent-Boundary-Layer Interactions** M. Adler, D. Gaitonde, Ohio State University, Columbus, OH	1200 hrs AIAA-2017-0988 **Frequency analysis of oblique shock wave boundary layer interaction** N. Chaganti, B. Brooker, S. Olcmen, University of Alabama, Tuscaloosa, Tuscaloosa, AL; P. Kolhe, Indian Institute of Technology Sangareddy, Sangareddy, India	

Wednesday, 11 January 2017						
248-FD-34	**Special Session: Low Reynold's Number Flows**					**Texas 2**
Chaired by: M. GREEN, Syracuse University and K. MULLENERS, EPFL						
0930 hrs AIAA-2017-0989 **Review of Vortex Identification Methods** B. Epps, Dartmouth College, Hanover, NH	1000 hrs Oral Presentation **Vortex formation and shedding characterized by Lagrangian techniques** M. Green, Syracuse University, Syracuse, NY	1030 hrs Oral Presentation **Surface Signatures for Leading Edge Vortex Shedding and Detachment from Unsteady Airfoils** A. Gopalarathnam, A. Saini, S. Narsipur, A. Suresh Babu, North Carolina State University, Raleigh, NC; K. Ramesh, University of Glasgow, Glasgow, United Kingdom	1100 hrs Oral Presentation **Tracking the footprints of dynamic stall vortices in the wing surface pressure** K. Mulleners, Swiss Federal Institute of Technology, Lausanne, Switzerland	1130 hrs Oral Presentation **Investigating Aerodynamic Flows at Low Angle of Attack Using a Hybrid Vortex Sheet/Point Vortex Model** D. Darakananda, J. Eldredge, University of California, Los Angeles, Los Angeles, CA; T. Colonius, California Institute of Technology, Pasadena, CA; D. Williams, Illinois Institute of Technology, Chicago, IL		

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249-FD-35	**Turbulence Modeling: RANS/LES**					**Texas 4**
Chaired by: D. MCDANIEL, DoD HPCMP/CREATE Kestrel Team, Eglin Air Force Base and K. DURAISAMY, University of Michigan, Ann Arbor						
0930 hrs AIAA-2017-0990 **One-Equation Turbulence Model Based on k/e** M. Rahman, V. Vuorinen, Aalto University, Helsinki, Finland; R. Agarwal, Washington University in St. Louis, St. Louis, MO; M. Larmi, T. Siikonen, Aalto University, Helsinki, Finland	1000 hrs AIAA-2017-0991 **Dominant Structures Identification of Three-Dimensional Turbulent Cavity Flow** T. Rokita, J. Greenberg, R. Arieli, Technion–Israel Institute of Technology, Haifa, Israel; Y. Levy, Israeli CFD Center, Caesarea, Israel	1030 hrs AIAA-2017-0992 **Dynamic Large Eddy Simulation: Analysis of Stability and Realizability** R. Mokhtarpoor, S. Heinz, M. Stoellinger, University of Wyoming, Laramie, Laramie, WY; P. Balakumar, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2017-0993 **Augmentation of Turbulence Models Using Field Inversion and Machine Learning** A. Singh, K. Duraisamy, Z. Zhang, University of Michigan, Ann Arbor, Ann Arbor, MI	1130 hrs AIAA-2017-0994 **LES and Hybrid RANS-LES of High Reynolds Number Separated Flows** R. Mokhtarpoor, S. Heinz, M. Stoellinger, University of Wyoming, Laramie, Laramie, WY		

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250-FD-36	**Unsteady Measurements**					**Texas 5**
Chaired by: O. STALNOV, Technical University of Berlin Germany and G. DIMITRIADIS, University of Liege						
0930 hrs AIAA-2017-0995 **Direct Force Measurements During Transient Flow about Pitching Flat Plates** H. Yu, Chung Cheng Institute of Technology, National Defense University, Taoyuan, Taiwan; L. Bernal, University of Michigan, Ann Arbor, Ann Arbor, MI	1000 hrs AIAA-2017-0996 **Unsteady Measurements for a Periodically Plunging Airfoil** N. Chiereghin, D. Cleaver, I. Gursul, University of Bath, Bath, United Kingdom	1030 hrs AIAA-2017-0997 **Experimental Investigation of Static Stall Hysteresis on an NACA 0012 Airfoil** G. Hristov, P. Ansell, University of Illinois, Urbana-Champaign, Urbana, IL	1100 hrs AIAA-2017-0998 **Oscillatory Plunging Motion Applied to an Airfoil Near Stall** M. Agate, 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	1130 hrs AIAA-2017-0999 **Unsteady Flow Physics of Airfoil Dynamic Stall** R. Gupta, P. Ansell, University of Illinois, Urbana-Champaign, Urbana, IL	1200 hrs AIAA-2017-1000 **Stable POD-Galerkin Reduced Order Models for unsteady turbulent incompressible flows** N. Akkari, R. Mercier, Safran Group, Magny-les-Hameaux, France; G. Lartigue, V. Moureau, CORIA, Rouen, France	

Wednesday, 11 January 2017						
251-FD-37	**LES**					**Texas 6**
Chaired by: D. GARMANN, Air Force Research Laboratory and C. BARNES, AFRL/RQVA						
0930 hrs AIAA-2017-1001 **Self-Sustained Pitch-Heave Oscillations and Gust Response of an Airfoil at Transitional Reynolds Numbers** C. Barnes, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2017-1002 **Investigation of the Unsteady Tip Vortex Structure on a NACA0012 Wing at Fixed Incidence** D. Garmann, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2017-1003 **Large-Eddy Simulation over a backward rounded ramp in presence of crossflow** A. Masi, J. Cui, P. Tucker, University of Cambridge, Cambridge, United Kingdom	1100 hrs AIAA-2017-1004 **Preliminary Numerical and Experimental Evaluation of Turbulent Mixing from Thin-Film Cooling** M. Borghi, P. Poinsatte, D. Thurman, NASA Glenn Research Center, Cleveland, OH; W. Engblom, Embry-Riddle Aeronautical University, Daytona Beach, FL	1130 hrs AIAA-2017-1005 **Large Eddy Simulation of Flow Interactions of a Finite-span Synthetic Jet on an Airfoil** S. Tran, E. McGlynn, O. Sahni, Rensselaer Polytechnic Institute, Troy, NY	1200 hrs AIAA-2017-1006 **LES of a surging airfoil with large streamwise oscillations** A. Kocher, R. Cummings, S. Tran, O. Sahni, Rensselaer Polytechnic Institute, Troy, NY	

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252-FD-38	**Other Topics in Fluid Dynamics I**					**Grapevine C**
Chaired by: M. MUNSON, U.S. Army Research Office and A. GROSS, New Mexico State University						
0930 hrs AIAA-2017-1007 **Linearized Fluid Film Forces for Squeeze Film Dampers Executing Small Amplitude Circular-Centered Orbits in Aero-Engines** S. Hamzelouia, K. Behdinan, University of Toronto, Toronto, Canada	1000 hrs AIAA-2017-1008 **Obtaining a Stable Galerkin ROM in Presence of Shock-Vortex Interaction** E. Rezaian, M. Wei, New Mexico State University, Las Cruces, NM	1030 hrs AIAA-2017-1009 **Numerical simulation of laser energy deposition near a wall** S. Ghosh, Indian Institute of Technology Madras, Chennai, India	1100 hrs AIAA-2017-1010 **Numerical Investigation of Radial Flow in Solar Chimney Power Plant Collector** M. Hasan, A. Gross, New Mexico State University, Las Cruces, NM	1130 hrs AIAA-2017-1011 **Natural Convection About an Idealized Standing Human With and Without Body Armor** D. Mott, A. Kercher, A. Corrigan, Naval Research Laboratory, Washington, D.C.	1200 hrs AIAA-2017-1012 **Demonstration of Leakage Flow Distribution of an Axial Fan inside the Tip Clearance Gap** A. Gamil, J. Teixeira , A. A., Cranfield University, Bedford, United Kingdom; H. Alhajeri, College of Technological Studies, Kuwait, Kuwait; F. Elasha, Coventry University, Coventry, United Kingdom	

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253-GNC-1	**Missile Intercept and Evasion Guidance**					**Austin 1**
Chaired by: A. RATNOO and B. BISWELL, Raytheon Missile Systems						
0930 hrs AIAA-2017-1013 **Visibility Augmentation of the Proportional Navigation Guidance** L. Tardioli, G. Franzini, L. Pollini, M. Innocenti, University of Pisa, Pisa, Italy	1000 hrs AIAA-2017-1014 **Near Optimal Evasion from Acceleration Estimating Pursuers** V. Shaferman, Technology University of Vienna, Vienna, Austria	1030 hrs AIAA-2017-1015 **A Cooperative Differential Game for Imposing a Relative Intercept Angle** V. Shaferman, Technical University of Vienna, Vienna, Austria; T. Shima, Technion–Israel Institute of Technology, Haifa, Israel	1100 hrs AIAA-2017-1016 **An Energy Based Objective for Solving an Optimal Missile Evasion Problem** R. Carr, R. Cobb, Air Force Institute of Technology, Wright-Patterson AFB, OH	1130 hrs AIAA-2017-1017 **Optimal Guidance for Active Aircraft Defense Against Homing Missiles** E. Garcia, Infoscitex Corporation, Wright-Patterson AFB, OH; D. Casbeer, M. Pachter, Air Force Institute of Technology, Wright-Patterson AFB, OH	1200 hrs AIAA-2017-1018 **Estimation Enhancement by Imposing a Relative Intercept Angle for Defending Missiles** R. Fonod, T. Shima, Technion–Israel Institute of Technology, Haifa, Israel	

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254-GNC-2	**Loss of Control and Protections**					**Austin 6**
Chaired by: A. CHAKRAVARTHY, Wichita State University and J. DONGMO						
0930 hrs AIAA-2017-1019 **Compact Trackers with Exponential Observers Using Hybrid Control Rates for Flight Vehicles Loss-Of-Control Autonomous Recovery** J. Dongmo, JetMech, Inc., Nottingham, MD	1000 hrs AIAA-2017-1020 **Performance Enhacement of Compact High Order Sliding Mode Controllers for Post LOC Autonomous Recovery Of Flight Vehicles Using Optimal Control Modification** J. Dongmo, JetMech, Inc., Nottingham, MD	1030 hrs AIAA-2017-1021 **Stall Recovery Guidance Using an Energy Based Algorithm** T. Lombaerts, S. Schuet, J. Kaneshige, K. Shish, V. Stepanyan, NASA Ames Research Center, Moffett Field, CA	1100 hrs AIAA-2017-1022 **Laplace-Based Predictive Estimation of Loss-of-Control Boundaries on a Transport Aircraft** K. Rajaram, M. Rafi, J. Steck, A. Chakravarthy, Wichita State University, Wichita, KS	1130 hrs AIAA-2017-1023 **Low Speed Protections for a Commercial Airliner : a Practical Approach** S. Oudin, Airbus, Toulouse, France	1200 hrs AIAA-2017-1024 **A Flight Envelope Protection Method Based on Potential Functions** D. Sun, X. Li, H. Jafarnejadsani, N. Hovakimyan, University of Illinois, Urbana-Champaign, Urbana, IL	

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255-GNC-3	**Aircraft GNC Control Applications**					**Grapevine 4**
Chaired by: J. HORN, The Pennsylvania State University						
0930 hrs AIAA-2017-1025 **Trajectory Shaping Autopilot-Guidance Design for Civil Autonomous Aerial Refueling** A. Tsukerman, M. Weiss, T. Shima, Technion--Israel Institute of Technology, Haifa, Israel; D. Löbl, F. Holzapfel, Technical University of Munich, Munich, Germany	1000 hrs AIAA-2017-1026 **Enhancing Manual Flight Precision and Reducing Pilot Workload Using a New Manual Control Augmentation System for Energy Angle** K. Schreiter, S. Müller, R. Luckner, D. Manzey, Technical University of Berlin, Berlin, Germany	1030 hrs AIAA-2017-1027 **Design of a Virtual Fighter Pilot and Simulation Environment for Unmanned Combat Aerial Vehicles** H. Shin, J. Lee, D. Shim, Korea Advanced Institute of Science and Technology, Daejeon, South Korea; D. You, Agency for Defense Development, Daejeon, South Korea	1100 hrs AIAA-2017-1028 **Aerial Vehicle Localization Using Generic Landmarks** M. DeAngelo, J. Horn, Pennsylvania State University, University Park, PA	1130 hrs AIAA-2017-1029 **PIL Simulation of Integrated Autopilot and Path Following Algorithms for MAVs Using Arduino Target** K. Ibrahim, Zewail City of Science and Technology, Cairo, Egypt; G. El-Bayoumi, A. Kassem, Cairo University, Cairo, Egypt		

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256-GNC-4	**Navigation Methods**					**Austin 2**
Chaired by: W. WHITACRE, Draper Laboratory and M. OPPENHEIMER, Air Force Research Laboratory						
0930 hrs AIAA-2017-1030 **Lost in Space and Time** V. Adams, M. Peck, Cornell University, Ithaca, NY	1000 hrs AIAA-2017-1031 **Inertial Navigation Employing Common Frame Error Representations** M. Whittaker, J. Crassidis, State University of New York, Amherst, NY	1030 hrs AIAA-2017-1032 **Wahba's Problem: A Combined Binary Search and Bisection Approach** K. Turkoglu, E. Wahl, San Jose State University, San Jose, CA	1100 hrs AIAA-2017-1033 **Utilization of INS Measurements into Fixed-Point Smoothing Approach to Mitigate the Disturbance Effect of Missile Initial Heading Errors on Missile Terminal Guidance Performance** G. Tanriverdi, M. Cavdaroglu, ASELSAN, Inc., Ankara, Turkey	1130 hrs AIAA-2017-1034 **Spacecraft Pose Estimation using Principal Component Analysis and a Monocular Camera** J. Shi, S. Ulrich, Carleton University, Ottawa, Canada; S. Ruel, Neptec, Ottawa, Canada	1200 hrs AIAA-2017-1035 **Robust Navigation of UAV using Inertial Sensors Aided by UWB and RTK GPS** K. Gryte, J. Hansen, T. Johansen, T. Fossen, Norwegian University of Science and Technology, Trondheim, Norway	

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257-GNC-5	**Spacecraft and Launch Controls**					**Grapevine 6**
Chaired by: K. BOLLINO, U.S. Air Force and J. REED, United Launch Alliance, LLC						
0930 hrs AIAA-2017-1036 **Non-linear Control Law Design For Satellite Fixed Ground Target tracking** H. Bel, A. Aly, A. Youssef, Y. Elhalwagy, Military Technical College, Cairo, Egypt	1000 hrs AIAA-2017-1037 **Super-Twisting Sliding Mode Three-Axis Attitude Control of Spacecraft Using Solar Radiation Pressure** K. Lee, Catholic Kwandong University, Gangwon, South Korea	1030 hrs AIAA-2017-1038 **Adaptive Nonlinear Control of Autonomous Spacecraft Rendezvous and Proximity Operations** L. Sun, W. Huo, Z. Jiao, Beihang University, Beijing, China	1100 hrs AIAA-2017-1039 **Evolving Systems Approach to the Attitude Control of a Space-Debris Removal Spacecraft** J. Habets, E. Mooij, Delft University of Technology, Delft, The Netherlands; S. Frost, NASA Ames Research Center, Moffett Field, CA	1130 hrs AIAA-2017-1906 **A New Multi-position Calibration Method for the Gyrowheel Using Multiple Objective Particle Swarm Optimization Algorithm** Y. Zhao, H. Zhao, X. Huo, Harbin Institute of Technology, Harbin, China		

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258-GNC-6	**Control of Micro Air Vehicles**					**Austin 4**
Chaired by: E. JOHNSON, Georgia Institute of Technology and Y. CAO, University of Texas, San Antonio						
0930 hrs AIAA-2017-1040 **A strategy for robust precision control of an endbody being towed by an orbiting UAV.** M. Merz, Norwegian University of Science and Technology, Trondheim, Norway	1000 hrs AIAA-2017-1041 **Nonlinear Controller Design for Transition Flight of a Fixed-Wing UAV with Input Constraints** Y. Kawakami, K. Uchiyama, Nihon University, Chiba, Japan	1030 hrs AIAA-2017-1042 **A Tangential Guidance Logic for Virtual Target Based Path Following** S. Thakar, A. Ratnoo, Indian Institute of Science, Bengaluru, India	1100 hrs AIAA-2017-1043 **A Daisy-Chain Control Design for a Multirotor UAV with Direct Force Capabilities** H. Mehmood, Delft University of Technology, Delft, The Netherlands; E. Johnson, Georgia Institute of Technology, Atlanta, GA	1130 hrs AIAA-2017-1044 **Integrated Guidance and Nonlinear Feedback Control of Underactuated Unmanned Aerial Vehicles in SE(3)** S. Viswanathan, A. Sanyal, Syracuse University, Syracuse, NY; M. Izadi, Texas A&M University, College Station, TX	1200 hrs AIAA-2017-1045 **Longitudinal Controller for Hand Launched MAV Based on Supertwisting Algorithm** S. Balajiwale, H. Arya, A. Joshi, Indian Institute of Technology Bombay, Mumbai, India	

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259-GNC-7	**Spacecraft Robotics**					**Austin 5**
Chaired by: S. LEE, Alfred University and H. LIU, University of Toronto						
0930 hrs AIAA-2017-1046 **Iterative Learning Control of Spacecraft Proximity Operations Based on Confidence Level** S. Ulrich, K. Hovell, Carleton University, Ottawa, Canada	1000 hrs AIAA-2017-1047 **Experimental Emulation of the Scaled Clohessy-Wiltshire Dynamics on a Flat Air-bearing Testbed** M. Ciarcia, South Dakota State University, Brookings, SD; R. Cristi, M. Romano, Naval Postgraduate School, Monterey, CA	1030 hrs AIAA-2017-1048 **Contact Dynamics and Control of a Space Manipulator Capturing a Rotating Object** S. Wu, F. Mou, Tsinghua University, Beijing, China; O. Ma, New Mexico State University, Las Cruces, NM	1100 hrs AIAA-2017-1049 **Experimental Validation for Tethered Capture of Spinning Space Debris** K. Hovell, S. Ulrich, Carleton University, Ottawa, Canada	1130 hrs AIAA-2017-1050 **Dynamics and Control of Polyhedral Surface Robots with Control Moment Gyroscopes** D. Elliott, M. Peck, Cornell University, Ithaca, NY		

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260-GT-6/AMT-10	**Test Technique and Data Analysis Improvements at the NASA Ames Unitary Plan Wind Tunnels I (Invited)**					**Ft. Worth 6**
Chaired by: J. ROSS, NASA Ames Research Center and K. JAMES						
0930 hrs Oral Presentation **The NASA Ames Unitary Plan Wind Tunnels - A Facility Overview** F. Kmak, NASA Ames Research Center, Moffett Field, CA	1000 hrs AIAA-2017-1051 **Recent Advancements in the Infrared Flow Visualization System for the NASA Ames Unitary Plan Wind Tunnels** T. Garbeff, NASA Ames Research Center, Moffett Field, CA; J. Baerny, Jacobs, Moffett Field, CA	1030 hrs AIAA-2017-1052 **Model Deformation and Optical Angle of Attack Measurement System in the NASA Unitary Plan Wind Tunnel** L. Kushner, AerospaceComputing, Inc., Mountain View, CA; E. Schairer, J. Heineck, J. Bell, NASA Ames Research Center, Moffett Field, CA	1100 hrs AIAA-2017-1053 **Stereo Photogrammetry Measurements of the Position and Attitude of a Nozzle-plume/Shock-wave Interaction Model in the NASA Ames 9- by 7- Ft Supersonic Wind Tunnel** E. Schairer, NASA Ames Research Center, Moffett Field, CA; L. Kushner, B. Drain, AerospaceComputing, Inc., Moffett Field, CA; J. Heineck, D. Durston, NASA Ames Research Center, Moffett Field, CA	1130 hrs AIAA-2017-1054 **Model Deformation Measurements of the Truss-Braced Wing Aircraft in the NASA Ames 11-By 11-Ft Transonic Wind Tunnel** B. Drain, L. Kushner, Aerospace Computing, Inc., Mountain View, CA; E. Schairer, J. Heineck, NASA Ames Research Center, Moffett Field, CA	1200 hrs AIAA-2017-1055 **Customer Guide to Pressure-Sensitive Paint Testing at NASA Ames Unitary Plan Wind Tunnels** N. Roozeboom, J. Baerny, NASA Ames Research Center, Moffett Field, CA	

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261-GTE-6	**Combustion Technologies, Emissions II**					**San Antonio 4**
Chaired by: S. JAMES, Honeywell Inc.						
0930 hrs AIAA-2017-1056 **Experimental Study on Lean Blowout of a High Temperature Rise Combustor** J. Suo, H. Yu, L. Zheng, Northwestern Polytechnical University, Xi'an, China	1000 hrs AIAA-2017-1057 **Effects of CO_2 additions on local flame front structure in turbulent premixed flames** D. Han, A. Satija, J. Kim, R. Lucht, J. Gore, Purdue University, West Lafayette, IN	1030 hrs AIAA-2017-1058 **Experimental study of the combustion of kerosene and binary surrogate in the model combustion chamber** S. Matveev, I. Chechet, R. Zubrilin, V. Abrashkin, S. Lukachev, S. Matveev, Samara University, Samara, Russia	1100 hrs AIAA-2017-1059 **Using LES Simulations to Predict Pilot Fuel Split Emissions Effects in an Industrial Gas Turbine Combustor with Automatic Meshing** S. Drennan, G. Kumar, Convergent Science, Inc., New Braunfels, TX	1130 hrs AIAA-2017-1060 **On the Colorless Distributed Combustion Regime** A. Khalil Hasan, A. Gupta, University of Maryland, College Park, College Park, MD		

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262-HSABP-5/PGC-4	**Pressure Gain Combustion - Rotating Detonation Engines II**					**Ft. Worth 3**
Chaired by: D. PAXSON, NASA Glenn Research Center and S. CLAFLIN, Aerojet Rocketdyne						
0930 hrs AIAA-2017-1061 **Pressure Feedback in the Diffuser of a Ram-RDE Propulsive Device** D. Schwer, Naval Research Laboratory, Washington, D.C.; T. Kaemming, Innovative Scientific Solutions, Inc., Dayton, OH; K. Kailasanath, Naval Research Laboratory, Washington, D.C.	1000 hrs AIAA-2017-1062 **Study on a Long-time Operation Towards Rotating Detonation Rocket Engine Flight Demonstration** K. Ishihara, J. Nishimura, K. Goto, S. Nakagami, K. Matsuoka, J. Kasahara, Nagoya University, Nagoya, Japan; et al.	1030 hrs AIAA-2017-1063 **Evaluation of the unsteadiness across nozzles downstream of rotating detonation combustors** J. Braun, J. Saavedra Garcia, G. Paniagua, Purdue University, West Lafayette, IN	1100 hrs AIAA-2017-1064 **Multi-beam Temperature Measurements in a Rotating Detonation Engine Using H_2O Absorption Spectroscopy** K. Rein, S. Roy, Spectral Energies, LLC, Dayton, OH; J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; A. Caswell, F. Schauer, J. Gord, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2017-1065 **Experimental Study of Rotating Detonation Combustor Performance under Preheat and Back Pressure Operation** A. Roy, D. Ferguson, T. Sidwell, B. O'Meara, P. Strakey, C. Bedick, National Energy Technology Laboratory, Morgantown, WV; et al.		

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263-IS-4	**Adaptive and Intelligent Control Systems**					**Ft. Worth 1**
Chaired by: M. BALAS, Embry-Riddle Aeronautical University						
0930 hrs AIAA-2017-1066 **Parametrized Experience Exchange in Expert – Fellow Swarm Robotic System, Controller Performance Context** S. Amin, K. Ibrahem, A. Al-Naggar, A. Nabil, A. El-Sadek, M. Abdel-Galil, Zewail City of Science and Technology, Giza, Egypt; et al.	1000 hrs AIAA-2017-1067 **Gaussian Process-based Visual Servoing Framework for an Aerial Parallel Manipulator** S. Cho, D. Shim, J. Kim, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1030 hrs AIAA-2017-1068 **Intelligent Controller Selection for Aggressive Quadrotor Manoeuvring** D. Molenkamp, E. Van Kampen, C. de Visser, Q. Chu, Delft University of Technology, Delft, The Netherlands	1100 hrs AIAA-2017-1069 **Human Demonstrations for Fast and Safe Exploration in Reinforcement Learning** G. Schonebaum, J. Junell, E. Van Kampen, Delft University of Technology, Delft, The Netherlands	1130 hrs AIAA-2017-1070 **Enhancement of Nonlinear Smooth Trackers Using Neural Network for Post LOC Autonomous Recovery of Flying Vehicles** J. Dongmo, JetMech, Inc., Nottingham, MD		

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264-MDO-7	**Aircraft Design Optimization II**					**Mustang 1**
Chaired by: T. TAKAHASHI, Arizona State University and G. KURUVILA, Boeing Research & Technology						
0930 hrs AIAA-2017-1071 **Optimal design of insect wing shape for hovering nano air vehicles** G. Throneberry, M. Hassanalian, A. Abdelkefi, New Mexico State University, Las Cruces, NM	1000 hrs AIAA-2017-1072 **Conceptual Design of a Blended-Wing-Body Tilt-Arm Hybrid Unmanned Aerial Vehicle** R. Abnous, C. Zeng, S. Chowdhury, University at Buffalo, Buffalo, NY; V. Maldonado , P. Mancuso, University of Texas, San Antonio, San Antonio, TX	1030 hrs AIAA-2017-1073 **Multidisciplinary Design Optimization of Air-based Battery Thermal Management System in Electric Vehicles** M. Li, J. Zhang, University of Texas, Dallas, Richardson, TX	1100 hrs AIAA-2017-1074 **High-Performance Aircraft Through Innovative Development Process and Methods** F. Daoud, Airbus, Manching, Germany			

Wednesday, 11 January 2017						
265-MST-5	**Aviation Simulation Scenario Development I**					**San Antonio 2**
Chaired by: U. DURAK, DLR-German Aerospace Center and S. JAFER, Embry-Riddle Aeronautical University						
0930 hrs **Introduction**	1000 hrs AIAA-2017-1075 **Scenario Development Process at the Vertical Motion Simulator** S. Reardon, NASA Ames Research Center, Moffett Field, CA; E. Lewis, SAIC, Moffett Field, CA; S. Beard, NASA Ames Research Center, Moffett Field, CA	1030 hrs AIAA-2017-1076 **Using System Entity Structures to Model the Elements of a Scenario in a Research Flight Simulator** U. Durak, I. Pruter, T. Gerlach, German Aerospace Center (DLR), Braunschweig, Germany; S. Jafer, Embry-Riddle Aeronautical University, Daytona Beach, FL; T. Pawletta, University of Wismar, Wismar, Germany; S. Hartmann, Clausthal University of Technology, Clausthal-Zellerfeld, Germany	1100 hrs AIAA-2017-1077 **Creating Scenarios for Airport Management Simulations Involving Independent Connected Simulators** R. Suikat, T. Stelkens-Kobsch, F. Stiekel, H. Lenz, German Aerospace Center (DLR), Braunschweig, Germany	1130 hrs AIAA-2017-1078 **The Use of Data from Accident Investigations in Development of Simulator Training Scenarios** D. Crider, National Transportation Safety Board, Washington, D.C.	1200 hrs **Panel Discussion**	

Wednesday, 11 January 2017						
266-MST-6	**Human Factors, Perception, Cueing I**					**San Antonio 1**
Chaired by: F. CARDULLO, State University of NY and D. CARTMELL, Boeing Engineering Operations & Technology						
0930 hrs AIAA-2017-1079 **Evaluation of a Steep Turn Spatial Disorientation Demonstration Scenario for Commercial Pilot Training** D. Klyde, A. Lampton, P. Schulze, Systems Technology, Inc., Hawthorne, CA	1000 hrs AIAA-2017-1080 **Evaluation of a Missed Approach/ Go-Around Spatial Disorientation Demonstration Scenario for Commercial Pilot Training** A. Lampton, D. Klyde, P. Schulze, Systems Technology, Inc., Hawthorne, CA	1030 hrs AIAA-2017-1081 **Refinement of Objective Motion Cueing Criteria Based on Three Flight Tasks** P. Zaal, San Jose State University, Moffett Field, CA; J. Schroeder, Federal Aviation Administration, Moffett Field, CA; W. Chung, SAIC, Moffett Field, CA	1100 hrs AIAA-2017-1082 **An Objective Method to Determine the Fidelity of Rotorcraft Motion Platforms** M. Jones, German Aerospace Center (DLR), Braunschweig, Germany	1130 hrs AIAA-2017-1083 **Experimental evaluation of haptic support systems for learning a 2-DoF tracking task** G. D'Intino, M. Olivari, S. Geluardi, J. Venrooij, Max Planck Institute for Biological Cybernetics, Tübingen, Germany; L. Pollini, University of Pisa, Pisa, Italy; H. Buelthoff, Max Planck Institute for Biological Cybernetics, Tübingen, Germany	1200 hrs AIAA-2017-1084 **Assessing the severity of wake encounters in various aircraft types in piloted flight simulations** G. Van Baren, National Aerospace Laboratory (NLR), Amsterdam, The Netherlands; V. Treve, F. Rooseleer, EUROCONTROL, Brussels, Belgium; P. Van der Geest, B. Heesbeen, National Aerospace Laboratory (NLR), Amsterdam, The Netherlands	

Wednesday, 11 January 2017						
267-MST-7	**Modeling and Simulation of Air Traffic Management II**					**San Antonio 3**
Chaired by: B. APONSO, NASA Ames Research Center						
0930 hrs AIAA-2017-1085 **Integrated Arrival-Departure-Surface-Enroute Air Traffic Optimization** P. Dutta, Optimal Synthesis, Inc., Los Altos, CA; P. Sengupta, Swift Navigation, San Francisco, CA; J. Kwan, P. Menon, Optimal Synthesis, Inc., Los Altos, CA	1000 hrs AIAA-2017-1086 **Severe-Weather Avoidance using Bezier Curve-based Trajectory Planning for Arrival Air Traffic Management** S. Izuta, M. Takahashi, Keio University, Yokohama, Japan	1030 hrs AIAA-2017-1087 **Merging Optimization Method Application to Arrival Scheduling Algorithm for Parallel Runways** D. Toratani, N. Wickramasinghe, E. Itoh, National Institute of Maritime, Port and Aviation Technology, Chofu, Japan	1100 hrs AIAA-2017-1088 **Feasibility Study on Constrained Optimal Trajectory Application in the Japanese Airspace** N. Wickramasinghe, M. Brown, H. Hirabayashi, S. Nagaoka, Electronic Navigation Research Institute, Tokyo, Japan			

Wednesday, 11 January 2017						
268-NDA-5	**Special Session: DARPA Efficient Quantification of Uncertainty in Physical Systems (EQUiPS) Program I**					**Mustang 2**
Chaired by: F. FAHROO and P. BERAN, US Air Force Research Laboratory(AFRL/RQVC)						
0930 hrs AIAA-2017-1089 **Global Sensitivity Analysis and Quantification of Model Error for Large Eddy Simulation in Scramjet Design** X. Huan, C. Safta, K. Sargsyan, G. Geraci, M. Eldred, Z. Vane, Sandia National Laboratories, Livermore, CA; et al.	1000 hrs AIAA-2017-1090 **Developing Design Insight Through Active Subspaces** Z. del Rosario, Stanford University, Stanford, CA; P. Constantine, Colorado School of Mines, Golden, CO; G. Iaccarino, Stanford University, Stanford, CA	1030 hrs AIAA-2017-1091 **An Inadequacy Formulation for an Uncertain Flamelet Model** D. Sondak, T. Oliver, C. Simmons, R. Moser, University of Texas, Austin, Austin, TX	1100 hrs AIAA-2017-1092 **The game theoretic approach to Uncertainty Quantification, reduced order modeling and numerical analysis** H. Owhadi, California Institute of Technology, Pasadena, CA	1130 hrs AIAA-2017-1093 **Uncertainty Modeling using Mixture Distributions for Decision-Based Design** V. Pandey, Oakland University, Rochester, MI	1200 hrs AIAA-2017-1094 **A Multi-Fidelity Collocation Method for Time-Dependent Parameterized Problems** X. Zhu, D. Xiu, University of Utah, Salt Lake City, Salt Lake City, UT	

Wednesday, 11 January 2017						
269-NDA-6	**Special Session: Non-Deterministic Approaches for Aerospace Human-in-the-Loop Related Missions**					**Mustang 3**
Chaired by: E. SUHIR and W. GERSTENMAIER, NASA						
0930 hrs AIAA-2017-1095 **Electronics Probabilistic/Prognostics, a Qualification Paradigm Shift with HITL** R. Ghaffarian, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1000 hrs AIAA-2017-1096 **A Method for the Integration of Real-time Probabilistic Approaches for Astronaut Wellness in Human in the Loop Related Missions and Situations with Big Data Analytics** C. McGregor, University of Ontario, Oshawa, Canada; O. Orlov, R. Baevsky, A. Chernikova, V. Rusanov, Russian Academy of Sciences, Moscow, Russia	1030 hrs AIAA-2017-1097 **Accounting for the Speed-Accuracy Trade-off in Quantifying Human-in-the-Loop Error Probabilities** A. Ahumada, B. Beard, NASA Ames Research Center, Moffett Field, CA; C. Null, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2017-1098 **And the Humans Saves the Day or Maybe They Ruin It, The Importance of Humans in the Loop** D. DeMott, SAIC, Houston, TX; R. Boyer, M. Bigler, NASA Johnson Space Center, Houston, TX	1130 hrs AIAA-2017-1099 **Towards a Framework for Reliability and Safety Analysis of Complex Space Missions** J. Evans, F. Groen, NASA Headquarters, Washington, D.C.; L. Wang, NASA Johnson Space Center, Houston, TX; R. Austin, A. Witulski, Vanderbilt University, Institute for Space and Defense Electronics, Nashville, TN; S. Cornford, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; et al.		

Wednesday, 11 January 2017						
270-PC-17	**Combustion Dynamics II**					**Dallas 7**
Chaired by: E. BARBOUR, The Aerospace Corpation and K. MCMANUS, GE Global Research Center						
0930 hrs AIAA-2017-1100 **Perturbation Dynamics in Turbulent Flames** M. Hassanaly, V. Raman, University of Michigan, Ann Arbor, Ann Arbor, MI	1000 hrs AIAA-2017-1101 **Evaluating Combustion Instability in a Swirl-Stabilized Combustor Using Simultaneous Pressure, Temperature, and Chemiluminescense Measurements at High Repetition Rates** J. Monfort, S. Stouffer, T. Hendershott, University of Dayton, Dayton, OH; P. Wrzesinski, W. Foley, Air Force Research Laboratory, Wright-Patterson AFB, OH; K. Rein, Spectral Energies, LLC, Beavercreek, OH	1030 hrs AIAA-2017-1102 **Self-induced transitions between stable and thermoacoustically excited states in a model swirl-stabilized burner at elevated pressure** I. Boxx, K. Geigle, German Aerospace Center (DLR), Stuttgart, Germany; C. Carter, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Yang, J. Lewalle, B. Kumgeh, Syracuse University, Syracuse, NY	1100 hrs AIAA-2017-1103 **The instability characteristics of lean premixed hydrogen and syngas flames stabilized on meso-scale bluff-body** Y. Kim, B. Lee, H. Im, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia			

Wednesday, 11 January 2017						
271-PC-18	**Super-Critical Combustion**					**San Antonio 6**
Chaired by: J. BELLAN, Jet Propulsion Laboratory and L. BAUWENS, University of Calgary						
0930 hrs Oral Presentation **Invited Review:Supercritical Combustion Modeling and Simulation: Recent Advances** V. Yang, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2017-1104 **Computational Modeling of Supercritical and Transcritical Flows** M. Harvazinski, Air Force Research Laboratory, Edwards AFB, CA; G. Lacaze, J. Oefelein, Sandia National Laboratories, Livermore, CA; S. Sardeshmukh, Purdue University, West Lafayette, IN; V. Sankaran, Air Force Research Laboratory, Edwards AFB, CA	1030 hrs AIAA-2017-1105 **Large Eddy Simulations of high pressure jets: Effect of subgrid scale modeling** A. Gnanaskandan, California Institute of Technology, Pasadena, CA; J. Bellan, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1100 hrs AIAA-2017-1106 **Seven questions about supercritical fluids - towards a new fluid state diagram** D. Banuti, M. Raju, P. Ma, M. Ihme, Stanford University, Stanford, CA; J. Hickey, University of Waterloo, Waterloo, Canada	1130 hrs AIAA-2017-1107 **Flow Dynamics of Gaseous Oxygen/ Kerosene Jet-Swirl Injectors at Supercritical Conditions** Y. Li, X. Wang, L. Zhang, S. Yeh, V. Yang, Georgia Institute of Technology, Atlanta, GA	1200 hrs AIAA-2017-1108 **Numerical Simulation for Effects of Pressure on Cryogenic Coaxial Jet under Supercritical Pressure** T. Araki, D. Muto, Kyushu Institute of Technology, Fukuoka, Japan; H. Terashima, Hokkaido University, Sapporo, Japan; N. Tsuboi, Kyushu Institute of Technology, Fukuoka, Japan	

Wednesday, 11 January 2017		
272-PC-19 **0930 - 1230 hrs**	**Model Validation for Propulsion Workshop: Opening Session**	**San Antonio 5**
The Model Validation for Propulsion (MVP) workshop is an open forum, bringing together researchers and modelers to help improve our understanding and capabilities of modeling turbulent reacting flows in relevant aerospace propulsion systems. This session introduces the objectives of the workshop and is followed by a panel discussion on Validation Metrics and Experimental Interactions.		

Wednesday, 11 January 2017						
273-PDL-6	**Plasma-Based Flow Control: Lessons Learned and Prospects I (Invited)**					**Ft. Worth 4**
Chaired by: S. LEONOV, University of Notre Dame and J. POGGIE, Purdue University- Sch of Aero and Astro						
0930 hrs Oral Presentation **Plasma Aerodynamics – Recent Developments and Future Prospects** K. Choi, J. Kim, University of Nottingham, Nottingham, United Kingdom	1000 hrs Oral Presentation **Applications of Plasma-Based Aerodynamic Flow Control for Understanding of Flow Physics** M. Samimy, Ohio State University, Columbus, OH	1030 hrs Oral Presentation **Modeling Laser Discharge in Quiescent Air** D. Knight, N. Kianvashrad, Rutgers University, New Brunswick, NJ; S. Wilkinson, A. Chou, G. Herring, R. Horne, NASA Langley Research Center, Hampton, VA	1100 hrs Oral Presentation **Computational Modeling of Plasma-Based Control in High-Speed Flow** J. Poggie, Purdue University, West Lafayette, IN	1130 hrs Oral Presentation **Turbulent Boundary Layer Drag Reduction Through Plasma Streak Transient Growth Instability Control** T. Corke, F. Thomas, A. Duong, R. McGowan, University of Notre Dame, Notre Dame, IN	1200 hrs Oral Presentation **Nanosecond Pulse Surface Discharges for Control of Turbulent Shear Flows** J. Little, University of Arizona, Tucson, Tucson, AZ	

Wednesday, 11 January 2017						
274-PDL-7	**Plasma and Laser Physics I**					**Ft. Worth 5**
Chaired by: L. RAJA, University of Texas at Austin and A. YALIN, Colorado State University						
0930 hrs Oral Presentation **The Development and Physics of High Power Lasers - Myths, Legends, and Facts; From SDI to Tactical Battlefield Lasers - Reflections of a 'Star Warrior'** J. Horkovich, Schafer Corporation Military Aerospace, Albuquerque, NM		1030 hrs AIAA-2017-1109 **Kinetic Mechanism of Plasma Recombination in Methane, Ethane and Propane after High-Voltage Nanosecond Discharge** A. Starikovskiy, Princeton University, Princeton, NJ	1100 hrs AIAA-2017-1110 **NS Dielectric Barrier Discharge Development and Thrust Generation in 4-Electrode Geometry** A. Starikovskiy, Princeton University, Princeton, NJ	1130 hrs AIAA-2017-1111 **FEM Simulation of Laser-Induced Plasma Breakdown Experiments for Combustion Applications** A. Alberti, A. Munafò, A. Sahai, C. Pantano, M. Panesi, University of Illinois, Urbana-Champaign, Urbana, IL		

Wednesday, 11 January 2017						
275-SCS-4	**Membrane-Based Deployable Systems**					**Palomino 1**
Chaired by: J. MOORE and J. SAUDER, Jet Propulsion Laboratory						
0930 hrs AIAA-2017-1112 **Data Driven Model for Efficient Prediction and Estimation of Spin Type Membrane Space Structure Dynamics** M. Yamazaki, Nihon University, Chiba, Japan	1000 hrs AIAA-2017-1113 **Investigation of the Deformation and Stiffness of Spinning Solar Sail Membrane of IKAROS** N. Okuizumi, Y. Satou, O. Mori, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; H. Sakamoto, Tokyo Institute of Technology, Okayama, Japan; H. Furuya, Tokyo Institute of Technology, Yokohama, Japan	1030 hrs AIAA-2017-1114 **Verification of the Similarity Rules for Spin Deployment Membrane in the ground experiment** Y. Tatematsu, T. Suzuki, M. Yamazaki, Y. Miyazaki, Nihon University, Funabashi, Japan	1100 hrs AIAA-2017-1115 **Vibration Response of Ultralight Wrapped Spacecraft Structures** J. Umali, Northrop Grumman Corporation, Azusa, CA; L. Wilson, S. Pellegrino, California Institute of Technology, Pasadena, CA	1130 hrs AIAA-2017-1116 **In-space Shape Measurement of Large Planar Structures** T. Talon, S. Pellegrino, California Institute of Technology, Pasadena, CA	1200 hrs AIAA-2017-1117 **Super Pressure Balloon with Diamond-Shaped Net: A Numerical Study of its Structural Characteristics** K. Nakashino, Tokai University, Kanagawa, Japan; Y. Saito, K. Goto, Japan Aerospace Exploration Agency (JAXA), Kanagawa, Japan; D. Akita, Tokyo Institute of Technology, Tokyo, Japan; T. Matsuo, Meiji University, Kanagawa, Japan; K. Matsushima, Fujikura Parachute Company, Ltd., Hukushima, Japan; et al.	

Wednesday, 11 January 2017						
276-SD-13	**Flutter and Aeroelastic Analysis I**					**Appaloosa 2**
Chaired by: W. SU, University of Alabama, Tuscaloosa and H. KIM, Boeing Defense, Space & Security						
0930 hrs AIAA-2017-1118 **Panel Flutter Analysis and Optimization of Composite Tow Steered Plates** T. Guimaraes, Federal University of Uberlândia, Uberlândia, Brazil; S. Castro, Embraer, São José dos Campos, 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-2017-1119 **Active Flutter Suppression: State of the Art and Technology Maturation Needs** E. Livne, University of Washington, Seattle, Seattle, WA	1030 hrs AIAA-2017-1120 **Optimisation of an Aeroelastic Flutter Energy Harvester** L. Grainger, D. Rezgui, D. Barton, University of Bristol, Bristol, United Kingdom				

Wednesday, 11 January 2017						
277-SD-14	**Dynamic Testing Techniques and System Identification I**					**Appaloosa 3**
Chaired by: T. KINNEY, NASA-Kenndey Space Center and R. MALLA, University of Connecticut						
0930 hrs AIAA-2017-1121 **Evolution of the Laser Vibrometer for Structural Dynamic Testing** J. Kosmatka, B. Martins, University of California, La Jolla, La Jolla, CA; M. Pineda, Polytec, Inc., Irvine, CA	1000 hrs AIAA-2017-1122 **Structural Dynamic Model Identification Using Time Transformation Method** J. Wang, Beijing Institute of Structure & Environment, Beijing, China; F. Wei, Central Connecticut State University, New Britain, CT	1030 hrs AIAA-2017-1123 **Experimental Characterization and Computational Modeling of Nonlinear Dynamics for F-16 Substructures** A. Ricciardi, D. Coleman, C. Denegri, Air Force SEEK EAGLE Office, Eglin AFB, FL	1100 hrs AIAA-2017-1124 **Development of a Stress Limit Surface for Turbine Blades under Multimode Forced Vibration for Use in Engine Testing** A. Kamaraj, V. Yadav, S. Venkataraman, San Diego State University, San Diego, CA	1130 hrs AIAA-2017-1125 **Finite Element Model Updating using Adjoint Based Sensitivity Analysis** R. Prasad, H. Kim, S. Choi, Virginia Polytechnic Institute and State University, Blacksburg, VA		

Wednesday, 11 January 2017						
278-SD-15	**Dynamics and Structural Dynamics of Launch Vehicles**					**Appaloosa 4**
Chaired by: B. WILLIS, Jacobs Technology and R. RUSOVICI, Florida Institute of Technology						
0930 hrs AIAA-2017-1126 **Bending Vibration Monitoring for Flexible Rockets through a Reference Strain Structure** N. Tsushima, W. Su, University of Alabama, Tuscaloosa, Tuscaloosa, AL; M. Wolf, NASA Kennedy Space Center, Cape Canaveral, FL; E. Griffin, a.i. solutions, Inc., Cape Canaveral, FL; J. Whittaker, NASA Kennedy Space Center, Cape Canaveral, FL; M. Dumoulin, a.i. solutions, Inc., Cape Canaveral, FL	1000 hrs AIAA-2017-1127 **Development of Three-dimensional Structural Analysis for Engine Nozzle Using Anisotropic Facet Shell Element** S. Kim, H. Cho, H. Joo, S. Shin, Seoul National University, Seoul, South Korea	1030 hrs AIAA-2017-1128 **Using Dispersed Modes During Model Correlation** E. Stewart, M. Hathcock, NASA Marshall Space Flight Center, Huntsville, AL	1100 hrs AIAA-2017-1129 **Experimental Investigations on dynamic aeroelastic Stability of Panels in the Transonic Domain** J. Lübker, German Aerospace Center (DLR), Göttingen, Germany	1130 hrs AIAA-2017-1130 **Reduced Order Modeling of SLS Pre-Burner to Enable Rapid Transient Analysis** A. Brown, A. Mulder, NASA Marshall Space Flight Center, Huntsville, AL	1200 hrs AIAA-2017-1131 **Structural and Acoustic Boundary Condition Assessment for Vibro-Acoustic Analysis of Spacecraft Reflectors using Acoustic Boundary Element Method** D. Inoyama, T. McQuigg, J. Francis, T. Stoumbos, Orbital ATK, Dulles, VA	

Wednesday, 11 January 2017						
279-SEN-3	**Applications of Sensor and Information Fusion**					**Ft. Worth 2**
Chaired by: D. ACCARDO, University of Naples						
0930 hrs AIAA-2017-1132 **Cooperative Searching Strategies for Distributed Sensor Networks** T. Frey, D. Faulk, Lockheed Martin Corporation, Fort Worth, TX	1000 hrs AIAA-2017-1133 **Real-Time Radar-Based Tracking and State Estimation of Multiple Non-Conformant Aircraft** B. Cook, T. Arnett, O. Macmann, M. Kumar, University of Cincinnati, Cincinnati, OH	1030 hrs AIAA-2017-1134 **Improving Inertial Attitude Measurement Performance by Exploiting MEMS Gyros and Neural Thermal Calibration** R. Fontanella, D. Accardo, University of Naples "Federico II", Naples, Italy; E. Caricati, S. Cimmino, MBDA, Bacoli, Italy; D. De Simone, G. Lucignano, GMA S.r.l., Giugliano, Italy	1100 hrs AIAA-2017-1135 **Prediction of Cognitive States during Flight Simulation using Multimodal Psychophysiological Sensing** A. Harrivel, C. Stephens, R. Milletich, C. Heinich, M. Last, N. Napoli, NASA Langley Research Center, Hampton, VA; et al.			

Wednesday, 11 January 2017						
280-STR-8	**Buckling, Fatigue and Fracture of Structures II**					**Appaloosa 1**
Chaired by: M. WOLFF, Gulfstream Aerospace Corporation and J. MIN, NASA Glenn Research Center						
0930 hrs AIAA-2017-1136 **Investigation of Hybridization and Architectural Effects on Tensile Response of Hybrid 3D Woven Textile Composites using NCYL Multiscale Method** A. Waas, University of Washington, Seattle, Seattle, WA; D. Patel, University of Michigan, Ann Arbor, Ann Arbor, MI; C. Yen, Army Research Laboratory, Aberdeen Proving Ground, MD	1000 hrs AIAA-2017-1137 **Buckling Analysis of Stiffened Panels Using Mechanics of Structure Genome** N. Liu, W. Yu, Purdue University, West Lafayette, IN	1030 hrs AIAA-2017-1138 **Peridynamic Unit Cell Homogenization** E. Madenci, University of Arizona, Tucson, Tucson, AZ; A. Barut, Global Engineering Research and Technologies, Tucson, AZ; N. Phan, Naval Surface Warfare Center, Patuxent River, MD	1100 hrs AIAA-2017-1139 **Comparison of Finite Element Strain Distribution to In Situ Strain Field of a Plastically-Deformed Plate** K. Knapp, A. Palazotto, Air Force Institute of Technology, Wright-Patterson AFB, OH; O. Scott-Emuakpor, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2017-1140 **Peridynamic Modeling of Fatigue Damage in Notched Composite Laminates** Y. Hu, E. Madenci, University of Arizona, Tucson, Tucson, AZ		

Wednesday, 11 January 2017						
281-SUR-1	**Survivability**					**Palomino 2**
Chaired by: S. BROUSSARD, The Boeing Co and M. SCHUCK, SURVICE Engineering Company						
0930 hrs AIAA-2017-1141 **Research on Space Debris Protection and Removal Strategy Based on Space Station Platform** M. Liu, China Academy of Space Technology (CAST), Beijing, China; Z. Zhu, York University, Toronto, Canada	1000 hrs AIAA-2017-1142 **Analysis of the Effects of Additive Manufacturing on the Material Properties of 15-5PH Stainless Steel** E. Lum, A. Palazotto, A. Dempsey, Air Force Institute of Technology, Wright-Patterson AFB, OH	1030 hrs AIAA-2017-1143 **Additively Manufactured Penetrators** Z. Provchy, A. Palazotto, Air Force Institute of Technology, Wright-Patterson AFB, OH	1100 hrs AIAA-2017-1144 **CFD Analysis and Shape Optimization of the Internal Convective Cooling System of a Hypersonic Vehicle** K. Liu, D. Stelzer, Air Force Institute of Technology, Wright-Patterson AFB, OH			

Wednesday, 11 January 2017						
282-TP-9	**Aerothermodynamics III**					**Austin 3**
Chaired by: D. KUNTZ, Sandia National Laboratories and W. FLAHERTY, MIT						
0930 hrs AIAA-2017-1145 **Benchmark EAST Experiments for Earth Re-Entry** A. Brandis, B. Cruden, Analytical Mechanics Associates, Inc., Moffett Field, CA	1000 hrs AIAA-2017-1146 **Inviscid/Boundary-Layer Aeroheating Approach for Integrated Vehicle Design** E. Lee, K. Wurster, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2017-1147 **Dependence of the Parameters of Shock Layer for Super-Orbital Space Vehicles at Increasing of Entry Velocity** S. Surzhikov, Russian Academy of Sciences, Moscow, Russia	1100 hrs AIAA-2017-1148 **Computation of Rarefaction Effects on a Blunt Body in Hypersonic Flow** G. Huang, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1130 hrs AIAA-2017-1149 **Best Practices for Unstructured Grid Shock Fitting** P. McCloud, NASA Johnson Space Center, Houston, TX		

Wednesday, 11 January 2017						
283-UMS-8	**UAS Self-Separation and Collision Avoidance II**					**Grapevine 1**
Chaired by: M. LOGAN, NASA Langley Research Center and R. STANSBURY, Embry-Riddle Aeronautical University						
0930 hrs AIAA-2017-1150 **Autonomous Stereo Vision based Collision Avoid System for Small UAV** Y. Lyu, Q. Pan, C. Zhao, J. Hu, Northwestern Polytechnical University, Xi'an, China	1000 hrs AIAA-2017-1151 **Sense and Avoid for Small Unmanned Aircraft Systems** C. Dolph, National Institute of Aerospace, Hampton, VA; M. Logan, L. Glaab, NASA Langley Research Center, Hampton, VA; T. Vranas, National Institute of Aerospace, Hampton, VA; R. McSwain, NASA Langley Research Center, Hampton, VA; Z. Johns, National Institute of Aerospace, Hampton, VA	1030 hrs AIAA-2017-1152 **Small Aircraft Flight Encounters Database for UAS Sense and Avoid** H. McClelland, C. Kang, C. Woolsey, Virginia Polytechnic Institute and State University, Blacksburg, VA; A. Roberts, D. Buck, T. Cheney, Brigham Young University, Provo, UT; et al.	1100 hrs AIAA-2017-1153 **UAV Collision Detection and Avoidance using ADS-B Sensor and Custom ADS-B Like Solution** S. Bhandari, N. Curtis-Brown, I. Guzman, T. Sherman, J. Tellez, E. Gomez, California State Polytechnic University, Pomona, Pomona, CA	1130 hrs AIAA-2017-1154 **ADS-B Surveillance System Performance With Small UAS at Low Altitudes** M. Guterres, S. Jones, G. Orrell, R. Strain, MITRE Corporation, McLean, VA		

Wednesday, 11 January 2017						
284-UMS-9	**UAS Technologies and Applications I**					**Grapevine 2**
Chaired by: O. ARIFF, University of Salford and S. SMITH, University of Kentucky						
0930 hrs AIAA-2017-1155 **3-D Mapping using LIDAR and Autonomous Unmanned Aerial Vehicle** C. Carreon-Limones, A. Rashid, P. Chung, S. Bhandari, California State Polytechnic University, Pomona, Pomona, CA	1000 hrs AIAA-2017-1156 **Catalyzing Collaboration for Multi-Disciplinary UAS Development with a Flight Campaign Focussed on Meteorology and Atmospheric Physics** S. Smith, University of Kentucky, Lexington, Lexington, KY; P. Chilson, University of Oklahoma, Norman, Norman, OK; A. Houston, University of Nebraska, Lincoln, Lincoln, NE; J. Jacob, Oklahoma State University, Stillwater, OK	1030 hrs AIAA-2017-1158 **Autonomous System for Rapid Airfield Assessment** M. Anderson, P. Pasque, C. Lane, J. Pond, U.S. Air Force Academy, Colorado Springs, CO	1100 hrs AIAA-2017-1157 **A Swarm-Intelligence Approach to Oil Spill Mapping using Unmanned Aerial Vehicles** Z. Ball, P. Odonkor, S. Chowdhury, State University of New York, Buffalo, NY	1130 hrs AIAA-2017-1159 **Design of a Modular Offline Reconfigurable Unmanned Aerial Vehicle** B. Rinauto, S. Gupta, S. Chowdhury, State University of New York, Buffalo, NY; V. Maldonado , University of Texas, San Antonio, San Antonio, TX		

Wednesday, 11 January 2017						
285-WE-5	**Atmospheric Inflow and Turbulence for Wind Energy**					**Texas D**
Chaired by: M. CHURCHFIELD, National Renewable Energy Laboratory and P. VEERS, National Renewable Energy Laboratory						
0930 hrs AIAA-2017-1160 **Large Eddy Simulation of Wind Flow Over Complex Terrain: The Bolund Hill Case** R. Roy, M. Stoellinger, University of Wyoming, Laramie, Laramie, WY	1000 hrs AIAA-2017-1161 **Large eddy simulation of atmospheric boundary layer flows over complex terrain with varying stability conditions** Y. Han, M. Stoellinger, University of Wyoming, Laramie, Laramie, WY	1030 hrs AIAA-2017-1162 **Numerical Modeling Framework for Wind Turbine Analysis & Atmospheric Boundary Layer Interaction** M. Siddiqui, Norwegian University of Science and Technology, Trondheim, Norway; A. Rasheed, M. Tabib, SINTEF, Trondheim, Norway; T. Kvamsdal, Norwegian University of Science and Technology, Trondheim, Norway	1100 hrs AIAA-2017-1163 **Development of a Wind Plant Large-Eddy Simulation with Measurement-Driven Atmospheric Inflow** E. Quon, M. Churchfield, S. Lee, National Renewable Energy Laboratory, Golden, CO; L. Cheung, General Electric Company, Niskayuna, NY; S. Kern, General Electric Company, Munich, Germany	1130 hrs AIAA-2017-1164 **Subfilter Scale Enrichment of Wind Farm LES using discrete Fourier-Gabor Modes** A. Ghate, S. Lele, Stanford University, Stanford, CA	1200 hrs AIAA-2017-1165 **Incorporating realistic geophysical effects of mean wind from LIDAR measurements in Large Eddy Simulation of Wind Turbine Arrays** T. Chatterjee, N. Cherukru, Y. Peet, R. Calhoun, Arizona State University, Tempe, AZ	

Wednesday, 11 January 2017						
286-WE-6	**Wind Turbine Structural Dynamics and Damage**					**Ft. Worth 7**
Chaired by: D. GRIFFITH and D. CAIRNS, Montana State University						
0930 hrs AIAA-2017-1166 **Collapse of a 47-meter Composite Blade under Combined Bending and Torsion during Full-scale Structural Testing** X. Chen, Chinese Academy of Sciences, Beijing, China	1000 hrs AIAA-2017-1167 **Effect of Fiber Orientation of Bend-Twist Coupled Blades on the Structural Performance of the Wind Turbine System** O. Sener, T. Farsadi, A. Kayran, Middle East Technical University, Ankara, Turkey	1030 hrs AIAA-2017-1168 **Effects of Fiber Misalignment on Composite Wind Turbine Rotor Blades** W. Vanskike, R. Hale, University of Kansas, Lawrence, Lawrence, KS	1100 hrs AIAA-2017-1169 **Multi-Dimensional Variational Mode Decomposition Applied to Intrinsic Vibration Mode Extraction for Bearing Crack Detection in Wind Turbines with Large Speed Variation** Z. Li, J. Yu, China University of Mining and Technology, Xuzhou, China; C. Hu, Iowa State University, Ames, IA; Z. Peng, University of New South Wales, Sydney, Australia	1130 hrs AIAA-2017-1170 **Agile Airborne Wind Energy System Design with Birds Impact Detection** R. Albertani, A. Muschler, W. Maurer, Oregon State University, Corvallis, OR		

Wednesday, 11 January 2017		
287-LUNCH-3 **1230 - 1400 hrs**	**Luncheon in the Exposition Hall**	**Longhorn Hall E&F**

Wednesday, 11 January 2017						
288-AA-8	**Aeroacoustics - Fan Noise, Open Rotor**					**Grapevine B**
Chaired by: S. RIZZI, NASA Langley Research Center and J. MENDOZA, United Technologies Research Center						
1400 hrs AIAA-2017-1171 **Validating the Harmonic Balance Method for Turbomachinery Tonal Noise Predictions** D. Lindblad, N. Andersson, Chalmers University of Technology, Göteborg, Sweden	1430 hrs AIAA-2017-1172 **Sound Radiation from a Rotor Operating in the Wake of a Cylinder** S. Glegg, J. Grant, Florida Atlantic University, Boca Raton, FL; W. Devenport, W. Alexander, Virginia Polytechnic Institute and State University, Blacksburg, VA	1500 hrs AIAA-2017-1173 **A Comparison of the Aerodynamic Performance and Aeroacoustic Behavior of Commercial and Custom Designed Quadcopter Propellers** C. Wisniewski, A. Byerley, U.S. Air Force Academy, Colorado Springs, CO; K. Van Treuren, A. Hays, Baylor University, Waco, TX	1530 hrs AIAA-2017-1174 **Acoustic Characterization of a Multi-Rotor UAS as a First Step Towards Noise Reduction** J. Feight, S. Whyte, J. Jacob, R. Gaeta, Oklahoma State University, Stillwater, OK	1600 hrs AIAA-2017-1175 **Tractor Propeller–Pylon Interaction, Part I: Characterization of Unsteady Pylon Loading** R. de Vries, T. Sinnige, B. Della Corte, F. Avallone, D. Ragni, G. Eitelberg, Delft University of Technology, Delft, The Netherlands; et al.	1630 hrs AIAA-2017-1176 **Tractor Propeller-Pylon Interaction, Part II:Mitigation of Unsteady Pylon Loading by Application of Leading-Edge Porosity** B. Della Corte, T. Sinnige, R. de Vries, F. Avallone, D. Ragni, G. Eitelberg, Delft University of Technology, Delft, The Netherlands; et al.	

Wednesday, 11 January 2017						
289-AA-9	**Aeroacoustics - Airframe and Community Noise**					**Grapevine 3**
Chaired by: W. SCHUSTER, Honeywell International, Inc. and E. NESBITT, Boeing Commercial Airplanes						
1400 hrs AIAA-2017-1177 **Owl-Inspired Trailing Edge Noise Treatments: Acoustic and Flow Measurements** A. Millican, I. Clark, W. Devenport, Virginia Polytechnic Institute and State University, Blacksburg, VA	1430 hrs AIAA-2017-1178 **Investigation of Passive Flow Control of Cavity Acoustics Using Dynamic Pressure-Sensitive Paint** J. Crafton, S. Stanfield, N. Rogoshchenkov, Innovative Scientific Solutions, Inc., Dayton, OH; R. Schmit, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2017-1179 **The HELINOIR Aeroacoustic Code and its Application to Active/Passive Helicopter Noise Reduction** M. Chia, K. Duraisamy, P. Friedmann, A. Padthe, University of Michigan, Ann Arbor, Ann Arbor, MI	1530 hrs AIAA-2017-1180 **Optimal Flight Trajectory to Minimize Noise During Landing** J. Udani, K. Mall, M. Grant, D. Sun, Purdue University, West Lafayette, IN			

Wednesday, 11 January 2017						
290-ACD-7	**Electric Aircraft Design**					**San Antonio 5**
Chaired by: R. MCDONALD, California Polytechnic State University-San Luis Obispo and I. CHAKRABORTY, ASDL, Georgia Tech						
1400 hrs AIAA-2017-1181 **Design Space Investigation for a Small Electric General Aviation Airplane** C. Brooks, S. Salgueiro, Massachusetts Institute of Technology, Cambridge, MA	1430 hrs AIAA-2017-1182 **Development of Parametric Power Generation and Distribution Subsystem Models at Conceptual Aircraft Design Stage** G. Cinar, D. Mavris, Georgia Institute of Technology, Atlanta, GA; M. Emeneth, A. Schneegans, PACE America, Inc., Seattle, WA; Y. Fefermann, Safran Tech, Magny-Les-Hameaux, France	1500 hrs AIAA-2017-1183 **Sizing, Integration and Performance Evaluation of Hybrid Electric Propulsion Subsystem Architectures** G. Cinar, D. Mavris, Georgia Institute of Technology, Atlanta, GA; M. Emeneth, A. Schneegans, PACE America, Inc., Seattle, WA; C. Riediger, 328 Design GnbH, Wessling, Germany; Y. Fefermann, Safran Tech, Magny-Les-Hameaux, France; et al.	1530 hrs AIAA-2017-1184 **Sparky Flapjack: Aircraft Design Inspirations from the Vought 173** D. Raymer, Conceptual Research Corporation, Playa del Rey, CA; M. Zhang, A. Rizzi, E. Raymer, Airinnova, Stockholm, Sweden	1600 hrs AIAA-2017-1185 **Sizing Methods for Aircraft of Variable Propulsion System Complexity** J. Vegh, T. MacDonald, A. Wendorff, J. Alonso, Stanford University, Stanford, CA		

Wednesday, 11 January 2017						
291-AFM-6	**Aircraft Flight Dynamics, Handling Qualities, and Performance I**					**Grapevine 5**
Chaired by: H. CHEN, Beihang University and C. KARLGAARD, Analytical Mechanics Associates Inc						
1400 hrs AIAA-2017-1186 **Cyclic Blade Pitch Control for Small UAV Without a Swashplate** J. Paulos, M. Yim, University of Pennsylvania, Philadelphia, PA	1430 hrs AIAA-2017-1187 **System Identification of a Multi-rotor UAV Actuator** M. Cunningham, J. Hubbard, University of Maryland, College Park, College Park, MD	1500 hrs AIAA-2017-1188 **Handling Qualities Metrics for Small VTOL UAVs in Precision and Agile Maneuvering Tasks** M. Abdulrahim, J. Dee, J. Grzywna, Prioria Robotics, Inc., Gainesville, FL	1530 hrs AIAA-2017-1189 **Measuring Atmospheric Winds from Quadrotor Motion** J. Gonzalez-Rocha, C. Woolsey, C. Sultan, Virginia Polytechnic Institute and State University, Blacksburg, VA; S. de Wekker, N. Rose, University of Virginia, Charlottesville, Charlottesville, VA	1600 hrs AIAA-2017-1190 **Uncertainty Analysis of Avian Approach to Remote Thermal Updraft Detection for Unmanned Aerial Vehicles** C. Pinkerman, T. O'Connell, A. Arena, Oklahoma State University, Stillwater, OK		

Wednesday, 11 January 2017						
292-APA-27	**Special Session: CREATE-AV HPC Multiphysics III**					**Dallas 1**
Chaired by: N. HARIHARAN, CREATE-AV and A. WISSINK, US Army Aeroflightdynamics Directorate						
1400 hrs Oral Presentation **On Changing Paradigms – Motive Resonant Catalysts, Sentient Subroutines, and Multi-Disciplinary, Physics-Based Simulation Software** R. Meakin, HPCMP CREATE-AV, Lorton, VA	1430 hrs AIAA-2017-1191 **Kestrel Modeling and Simulation Flutter Evaluation for Fighter Aircraft** J. Dubben, C. Lillian, Air Force SEEK EAGLE Office, Eglin AFB, FL	1500 hrs AIAA-2017-1192 **Results from HPCMP CREATE™-AV COFFE for 3-D Aircraft Configurations with Meshes Generated by HPCMP CREATE™-MG Capstone** R. Glasby, J. Erwin, D. Stefanski, University of Tennessee, Knoxville, Knoxville, TN	1530 hrs AIAA-2017-1193 **Development of a Dual-Mesh Computational Fluid Dynamics Platform for Internal Reacting Flows** N. Mundis, M. Harvazinski, K. Brown, C. Lietz, C. Umphrey, Air Force Research Laboratory, Edwards AFB, CA; J. Sitaraman, PGA, LLC, Sunnyvale, CA; et al.	1600 hrs AIAA-2017-1194 **On the Accuracy and Convergence of a Hamiltonian-Strand Approach for Aerodynamic Flows** Y. Jung, B. Govindarajan, J. Baeder, University of Maryland, College Park, College Park, MD	1630 hrs AIAA-2017-1195 **CREATE-AV DaVinci 4.0 Capabilities and DaVinci 5.0 Development** J. Livingston, Riverside Research, Beavercreek, OH	

Wednesday, 11 January 2017						
293-APA-28	**Special Session: Sensitivity Analysis and Uncertainty Quantification Evaluation for Realistic Problems I**					**Dallas 2**
Chaired by: P. MORGAN, Ohio Aerospace Institute and M. JURKOVICH, US Air Force						
1400 hrs AIAA-2017-1196 **Overview of the AVT-191 Project to Assess Sensitivity Analysis and Uncertainty Quantification Methods for Military Vehicle Design** J. Benek, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Luckring, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2017-1197 **Three-parameter uncertainty quantification for generic missile FG5** J. Peter, ONERA, Châtillon, France; S. Goertz, German Aerospace Center (DLR), Braunschweig, Germany; R. Graves, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2017-1198 **Meta-Model Results For Polynomial Chaos Method** J. Doty, Doty Consulting Services, Dayton, OH	1530 hrs AIAA-2017-1199 **Scalable Uncertainty Taxonomy for a Transonic Missile** R. Graves, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2017-1200 **Uncertainty Quantification in Internal Flows** R. Nigro, University of Mons, Mons, Belgium; D. Wunsch, NUMECA International, Brussels, Belgium; G. Coussement, University of Mons, Mons, Belgium; C. Hirsch, NUMECA International, Brussels, Belgium		

Wednesday, 11 January 2017						
294-APA-29	**Weapons Aerodynamics**					**Dallas 3**
Chaired by: C. PASILIAO, AFRL/RW and J. DOYLE, US Army AMRDEC						
1400 hrs AIAA-2017-1201 **Catastrophic Yaw of Triform and Cruciform Tailed Missiles** J. Morote, P. Morote, National Institute of Aerospace Technology (INTA), Madrid, Spain	1430 hrs AIAA-2017-1204 **Trajectory Simulation of a Standard Store and Generic Wing Pylon using CFD** J. Masud, O. Mahmood, Z. Toor, Air University, Islamabad, Pakistan	1500 hrs AIAA-2017-1205 **A Comparative Study of Prediction Techniques for Supersonic Missile Aerodynamic Coefficients at Incidence** L. El mahdi, M. Ahmed, O. Mahmoud, O. Abdel Hameed, Military Technical College, Cairo, Egypt				

Wednesday, 11 January 2017						
295-APA-30	**DPW-6 Results and Comparisons II**					**Dallas 4**
Chaired by: J. VASSBERG, Boeing Engineering Operations & Technology and J. MORRISON, NASA Langley Research Center						
1400 hrs AIAA-2017-1206 **Summary of Data from the Sixth AIAA CFD Drag Prediction Workshop: Case 1 Code Verification** C. Roy, Virginia Polytechnic Institute and State University, Blacksburg, VA	1430 hrs AIAA-2017-1207 **Summary of Data from the Sixth AIAA CFD Drag Prediction Workshop: Case 5 (Coupled Aero-Structural Simulation)** S. Keye, German Aerospace Center (DLR), Braunschweig, Germany; D. Mavriplis, University of Wyoming, Laramie, Laramie, WY	1500 hrs AIAA-2017-1208 **Summary of Data from the Sixth AIAA CFD Drag Prediction Workshop: CRM Cases 2 to 5.** E. Tinoco, Self, Kent, WA; O. Brodersen, S. Keye, German Aerospace Center (DLR), Braunschweig, Germany; K. Laflin, Cessna Aircraft Company, Wichita, KS	1600 hrs AIAA-2017-1209 **Statistical Analysis of CFD Solutions from the Sixth AIAA Drag Prediction Workshop** J. Derlaga, J. Morrison, NASA Langley Research Center, Hampton, VA	1630 hrs **Open Discussion**	

Wednesday, 11 January 2017						
296-APA-31	**High Angle-of-Attack Aerodynamics**					**Dallas 5**
Chaired by: N. HALL, Lockheed Martin and J. PINIER, NASA Langley Research Center						
1400 hrs AIAA-2017-1210 **Design of Airfoils to Mitigate Wake Bursting** B. Pomeroy, M. Selig, University of Illinois, Urbana-Champaign, Urbana, IL	1430 hrs AIAA-2017-1211 **Analysis of Multi-Element Airfoil High Lift Improvement by Efficient Upper Surface Suction** L. Veldhuis, J. van Craenenbroeck, Delft University of Technology, Delft, The Netherlands	1500 hrs AIAA-2017-1212 **Computational Study of Aerodynamic Characteristics of Reusable Rocket at High-Angle-of-Attack** T. Aogaki, K. Kitamura, Yokohama National University, Kanagawa, Japan; S. Nonaka, Japan Aerospace Exploration Agency (JAXA), Kanagawa, Japan				

Wednesday, 11 January 2017						
297-APA-32	**Aerodynamic Results from Ground Test or Flight Test**					**Dallas 6**
Chaired by: G. GATLIN, NASA Langley Research Center and A. VANDERWYST, Leidos						
1400 hrs AIAA-2017-1213 **Blockage Testing in the NASA Glenn 225 Square Centimeter Supersonic Wind Tunnel** A. Sevier, Case Western Reserve University, Cleveland, OH; D. Davis, NASA Glenn Research Center, Cleveland, OH; M. Schoenenberger, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2017-1214 **Range and Endurance Estimation for Low-*Re* Electric UAS** M. McCrink, J. Gregory, Ohio State University, Columbus, OH	1500 hrs AIAA-2017-1215 **Low Cost Accurate Angle of Attack System** B. Martos, Embry-Riddle Aeronautical University, Daytona Beach, FL; D. Rogers, U.S. Naval Academy, Annapolis, MD	1530 hrs AIAA-2017-1216 **Wind Induced Forces on a Hemispherical Observatory Dome with Open Shutter Doors** T. Siefers, R. Frost, S. Lim, T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO	1600 hrs AIAA-2017-1217 **Use of a Ring Wing Model to investigate Factors affecting Transition Measurement using Temperature Sensitive Paint and Hot Films in Transonic Flow** A. Ciarella, S. Lawson, Aircraft Research Association, Ltd., Bedford, United Kingdom		

Wednesday, 11 January 2017		
298-F360-6 **1400 - 1600 hrs**	**Transitioning Your Idea from the Lab to Flight Test**	**Texas C**

Moderator: Chris Cotting, Flight Sciences Technical Expert, United States Air Force Test Pilot School

Panelists:

Albion Bowers Chief Scientist NASA Armstrong Flight Research Center	**James "Buddy" Denham** Senior Scientific Technical Manager Aeromechanics Division Naval Air Systems Command	**Bill Gray** Chief Pilot U.S. Air Force Test Pilot School	**John S. Langford** Chairman and Chief Executive Officer Aurora Flight Sciences Corporation	**Shawn Whitcomb** Systems Engineer, Advanced Development Programs Lockheed Martin Corporation	**Craig Woolsey** Professor of Aerospace and Ocean Engineering Virginia Polytechnic Institute and State University

Wednesday, 11 January 2017						
299-FD-39	**CFD Methods for Fast Computing**					**Texas 6**
Chaired by: J. BORIS, US Naval Research Lab						
1400 hrs AIAA-2017-1218 **Improving the strong parallel scalability of CFD schemes via the swept domain decomposition rule** M. Alhubail, Q. Wang, Massachusetts Institute of Technology, Cambridge, MA	1430 hrs AIAA-2017-1220 **Pleasingly Parallel Discontinuous Least Squares Spectral Element Method for Laminar Incompressible Flows with H-Refinement** J. Hasbestan, J. Newman, A. Arabshahi, University of Tennessee, Chattanooga, Chattanooga, TN	1500 hrs AIAA-2017-1219 **An Order N log $_2$(N) Parallel Solver for Time Spectral Problems** D. Ramezanian, D. Mavriplis, University of Wyoming, Laramie, Laramie, WY	1530 hrs AIAA-2017-1221 **Implementing the Swept Time-Space Decomposition Scheme for PDEs on the GPU** D. Magee, K. Niemeyer, Oregon State University, Corvallis, OR	1600 hrs AIAA-2017-1222 **Speed-Up of Colloidal Fluctuating Lattice Boltzmann Simulations through Discrete Approximations of Probability Distributions** S. Coogan, G. Musgrove, H. Basagaoglu, Southwest Research Institute, San Antonio, TX		

Wednesday, 11 January 2017						
300-FD-41	**Special Session: Wall Models for Large Eddy Simulation**					**Texas 2**
Chaired by: N. BISEK, Air Force Reseach Laboratory and J. LARSSON, University of Maryland						
1400 hrs Oral Presentation **Large eddy simulation with modeled wall-stress: what to expect, recent progress, and future directions** J. Larsson, University of Maryland, College Park, College Park, MD	1430 hrs Oral Presentation **Wall Modeling for Shock Turbulent Boundary Layer Interactions with Heat Transfer** J. Komives, Air Force Institute of Technology, Wright-Patterson AFB, OH; G. Candler, University of Minnesota, Minneapolis, Minneapolis, MN	1500 hrs Oral Presentation **Wall-Modeled Large Eddy Simulation of Separated Flows** F. Cadieux, J. Sadique, X. Yang, R. Mittal, C. Meneveau, Johns Hopkins University, Baltimore, MD	1530 hrs AIAA-2017-1223 **Assessment of Wall-modeled LES Strategies Within a Discontinuous-Galerkin Spectral-element Framework** C. Carton de Wiart, S. Murman, NASA Ames Research Center, Moffett Field, CA	1600 hrs Oral Presentation **Algorithmic and modeling constraints for the application of LES to design** S. Bose, F. Ham, Cascade Technologies, Inc., Palo Alto, CA	1630 hrs Oral Presentation **Scale-Resolving Simulations and their Impact on Scramjet Engine Design and Development** R. Baurle, NASA Langley Research Center, Hampton, VA	

Wednesday, 11 January 2017		
301-FD-42 **1400 - 1700 hrs**	**Transition Open Forum**	**Texas 3**

Wednesday, 11 January 2017						
302-FD-43	**Turbulent, Compressible CFD Applications and Validations**					**Texas 4**
Chaired by: J. CHAPELIER, Université de Rouen and S. LELE, Stanford University						
1400 hrs AIAA-2017-1224 **Finite-element solutions to the Reynolds Averaged Navier-Stokes equations using a Spalart-Allmaras Turbulence Model** N. Burgess, Science and Technology Corporation, Moffett Field, CA; R. Glasby, J. Erwin, D. Stefanski, University of Tennessee, Knoxville, Knoxville, TN; S. Allmaras, Massachusetts Institute of Technology, Cambridge, MA	1430 hrs AIAA-2017-1225 **Triple Hill's Vortex Synthetic Eddy Method for Turbulent Inflow Conditions** J. Haywood, A. Sescu, Mississippi State University, Mississippi State, MS; J. Foster, M. Farthing, U.S. Army Corps of Engineers, Vicksburg, MS	1500 hrs AIAA-2017-1226 **Development and Validation of a Lagrangian Droplet Tracking Algorithm in a Turbulent Combustion Solver** C. Neal, S. Thakur, J. Wright, Streamline Numerics, Inc., Gainesville, FL	1530 hrs AIAA-2017-1227 **Stabilized Scale-Similarity Modeling for Explicitly-Filtered Large-Eddy Simulations** A. Edoh, A. Karagozian, University of California, Los Angeles, Los Angeles, CA	1600 hrs AIAA-2017-1228 **Optimized high-order Spectral Difference schemes for the computation of aeroacoutics and turbulence** J. Chapelier, G. Lodato, CORIA, Rouen, France		

Wednesday, 11 January 2017						
303-FD-44	**CFD Modeling**					**Texas 5**
Chaired by: M. CONWAY, The Aerospace Corporation						
1400 hrs AIAA-2017-1229 **CFD Modelling of Kiel-Shrouded Temperature Probes** B. Ubald, P. Tucker, University of Cambridge, Cambridge, United Kingdom; S. Shahpar, Rolls-Royce Group plc, Derby, United Kingdom	1430 hrs AIAA-2017-1230 **Modeling of Conventional Flaps at High Deflection-Rate** A. Medina, M. Ol, Air Force Research Laboratory, Wright-Patterson AFB, OH; D. Williams, X. An, Illinois Institute of Technology, Chicago, IL; M. Hemati, University of Minnesota, Minneapolis, Minneapolis, MN	1500 hrs AIAA-2017-1231 **DNS of High Temperature Effects on Compressible Isotropic Turbulence** G. Ramanathan, S. Ghosh, Indian Institute of Technology Madras, Chennai, India	1530 hrs AIAA-2017-1232 **Three-dimensional Numerical Simulation on Dispersion Process of Unsteady High Pressure Hydrogen Jet Flow** N. Tsuboi, K. Fujimoto, D. Muto, Kyushu Institute of Technology, Kitakyushu, Japan; M. Asahara, Gifu University, Gifu, Japan			

Wednesday, 11 January 2017						
304-FD-45	**Other Topics in Fluid Dynamics II**					**Grapevine C**
Chaired by: Y. ZHANG, and J. ESTEVADEORDAL, Innovative Scientific Solutions Incorporated						
1400 hrs AIAA-2017-1233 **Numerical Study of Radial Deformation and Energy Conversion in Head-on Collision of Two Equal-size Droplets** Q. Qu, C. Ge, P. Liu, Beihang University, Beijing, China; R. Agarwal, Washington University in St. Louis, St. Louis, MO	1430 hrs AIAA-2017-1234 **Approximate Analytical Models for Turbulent Boundary Layer Wall Pressure and Wall Shear Fluctuation Spectra and Coherence Functions** L. DeChant, J. Smith, M. Barone, Sandia National Laboratories, Albuquerque, NM	1500 hrs AIAA-2017-1235 **Design of a Modular Vortex Tube Engine Air Particle Separator for the MQ-1 UAV Utilizing Additive Manufacturing Technologies** R. Crumpacker, Ohio State University, Columbus, OH	1530 hrs AIAA-2017-1236 **BiGlobal Stability Analysis of Unsteady Flow in Vaneless Diffuser of Centrifugal Compressor** C. Hu, P. Liu, X. Zhu, Shanghai Jiao Tong University, Shanghai, China; H. Chen, National Laboratory of Engine Turbocharging Technology, Tianjin, China; Z. Du, Shanghai Jiao Tong University, Shanghai, China	1600 hrs AIAA-2017-1237 **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		

Wednesday, 11 January 2017						
305-GNC-8	**Missile GNC**					**Austin 1**
Chaired by: S. WELLS, Raytheon Missile Systems and J. PARISH, Sandia National Laboratories						
1400 hrs AIAA-2017-1238 **Adaptive Roll Control of Guided Munitions with State Independent Uncertainty Parameterization** N. Ovec, ROKETSAN Missile Industries, Inc., Ankara, Turkey; A. Kutay, Middle East Technical University, Ankara, Turkey	1430 hrs AIAA-2017-1239 **Time-to-Go Prediction for Anti-Ballistic Missile Midcourse Guidance** G. Moon, M. Seo, S. Hong, S. Shim, M. Tahk, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1500 hrs AIAA-2017-1240 **Linearized Analysis of Azimuth Transfer of Strapdown INS for Vertical and Slant Launch Applications** V. Bogala, C. RS, N. BHVS, Defence Research and Development Organisation, Hyderabad, India				

Wednesday, 11 January 2017						
306-GNC-9	**Trajectory Optimization**					**Grapevine D**
Chaired by: J. RYAN, NASA-Dryden Flight Research Center and Y. MIYAZAWA, Kyushu University						
1400 hrs AIAA-2017-1241 **Vertical and Horizontal Flight Reference Trajectory Optimization for a Commercial Aircraft** A. Murrieta Mendoza, P. Mugnier, R. Botez, University of Québec, Montréal, Canada	1430 hrs AIAA-2017-1242 **An Improved Online Reentry Trajectory Planning and Tracking Algorithm for Common Aero Vehicles** Y. Wang, W. Zhou, Y. Pang, Dalian University of Technology, Dalian, China	1500 hrs AIAA-2017-1243 **Maximizing Range Observability in Bearings-Only Rendezvous Guidance** P. Anjaly , A. Ratnoo, Indian Institute of Science, Bengaluru, India	1530 hrs AIAA-2017-1244 **A Blended Performance Function for Extremum-Seeking-Control of a Formation Flight System** J. Ryan, NASA Armstrong Flight Research Center, Edwards, CA	1600 hrs AIAA-2017-1245 **Target tracking using Adaptive coarse-to-fine Particle Filter** D. Lee, S. Shim, M. Hwang, M. Tahk, Korea Advanced Institute of Science and Technology, Daejeon, South Korea	1630 hrs AIAA-2017-1246 **Optimal Arrival Time Assignment and Control Analysis using Air Traffic Data for Tokyo International Airport** Y. Higuchi, N. Kitazume, K. Tamura, T. Kozuka, Y. Miyazawa, Kyushu University, Fukuoka, Japan; M. Brown, Electronic Navigation Research Institute, Tokyo, Japan	

Wednesday, 11 January 2017						
307-GNC-10	**Adaptive Control for Aircraft GNC**					**Austin 6**
Chaired by: F. HOLZAPFEL and S. NIVISON, Air Force Research Lab						
1400 hrs AIAA-2017-1247 **L1 Augmentations for a Fixed Gain Controller on a Large Transport Aircraft** M. Wang, Harbin Institute of Technology, Beijing, China; F. Holzapfel, F. Zhang, Technical University of Munich, Munich, Germany; S. Zhang, Harbin Institute of Technology, Beijing, China	1430 hrs AIAA-2017-1248 **NDI-Based L1 Adaptive Control Design for a Generic Hypersonic Vehicle Model** C. Qi, A. Jianliang, Fudan University, Shanghai, China	1500 hrs AIAA-2017-1249 **Improving Long-Term Learning of Model Reference Adaptive Controllers for Flight Applications: A Sparse Neural Network Approach** S. Nivison, P. Khargonekar, University of Florida, Gainesville, Gainesville, FL	1530 hrs AIAA-2017-1250 **Design and Evaluation of an L1 Adaptive Controller for NASA's Transport Class Model** J. Dodenhöft, Technical University of Munich, Garching, Germany; R. Choe, K. Ackerman, University of Illinois, Urbana-Champaign, Urbana, IL; F. Holzapfel, Technical University of Munich, Garching, Germany; N. Hovakimyan, University of Illinois, Urbana-Champaign, Urbana, IL	1600 hrs AIAA-2017-1251 **Helicopter Dynamic Model Identification by Conditional Attitude Hold Logic** S. Jung, D. Shim, Korea Advanced Institute of Science and Technology, Daejeon, South Korea; E. Kim, Korea Aerospace Research Institute (KARI), Daejeon, South Korea		

Wednesday, 11 January 2017						
308-GNC-11	**Aircraft GNC Control Methods**					**Austin 5**
Chaired by: T. YUCELEN, Missouri University of Science & Technology and M. MCFARLAND, Orbital ATK						
1400 hrs AIAA-2017-1252 **Decentralized LQT in a Limited Information Environment** C. Robertson, A. Sinclair, Auburn University, Auburn, AL; E. Doucette, Air Force Research Laboratory, Eglin AFB, FL	1430 hrs AIAA-2017-1253 **An Anti-windup Fault Tolerant Control Scheme with Guaranteed Transient Performance for Tailless Flying Wing Aircrafts** W. Shuang, S. Zhang, X. Wu, Nanjing University of Aeronautics and Astronautics, Nanjing, China; E. Van Kampen, Q. Chu, Delft University of Technology, Delft, The Netherlands	1500 hrs AIAA-2017-1254 **Intent Inference of Aircraft via Inverse Optimal Control Including Second-order Optimality Condition** N. Yokoyama, National Defense Academy, Yokosuka, Japan	1530 hrs AIAA-2017-1255 **Integrator-Augmented Robust Adaptive Control Design for Close Formation Flight** Q. Zhang, H. Liu, University of Toronto, Toronto, Canada	1600 hrs AIAA-2017-1256 **Two-Time-Scale Slow and Fast State Tracking of an F-16 Using Slow and Fast Controls** D. Saha, J. Valasek, Texas A&M University, College Station, TX	1630 hrs AIAA-2017-1257 **Angle of Attack and Load Factor Limiting in Fighter Aircraft using Command Governors** D. Simon, O. Härkegård, Saab, Linköping, Sweden; J. Löfberg, Linköping University, Linköping, Sweden	

Wednesday, 11 January 2017						
309-GNC-12	**Estimation and Tracking Methods**					**Austin 2**
Chaired by: W. WHITACRE, Draper Laboratory and N. AHMED						
1400 hrs AIAA-2017-1258 **Application of Observability Analysis to Space Object Tracking** A. Dianetti, State University of New York, Buffalo, NY; R. Weisman, Air Force Research Laboratory, Kirtland AFB, NM; J. Crassidis, State University of New York, Buffalo, NY	1430 hrs AIAA-2017-1259 **Gaussian Sum-Based Maneuvering Target Tracking Using Unmanned Aerial Vehicle** C. Zhang, I. Hwang, Purdue University, West Lafayette, IN	1500 hrs AIAA-2017-1260 **Multiple-Model Adaptive Estimation for Measurements with Unknown Time Delay** K. Lee, E. Johnson, Georgia Institute of Technology, Atlanta, GA	1530 hrs AIAA-2017-1261 **Norm-Constrained Forward-Backward Smoothing** S. Chee, J. Forbes, McGill University, Montréal, Canada	1600 hrs AIAA-2017-1262 **Distributed Cubature Gaussian Mixture Filters** B. Jia, Intelligent Fusion Technology, Inc., Germantown, MD; M. Xin, T. Sun, University of Missouri, Columbia, Columbia, MO	1630 hrs AIAA-2017-1263 **Efficient Nonlinear Actuator Fault Reconstruction System** P. Lu, E. Van Kampen, Q. Chu, Delft University of Technology, Delft, The Netherlands	

Wednesday, 11 January 2017						
310-GNC-13	**Spacecraft and Launch Guidance**					**Grapevine 6**
Chaired by: J. REED, United Launch Alliance, LLC and K. BOLLINO, U.S. Air Force						
1400 hrs AIAA-2017-1264 **Adaptive Controllers for Spacecraft Rendezvous based on nonlinear model with unknown parameters** K. Zhang, M. Demetriou, Worcester Polytechnic Institute, Worcester, MA	1430 hrs AIAA-2017-1265 **Re-entry Guidance for Path-Constraint Tracking** E. Mooij, Delft University of Technology, Delft, The Netherlands	1500 hrs AIAA-2017-1266 **An Optimal Explicit Guidance Algorithm for Terminal Descent Phase of Lunar Soft Landing** A. Banerjee, R. Padhi, Indian Institute of Science, Bengaluru, India	1530 hrs AIAA-2017-1267 **Explicit Constrained Terminal Acceleration Optimal Guidance for Three Dimensional Lunar Landing** M. S, Indian Space Research Organisation, Bengaluru, India; R. Padhi, Indian Institute of Science, Bengaluru, India	1600 hrs AIAA-2017-1268 **Spacecraft De-Orbit Point Targeting using Aerodynamic Drag** S. Omar, R. Bevilacqua, University of Florida, Gainesville, Gainesville, FL	1630 hrs AIAA-2017-1269 **Autonomous Spacecraft Swarm Formation Planning Using Artificial Field Based on Nonlinear Bifurcation Dynamics** H. Chen, J. Sun, Beihang University, Beijing, China; K. Li, Beijing Institute of Control Engineering, Beijing, China; M. Wang, Beihang University, Beijing, China	

Wednesday, 11 January 2017						
311-GNC-14	**Control of Innovative Micro Air Vehicle Configurations**					**Austin 4**
Chaired by: M. OPPENHEIMER, Air Force Research Laboratory and H. TAHA, University of California, Irvine						
1400 hrs AIAA-2017-1270 **Manipulation of Wing Tip Vortices on Low Aspect Ratio Wings using Winglet Control Surfaces** R. O'Donnell, K. Mohseni, University of Florida, Gainesville, Gainesville, FL	1430 hrs AIAA-2017-1271 **Wing Design and Testing for a Tailless Flapping Wing Micro-Air Vehicle** M. Oppenheimer, Air Force Research Laboratory, Wright-Patterson AFB, OH; D. Sigthorsson, Infoscitex Corporation, Beavercreek, OH; D. Doman, I. Weintraub, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2017-1272 **Wing Flexibility Induced Control Reversal For Flapping Wing Vehicles: Theoretical Analysis** D. Sigthorsson, Infoscitex Corporation, Dayton, OH; M. Oppenheimer, D. Doman, I. Weintraub, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2017-1273 **Wing Flexibility Induced Control Reversal For Flapping Wing Vehicles: Observation and Evaluation** D. Sigthorsson, Infoscitex Corporation, Dayton, OH; M. Oppenheimer, D. Doman, I. Weintraub, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2017-1274 **Aerodynamic-Dynamic Interactions and Multi-Body Formulation of Flapping Wing Dynamics: Part I Modeling** A. Hassan, H. Taha, University of California, Irvine, Irvine, CA	1630 hrs AIAA-2017-1275 **Aerodynamic-Dynamic Interactions and Multi-Body Formulation of Flapping Wing Dynamics: Part II Trim and Stability Analysis** A. Hassan, H. Taha, University of California, Irvine, Irvine, CA	

Wednesday, 11 January 2017						
312-GT-7/AMT-11	**Test Technique and Data Analysis Improvements at the NASA Ames Unitary Plan Wind Tunnels II (Invited)**					**Ft. Worth 6**
Chaired by: N. BURNSIDE, NASA-Ames and K. LONG, Arc-Aox, Experimental Aerophyscis Branch						
1400 hrs AIAA-2017-1277 **Initial Testing of the Ames Unitary Short Static Pipe** M. Amaya, R. Flach, A. L'Esperance, NASA Ames Research Center, Moffett Field, CA	1430 hrs AIAA-2017-1278 **MiniWall Tool for Analyzing CFD and Wind Tunnel Large Data Sets** M. Schuh, J. Melton, NASA Ames Research Center, Moffett Field, CA; P. Stremel, Science and Technology Corporation, Moffett Field, CA	1500 hrs AIAA-2017-1279 **Development of a Hybrid Non–Iterative and Neural Network Based Strain–Gage Balance Load Calculation Method** A. Meade, A. Mokhtarzadeh, Rice University, Houston, TX; K. James, K. Long, NASA Ames Research Center, Moffett Field, CA				

Wednesday, 11 January 2017						
313-GTE-7	**Advanced Turbine Cooling I**					**San Antonio 4**
Chaired by: G. PANIAGUA, Purdue University						
1400 hrs AIAA-2017-1280 **Relating Film Cooling Performance at Ambient and Near Engine Temperatures** C. Vorgert, R. Ashby, C. Schmiedel, M. Polanka, J. Rutledge, Air Force Institute of Technology, Wright-Patterson AFB, OH	1430 hrs AIAA-2017-1281 **Optimization of Film Cooling Hole Array Considering the Variation of Turbine Inlet Temperature Profiles** S. Lee, Seoul National University, Seoul, South Korea; D. Rhee, Korea Aerospace Research Institute (KARI), Daejeon, South Korea; Y. Kim, K. Yee, Seoul National University, Seoul, South Korea	1500 hrs AIAA-2017-1282 **Extended Surface Heat Transfer Coefficients via Endwall Temperature Measurements.** Y. Pai, R. Fernandes, S. Fernandes, M. Ricklick, Embry-Riddle Aeronautical University, Daytona Beach, FL	1530 hrs AIAA-2017-1283 **A Detailed Uncertainty Analysis of Heat Transfer Experiments using Temperature Sensitive Paint** A. Prasad, M. Ricklick, Embry-Riddle Aeronautical University, Daytona Beach, FL			

Wednesday, 11 January 2017						
314-HSABP-6/PGC-5	**Pressure Gain Combustion - Rotating Detonation Engines III**					**Ft. Worth 3**
Chaired by: K. KAILASANATH, Naval Research Laboratory and D. PAXSON, NASA Glenn Research Center						
1400 hrs AIAA-2017-1284 **Numerical Investigation on Burned Gas Backflow in Liquid Fuel Purge Method** H. Watanabe, A. Matsuo, Keio University, Yokohama, Japan; K. Matsuoka, J. Kasahara, Nagoya University, Chikusa, Japan	1430 hrs AIAA-2017-1285 **Experimental Characterization of Heat Transfer Coefficients in a Rotating Detonation Engine** S. Meyer, M. Polanka, Air Force Institute of Technology, Wright-Patterson AFB, OH; F. Schauer, R. Anthony, Air Force Research Laboratory, Wright-Patterson AFB, OH; C. Stevens, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; et al.	1500 hrs AIAA-2017-1286 **Experimental Study of the Disk-Shaped Rotating Detonation Turbine Engine** J. Higashi, S. Nakagami, K. Matsuoka, J. Kasahara, Nagoya University, Nagoya, Japan; A. Matsuo, Keio University, Yokohama, Japan; I. Funaki, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; et al.	1530 hrs AIAA-2017-1287 **Numerical study of oblique detonation initiations with chain-branching kinetics** H. Teng, P. Yang, Z. Jiang, Chinese Academy of Sciences, Beijing, China			

Wednesday, 11 January 2017						
315-ICC-1	**Information and Command and Control Systems**					**Ft. Worth 2**
Chaired by: J. MCEVER, Johns Hopkins University Applied Physics Laboratory and M. SOTAK						
1400 hrs AIAA-2017-1288 **TowardsThe Design of An Intelligent Aerospace Pursuit - Evasion Game** M. El-Arabaty, Misr International University, Cairo, Egypt	1430 hrs AIAA-2017-1289 **Multivariable Direct Adaptive Stability And Command Augmentation of an Air-Breathing Hypersonic Vehicle** M. Balas, R. Aditya, Embry-Riddle Aeronautical University, Daytona Beach, FL; D. Doman, Air Force Research Laboratory, Wright-Patterson AFB, OH; F. Franquiz, Embry-Riddle Aeronautical University, Daytona Beach, FL	1500 hrs AIAA-2017-1290 **VOSSCA Satellite Operation System** S. Chusri, U. Khowsuwan, J. Plaidoung, P. Pipitsunthonsan, Geo-Informatics and Space Technology Development Agency, Chonburi, Thailand	1530 hrs AIAA-2017-1291 **Development of Command and Control Software for an In-Space 3D Printer and Small Satellite Test Mission** R. Barsotti, University of Texas, Dallas, Dallas, TX; J. Straub, University of North Dakota, Grand Forks, Grand Forks, ND	1600 hrs AIAA-2017-1292 **System-of-Systems Architecture Metrics for Information Fusion: A Network Theoretic Formulation** A. Raz, D. DeLaurentis, Purdue University, West Lafayette, IN		

Wednesday, 11 January 2017						
316-IS-5	**Integrated Systems Health Management (ISHM)**					**Ft. Worth 1**
Chaired by: J. VALASEK, Texas A&M University						
1400 hrs AIAA-2017-1293 **Architectural Considerations Towards Automated Contingency Management for Unmanned Aircraft** H. Usach, Technical University of Valencia, Valencia, Spain; C. Torens, F. Adolf, German Aerospace Center (DLR), Braunschweig, Germany; J. Vila, Technical University of Valencia, Valencia, Spain	1430 hrs AIAA-2017-1294 **Spacecraft Health Monitoring Using a Biomimetic Fault Diagnosis Scheme** D. Garcia, H. Moncayo, A. Perez Rocha, K. Rivera, Embry-Riddle Aeronautical University, Daytona Beach, FL; M. Dupuis, R. Mueller, NASA Kennedy Space Center, Cape Canaveral, FL	1500 hrs AIAA-2017-1295 **Fault Management Metrics** S. Johnson, Dependable System Technologies, Broomfield, CO; S. Ghoshal, D. Haste, Qualtech Systems, Inc., Rocky Hill, CT; C. Moore, NASA Marshall Space Flight Center, Huntsville, AL				

Wednesday, 11 January 2017						
317-IS-6	**Human Automation Interaction**					**Ft. Worth 1**
Chaired by: N. NGUYEN, NASA-Ames Research Center						
1400 hrs **No Presentations**			1530 hrs AIAA-2017-1296 **A Human-System Interface with Contingency Planning for Collaborative Operations of Unmanned Aerial Vehicles** J. Mueller, C. Miller, U. Kuter, J. Rye, J. Hamell, Smart Information Flow Technologies, Minneapolis, MN	1600 hrs AIAA-2017-1297 **Aviate, Navigate: Functional Visualizations of Asymmetric Flight Envelope Limits** T. Rijndorp, C. Borst, C. de Visser, O. Stroosma, M. Mulder, M. van Paassen, Delft University of Technology, Delft, The Netherlands		

Wednesday, 11 January 2017						
318-MAT-6	**Fatigue and Fracture**					**Palomino 2**
Chaired by: R. FERTIG, University of Wyoming and G. SEIDEL, Virginia Polytechnic Institute and State Universit						
1400 hrs AIAA-2017-1298 **Delamination Detection in Carbon Fiber Composites using Piezoresistive Nanocomposites** S. Chava, S. Choudhary, S. Namilae, Embry-Riddle Aeronautical University, Daytona Beach, FL	1430 hrs AIAA-2017-1299 **Calibrating an equivalent initial flaw size distribution from da/dN and S-N data** I. Asher, G. Khan, L. Wang, Y. Ling, F. Viana, General Electric Company, Niskayuna, NY	1500 hrs AIAA-2017-1300 **Observation of the Constant Life Criterion for Turbine Engine Component Design** O. Scott-Emuakpor, T. George, C. Holycross, B. Langley, Air Force Research Laboratory, Wright-Patterson AFB, OH				

Wednesday, 11 January 2017						
319-MDO-8	**Topology and Structural Optimization**					**Mustang 1**
Chaired by: J. DEATON, Adjoint Technologies and A. NAJAFI, ANSYS, Inc.						
1400 hrs AIAA-2017-1301 **Topological Optimization of a Cuboct Truss Structure Using a Genetic Algorithm** H. Jackson, NASA Ames Research Center, Moffett Field, CA	1430 hrs AIAA-2017-1302 **A Nonlinear Finite Element Analysis Capability for the Optimization of Thermoelastic Structures** D. Neiferd, R. Grandhi, Wright State University, Dayton, OH; P. Beran, Air Force Research Laboratory, Wright-Patterson AFB, OH; M. Bhatia, Mississippi State University, Mississippi State, MS	1500 hrs AIAA-2017-1303 **Aeroelastic Optimization of Wing Structure Using Curvilinear Spars, Ribs, and Flutter Suppression** S. Doyle, M4 Engineering, Inc., Long Beach, CA	1530 hrs AIAA-2017-1304 **Efficient Methods for Design And Analysis of Tow Steered Wing Structures** M. Henson, Lockheed Martin Corporation, Fort Worth, TX; B. Wang, University of Texas, Arlington, Arlington, TX			

Wednesday, 11 January 2017						
320-MDO-9	**Emerging Methods and Algorithms in Optimization**					**Mustang 3**
Chaired by: V. BALABANOV, Boeing Commercial Airplanes and D. ALLAIRE, Texas A&M University						
1400 hrs AIAA-2017-1305 **A Mixed Integer Efficient Global Optimization Algorithm for the Simultaneous Aircraft Allocation-Mission-Design Problem** S. Roy, Purdue University, West Lafayette, IN; K. Moore, J. Hwang, J. Gray, NASA Glenn Research Center, Cleveland, OH; W. Crossley, Purdue University, West Lafayette, IN; J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1430 hrs AIAA-2017-1306 **Spiral: A General Framework For Parameter Sensitivity Analysis** D. Makhija, Universal Technology Corporation, Dayton, OH; P. Beran, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2017-1307 **Sub-space Metamodel-based Multidisciplinary Optimization of an Aircraft Wing subjected to Bird Strike** J. Ollar, R. Jones, Altair Engineering, Inc., Leamington Spa, United Kingdom; V. Toropov, Queen Mary University of London, London, United Kingdom	1530 hrs AIAA-2017-1308 **Optimization of Aerospace Structures under Uncertainty using an Iterative Distribution Evolutionary Algorithm** I. Tartaruga, Siemens, Leuven, Belgium; M. Lowenberg, J. Cooper, P. Sartor, University of Bristol, Bristol, United Kingdom; Y. Lemmens, Siemens, Leuven, Belgium			

Wednesday, 11 January 2017						
321-MST-8	**Aviation Simulation Scenario Development II**					**San Antonio 2**
Chaired by: U. DURAK, DLR-German Aerospace Center and S. JAFER, Embry-Riddle Aeronautical University						
1400 hrs AIAA-2017-1309 **Enhanced Scenario-Based Training for Unmanned Aircraft System Operational Missions** K. Rigby, N. Macchiarella, A. Mirot, Embry-Riddle Aeronautical University, Daytona Beach, FL	1430 hrs AIAA-2017-1310 **Harmonizing the Scenario Generation Process, Tools and Standards for Flight Simulators** J. Field, A. Gerretsen, R. Meiland, F. Mohrmann, National Aerospace Laboratory (NLR), Amsterdam, The Netherlands	1500 hrs AIAA-2017-1311 **Graphical Specification of Flight Scenarios with Aviation Scenario Defintion Language (ASDL)** S. Jafer, B. Chhaya, Embry-Riddle Aeronautical University, Daytona Beach, FL; U. Durak, German Aerospace Center (DLR), Braunschweig, Germany	1530 hrs **Panel Discussion**			

Wednesday, 11 January 2017						
322-MST-9	**Human Factors, Perception, Cueing II**					**San Antonio 1**
Chaired by: D. CARTMELL, Boeing Engineering Operations & Technology and F. CARDULLO, State University of NY						
1400 hrs AIAA-2017-1312 **Development of model-following control laws for helicopters to achieve personal aerial vehicle's handling qualities** C. Gerboni, S. Geluardi, J. Venrooij, Max Planck Institute for Biological Cybernetics, Tübingen, Germany; A. Joos, W. Fichter, University of Stuttgart, Stuttgart, Germany; H. Buelthoff, Max Planck Institute for Biological Cybernetics, Tübingen, Germany	1430 hrs AIAA-2017-1313 **Passive Haptics to Enhance Virtual Reality Simulations** R. Joyce, S. Robinson, University of California, Davis, Davis, CA	1500 hrs AIAA-2017-1314 **Real-Time Performance Feedback in a Manually-Controlled Spacecraft Inspection Task** J. Karasinski, S. Robinson, University of California, Davis, Davis, CA; P. Handley, K. Duda, Draper Laboratory, Cambridge, MA	1530 hrs AIAA-2017-1315 **A Hybrid-Systems Approach for Analyzing Pilot-Cockpit Interactions** B. Yang, S. Park, Optimal Synthesis, Inc., Los Altos, CA; J. Suraj Nandiganahalli, I. Hwang, Purdue University, West Lafayette, IN	1600 hrs AIAA-2017-1316 **Effects of Eye Parameters on Human Controller Remnant and Control Behavior** A. Popovici, P. Zaal, San Jose State University, Moffett Field, CA; D. Pool, M. Mulder, Delft University of Technology, Delft, The Netherlands	1630 hrs AIAA-2017-1317 **Real Time Eye Tracking Interface for Visual Monitoring of Radar Controllers** H. Wee, S. Lye, Nanyang Technological University, Singapore, Singapore; J. Pinheiro, Thales Group, Rungis, France	

Wednesday, 11 January 2017						
323-MST-10	**Modeling and Simulation of Air Traffic Management III**					**San Antonio 3**
Chaired by: J. SCHROEDER, Federal Aviation Administration						
1400 hrs AIAA-2017-1318 **Automated Route Clustering for Air Traffic Modeling** A. Bombelli, A. Segarra Torne, E. Trumbauer, K. Mease, University of California, Irvine, Irvine, CA	1430 hrs AIAA-2017-1319 **TFDM Departure Queue Management - Effective Calibration and Validation Strategies for High-Fidelity Modeling** V. Shah, C. David, S. James, Noblis, Falls Church, VA	1500 hrs AIAA-2017-1320 **Estimation of Midair Collision Risk for Established on Required Navigation Performance Procedures** C. Nichols, J. Walls, Federal Aviation Administration, Washington, D.C.	1530 hrs AIAA-2017-1321 **A Study on Free Routing Considering Interference of Air Traffic Flow** Y. Nakamura, K. Kageyama, Electronic Navigation Research Institute, Chofu, Japan; Y. Miyazawa, H. Matsuda, Kyushu University, Fukuoka, Japan	1600 hrs AIAA-2017-1322 **An Elementary Algorithm for Autonomous Air Terminal Merging and Interval Management** A. White, NASA Langley Research Center, Hampton, VA	1630 hrs AIAA-2017-1323 **Arrival Traffic Scheduling Performance subject to Futuristic Traffic Statistics** N. Takeichi, Tokyo Metropolitan University, Hino, Japan	

Wednesday, 11 January 2017						
324-NDA-7	**Special Session: DARPA Efficient Quantification of Uncertainty in Physical Systems (EQUiPS) Program II**					**Mustang 2**
Chaired by: F. FAHROO and B. SMARSLOK, AFRL/RQH						
1400 hrs AIAA-2017-1324 **Information theory based metrics for the characterization and influence of reinforcing matrix phases in polymeric composites** P. Bandaru, University of California, San Diego, La Jolla, CA; S. Pfeifer, General Atomics, San Diego, CA	1430 hrs AIAA-2017-1325 **An Adaptive Sampling Approach for Solving PDEs with Uncertain Inputs and Evaluating Risk** Z. Zou, Duke University, Durham, NC; D. Kouri, Sandia National Laboratories, Albuquerque, NM; W. Aquino, Duke University, Durham, NC	1500 hrs AIAA-2017-1326 **Predicting fracture patterns in simulations of brittle materials under variable load and material strength** M. Stoyanov, P. Seleson, C. Webster, Oak Ridge National Laboratory, Oak Ridge, TN	1530 hrs AIAA-2017-1327 **Scalable Environment for Quantification of Uncertainty and Optimization in Industrial Applications (SEQUOIA)** J. Alonso, Stanford University, Stanford, CA; M. Eldred, Sandia National Laboratories, Albuquerque, NM; P. Constantine, Colorado School of Mines, Golden, CO; K. Duraisamy, University of Michigan, Ann Arbor, Ann Arbor, MI; C. Farhat, G. Iaccarino, Stanford University, Stanford, CA; et al.	1600 hrs AIAA-2017-1328 **A multi-fidelity framework for investigating the performance of super-cavitating hydrofoils under uncertain flow conditions** L. Bonfiglio, P. Perdikaris, S. Brizzolara, Massachusetts Institute of Technology, Cambridge, MA; G. Karniadakis, Brown University, Providence, RI		

Wednesday, 11 January 2017						
325-OPS-1	**Intelligent and Autonomous Systems for Improving Space Operation**					**Grapevine 4**
Chaired by: S. BURLEIGH, Jet Propulsion Laboratory						
1400 hrs AIAA-2017-1329 **Satellite Articulation Sensing using Computer Vision** D. Curtis, R. Cobb, Air Force Institute of Technology, Wright-Patterson AFB, OH	1430 hrs AIAA-2017-1330 **Configuration validation of a novel in-space propellant storage and transfer** S. Gangadharan, Embry-Riddle Aeronautical University, Daytona Beach, FL; D. Kirk, Florida Institute of Technology, Melbourne, FL	1500 hrs AIAA-2017-1331 **Optical Tracking and Collision Avoidance System for GEO/MEO Spacecraft Operators, in use at Italian MoD** A. D'Apolito, L. Rizzo, M. Argentiero, A. D'Antoni, G. Marino, D. D'Amato, Italian Ministry of Defence, Rome, Italy	1530 hrs AIAA-2017-1332 **Asteroid Planetary Defense and Redirection Mission Design** K. Turkoglu, J. Zhen, San Jose State University, San Jose, CA	1600 hrs AIAA-2017-1333 **Satellite formation flight vision navigation system** R. Glebocki, M. Jacewicz, Warsaw University of Technology, Warsaw, Poland	1630 hrs AIAA-2017-1334 **Reference Ground Station Design for University Satellite Missions with Varying Communication Requirements** T. Choi, T. Stevenson, E. Lightsey, Georgia Institute of Technology, Atlanta, GA	

Wednesday, 11 January 2017						
326-PC-20	**Combustion Dynamics III**					**Dallas 7**
Chaired by: J. O`CONNOR, Pennsylvania State University and B. CHEHROUDI, European Research Council (ERC)						
1400 hrs AIAA-2017-1335 **A Study of Acoustic Forcing on Gas-Centered Swirl-Coaxial Reacting Flows** M. Roa, Sierra Lobo, Inc., Edwards AFB, CA; S. Schumaker, D. Talley, Air Force Research Laboratory, Edwards AFB, CA; J. Bennewitz, University of California, Los Angeles, Los Angeles, CA	1430 hrs AIAA-2017-1336 **Experimental Investigation of the Ensemble-Averaged Turbulent Displacement Speed** L. Humphrey, T. Lieuwen, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2017-1337 **Forced Response of Flames in a Bluff-Body Stabilized Annular Combustor** P. Allison, E. Mastorakos, University of Cambridge, Cambridge, United Kingdom	1530 hrs AIAA-2017-1338 **Extraction of response function from numerical simulations and their use for longitudinal combustion intsbility modeling** M. Frezzotti, F. Nasuti, University of Rome "La Sapienza", Rome, Italy; C. Huang, W. Anderson, Purdue University, West Lafayette, IN			

Wednesday, 11 January 2017						
327-PDL-8	**Plasma-Based Flow Control: Lessons Learned and Prospects II (Invited)**					**Ft. Worth 4**
Chaired by: S. LEONOV, University of Notre Dame and J. POGGIE, Purdue University- Sch of Aero and Astro						
1400 hrs AIAA-2017-1339 **Thermal perturbations generated by near-surface electric discharges and mechanisms of their interaction with the airflow** I. Adamovich, Ohio State University, Columbus, OH; S. Leonov, University of Notre Dame, Notre Dame, IN; K. Frederickson, Ohio State University, Columbus, OH; J. Zheng, Y. Cui, B. Khoo, National University of Singapore, Singapore, Singapore	1430 hrs Oral Presentation **Thermal and Non-Thermal Effects in Plasma Aerodynamics** S. Macheret, Purdue University, West Lafayette, IN	1500 hrs Oral Presentation **Electrohydrodynamic phenomena in corona discharges and surface plasma actuators for airflow control** E. Moreau, N. Benard, University of Poitiers, Poitiers, France	1530 hrs Oral Presentation **Plasma Guiding and Deflection of High Speed Projectiles** R. Miles, A. Starikovskiy, Princeton University, Princeton, NJ; C. Limbach, Colorado State University, Fort Collins, CO	1600 hrs Oral Presentation **Plasma actuators as tools for understanding transitional flows** M. Kotsonis, Delft University of Technology, Delft, The Netherlands	1630 hrs Oral Presentation **Experimental Investigation of Dynamic Stall Control by Plasma Actuators with Combined Energy/ Momentum Action** A. Starikovskiy, Princeton University, Princeton, NJ	

Wednesday, 11 January 2017						
328-PDL-9	**Plasma and Laser Propulsion**					**Ft. Worth 5**
Chaired by: D. LEVIN, University of Illinois and T. MOELLER, University of Tennessee Space Institute						
1400 hrs AIAA-2017-1340 **High Temperature Millimeter-Wave Permittivity Measurement Setup for Beamed Energy Heat Exchangers** M. Hilario, J. Wang, University of Southern California, Los Angeles, CA	1430 hrs AIAA-2017-1341 **Effect of solvents on Ethylammonium nitrate nanostructure in the presence of an electric field** N. Mehta, D. Levin, University of Illinois, Urbana-Champaign, Urbana, IL	1500 hrs AIAA-2017-1342 **Static and Dynamic Stall Control at High Angle of Attack by NS pulsed Actuator in Burst Mode** A. Starikovskiy, Princeton University, Princeton, NJ	1530 hrs AIAA-2017-1343 **Particle Simulation of Electrodeless Plasma Thruster with Rotating Magnetic Field** D. Uchigasaki, N. Ohnishi, Tohoku University, Sendai, Japan	1600 hrs AIAA-2017-1344 **Multiple aperture approach to wavefront prediction for adaptive-optic applications** M. Kemnetz, S. Gordeyev, University of Notre Dame, Notre Dame, IN		

Wednesday, 11 January 2017						
329-SCS-5	**Deployable Apertures and Novel Structural Concepts**					**Palomino 1**
Chaired by: H. FANG and J. BANIK, USAF						
1400 hrs AIAA-2017-1345 **Modular Foldable Surfaces: a Novel Approach based on Spatial Mechanisms and Thin Shells** Y. Wei, S. Pellegrino, California Institute of Technology, Pasadena, CA	1430 hrs AIAA-2017-1346 **The Straightness of Off-Radial Ribs with Preloaded Sheet Sections Between - a Wrapped Array Design** G. Greschik, TentGuild Engineering Company, Boulder, CO	1500 hrs AIAA-2017-1347 **A Study on the Design of Deployable Cable-Panel Structure** K. Seino, V. Parque, T. Miyashita, Waseda University, Shinjuku, Japan	1530 hrs AIAA-2017-1348 **Effect of grid geometry on mechanical behavior of skin added lattice structure under axial compression** Y. Shimizu, T. Aoki, T. Yokozeki, University of Tokyo, Tokyo, Japan			

Wednesday, 11 January 2017						
330-SD-16	**Aeroelastic Analysis**					**Appaloosa 2**
Chaired by: P. TAYLOR, Gulfstream Aerospace Corporation and T. BARTKOWICZ, Boeing Defense, Space & Security						
1400 hrs AIAA-2017-1349 **Geometrical Nonlinear Aeroelastic Stability Analysis and Active Control with Piezoelectric Actuators of a High-Aspect-Ratio Flexible Wing** Y. Bi, C. Xie, C. Yang, Beihang University, Beijing, China	1430 hrs AIAA-2017-1350 **High-fidelity Multipoint Aerostructural Optimization of a High Aspect Ratio Tow-steered Composite Wing** T. Brooks, University of Michigan, Ann Arbor, Ann Arbor, MI; G. Kennedy, Georgia Institute of Technology, Atlanta, GA; J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1500 hrs AIAA-2017-1351 **Nonlinear Aeroelastic Analysis of Aircraft with Strut-Braced Highly Flexible Wings** W. Su, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1530 hrs AIAA-2017-1352 **Geometrically-nonlinear effects in lateral manoeuvres with coupled flight dynamics and aeroelasticity** S. Maraniello, R. Palacios, Imperial College London, London, United Kingdom	1600 hrs AIAA-2017-1353 **Nonlinear Aeroelasticity of Highly Flexible Joined-Wing Aircraft using Unsteady Vortex-Lattice Method** W. Su, Y. Huang, J. Hammerton, University of Alabama, Tuscaloosa, Tuscaloosa, AL		

Wednesday, 11 January 2017						
331-SD-17	**Large-Deformation Nonlinear Dynamics, Flexible Multibody Dynamics, Contact/Constraint Modeling**					**Appaloosa 3**
Chaired by: J. COOPER, University of Bristol and W. SILVA, NASA-Langley Research Center						
1400 hrs AIAA-2017-1354 **Evaluating NLROMs' Ability to Predict Dynamic Snap Through of a Curved Beam in a Random Loading Environment** C. VanDamme, M. Allen, University of Wisconsin, Madison, Madison, WI	1430 hrs AIAA-2017-1355 **Worst Case Gust Prediction of Highly Flexible Wings** R. Cook, D. Calderon, M. Lowenberg, S. Nield, J. Cooper, University of Bristol, Bristol, United Kingdom; E. Coetzee, Airbus, Bristol, United Kingdom	1500 hrs AIAA-2017-1356 **A Computational approach for vertical launch system by coupled CFD/CSD with hybrid particle level-set method** H. Cho, S. Shin, H. Joo, Seoul National University, Seoul, South Korea	1530 hrs AIAA-2017-1357 **Multi-Body Dynamics Simulation of Spacecraft Rendezvous Operations** D. Inoyama, J. Francis, T. Stoumbos, Orbital ATK, Dulles, VA	1600 hrs AIAA-2017-1358 **Structural Bionic Design for Thin-walled Energy Absorber Tube and Parametric Analysis** Z. Feng, Z. Luo, J. Xiang, Beihang University, Beijing, China		

Wednesday, 11 January 2017						
332-SD-18	**Flutter and Aeroelastic Analysis II**					**Appaloosa 4**
Chaired by: I. CHOPRA, University of Maryland and A. GREWAL, National Research Council Canada						
1400 hrs AIAA-2017-1359 **Bifurcations of limit-cycle oscillations of a two degree-of-freedom airfoil caused by aerodynamic non-linearities** A. van Rooij, J. Nitzsche, German Aerospace Center (DLR), Göttingen, Germany; R. Dwight, Delft University of Technology, Delft, The Netherlands	1430 hrs AIAA-2017-1360 **Aeroelastic Tailoring using the Spars and Stringers Planform Geometry** G. Francois, J. Cooper, P. Weaver, University of Bristol, Bristol, United Kingdom	1500 hrs AIAA-2017-1361 **A Recurrent Neural Network Controller for Gust Load Alleviation on a Transport Aircraft** F. Fonte, P. Mantegazza, Technical University of Milan, Milan, Italy	1530 hrs AIAA-2017-1362 **Higher Order Estimations of Load Factor from Derived Gust Velocity** K. Rokhsaz, L. Kliment, Wichita State University, Wichita, KS			

Wednesday, 11 January 2017						
333-SUR-2/MAT-7	**Materials/Materials for Survivability**					**Palomino 3**
Chaired by: E. FAHRENTHOLD, University of Texas and G. ODEGARD						
1400 hrs AIAA-2017-1363 **Steady State and Transient Creep Responses of High Temperature Alloys** R. Song, A. Muliana, Texas A&M University, College Station, TX; A. Palazotto, Air Force Institute of Technology, Wright-Patterson AFB, OH	1430 hrs AIAA-2017-1364 **Simulation for Explosive Sensing Materials Design** E. Fahrenthold, J. Zhang, University of Texas, Austin, Austin, TX	1500 hrs AIAA-2017-1365 **Progressive Damage Analysis in Composites** H. Sertse, W. Yu, Purdue University, West Lafayette, IN	1530 hrs AIAA-2017-1366 **Rapid Heat Generation using Carbon Nanotubes** S. Loganathan, V. Rollin, D. Kim, Embry-Riddle Aeronautical University, Daytona Beach, FL	1600 hrs AIAA-2017-1367 **Development of New Thermal Protection Systems Based on Silica/ Polysiloxane Composites** K. Schellhase, E. Liu, J. Koo, University of Texas, Austin, Austin, TX; J. Buffy, Dyna-Glass, Perrysburg, OH; R. Brushaber, Texas Research International, Austin, TX		

Wednesday, 11 January 2017						
334-TP-10	**Nonequilibrium Radiation**					**Austin 3**
Chaired by: A. BRANDIS, AMA Inc at NASA Ames and W. YUEN, The Hong Kong Polytechnic University						
1400 hrs AIAA-2017-1368 **Physico-Chemical Parameters Governing the Convective and Radiative Heating from a CO_2-based mixture** Y. Higuchi, Ryokoku University, Otsu, Japan; L. Pierre, École Polytechnique, Palaiseau, France; A. Lemal, S. Matsuyama, K. Fujita, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	1430 hrs AIAA-2017-1369 **Measurement of Carbon Dioxide Infrared Radiation in the Afterbody of a Mars entry Capsule** H. Takayanagi, A. Lemal, S. Nomura, K. Fujita, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	1500 hrs AIAA-2017-1370 **Development of a Radiative Heating Margin Policy for Lunar Return Missions** B. Cruden, A. Brandis, Analytical Mechanics Associates, Inc., Moffett Field, CA; C. Johnston, NASA Langley Research Center, Hampton, VA	1530 hrs AIAA-2017-1371 **Impact of Non-Tangent-Slab Radiative Transport on Flowfield-Radiation Coupling** C. Johnston, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2017-1372 **On the development of a new nonequilibrium chemistry model for Mars entry** R. Jaffe, D. Schwenke, G. Chaban, D. Prabhu, NASA Ames Research Center, Moffett Field, CA; C. Johnston, NASA Langley Research Center, Hampton, VA; M. Panesi, University of Illinois at Urbana-Champaign, Urbana, IL		

Wednesday, 11 January 2017						
335-UMS-10	**UAS Technologies and Applications II**					**Grapevine 2**
Chaired by: O. ARIFF, University of Salford						
1400 hrs AIAA-2017-1373 **Experimental Analysis of Forces During Take-Off of Birds** J. Barata, T. Silva, F. Neves, A. Silva, University of Beira Interior, Covilha, Portugal	1430 hrs AIAA-2017-1374 **Design of a Small UAS for Manipulation in Cluttered Indoor Environments** D. Sun, R. Jones, T. Marinho, A. Lakshmanan, A. Jones, N. Hovakimyan, University of Illinois, Urbana-Champaign, Urbana, IL	1500 hrs AIAA-2017-1375 **Optimal Strategies for Meteorological Measurements with Unmanned Aircraft** A. Avery, J. Jacob, Oklahoma State University, Stillwater, OK	1530 hrs AIAA-2017-1376 **Temporal Feature Variation as an Efficient Method for Real-Time Video Summarization Captured from Unmanned Aerial Systems** B. Massinas, A. Doulamis, N. Doulamis, D. Paradissis, National Technical University of Athens, Athens, Greece	1600 hrs AIAA-2017-1377 **Small Unmanned Aircraft Systems for Project-Based Engineering Education** P. Di Donato, National Civil Aviation Agency, São José dos Campos, Brazil; P. Gaskell, E. Atkins, University of Michigan, Ann Arbor, Ann Arbor, MI		

Wednesday, 11 January 2017						
336-WE-8	**Wind Turbine Rotor and Blade Innovations**					**Ft. Worth 7**
Chaired by: D. GRIFFITH and K. WETZEL, Wetzel Engineering, Inc.						
1400 hrs AIAA-2017-1378 **Wind Tunnel and Field Test Results on Reducing Load Oscillations on Wind Turbine Blades using Synthetic Jets** T. Rice, K. Taylor, M. Amitay, Rensselaer Polytechnic Institute, Troy, NY	1430 hrs AIAA-2017-1379 **Numerical analysis of noise reduction mechanisms on improved trailing edge serrations using the Lattice Boltzmann method** W. van der Velden, Delft University of Technology, Delft, The Netherlands; S. Oerlemans, Siemens, Brande, Denmark	1500 hrs AIAA-2017-1380 **Design of a Boundary-Layer Suction System for Trailing-Edge Noise Reduction of an Industrial Wind Turbine** B. Arnold, University of Stuttgart, Stuttgart, Germany; C. Rautmann, Nordex Energy GmbH, Hamburg, Germany; T. Lutz, E. Kraemer, University of Stuttgart, Stuttgart, Germany	1530 hrs AIAA-2017-1381 **Bio-inspired Leading-Edge Tubercles to Improve Fatigue Life in Horizontal Axis Wind Turbine Blades** B. Ng, T. New, Nanyang Technological University, Singapore, Singapore; R. Palacios, Imperial College London, London, United Kingdom	1600 hrs AIAA-2017-1382 **Effects of Gurney Flaps on the Performance of Diffuser Augmented Wind Turbine** V. Dighe, F. Avallone, J. Tang, G. van Bussel, Delft University of Technology, Delft, The Netherlands		

Wednesday, 11 January 2017		
337-NW-14 1500 - 1700 hrs	Diversity and Inclusion in the Workplace	Grapevine A

Wednesday, 11 January 2017		
338-NW-15 1530 - 1600 hrs	Wednesday Afternoon Networking Coffee Break	Longhorn Hall E&F

Wednesday, 11 January 2017		
339-LEC-5 1800 - 1900 hrs	Structures, Structural Dynamics, and Materials Lecture Challenges in Integrated Computational Materials Engineering of Aerospace Composites	Texas C

Anthony M. Waas
Boeing-Egtvedt Chair, Professor of Aerostructures
Chair, William E Boeing Department of Aeronautics and Astronautics
University of Washington

Thursday

Thursday, 12 January 2017		
340-NW-16 0700 - 0730 hrs	Thursday Early Morning Networking Coffee Break	Session Room Foyers

Thursday, 12 January 2017		
341-SB-4 0730 - 0800 hrs	Thursday Morning Speakers' Briefing	Session Rooms

Thursday, 12 January 2017		
342-PLNRY-5 0800 - 0900 hrs	Thursday Morning Plenary: Disruptive Technology Developments - Breakthroughs that will Transform Aerospace	Texas A & B

Moderator: Samantha Marquart Brainard, Ph.D. Candidate, George Washington, University

Panelists:

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

Neil Gershenfeld
Director, The Center for Bits and Atoms
Massachusetts Institute of Technology

Rob High
Vice President and Chief Technology Officer
IBM Watson

Robert Lutwak
Program Manager, Microsystems Technology Office
DARPA

Thursday, 12 January 2017		
343-NW-17 0900 - 0930 hrs	Thursday Morning Networking Coffee Break	Longhorn Hall E&F

Thursday, 12 January 2017						
344-ABPSI-1	High-Speed Inlets and Scramjets					Dallas 1
Chaired by: L. LEAVITT, N A S A and C. CHUCK, The Boeing Company						
0930 hrs AIAA-2017-1383 **Vortex Generators in a Streamline-Traced, External-Compression Supersonic Inlet** E. Baydar, F. Lu, University of Texas, Arlington, Arlington, TX; J. Slater, C. Trefny, NASA Glenn Research Center, Cleveland, OH	1000 hrs AIAA-2017-1384 **Trajectory Optimization using Indirect Methods and Parametric Scramjet Cycle Analysis** J. Williams, K. Mall, M. Grant, Purdue University, West Lafayette, IN	1030 hrs AIAA-2017-1385 **Shapeable Inlet Manifold for Hypersonic Scramjet** J. Maxwell, G. Goodwin, Naval Research Laboratory, Washington, D.C.	1100 hrs AIAA-2017-1386 **Research Developments on Rocket-Based Combined-Cycle Inlet in Northwestern Polytechnical University** L. Shi, Northwestern Polytechnical University, Xi'an, China			

Thursday, 12 January 2017						
345-ACD-8	**Innovative Aircraft Design Concepts I**					**Grapevine 3**
Chaired by: C. NICKOL, NASA Langley Research Center and W. CROSSLEY, Purdue University						
0930 hrs AIAA-2017-1387 **Preliminary Design of an N+1 Overwater Supersonic Commerical Transport Aircraft** M. Mathieu, A. Marin, K. Stephenson, J. Beard, E. Castillo, C. Weddle-Weaver, Arizona State University, Tempe, AZ; et al.	1000 hrs AIAA-2017-1388 **Cost-Driven Design of a Large Scale X-Plane** J. Welstead, NASA Langley Research Center, Hampton, VA; P. Frederic, Tecolote Research, Inc., Santa Barbara, CA; M. Frederick, S. Jacobson, NASA Armstrong Flight Research Center, Edwards, CA; J. Berton, NASA Glenn Research Center, Cleveland, OH	1030 hrs AIAA-2017-1389 **Development of an Improved Wing-Integrated Airborne Antenna Array with Applications to Future Wing Sizing** E. Arnold, A. Patil, University of Kansas, Lawrence, Lawrence, KS	1100 hrs AIAA-2017-1390 **Advanced Tube and Wing Aircraft for Year 2050 Timeframe** P. Heinemann, Bauhaus Luftfahrt e.V., Taufkirchen, Germany; P. Panagiotou, Aristotle University of Thessaloniki, Thessaloniki, Greece; P. Vratny, S. Kaiser, M. Hornung, Bauhaus Luftfahrt e.V., Taufkirchen, Germany; K. Yakinthos, Aristotle University of Thessaloniki, Thessaloniki, Greece			

Thursday, 12 January 2017						
346-AFM-7	**Special Session: Performance Adaptive Aeroelastic Wing**					**Grapevine 4**
Chaired by: B. DANOWSKY, Systems Technology, Inc. and S. KEYES						
0930 hrs AIAA-2017-1391 **mAEWing2: Conceptual Design and System Test** C. Regan, University of Minnesota, Minneapolis, Minneapolis, MN	1000 hrs AIAA-2017-1392 **Multidisciplinary Design Analysis and Optimization of Performance Adaptive Aeroelastic Wings** W. Zhao, M. Jrad, R. Gupta, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA	1030 hrs AIAA-2017-1393 **Finite Element Model Updating of A Small Flexible Composite UAV** W. Zhao, N. Muthirevula, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA; A. Gupta, C. Regan, P. Seiler, University of Minnesota, Minneapolis, Minneapolis, MN	1100 hrs AIAA-2017-1394 **Control-Oriented System and Parameter Identification of a Small Flexible Flying-Wing Aircraft** B. Danowsky, Systems Technology, Inc., Hawthorne, CA; D. Schmidt, D.K. Schmidt & Associates, Monument, CO; H. Pfifer, University of Nottingham, Nottingham, United Kingdom	1130 hrs AIAA-2017-1395 **A Newtonian Development of the Mean-Axis Equations of Motion for Flexible Aircraft** S. Keyes, P. Seiler, University of Minnesota, Minneapolis, Minneapolis, MN; D. Schmidt, D.K. Schmidt & Associates, Monument, CO		

Thursday, 12 January 2017						
347-AFM-8	**Aircraft Flight Dynamics, Handling Qualities, and Performance II**					**Grapevine 5**
Chaired by: I. CHAKRABORTY, ASDL, Georgia Tech and K. SHWEYK, Boeing Engineering Operations & Technology						
0930 hrs AIAA-2017-1397 **Control Law Affect on Spin Characteristics of Aerodynamically Asymmetric Aircraft** S. Akhtar, National University of Sciences and Technology, Islamabad, Pakistan; B. Malik, J. Masud, Air University, Islamabad, Pakistan	1000 hrs AIAA-2017-1398 **Handling Qualities Flight Test Assessment of a Business Jet N_zU P-β Fly-By-Wire Control System** T. Berger, M. Tischler, Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA; S. Hagerott, Cessna Aircraft Company, Wichita, KS; M. Cotting, J. Gresham, J. George, U.S. Air Force Test Pilot School, Edwards AFB, CA; et al.	1030 hrs AIAA-2017-1399 **Dynamic Stability of the Boeing CST-100** V. Aubuchon, D. Owens, NASA Langley Research Center, Hampton, VA; O. Carvajal, The Boeing Company, Houston, TX; S. Lumb, The Boeing Company, Huntington Beach, CA	1100 hrs AIAA-2017-1400 **Gust Load Alleviation and Ride Quality Improvement with Incremental Nonlinear Dynamic Inversion** X. Wang, E. Van Kampen, Q. Chu, Delft University of Technology, Delft, The Netherlands	1130 hrs AIAA-2017-1401 **Comparison of free flight base pressure measurements with CFD predictions** M. Albisser, S. Dobre, C. Berner, French-German Research Institute of Saint-Louis (ISL), Saint-Louis, France	1200 hrs AIAA-2017-0249 **Rapid Ascent-Entry Vehicle Mission Optimization Using hp-Adaptive Gaussian Quadrature Collocation** A. Miller, A. Rao, University of Florida, Gainesville, Gainesville, FL	

Thursday, 12 January 2017						
348-AMT-12	**Launch Vehicle Buffet (Invited)**					**Grapevine 2**
Chaired by: J. ROSS, NASA Ames Research Center and J. PANDA, NASA Ames Research Center						
0930 hrs Oral Presentation **Measuring Aerodynamic Buffet on a Generic Launch-Vehicle Using Unsteady Pressure-Sensitive Paint** J. Ross, NASA Ames Research Center, Moffett Field, CA; M. Sellers, Quantitech, Arnold AFB, TN; N. Roozeboom, J. Panda, D. Atler, NASA Ames Research Center, Moffett Field, CA; D. Piatak, NASA Langley Research Center, Hampton, VA; et al.	1000 hrs AIAA-2017-1402 **Evaluation of Unsteady Pressure Sensitive Paint Use for Space Launch Vehicle Buffet Determination** M. Sellers, M. Nelson, Quantitech, Arnold AFB, TN; N. Burnside, N. Roozeboom, NASA Ames Research Center, Moffett Field, CA	1030 hrs AIAA-2017-1403 **Experimental Visualizations of a Generic Launch Vehicle Flow Field: Time-Resolved Shadowgraph and Infrared Imaging** T. Garbeff, J. Panda, J. Ross, N. Smith, NASA Ames Research Center, Moffett Field, CA	1100 hrs AIAA-2017-1404 **Comparison of Transonic Buffet Simulations with Unsteady PSP Measurements for a Hammerhead Payload Fairing** S. Murman, L. Diosady, P. Blonigan, NASA Ames Research Center, Moffett Field, CA	1130 hrs AIAA-2017-1405 **Inverse Force Determination on a Small Scale Launch Vehicle Model using a Dynamic Balance** C. Ngo, Aerospace Computing, Inc., Moffett Field, CA; J. Powell, NASA Johnson Space Center, Houston, TX; J. Ross, NASA Ames Research Center, Moffett Field, CA	1200 hrs AIAA-2017-1406 **Wavenumber-Frequency Spectra of Pressure Fluctuations on a Generic Space Vehicle Measured via Fast-Response Pressure-Sensitive Paint** J. Panda, N. Roozeboom, J. Ross, NASA Ames Research Center, Moffett Field, CA	

Thursday, 12 January 2017						
349-AMT-13	**Rayleigh Scattering Measurements**					**Grapevine B**
Chaired by: B. BATHEL, NASA Langley Research Center and J. SUTTON, Ohio State University						
0930 hrs AIAA-2017-1407 **Measurement of Density in High Speed Shear Layers and Oblique Shocks using Filtered Rayleigh Scattering** J. George, T. Jenkins, MetroLaser, Inc., Laguna Hills, CA; R. Miles, Princeton University, Princeton, NJ	1000 hrs AIAA-2017-1408 **Quantitative 2D Temperature Imaging in Turbulent Nonpremixed Jet Flames using Filtered Rayleigh Scattering** T. McManus, J. Sutton, Ohio State University, Columbus, OH					

Thursday, 12 January 2017						
350-APA-33	**Aerodynamic Design: Transonic/Supersonic**					**Ft. Worth 2**
Chaired by: C. TILMANN, AFRL/RQV and S. MUPPIDI						
0930 hrs AIAA-2017-1409 **Drag polar prediction methodologies during aircraft design phases** A. de Paula, F. Porto, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; M. Sousa, Federal University of Itajubá, Itajubá, Brazil	1000 hrs AIAA-2017-1410 **Restricted Snakes: a Flexible Topology Parameterisation Method for Aerodynamic Optimisation** A. Payot, T. Rendall, C. Allen, University of Bristol, Bristol, United Kingdom	1030 hrs AIAA-2017-1411 **Validation of LS-FLOW for Reentry Capsule Unsteady Aerodynamic Analysis** K. Fujimoto, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan; T. Nambu, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan; H. Negishi, Y. Watanabe, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan	1100 hrs AIAA-2017-1412 **Enhanced Manoeuvrability of Delta-Canard Combat Aircraft by Vortex Flow Control** S. Hitzel, Airbus, Manching, Germany	1130 hrs AIAA-2017-1413 **Utilizing Direct Numerical Simulations of Transition and Turbulence in Design Optimization – Part 2** M. Rai, NASA Ames Research Center, Moffett Field, CA	1200 hrs AIAA-2017-1414 **Robust Design of High Speed Natural-Laminar-Flow Airfoil for High Lift** H. Zhao, Z. Gao, C. Wang, G. Yuan, Northwestern Polytechnical University, Xi'an, China	

Thursday, 12 January 2017						
351-APA-34	**Aerodynamic-Structural Dynamic Interactions I**					**Dallas 5**
Chaired by: D. ABERNATHY, Lockheed Martin Aeronautics and R. DOWGWILLO, Boeing Engineering Operations & Technology						
0930 hrs AIAA-2017-1415 **A Drichlet/Neumann Strongly Coupled Iterative Method for Fluid Structure Interaction of Parafoil Inflation Process** S. Nie, Y. Cao, Beihang University, Beijing, China	1000 hrs AIAA-2017-1416 **Stall Flutter Prediction and Experimental Verification using a Cyber-Physical Wing** C. Fagley, D. Broadbent, J. Seidel, T. McLaughlin, U.S. Air Force Academy, Colorado Springs, CO	1030 hrs AIAA-2017-1417 **Improved Computational Approach for 3-D Realistic Insect-like Flapping Wing using Co-rotational Finite Elements** H. Cho, Seoul National University, Seoul, South Korea; N. Lee, Inha University, Incheon, South Korea; S. Shin, Seoul National University, Seoul, South Korea; S. Lee, Inha University, Incheon, South Korea; S. Kim, Agency for Defense Development, Daejeon, South Korea				

Thursday, 12 January 2017						
352-APA-35	**Airfoil/Wing/Configuration Aerodynamics II: Multifidelity Methods**					**Dallas 3**
Chaired by: J. PINIER, NASA Langley Research Center and D. O'BRIEN, US Army RDECOM						
0930 hrs AIAA-2017-1418 **Surrogate Models for Surface Vorticity** M. Carpenter, R. Hartfield, Auburn University, Auburn, AL; V. Ahuja, Research in Flight, Auburn, AL	1000 hrs AIAA-2017-1419 **Designing Wings with Fixed Twist for Minimum Induced Drag** D. Hunsaker, W. Phillips, Utah State University, Logan, UT; J. Joo, Air Force Research Laboratory, Dayton, OH	1030 hrs AIAA-2017-1420 **Aerodynamic Shape Optimization of Morphing Wings at Multiple Flight Conditions** D. Hunsaker, W. Phillips, Utah State University, Logan, UT; J. Joo, Air Force Research Laboratory, Dayton, OH	1100 hrs AIAA-2017-1421 **An Efficient Multistep ROM Method for Prediction of Flows over Airfoils** C. Cao, J. Cai, K. Qu, J. Li, Northwestern Polytechnical University, Xi'an, China	1130 hrs AIAA-2017-1422 **The Thickness Effect on Symmetrical Airfoil Flow Characteristics at low Reynolds number** A. de Paula, V. Kleine, F. Porto, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil		

Thursday, 12 January 2017						
353-APA-36	**Applied CFD I: Boundary Layer and Solver Methodologies**					**Dallas 4**
Chaired by: K. VANDEN, USAF and B. MARPLES, Johns Hopkins University Applied Physics Laboratory						
0930 hrs AIAA-2017-1423 **CFD Investigation Using Bleed as a Method of Active Flow Control** D. Chang, D. Crowe, Air Force Institute of Technology, Wright-Patterson AFB, OH; S. Sherer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2017-1424 **Numerical Study of the Aerodynamics of DLR-F6 Wing-Body in Unbounded Flow Field and in Ground Effect** N. Deng, Q. Qu, R. Agarwal, Washington University in St. Louis, St. Louis, MO	1030 hrs AIAA-2017-1425 **Numerical and Experimental Testing of a Morphing Upper Surface Wing Equipped with Conventional and Morphing Ailerons** A. Koreanschi, S. Oliviu, Y. Tondji, R. Botez, University of Québec, Montréal, Canada	1100 hrs AIAA-2017-1426 **On the Stall Characteristics of Iced Wings** A. Ribeiro, B. Konig, E. Fares, Exa Corporation, Stuttgart, Germany	1130 hrs AIAA-2017-1427 **Interpolation Techniques for Data Reconstruction at Surface in Immersed Boundary Method** A. Bharadwaj S, S. Ghosh, C. Joseph, Indian Institute of Technology Madras, Chennai, India	1200 hrs Oral Presentation **Requirements for Certification by Analysis and Implications for CFD** R. Gregg-III, The Boeing Company, Mukilteo, WA; J. Alonso, Stanford University, Stanford, CA	

Thursday, 12 January 2017						
354-APA-37	**Special Session: Simulation of Rotor in Hover I**					**Dallas 2**
Chaired by: N. HARIHARAN, CREATE-AV and R. NARDUCCI, Boeing Defense, Space & Security						
0930 hrs AIAA-2017-1429 **AIAA Standardized Hover Simulation: Hover Performance Prediction Status and Outstanding Issues** N. Hariharan, CREATE AV Team, Lorton, VA; R. Narducci, The Boeing Company, Philadelphia, PA; E. Reed, A. Egolf, Sikorsky Aircraft Corporation, Stratford, CT	1000 hrs AIAA-2017-1430 **Comparison of Steady-State and Time-Dependent Solutions for the S-76 Model-Scale Rotor in Hover** R. Narducci, The Boeing Company, Philadelphia, PA	1030 hrs AIAA-2017-1431 **Parameter Studies on the S-76 Rotor Using HELIOS** J. Abras, Naval Air Systems Command, Patuxent River, MD; N. Hariharan, CREATE AV Team, Lorton, VA	1100 hrs AIAA-2017-1432 **OVERFLOW Rotor Simulations Using Advanced Turbulence and Transition Modeling** J. Coder, Pennsylvania State University, University Park, PA	1130 hrs Oral Presentation **On the breakdown of wake in computed hover Navier-Stokes simulations** N. Hariharan, HPCMP CREATE-AV, Lorton, VA		

Thursday, 12 January 2017						
355-APA-38	**Transonic/Supersonic Aerodynamics**					**Dallas 6**
Chaired by: J. LATZ, Northrop Grumman Aerospace Systems and M. CONWAY, The Aerospace Corporation						
0930 hrs AIAA-2017-1433 **Computational Study of Supersonic Flow Past Wall-Mounted Cylindrical and Hemispherical Bodies** P. Morgan, Ohio Aerospace Institute, Dayton, OH; S. Sherer, M. Visbal, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2017-1434 **High Resolution Numerical Schemes and Supersonic Flow over a Backward-Facing Step** O. Khan, Tuskegee University, Tuskegee, AL; G. Arshed, National University of Sciences and Technology, Karachi, Pakistan	1030 hrs AIAA-2017-1435 **Onset of unsteadiness in aero-engine intakes at incidence** A. Coschignano, H. Babinsky, University of Cambridge, Cambridge, United Kingdom	1100 hrs AIAA-2017-1436 **Numerical Investigation of Transonic Buffet on a Three-Dimensional Wing using Incremental Mode Decomposition** Y. Ohmichi, A. Hashimoto, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	1130 hrs AIAA-2017-1437 **Dynamic CFD Simulations of the Supersonic Inflatable Aerodynamic Decelerator (SAID) Ballistic Range Tests** J. Brock, E. Stern, M. Wilder, NASA Ames Research Center, Moffett Field, CA	1200 hrs AIAA-2017-1438 **Buffet Simulations with a Lattice-Boltzmann based Transonic Solver** A. Ribeiro, B. Konig, D. Singh, E. Fares, Exa Corporation, Stuttgart, Germany; R. Zhang, P. Gopalakrishnan, Exa Corporation, Boston, MA; et al.	

Thursday, 12 January 2017						
356-ASC-5	**Active Noise and Vibration Control, Smart Sensor and Actuator Device Design**					**Palomino 3**
Chaired by: J. KAUFFMAN, University of Central Florida and D. HARTL, Texas A&M University						
0930 hrs AIAA-2017-1439 **Resonance Frequency Detuning in Regions of High Modal Density** G. Lopp, J. Kauffman, University of Central Florida, Orlando, FL	1000 hrs AIAA-2017-1440 **Model Reference Adaptive Sliding Mode Control of a Laser Beam for Jitter Correction** S. Samantaray, R. Padhi, Indian Institute of Science, Bengaluru, India	1030 hrs AIAA-2017-1441 **Investigation of a Parallel Active Vibration Isolation Mount for Mitigating N/Rev Helicopter Vibrations** A. Fereidooni, S. Graham, E. Chen, V. Wickramasinghe, National Research Council Canada, Ottawa, Canada	1100 hrs AIAA-2017-1442 **Multi-fidelity Analysis and Experimental Characterization of Muscular-Skeletal Structures Optimized via Genetic Programming** D. Hartl, B. Bielefeldt, Texas A&M University, College Station, TX; G. Reich, P. Beran, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2017-1443 **Liquid Metal Integration for Expedited Heating and Cooling of Monolithic and Composite SMA Actuators** J. Mingear, A. Greer, B. Bielefeldt, D. Hartl, Texas A&M University, College Station, TX		

Thursday, 12 January 2017						
357-EXPL-1	**Habitation Systems**					**Palomino 1**
Chaired by: S. SHARMA, NASA Ames Research Center						
0930 hrs AIAA-2017-1444 **Design and Development of Support Systems for Future Human Extravehicular Activity** M. Miller, Georgia Institute of Technology, Atlanta, GA; D. Coan, A. Abercromby, NASA Johnson Space Center, Houston, TX; K. Feigh, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2017-1445 **Analysis of a Radioisotope Thermal Rocket Engine** J. Machado-Rodriguez, G. Landis, NASA Glenn Research Center, Cleveland, OH	1030 hrs AIAA-2017-1446 **Lunar Environtmental and Construction Challenges and a Proposed Semi-Circular Frame Membrane Habitat** F. O'Donnell, R. Malla, University of Connecticut, Storrs, Storrs, CT	1100 hrs AIAA-2017-1447 **Generating Artificial Gravity on Planetary Bodies** R. White, Purdue University, West Lafayette, IN	1130 hrs AIAA-2017-1448 **A Study in Selected Power Subsystems and Components of Space Electric Propulsion** A. Gohardani, International Rectifier HiRel Products, El Segundo, CA		

Thursday, 12 January 2017		
358-F360-7 **0930 - 1130 hrs**	**Managing Change During the Development of Disruptive Technologies**	**Texas C**

Moderator: Jocelyn Harrison, Program Manager, Air Force Office of Scientific Research

Panelists:

Irene Gregory
Senior Technologist for Advanced Control Theory and Applications
NASA Langley Research Center

Rob High
Vice President and Chief Technology Officer
IBM Watson

Steven Huybrechts
Chief of Staff
Applied Minds LLC

Robert Lutwak
Program Manager, Microsystems Technology Office
DARPA

Samantha Magill
Special Projects, Inclusion & Diversity
Honda Aircraft Company

Thursday, 12 January 2017						
359-FD-46	**Boundary Layer Separation Control**					**Texas 1**
Chaired by: J. LITTLE, The University of Arizona						
0930 hrs AIAA-2017-1449 **Flow around Low Aspect Ratio Cylinders and their Applications** S. Gildersleeve, M. Amitay, Rensselaer Polytechnic Institute, Troy, NY; D. Clingman, The Boeing Company, Milton, WA	1000 hrs AIAA-2017-1450 **Experimental Study of Discrete Jet Forcing for Flow Separation Control on a Wall Mounted Hump** D. Borgmann, A. Pande, J. Little, University of Arizona, Tucson, Tucson, AZ; R. Woszidlo, The Boeing Company, St. Louis, MO	1030 hrs AIAA-2017-1451 **Use of local periodic heating for separation control on a NACA 0012 airfoil** C. Yeh, P. Munday, K. Taira, Florida State University, Tallahassee, FL	1100 hrs AIAA-2017-1452 **Separation delay via hydro-acoustic control of a NACA4412 airfoil in pre-stalled conditions** J. Bodart, G. Shelekhov, Higher Institute of Aeronautics and Space, Toulouse, France; C. Scalo, Purdue University, Lafayette, IN; L. Joly, Higher Institute of Aeronautics and Space, Toulouse, France			

Thursday, 12 January 2017						
360-FD-47	**Internal Flow Control**					**Texas 2**
Chaired by: D. BRZOZOWSKI, The Boeing Company and B. VUKASINOVIC, Georgia Institute of Technology						
0930 hrs AIAA-2017-1453 **Active Flow Control in a Cascade Thrust Reverser** A. Gissen, The Boeing Company, St. Louis, MO; B. Vukasinovic, Georgia Institute of Technology, Atlanta, GA; N. Packard, The Boeing Company, Seattle, WA; D. Brzozowski, The Boeing Company, St. Louis, MO; A. Glezer, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2017-1454 **Experimental and Numerical Investigation of Controlled Flow Distortion in a Subsonic Offset Diffuser by Trapped Vorticity** B. Vukasinovic, T. Burrows, A. Glezer, Georgia Institute of Technology, Atlanta, GA; M. Lakebrink, M. Mani, The Boeing Company, St. Louis, MO	1030 hrs AIAA-2017-1455 **Numerical Investigation of Fluidic Oscillator Flow Control in an S-Duct Diffuser** M. Lakebrink, M. Mani, C. Winkler, The Boeing Company, St. Louis, MO	1100 hrs AIAA-2017-1456 **Numerical Investigation of Low Reynolds Number Flow in Turbine Passage** S. Romero Martinez, A. Gross, New Mexico State University, Las Cruces, NM			

Thursday, 12 January 2017						
361-FD-48	**Boundary Layers and Shear Layers I**					**Texas 4**
Chaired by: Q. WANG, MIT and C. REED, Lockheed Martin Corporation						
0930 hrs AIAA-2017-1457 **Development of Trip Line Sub-Region Approach for Flow Transition Modeling** D. Yeh, J. Slotnick, The Boeing Company, Huntington Beach, CA	1000 hrs AIAA-2017-1458 **Observation of the development of -vortex to hairpin vortex packet** Y. Yang, S. Tian, C. Liu, University of Texas, Arlington, Arlington, TX	1030 hrs AIAA-2017-1459 **Towards laminar flow control on swept wings with AC-DBD plasma actuators as active roughness** J. Serpieri, S. Yadala Venkata, M. Kotsonis, Delft University of Technology, Delft, The Netherlands	1100 hrs AIAA-2017-1460 **Numerical Simulations of Active Flow Control for Highly Loaded Low-Pressure Turbine Cascade** A. Gross, New Mexico State University, Las Cruces, NM; C. Marks, R. Sondergaard, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2017-1461 **Cross-stream Contributions to Wing Wake Free Shear Layers Using Particle Image Velocimetry: Challenges and Results** M. Memon, A. Altman, University of Dayton, Dayton, OH	1200 hrs AIAA-2017-1462 **Resonant growth of surface pressure fluctuation in hypersonic boundary layer in shock tunnel** K. Itoh, H. Tanno, T. Komuro, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan	

Thursday, 12 January 2017						
362-FD-49	**Multiphase Flows I**					**Texas 3**
Chaired by: J. HARTWIG, NASA Glenn Research Center and C. TSAI, Lockheed Martin Space Systems						
0930 hrs AIAA-2017-1463 **Uncertainty Quantification of Experiments on a Small Number of Explosively-Driven Particles** K. Hughes, University of Florida, Gainesville, Gainesville, FL; A. Diggs, D. Littrell, Air Force Research Laboratory, Eglin AFB, FL; S. Balachandar, R. Haftka, N. Kim, University of Florida, Gainesville, Gainesville, FL; et al.	1000 hrs AIAA-2017-1464 **Longitudinal Wavelength of Oscillating Liquid Sheet with Air Flow** I. Oshima, A. Sou, R. Kawabata, Kobe University, Kobe, Japan; K. Matsuura, Japan Aerospace Exploration Agency (JAXA), Chofu, Japan	1030 hrs AIAA-2017-1465 **Pneumatic Transport of Drill Cuttings Under Venus Conditions** J. Lambert, J. Rabinovitch, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1100 hrs AIAA-2017-1466 **Measurements of the Initial Transient of a Dense Particle Curtain Following Shock Wave Impingement** E. DeMauro, J. Wagner, S. Beresh, P. Farias, A. Turpin, W. Sealy, Sandia National Laboratories, Albuquerque, NM; et al.	1130 hrs AIAA-2017-1467 **Transient Deformation and Breakup of a Droplet in Confined Shear Flow** Q. Qu, F. Liu, P. Liu, Beihang University, Beijing, China; R. Agarwal, Washington University in St. Louis, St. Louis, MO	1200 hrs AIAA-2017-1468 **Numerical Simulation of a Droplet Impacting upon Films with Varied Liquid Properties** Y. Zhang, P. Liu, Q. Qu, F. Liu, Beihang University, Beijing, China; R. Agarwal, Washington University in St. Louis, St. Louis, MO	

Thursday, 12 January 2017						
363-FD-50	**Reacting Flows**					**Texas 5**
Chaired by: J. BORIS, US Naval Research Lab						
0930 hrs AIAA-2017-1469 **Non-Adiabatic Tabulation Methods to predict Wall-Heat Loads in Rocket Combustion** J. Zips, H. Müller, M. Pfitzner, University of the German Federal Armed Forces, Munich, Germany	1000 hrs AIAA-2017-1470 **Shock-Tube Boundary-Layer Growth Effects on Reflected-Shock Conditions in Bath Gases with and without CO2** J. Hargis, E. Petersen, Texas A&M University, College Station, TX	1030 hrs AIAA-2017-1471 **LES modeling of piloted jet flames with inhomogeneous inlets using tabulated chemistry methods** G. Maio, M. Cailler, B. Fiorina, École Centrale Paris, Paris, France; R. Mercier, Safran Group, Paris, France; V. Moureau, CORIA, Rouen, France	1100 hrs AIAA-2017-1472 **The Impact of Global Parameters of the Gas Mixture on Flow Field and Direct Combustion Noise of a Turbulent Jet Flame** H. Nawroth, C. Paschereit, Technical University of Berlin, Berlin, Germany	1130 hrs AIAA-2017-1473 **Simulation of turbulent reactive flows using a hybrid LES / PDF methodology - Advances in particle density control for normalized variables** J. Vedovoto, M. Damasceno, J. Guarato de Freitas Santos, A. Silveira Neto, Federal University of Uberlândia, Uberlândia, Brazil; R. Serfaty, CENPES-PETROBRAS, Rio de Janeiro, Brazil		

Thursday, 12 January 2017						
364-FD-51	**Cavity Flows**					**Texas 6**
Chaired by: A. AHMED, Auburn University						
0930 hrs AIAA-2017-1474 **Measurements of Finite-Span Complex Cavities Using PIV and High-Speed Pressure Sensitive Paint** E. DeMauro, K. Casper, S. Beresh, J. Wagner, J. Henfling, R. Spillers, Sandia National Laboratories, Albuquerque, NM	1000 hrs AIAA-2017-1475 **Flow Characteristics of Axisymmetric Cavity** B. Brooker, N. Chaganti, R. Weiner, S. Olcmen, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1030 hrs AIAA-2017-1476 **Spatial Distribution of Pressure Resonance in a Rectangular Cavity** K. Casper, J. Wagner, S. Beresh, R. Spillers, J. Henfling, Sandia National Laboratories, Albuquerque, NM	1100 hrs AIAA-2017-1477 **Implicit Large-Eddy Simulation of a Supersonic Cavity** D. Peterson, Innovative Scientific Solutions, Inc., Dayton, OH; E. Hassan, Air Force Research Laboratory, Wright-Patterson AFB, OH	1130 hrs AIAA-2017-1478 **Pressure Rate of Strain, Pressure Diffusion and Velocity Pressure Gradient Tensor Measurements in a Cavity Shear Layer Flow** X. Liu, San Diego State University, San Diego, CA; J. Katz, Johns Hopkins University, Baltimore, MD		

Thursday, 12 January 2017						
365-FD-52	**LES/DES Simulations**					**Grapevine C**
Chaired by: N. BISEK, Air Force Reseach Laboratory and R. GOSSE, AFRL/RQH						
0930 hrs AIAA-2017-1479 **Numerical Investigation on the Effect of Ground Proximity on the Transient Forces of Low Aspect Ratio Wings** B. Johnson, Hokkaido University, Sapporo, Japan; M. Tsubokura, Kobe University, Kobe, Japan	1000 hrs AIAA-2017-1480 **Influence of the External Aeroshell on the HIFiRE-6 Internal Flow Path using High-Fidelity Simulations** N. Bisek, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2017-1481 **Numerical Investigation of Spanwise End Effects on Dynamic Stall of a Pitching NACA 0012 Wing** M. Visbal, D. Garmann, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2017-1482 **Modeling of Three Dimensional Effects in Fuel Film Cooling** K. Brown, E. Coy, M. Harvazinski, V. Sankaran, Air Force Research Laboratory, Edwards AFB, CA	1130 hrs AIAA-2017-1483 **Towards Predicting Dry Cable Galloping using Detached Eddy Simulations** X. Wu, A. Sharma, M. Jafari, P. Sarkar, Iowa State University, Ames, IA		

Thursday, 12 January 2017						
366-GNC-15	**Airflow Mechanosensing for Aircraft Navigation and Control**					**Grapevine 1**
Chaired by: Y. XU, University of Central Florida and B. DICKINSON, Air Force Reseach Laboratory						
0930 hrs AIAA-2017-1484 **Tip-Vortex Localization for Cross-Stream Position Control of a Multi-Hole Probe Relative to a Stationary Wing in a Free-Jet Wind Tunnel** N. Lauer, D. Yeo, D. Paley, University of Maryland, College Park, College Park, MD	1000 hrs AIAA-2017-1485 **Active Gust Alleviation using Artificial Hair Sensors and Feedforward Control** K. Thapa Magar, University of Dayton, Dayton, OH; G. Reich, A. Pankonien, B. Smyers, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2017-1486 **Active Camber Control of Flexible Airfoils using Artificial Hair Sensors** W. Su, H. Spencer, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1100 hrs AIAA-2017-1487 **Bio-inspired Distributed Strain and Airflow Sensing for Small Unmanned Air Vehicle Flight Control** S. Araujo-Estrada, F. Salama, C. Greatwood, K. Wood, T. Richardson, S. Windsor, University of Bristol, Bristol, United Kingdom	1130 hrs AIAA-2017-1488 **Fixed Wing Micro Aerial Vehicle Pitching Control Based on Flow Field Patterns** K. Thompson, Y. Xu, A. Mark, University of Central Florida, Orlando, FL; B. Dickinson, Air Force Research Laboratory, Eglin AFB, FL	1200 hrs AIAA-2017-1489 **Thin film flow sensor for unmanned aerial platforms** L. Castano, A. Flatau, University of Maryland, College Park, College Park, MD; J. Hubbard, National Institute of Aerospace, Hampton, VA	

Thursday, 12 January 2017						
367-GNC-16	**Verification and Validation of Adaptive Systems I**					**Austin 2**
Chaired by: T. YUCELEN, Missouri University of Science & Technology and J. MUSE, AFRL/RQQA						
0930 hrs AIAA-2017-1490 **Robust and Adaptive Output Feedback Control for Non-Minimum Phase Systems with Arbitrary Relative Degree** E. Lavretsky, The Boeing Company, Huntington Beach, CA	1000 hrs AIAA-2017-1491 **Model Reference Adaptive Control in the Presence of Actuator Dynamics with Applications to the Input Time-Delay Problem** B. Gruenwald, T. Yucelen, University of South Florida, Tampa, FL; J. Muse, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2017-1492 **Observer-Based Feedback Adaptive Control for Nonlinear Hypersonic Vehicles** D. Famularo, J. Valasek, Texas A&M University, College Station, TX; J. Muse, M. Bolender, Air Force Research Laboratory, Wright Patterson AFB, OH	1100 hrs AIAA-2017-1493 **Stability Analysis of Human-Adaptive Controller Interactions** T. Yucelen, University of South Florida, Tampa, FL; Y. Yildiz, Bilkent University, Ankara, Turkey; R. Sipahi, Northeastern University, Boston, MA; E. Yousefi, Bilkent University, Ankara, Turkey; N. Nguyen, NASA Ames Research Center, Moffett Field, CA	1130 hrs AIAA-2017-1494 **Adaptive Model Predictive Control of Uncertain Systems with Input Constraints** M. Yayla, A. Kutay, Middle East Technical University, Ankara, Turkey	1200 hrs AIAA-2017-1495 **Analysis of Simple Relay Feedback Adaptive Control** Y. Yoon, E. Johnson, Georgia Institute of Technology, Atlanta, GA	

Thursday, 12 January 2017						
368-GNC-17	**Entry, Descent and Landing GNC Technology I**					**Austin 4**
Chaired by: J. CARSON, NASA Jet Propulsion Laboratory and R. SOSTARIC, NASA-Johnson Space Center						
0930 hrs AIAA-2017-1496 **COBALT: Development of a Platform to Flight Test Lander GN&C Technologies on Suborbital Rockets** J. Carson, NASA Johnson Space Center, Houston, TX; C. Seubert, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; F. Amzajerdian, NASA Langley Research Center, Hampton, VA; C. Bergh, A. Kourchians, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA; C. Restrepo, NASA Johnson Space Center, Houston, TX; et al.	1000 hrs AIAA-2017-1497 **Evaluation of the Simple Safe Site Selection (S4) Hazard Detection Algorithm using Helicopter Field Test Data** M. Luna, E. Almeida, G. Spiers, C. Villalpando, A. Johnson, N. Trawny, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA	1030 hrs AIAA-2017-1498 **Comparison of Factorization-based Filtering for Landing Navigation** J. McCabe, Missouri University of Science and Technology, Rolla, MO; A. Brown, NASA Johnson Space Center, Houston, TX; K. DeMars, Missouri University of Science and Technology, Rolla, MO; J. Carson, NASA Johnson Space Center, Houston, TX	1100 hrs AIAA-2017-1499 **Linear Covariance Analysis for a Lunar Lander** J. Jang, S. Bhatt, M. Fritz, D. Woffinden, Draper Laboratory, Houston, TX	1130 hrs AIAA-2017-1500 **Successive Convexification for Mars 6-DoF Powered Descent Landing Guidance** M. Szmuk, U. Eren, B. Acikmese, University of Washington, Seattle, Seattle, WA		

Thursday, 12 January 2017						
369-GNC-18	**Control Theory, Analysis and Design I**					**Austin 5**
Chaired by: A. NARANG-SIDDARTH, University of Washington and R. YEDAVALLI, The Ohio State University						
0930 hrs AIAA-2017-1501 **Normal Form for Linear Infinite-Dimensional Systems in Hilbert Space and Its Role in Direct Adaptive Control of Distributed Parameter Systems** M. Balas, Embry-Riddle Aeronautical University, Daytona Beach, FL; S. Frost, NASA Ames Research Center, Moffett Field, CA	1000 hrs AIAA-2017-1502 **Simple Adaptive Control System Design Trades** E. Mooij, Delft University of Technology, Delft, The Netherlands	1030 hrs AIAA-2017-1503 **Optimal Trajectory Planning of Wheeled Mobile Robot Using Nonlinear Receding Horizon** K. Turkoglu, M. Miller, San Jose State University, San Jose, CA	1100 hrs AIAA-2017-1504 **Mismatch-Observer Based Model Reference Adaptive Control for Transient Performance Improvement of Aircraft** S. Kim, Y. Kim, Seoul National University, Seoul, South Korea	1130 hrs AIAA-2017-1505 **Resilient Control of Active-Passive Networked Multiagent Systems in the Presence of Persistent Disturbances** D. Tran, T. Yucelen, University of South Florida, Tampa, FL; J. Peterson, Missouri University of Science and Technology, Rolla, MO	1200 hrs AIAA-2017-1506 **Mesh Refinement Method for Optimal Control Problems with Discontinuous Control Profiles** Y. Agamawi, W. Hager, A. Rao, University of Florida, Gainesville, Gainesville, FL	

Thursday, 12 January 2017						
370-GNC-19	**Missile Guidance**					**Austin 1**
Chaired by: S. KOWALCHUK, Sandia National Laboratories and R. TEKIN, ASELSAN Inc						
0930 hrs AIAA-2017-1507 **Optimal Guidance With an in Route Look-Angle Constraint** V. Shaferman, Technology University of Vienna, Vienna, Austria	1000 hrs AIAA-2017-1508 **A Non-Switching Guidance Law for Impact Angle Constrained Interception of Moving Targets** V. A, A. Ratnoo, Indian Institute of Science, Bengaluru, India	1030 hrs AIAA-2017-1509 **Impact Angle Control Based on Feedback Linearization** R. Tekin, F. Holzapfel, Technical University of Munich, Munich, Germany	1100 hrs AIAA-2017-1510 **Nonlinear Robust Inscribed Angle Guidance for Stationary Targets** S. Kumar, R. Tsalik, T. Shima, Technion–Israel Institute of Technology, Haifa, Israel			

Thursday, 12 January 2017						
371-GNC-20	**Predictive Control Methods**					**Grapevine D**
Chaired by: E. ATKINS, University of Michigan and V. STEPANYAN, Universities Space Research Association						
0930 hrs AIAA-2017-1511 **Model Predictive Control Based Integral Line-of-Sight Curved Path Following for Unmanned Aerial Vehicle** S. Zhao, X. Wang, D. Zhang, L. Shen, National University of Defense Technology, Changsha, China	1000 hrs AIAA-2017-1512 **Nonlinear MPC for Fixed-wing UAV Trajectory Tracking: Implementation and Flight Experiments** T. Stastny, A. Dash, R. Siegwart, Swiss Federal Institute of Technology, Zürich, Switzerland	1030 hrs AIAA-2017-1513 **Stall Recovery Guidance Using Fast Model Predictive Control** S. Schuet, T. Lombaerts, J. Kaneshige, K. Shish, V. Stepanyan, NASA Ames Research Center, Moffett Field, CA	1100 hrs AIAA-2017-1514 **Application of Generalized Predictive Control to an Experimental Data-based Aeroelastic System** W. Zhuang, Z. Wu, C. Yang, Beihang University, Beijing, China	1130 hrs AIAA-2017-1515 **Nonlinear System Finite-Time Output Reachability for Flight Control given Uncertain Airspeed** H. Rastgoftar, X. Ni, E. Atkins, University of Michigan, Ann Arbor, Ann Arbor, MI	1200 hrs AIAA-2017-1516 **Cooperative Control of Unmanned Aerial Vehicles based on Nonlinear Model Predictive Control** P. Ru, K. Subbarao, University of Texas, Arlington, Arlington, TX	

Thursday, 12 January 2017						
372-GNC-21	**Spacecraft and Launch Navigation**					**Grapevine 6**
Chaired by: J. REED, United Launch Alliance, LLC and K. BOLLINO, U.S. Air Force						
0930 hrs AIAA-2017-1517 **Orbit Injection Error Mitigation by Time-Differenced GPS Carrier Phase Observables-Aided Inertial Navigation** S. P V, D. Thomas, Defence Research and Development Organisation, Hyderabad, India	1000 hrs AIAA-2017-1518 **Spacecraft Relative Navigation using Only Range-Rate Measurements** C. Kilic, J. Christian, West Virginia University, Morgantown, WV	1030 hrs AIAA-2017-1519 **Multiple-Model Adaptive Estimation for Star Identification with Two Stars** S. Szklany, J. Crassidis, State University of New York, Amherst, NY	1100 hrs AIAA-2017-1520 **Space Object Data Association Using Spatial Pattern Recognition Approaches** A. Kalur, P. Silversmith, J. Crassidis, State University of New York, Amherst, NY	1130 hrs AIAA-2017-1521 **Relative Navigation in Asteroid Missions: A Dual Quaternion Approach** B. Razgus, E. Mooij, Delft University of Technology, Delft, The Netherlands; D. Choukroun, Ben-Gurion University of the Negev, Be'er Sheva, Israel		

Thursday, 12 January 2017						
373-GNC-22	**Aerospace Robotics Control**					**Austin 6**
Chaired by: A. DE RUITER, Ryerson University and S. ULRICH, Carleton University						
0930 hrs AIAA-2017-1522 **Relative Motion Modeling and Control for a Quadrotor Landing on an Unmanned Vessel** C. Jin, M. Zhu, L. Sun, Z. Zheng, Beihang University, Beijing, China	1000 hrs AIAA-2017-1523 **Trajectory-Driven Adaptive Control of Autonomous UAVs with Disturbance Accommodation** D. Painter, N. Prabhakar, R. Prazenica, M. Balas, Embry-Riddle Aeronautical University, Daytona Beach, FL	1030 hrs AIAA-2017-1524 **Nonlinear Adaptive Control of a Fixed-Wing UAV using Multilayer Perceptrons** S. Bhandari, N. Patel, California State Polytechnic University, Pomona, Pomona, CA	1100 hrs AIAA-2017-1525 **Pseudospectral Model Predictive Control under Partially Learned Dynamics** M. Gandhi, Y. Pan, E. Theodorou, Georgia Institute of Technology, Atlanta, GA	1130 hrs AIAA-2017-1526 **Robust Control of Quadrotors using Neuro-Adaptive Control Augmented with State Estimation** G. Joshi, University of Illinois, Urbana-Champaign, Urbana, IL; R. Padhi, Indian Institute of Science, Bengaluru, India	1200 hrs AIAA-2017-1527 **Dynamic Vehicle Routing with Indirect Communication via Unattended Ground Sensors** C. Olsen, D. Kunz, Air Force Institute of Technology, Wright-Patterson AFB, OH	

Thursday, 12 January 2017						
374-GT-8	**Real-Time Control, Data Acquisition and Analysis**					**Ft. Worth 6**
Chaired by: M. RHODE, NASA-Langley Research Center and S. SIMERLY, NASA Glenn Research Center						
0930 hrs AIAA-2017-1528 **Design and Development of a Control Scheme for the UC²AV: Unmanned Circulation Control Aerial Vehicle** C. Rosen, K. Kanistras, P. Saka, K. Valavanis, M. Rutherford, University of Denver, Denver, CO	1000 hrs AIAA-2017-1529 **Upgrades to Common Data Acquisition System Software Development for NASA's Rocket Propulsion Test Facilities and Software Reuse** P. Hebert, A. Elliot, K. Mobbs, NASA Stennis Space Center, Stennis Space Center, MS	1030 hrs AIAA-2017-1530 **Modernization of the real time control and data acquisition systems at the National Research Council of Canada's 1.5m Tri-Sonic Wind Tunnel** G. Burns, M. Sabbagh, S. Rutherford, Y. Cronier, National Research Council Canada, Ottawa, Canada	1100 hrs AIAA-2017-1531 **Design, Fabrication, and Testing of a B-Dot Probe in Arc Heaters** C. Rudolf, J. Sheeley, W. Scott, Arnold Engineering Development Complex, Arnold AFB, TN	1130 hrs AIAA-2017-1532 **Mathematical Modeling of Wind Tunnels for Low Reynolds Number Unsteady Aerodynamic Testing** M. Rennie, B. Catron, University of Notre Dame, Notre Dame, IN; D. Williams, M. Feroz, Illinois Institute of Technology, Chicago, IL		

Thursday, 12 January 2017		
375-GT-9 **0930 - 1230 hrs**	**Selected Papers from the 10th International Symposium on Strain-Gauge Balances Held at CARDC (Invited)**	**San Antonio 5**

A Review of Wind Tunnel Balance Technologies with a Look Towards the Future
Devin Burns
NASA Langley Research Center

Design, Manufacture and Commissioning of a New NLR 6-Component Rotating Shaft Balance for Propeller Tests at Delft University of Technology
Ruben Nahuis
Netherlands Aerospace Center (NLR)

Design Concepts of Fatigue Tolerant Wind Tunnel Balances
Henry Bennett
The Boeing Company

Strain Gauge Balance Optimization Platform Based on Web Service and Process Encapsulation
Xiang Guangwei
China Aerodynamic Research and Development Center

Design, Calibration and Commissioning of a Small Cryogenic High Load Balance for ETW
Jennifer Semmelmann
European Transonic Wind Tunnel (ETW)

An Experimental Six Component Wind Tunnel Block Balance Using Fibre Sensors
Francois Pieterse
University of Johannesburg

Thursday, 12 January 2017						
376-GTE-8	**Advanced Turbine Cooling II**					**San Antonio 4**
Chaired by: A. SURYANARAYANAN, FMC Technologies						
0930 hrs AIAA-2017-1533 **Variable Fidelity Optimization of Film Cooling Hole Arrangement Considering Internal Cooling Effects** Y. Kim, S. Lee, Seoul National University, Seoul, South Korea; J. Kim, Hanyang University, Seoul, South Korea; D. Rhee, Korea Aerospace Research Institute (KARI), Daejeon, South Korea; K. Yee, Seoul National University, Seoul, South Korea	1000 hrs AIAA-2017-1534 **U-turn Optimization of a Ribbed Turbine Blade Cooling Channel Using a Meshless Optimization Technique** F. Kiyici, S. Yilmazturk, E. Arican, Tusas Engine Industries, Inc., Eskisehir, Turkey; E. Costa, S. Porziani, D'Appolonia SpA, Rome, Italy	1030 hrs AIAA-2017-1535 **Impingement Heat Transfer Characteric of a Sweeping Jet** R. Lundgreen, M. Hossain, R. Prenter, J. Bons, J. Gregory, A. Ameri, Ohio State University, Columbus, OH				

Thursday, 12 January 2017						
377-HSABP-7	**Experimental Investigations of Scramjets**					**Ft. Worth 3**
Chaired by: J. DONOHUE, United Technologies Research Center and S. ELIA, Northrop Grumman Corporation						
0930 hrs AIAA-2017-1536 **Closed-Loop Control of Isolator Shock Trains in a Mach 2.2 Direct-Connect Scramjet** L. Vanstone, K. Hashemi, J. Lingren, M. Akella, N. Clemens, University of Texas, Austin, Austin, TX; J. Donbar, Air Force Research Laboratory, Wright-Patterson AFB, OH; et al.	1000 hrs AIAA-2017-1537 **Computational and Experimental Characterization of the Mach 6 Facility Nozzle Flow for the Enhanced Injection and Mixing Project at NASA Langley Research Center** T. Drozda, K. Cabell, NASA Langley Research Center, Hampton, VA; B. Passe, Analytical Mechanics Associates, Inc., Hampton, VA; R. Baurle, NASA Langley Research Center, Hampton, VA	1030 hrs AIAA-2017-1538 **The Effect of Pulsed Injection on the Entrainment into a Cavity Based Flameholder in Supersonic Flow** L. Smith, T. Ombrello, S. Okhovat, Air Force Research Laboratory, Wright-Patterson AFB, OH	1100 hrs AIAA-2017-1539 **The Effects of Planar Symmetry and Radiative Heat Losses in a Three-Dimensional Transient CFD Simulation of Right Angle Flow Through a Brayton-Gluhareff Cycle Pressure Jet Engine** R. Bramlette, C. Depcik, R. Barrett-Gonzalez, University of Kansas, Lawrence, Lawrence, KS			

Thursday, 12 January 2017		
378-IS-7 **0930 - 1100 hrs**	**Establishing Trust in Autonomous Systems**	**Ft. Worth 1**

Moderator: Andrew Lacher

Automation in many different forms is a routine part of our everyday lives. Automation systems are becoming increasingly autonomous in that they are often making and executing decisions with little human oversight (i.e., self-governing) leveraging algorithms that are increasingly complex and adaptive (i.e. non-deterministic and intelligent). As these systems mature, establishing and ensuring appropriate levels of human trust in these systems will be necessary. The panel will discuss several different perspectives on this issue for systems used in life-critical applications.

Panelists:

Steve Cook
Northrop Grumman

Ella Atkins
University of Michigan

Katharine Sieck
Rand Corporation

Thursday, 12 January 2017						
379-MAT-8	**Materials for Additive Manufacturing**					**Palomino 2**
Chaired by: J. KOO, The University of Texas at Austin and S. WANTHAL, The Boeing Company						
0930 hrs AIAA-2017-1540 **A Holistic Process-Flow from Concept to Validation for Additive Manufacturing of Light-Weight, Optimized, Metallic Components Suitable for Space Flight** M. Orme, Morf3D, El Segundo, CA; M. Gschweitl, M. Ferrari, RUAG Group, Zürich, Switzerland; R. Vernon, Altair Engineering, Inc., Irvine, CA; R. Yancey, Altair, Bothell, WA; F. Mouriaux, RUAG Group, Zürich, Switzerland; et al.	1000 hrs AIAA-2017-1541 **Cooling System for 0.1 kN Thrust Micro-Engines: Concept Design Using Additive Manufacturing** M. Ugolotti, M. Sharma, Z. Williams, M. Owen, J. Ouwerkerk, S. Balachandar, University of Cincinnati, Cincinnati, OH; et al.	1030 hrs AIAA-2017-1542 **Real-time evolution of Selective Laser Melted (SLM) Inconel 718 with temperature through synchrotron X-rays** B. Sarley, A. Manero, J. Cotelo, University of Central Florida, Orlando, FL; J. Wischek, German Aerospace Center (DLR), Cologne, Germany; J. Okasinski, P. Kenesei, Argonne National Laboratory, Argonne, IL; et al.				

Thursday, 12 January 2017						
380-MDO-10	**Integrated Computational Materials Engineering (ICME)**					**Mustang 1**
Chaired by: H. KIM and G. KENNEDY, Georgia Institute of Technology						
0930 hrs AIAA-2017-1543 **Integrated Computational Materials Engineering (ICME) Approaches to the Design and Fabrication of Architected Materials** C. Spadaccini2, J. Jackson, Lawrence Livermore National Laboratory, Livermore, CA; S. Watts, D. Tortorelli, University of Illinois, Urbana-Champaign, Urbana, IL; J. Hopkins, University of California, Los Angeles, Los Angeles, CA; N. Fang, Massachusetts Institute of Technology, Cambridge, MA; et al.	1000 hrs AIAA-2017-1544 **Stress Minimization Using The Level Set Topology Optimization** R. Picelli, S. Townsend, Cardiff University, Cardiff, United Kingdom; C. Brampton, University of Bath, Bath, United Kingdom; J. Norato, University of Connecticut, Storrs, Storrs, CT; H. Kim, University of California, San Diego, San Diego, CA	1030 hrs AIAA-2017-1545 **Application of Numerical Optimisation to Support Engineering Design** A. Keskin, Rolls-Royce Group plc, Derby, United Kingdom	1100 hrs AIAA-2017-1546 **Two-Dimensional Optimization of Functionally Graded Material Plates Subjected to Buckling Constraints** O. Hussien, S. Mulani, University of Alabama, Tuscaloosa, Tuscaloosa, AL	1130 hrs AIAA-2017-1547 **The Validation of a Genetically Inspired Aircaft Structural Design using an Additive Manufacturing Technique** M. Kobayashi, University of Hawaii, Manoa, Manoa, HI; J. Deaton, R. Reuter, Air Force Research Laboratory, Wright-Patterson AFB, OH		

Thursday, 12 January 2017						
381-MST-11	**Model and Simulation Design, Development, Testing, and Validation**					**San Antonio 1**
Chaired by: D. CRIDER, National Transportation Safety Board and S. BEARD, NASA/ARC-AFS Aerospace Simulation R&D						
0930 hrs AIAA-2017-1548 **Parameter Identification through Adaptive Optimal Estimation** A. Hebert, Engility Corporation, Shalimar, FL; S. Cafarelli, MacAulay Brown, Dayton, OH; P. Mackin, Engility Corporation, Shalimar, FL; J. Shaver, Air Force Research Laboratory, Eglin AFB, FL	1000 hrs AIAA-2017-1549 **Development of Post-stall Flight Models from Certification Flight Test and Wind-tunnel Data** P. Grant, Z. Luo, S. Liu, G. Moszczynski, University of Toronto, Toronto, Canada	1030 hrs AIAA-2017-1550 **Development and Validation of a Flight-Identified Full-Envelope Business Jet Simulation Model Using a Stitching Architecture** T. Berger, M. Tischler, Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA; S. Hagerott, Cessna Aircraft Company, Wichita, KS; M. Cotting, W. Gray, J. Gresham, U.S. Air Force Test Pilot School, Edwards AFB, CA; et al.	1100 hrs AIAA-2017-1551 **Matching of Aerodynamic databank with Flight test data – Latero-directional Dynamics** M. Sousa, Federal University of Itajubá, Itajubá, Brazil; A. de Paula, F. Porto, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; S. Cunha Junior, Federal University of Itajubá, Itajubá, Brazil	1130 hrs AIAA-2017-1552 **Nonparametric Time-Varying Frequency Response Function Estimates for Aircrafts** T. Song, D. Lin, J. Wang, T. Jiang, Y. Yu, Beijing Institute of Technology, Beijing, China		

Thursday, 12 January 2017						
382-MST-12	**Modeling and Simulation of Space Vehicle Dynamics, Systems, and Environments**					**Ft. Worth 7**
Chaired by: R. RUFF and D. KEATING, The Charles Stark Draper Laboratory, Inc.						
0930 hrs AIAA-2017-1553 **Microsatellite Simulation for Constellation Research** K. Leidig, J. Eickhoff, University of Stuttgart, Stuttgart, Germany	1000 hrs AIAA-2017-1554 **Characterization of Multi-Antenna GNSS, Multi-Sensor Attitude Determination for Stratospheric Balloon Platforms** N. Tehrani, J. Gross, West Virginia University, Morgantown, WV	1030 hrs AIAA-2017-1555 **Interaction of a Robotic Servicing Vehicle with Satellite Flexible Modes during Capture** J. Brannan, Emergent Space Technologies, Inc., Greenbelt, MD; C. Carignan, University of Maryland, College Park, College Park, MD	1100 hrs AIAA-2017-1556 **An open-source, stochastic, six-degrees-of-freedom rocket flight simulator, with a probabilistic trajectory analysis approach** W. Eerland, S. Box, H. Fangohr, A. Sobester, University of Southampton, Southampton, United Kingdom	1130 hrs AIAA-2017-1557 **Modeling and Simulation of Aerobee-150A Sounding Rocket** U. Akcal, B. Yuksek, N. Ure, Istanbul Technical University, Istanbul, Turkey		

Thursday, 12 January 2017						
383-MST-14	**Modeling and Simulation of Uninhabited Aerial Vehicles III**					**San Antonio 2**
Chaired by: D. KLYDE, Systems Technology, Inc.						
0930 hrs AIAA-2017-1558 **Flight Testing, Data Collection, and System Identification of a Multicopter UAV** S. Bhandari, P. Navarro, A. Ruiz, California State Polytechnic University, San Luis Obispo, Pomona, CA	1000 hrs AIAA-2017-1559 **Improving Model Fidelity For a Small Quadcopter Through Experimental Modeling** P. Olejnik, B. Burchett, Rose-Hulman Institute of Technology, Terre Haute, IN	1030 hrs AIAA-2017-1560 **Dynamic Modeling and Simulation of A Quadcopter with Motor Dynamics** A. Kim, P. Vivekanandan, P. McNamee, I. Sheppard, A. Blevins, A. Sizemore, University of Kansas, Lawrence, Lawrence, KS	1100 hrs AIAA-2017-1561 **Modeling and Flight Control Simulation of a Quadrotor Tailsitter VTOL UAV** F. Zhang, X. Lyu, Y. Wang, H. Gu, Z. Li, Hong Kong University of Science and Technology, Hong Kong, China			

Thursday, 12 January 2017						
384-NDA-8	**Special Session: Uncertainty Quantification and Management for the Digital Thread and Twin**					**Mustang 2**
Chaired by: E. TUEGEL, U.S. Air Force Research Laboratory and T. KRISHNAMURTHY, NASA-Langley Research Center						
0930 hrs AIAA-2017-1562 **Developing a Probabilistic Load Spectrum for Fatigue Modeling** I. Asher, L. Wang, G. Khan, Y. Ling, F. Viana, General Electric Company, Niskayuna, NY	1000 hrs AIAA-2017-1563 **Near Real Time Damage Diagnosis Using Surrogate Modeling and High Performance Computing** J. Warner, NASA Langley Research Center, Hampton, VA; M. Zubair, D. Ranjan, Old Dominion University, Norfolk, VA	1030 hrs AIAA-2017-1564 **A diagnosis-prognosis feedback loop for improved performance under uncertainties** P. Leser, J. Warner, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2017-1565 **Information gain-based inspection scheduling for fatigued aircraft components** Y. Ling, I. Asher, L. Wang, F. Viana, G. Khan, General Electric Company, Niskayuna, NY	1130 hrs AIAA-2017-1566 **A dynamic Bayesian network approach for digital twin** C. Li, S. Mahadevan, Vanderbilt University, Nashville, TN; Y. Ling, L. Wang, General Electric Company, Niskayuna, NY; S. Choze, Alcoa Technical Center, Pittsburgh, PA	1200 hrs AIAA-2017-1567 **Probabilistic Damage Tolerance for Aviation Fleets Using a Kriging Surrogate Model** J. Ocampo, St. Mary's University, San Antonio, TX; N. Crosby, H. Millwater, University of Texas, San Antonio, San Antonio, TX	

Thursday, 12 January 2017						
385-PC-22	**Combustion Dynamics IV**					**Dallas 7**
Chaired by: D. TALLEY, and P. PALIES, CFD Research Corporation						
0930 hrs AIAA-2017-1569 **Transient Behavior of Kerosene Flames in a Bluff-Body Stabilized Swirl Combustor** P. Allison, J. Sidey, E. Mastorakos, University of Cambridge, Cambridge, United Kingdom	1000 hrs AIAA-2017-1570 **Axial Evolution of Helical Flame and Flow Disturbances in a Transversely Forced Combustor** T. Smith, C. Douglas, B. Emerson, T. Lieuwen, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2017-1571 **Development and Application of an Energy Balance Analysis Tool for Combustion** A. Pons Lorente, S. Sardeshmukh, C. Huang, W. Anderson, Purdue University, West Lafayette, IN				

Thursday, 12 January 2017						
386-PC-23	**Model Validation for Propulsion Workshop I**					**San Antonio 6**
Chaired by: A. COMER, Air Force Institute of Technology and V. SANKARAN, US Air Force/AFRL/RQRC						
0930 hrs AIAA-2017-1572 **On the Role of Chemical Kinetics Modeling in the LES of Premixed Bluff Body and Backward-Facing Step Combustors** N. Chakroun, S. Shanbhogue, G. Kewlani, S. Taamallah, D. Michaels, A. Ghoniem, Massachusetts Institute of Technology, Cambridge, MA	1000 hrs AIAA-2017-1573 **MVP-Workshop Contribution: Modeling of Volvo bluff body flame experiment** H. Wu, P. Ma, Y. Lv, M. Ihme, Stanford University, Stanford, CA	1030 hrs AIAA-2017-1574 **Developing Grid-Convergent LES Simulations of Augmentor Combustion with Automatic Meshing and Adaptive Mesh Refinement** S. Drennan, G. Kumar, S. Liu, Convergent Science, Inc., New Braunfels, TX	1100 hrs AIAA-2017-1575 **A Comparative Study of Large Eddy Simulation (LES) Combustion Models applied to the Volvo Validation Rig** C. Fureby, Swedish Defense Research Agency (FOI), Stockholm, Sweden	1130 hrs AIAA-2017-1576 **LES reliability of the Volvo bluff-body stabilized ame dynamics** D. Maestro, CERFACS, Toulouse, France; A. Ghani, Fluid Mechanics Institute of Toulouse (IMFT), Toulouse, France; L. Gicquel, CERFACS, Toulouse, France; T. Poinsot, Fluid Mechanics Institute of Toulouse (IMFT), Toulouse, France		

Thursday, 12 January 2017						
387-PDL-10	**DBD Plasma Actuators I**					**Ft. Worth 4**
Chaired by: S. ROY, University of Florida and S. BANE, Purdue University- Sch of Aero and Astro						
0930 hrs AIAA-2017-1577 **Stall Cell Formation over a Boeing Vertol VR-7 Airfoil** A. Ghassemi Isfahani, N. Webb, M. Samimy, Ohio State University, Columbus, OH	1000 hrs AIAA-2017-1578 **Airfoil Optimisation for DBD Plasma Actuator in a Wind Energy Environment: Design and Experimental Study** E. Batlle, Technical University of Catalonia, Terrassa, Spain; R. Pereira, M. Kotsonis, G. de Oliveira, Delft University of Technology, Delft, The Netherlands	1030 hrs AIAA-2017-1579 **PIV-based dynamic model of EHD volume force produced by a surface dielectric barrier discharge** N. Benard, University of Poitiers, Futuroscope, France; S. Laizet, Imperial College London, London, United Kingdom; E. Moreau, University of Poitiers, Futuroscope, France	1100 hrs AIAA-2017-1580 **Unsteady Joule Heating Energy Model for Nanosecond Pulsed DBD Plasma Actuator** J. Chae, S. Ahn, H. Kim, K. Kim, Seoul National University, Seoul, South Korea			

Thursday, 12 January 2017						
388-PDL-11	**Plasma Assisted Combustion and Ignition I**					**Ft. Worth 5**
Chaired by: A. STARIKOVSKIY, Princeton University and J. POGGIE, Purdue University- Sch of Aero and Astro						
0930 hrs AIAA-2017-1581 **Hydrodynamic effects induced by nanosecond sparks in air and air/fuel mixtures** S. Stepanyan, École Centrale Paris, Châtenay-Malabry, France; J. Hayashi, Osaka University, Suita, Japan; S. Lovascio, University of Bari, Bari, Italy; G. Stancu, C. Laux, École Centrale Paris, Châtenay-Malabry, France	1000 hrs AIAA-2017-1582 **Developing Multiphysics Simulations of Swirl-Stabilized Plasma-Assisted Combustion** J. Zimmerman, A. Palla, D. King, D. Carroll, CU Aerospace, LLC, Champaign, IL; C. Mitsingas, R. Rajasegar, University of Illinois, Urbana-Champaign, Urbana, IL; et al.	1030 hrs AIAA-2017-1583 **Effect of Translational Nonequilibrium and "Hot" Atoms Reactions on Active Species Production in High-Voltage Pulsed Discharges** A. Starikovskiy, Princeton University, Princeton, NJ	1100 hrs AIAA-2017-1584 **OH Radical Measurements in Hydrogen-Air Mixtures at the Conditions of Strong Vibrational Nonequilibrium** C. Winters, Y. Hung, E. Jans, K. Frederickson, I. Adamovich, Ohio State University, Columbus, OH	1130 hrs AIAA-2017-1585 **Effects of DC electric fields on the combustion of a simplified multi-element injector** P. Salvador, K. Xu, University of Alabama, Huntsville, Huntsville, AL		

Thursday, 12 January 2017						
389-SD-19	**Special Session: Adaptive Aeroelastic Wing Shaping Control I**					**Appaloosa 2**
Chaired by: N. NGUYEN, NASA-Ames Research Center and B. STANFORD, NASA Langley Research Center						
0930 hrs AIAA-2017-1586 **Flexible Deflection Measurements using the SansEC Smart Sensor** A. Menon, J. Whitford, Y. Kostogorova-Beller, J. Steck, A. Chakravarthy, Wichita State University, Wichita, KS	1000 hrs AIAA-2017-1588 **A Flutter Suppression and Drag Optimization Approach for Flexible Aircraft** J. Boskovic, R. Wise, J. Jackson, Scientific Systems Company, Inc., Woburn, MA; N. Nguyen, NASA Ames Research Center, Moffett Field, CA	1030 hrs AIAA-2017-1589 **Multi-Objective Flight Control for Drag Minimization and Load Alleviation of High-Aspect Ratio Flexible Wing Aircraft** N. Nguyen, NASA Ames Research Center, Moffett Field, CA; E. Ting, D. Chaparro, M. Drew, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; S. Swei, NASA Ames Research Center, Moffett Field, CA	1100 hrs AIAA-2017-1590 **Decentralized Optimal Adaptive Control Architectures for the VCCTEF Aircraft** A. Menon, A. Chakravarthy, J. Steck, Wichita State University, Wichita, KS; N. Nguyen, NASA Ames Research Center, Moffett Field, CA	1130 hrs AIAA-2017-1591 **Development of a Refined Space Vehicle Rollout Forcing Function** G. James, J. Tucker, G. Valle, R. Grady, J. Schliesing, NASA Johnson Space Center, Houston, TX; J. Fahling, Jacobs, Houston, TX; et al.		

Thursday, 12 January 2017							
390-SD-20	**Dynamic Loads, Response, Vibration, and Stability of Aerospace Vehicles I**						**Appaloosa 3**
Chaired by: C. HEBERT and A. DATTA, Science & Technology Corporation							
0930 hrs AIAA-2017-1592 **Dynamic analysis of assembled aircraft structures with nonlinear joints** S. Hernandez, University of A Coruña, A Coruña, Spain; E. Menga, Airbus, Madrid, Spain; P. Naveira, C. Lopez, A. Baldomir, M. Cid, University of A Coruña, A Coruña, Spain; et al.	1000 hrs AIAA-2017-1593 **Development and Implementation of a Hybrid Dynamic Force Measurement System at AEDC Tunnel 9** J. Draper, S. Lee, University of Maryland, College Park, College Park, MD; E. Marineau, Arnold Engineering Development Complex, Silver Spring, MD	1030 hrs AIAA-2017-1594 **Linear and Nonlinear Flutter Analyses Using Dynamic Response Computations** F. Roizner, M. Karpel, Technion-Israel Institute of Technology, Haifa, Israel	1100 hrs AIAA-2017-1595 **State-space realizations of potential-flow unsteady aerodynamics with arbitrary kinematics** R. Simpson, R. Palacios, S. Maraniello, Imperial College London, London, United Kingdom	1130 hrs AIAA-2017-1596 **Design and Modal Analysis of a Unique Structure under an Internal Vacuum** J. Snyder, A. Palazotto, Air Force Institute of Technology, Wright-Patterson AFB, OH	1200 hrs AIAA-2017-1597 **Modal Characteristics of a Piezoelectric Shaker Table** A. Palazotto, Air Force Institute of Technology, Wright-Patterson AFB, OH	

Thursday, 12 January 2017						
391-SD-21	**Reduced Order Modeling**					**Appaloosa 4**
Chaired by: Z. SOTOUDEH, Cal Poly Pomona and R. PALACIOS, Imperial College London						
0930 hrs AIAA-2017-1598 **Genetic Algorithm-Guided, Adaptive Model Order Reduction of Flexible Aircrafts** J. Zhu, Y. Wang, K. Pant, CFD Research Corporation, Huntsville, AL; P. Suh, M. Brenner, NASA Armstrong Flight Research Center, Edwards, CA	1000 hrs AIAA-2017-1599 **A Reduced Order Model of Corrected Aerodynamic Influence Coefficients for Aircraft Loads Analysis** M. Verveld, T. Kier, German Aerospace Center (DLR), Oberpfaffenhofen, Germany	1030 hrs AIAA-2017-1600 **Mistuned Rotor Reduced Order Modeling with Surrogate-Modeled Airfoil Substructures** E. Henry, J. Brown, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Beck, Universal Technology Corporation, Dayton, OH	1100 hrs AIAA-2017-1601 **An Aerothermoelastic Analysis Framework Enhanced by Model Order Reduction With Applications** D. Huang, T. Rokita, P. Friedmann, University of Michigan, Ann Arbor, Ann Arbor, MI			

Thursday, 12 January 2017						
392-STR-10	**Challenges in the Design of Joined Wings and Structural Joints**					**Appaloosa 1**
Chaired by: L. DEMASI, San Diego State University College of Engineering and S. RUSSELL, Triumph Aerostructures						
0930 hrs AIAA-2017-1602 **Analytical and Experimental Studies on Delamination Arrest in Bolted-Bonded Composite Structures** L. Richard, K. Lin, University of Washington, Seattle, Seattle, WA	1000 hrs AIAA-2017-1603 **Physical based Multidisciplinary Optimization of Strut Braced Wing Configuration in a Distributed design environment** X. Gu, P. Ciampa, B. Nagel, German Aerospace Center (DLR), Hamburg, Germany	1030 hrs AIAA-2017-1604 **Honeycomb Core Failure Prediction in Joint using Nonlinear Finite Element Analysis** A. Lyford, Orbital ATK, Dulles, VA; R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA; T. Stoumbos, Orbital ATK, Dulles, VA	1100 hrs AIAA-2017-1605 **Automatic Design and Sizing of Inverted Joined-Wing Aircraft** M. Kalinowski, Institute of Aviation, Warsaw, Poland			

Thursday, 12 January 2017						
393-TES-1	**Fossil Fuel Power Technologies I**					**Mustang 3**
Chaired by: A. GUPTA, University of Maryland and H. KIM, Airliquide						
0930 hrs AIAA-2017-1606 **Heat Transfer Characterization of a High Heat Flux Oxy-Fuel Direct Power Extraction Combustor** L. Cabrera, J. Aboud, M. Hernandez, B. Lovich, A. Choudhuri, N. Love, University of Texas, El Paso, El Paso, TX	1000 hrs AIAA-2017-1607 **Impact of Confinement on a Swirl Burner Flowfield** A. Khalil Hasan, J. Brooks, A. Gupta, University of Maryland, College Park, College Park, MD	1030 hrs AIAA-2017-1608 **CARSOXY (CO2-Argon-Steam-OxyFuel) Combustion in Gas Turbines for CCS Systems** N. Syred, M. Gutesha, A. Doboon, A. Valera-Medina, P. Bowen, Cardiff University, Cardiff, United Kingdom	1100 hrs AIAA-2017-1609 **Preliminary Computational Analysis of Combustion in a Directly Heated Supercritical Oxy-Fuel Combustor** A. Badhan, A. Chowdhury, A. Choudhuri, N. Love, University of Texas, El Paso, El Paso, TX	1130 hrs AIAA-2017-1610 **Sorption Enhanced Steam Reforming of Methane using Calcium Looping** C. Batini, K. Burra, A. Gupta, University of Maryland, College Park, College Park, MD		

Thursday, 12 January 2017						
394-TP-11	**Nonequilibrium Flows and Radiation**					**Austin 3**
Chaired by: C. JOHNSTON, NASA-Langley Research Center						
0930 hrs AIAA-2017-1611 **Simulations of stagnation point radiative heating rates and spectral analysis of entry vehicles** J. Bonin, University of the German Federal Armed Forces, Munich, Germany; D. Kliche, IABG, Munich, Germany; C. Mundt, University of the German Federal Armed Forces, Munich, Germany	1000 hrs AIAA-2017-1612 **Advanced Modeling of Non-equilibrium Flows using a Maximum Entropy "Quadratic" Formulation** M. Sharma, University of Illinois, Urbana-Champaign, Urbana, IL; Y. Liu, NASA Ames Research Center, Moffett Field, CA; M. Panesi, University of Illinois, Urbana-Champaign, Urbana, IL	1030 hrs AIAA-2017-1613 **Rarefaction Effects on Species Diffusion through Nanoscales** M. Darbandi, M. Sabouri, Sharif University of Technology, Tehran, Iran; G. Schneider, University of Waterloo, Waterloo, Canada	1100 hrs AIAA-2017-1614 **Assessment of Degree of Steadiness in Boundary Layer Shock-Interaction Flows** O. Tumuklu, D. Levin, University of Illinois, Urbana-Champaign, Urbana, IL			

Thursday, 12 January 2017						
395-WE-9	**Wind Energy Control and Optimization I**					**Texas D**
Chaired by: P. VEERS, National Renewable Energy Laboratory and R. DAMIANI, NREL						
0930 hrs AIAA-2017-1615 **Large Eddy Simulation Analysis of Wake Characteristics and Power Spectrum of a Wind Turbine Operating in Yaw** T. Kaushik, T. Chatterjee, Y. Peet, R. Calhoun, Arizona State University, Tempe, AZ	1000 hrs AIAA-2017-1616 **Real time controlled wind turbine wake simulator** R. Castillo, Y. Wang, S. Pol, A. Swift, C. Westergaard, Texas Tech University, Lubbock, TX	1030 hrs AIAA-2017-1617 **Development of a Mechanical Passive Pitch System for a 500W Horizontal Axis Wind Turbine** T. Poryzala, T. Kim, Technical University of Denmark, Roskilde, Denmark	1100 hrs AIAA-2017-1618 **Multivariable controller design verification for a Liberty wind turbine** D. Ossmann, University of Minnesota, Minneapolis, Minneapolis, MN; J. Theis, Hamburg University of Technology, Hamburg, Germany	1130 hrs AIAA-2017-1619 **Gradient Based Optimization of Wind Farms with Multiple Turbine Hub Heights** A. Stanley, J. Thomas, A. Ning, Brigham Young University, Provo, UT; K. Dykes, P. Fleming, National Renewable Energy Laboratory, Boulder, CO		

Thursday, 12 January 2017		
396-IS-8 **1100 - 1230 hrs**	**New Developments in ISHM for NASA Ground, Launch, and Flight Systems**	**Ft. Worth 1**

Moderator: Kevin Melcher, Team Lead, Systems Health Management for Space Exploration, NASA Glenn Research Center, Intelligent Control and Autonomy Branch

During this session, participants will discuss key developments in NASA ground, launch, and flight systems that have occurred over the past 2-3 years. This will be followed by a dialogue with audience participants. Questions to be addressed by the panel include:

1. In your area of experience, what are the top 2-3 advances or developments in Systems Health Management or Fault Management?
2. How have or will these advances positively impacted NASA's systems engineering development processes and set the stage for successful recent or future flights?
3. What are 1 or 2 key next steps toward advancing ISHM in your area of expertise (i.e., ground, launch, or flight systems)?

Panelists:

Stephen B. Johnson
President, Dependable System Technology, LLC
Analysis Lead, Mission and Fault Management
NASA Space Launch System Program

Fernando Figueroa
Lead, Autonomous Operations and Systems, Engineering and Test Directorate, Advanced Technology and Tech Transfer Division
NASA Stennis Space Center

Gordon B. Aaseng
Computer Scientist, Intelligent Systems Division
NASA Ames Research Center

Edmond Wong
Technical Lead, Sensor Data Qualification and Consolidation for the Space Launch System
NASA Glenn Research Center

Lorraine Fesq
Lead, NASA's Fault Management Community of Practice; Chief Technologist for Systems Engineering and Formulation Division
NASA Jet Propulsion Laboratory

Thursday, 12 January 2017		
397-LUNCH-4 **1200 - 1400 hrs**	**Recognition Luncheon: Celebrating Achievements in Aerospace Design/Structures and Aerospace Literature**	**Texas A & B**

Walter Downing
Executive Vice President
Southwest Research Institute

Thursday, 12 January 2017		
398-NW-18 **1230 - 1400 hrs**	**Rising Leaders Keynote Speaker with Boxed Lunch**	**Grapevine A**

A New Era in Aviation
Jaiwon Shin
NASA Associate Administrator, Aeronautics Research Mission Directorate

Thursday, 12 January 2017						
399-ABPSI-2	**Inlet Distortion and Characterization**					**Dallas 1**
Chaired by: E. LOTH, University of Virginia and C. CHUCK, The Boeing Company						
1400 hrs AIAA-2017-1621 **Axial Extent of Flowfield Variation from the StreamVaneTM Swirl Pattern Generation System** C. Nessler, D. Sanders, T. Janczeswki, M. List, W. Copenhaver, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2017-1620 **Swirling Flow Evolution Part 1: Design and Stereo PIV Measurements at Select Planes** T. Guimaraes Bucalo, Virginia Polytechnic Institute and State University, Blacksburg, VA; W. Copenhaver, Air Force Research Laboratory, Wright-Patterson AFB, OH; W. Schneck, K. Lowe, W. O'Brien, Virginia Polytechnic Institute and State University, Blacksburg, VA	1500 hrs AIAA-2017-1622 **Swirling Flow Evolution Part 2: StreamFlow 2D+t Model Validated with Stereo PIV Measurements** W. Schneck, T. Guimaraes Bucalo, D. Frohnapfel, K. Lowe, W. O'Brien, Virginia Polytechnic Institute and State University, Blacksburg, VA; W. Copenhaver, Air Force Research Laboratory, Wright-Patterson AFB, OH	1530 hrs AIAA-2017-1623 **Fan Rotor Flow Measurements in a Turbofan Engine operating with Inlet Swirl Distortion** D. Frohnapfel, W. O'Brien, K. Lowe, Virginia Polytechnic Institute and State University, Blacksburg, VA	1600 hrs AIAA-2017-1624 **Design and Testing of a Small Pressure Wave Supercharger for an Industrial Diesel Engine** M. Mataczynski, Air Force Research Laboratory, Wright-Patterson AFB, OH; D. Paxson, NASA Glenn Research Center, Cleveland, OH; J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH		

Thursday, 12 January 2017						
400-ACD-9	**Innovative Aircraft Design Concepts II**					**Grapevine 3**
Chaired by: C. BIL, RMIT University and S. KOMADINA, Northrop Grumman Aerospace Systems						
1400 hrs AIAA-2017-1625 **Conceptual Design of Air Vehicles with Hybrid Lift Concepts - A Design Space Exploration** J. Hartmann, German Aerospace Center (DLR), Hamburg, Germany	1430 hrs AIAA-2017-1626 **Impact of Cloud Encounter Mitigation Procedures on Operational and Economic Effectiveness of HLFC Aircraft** K. Wicke, F. Linke, A. Lau, K. Risse, German Aerospace Center (DLR), Hamburg, Germany; A. Pohya, B. Lührs, Hamburg University of Technology, Hamburg, Germany; et al.	1500 hrs AIAA-2017-1627 **Integrated Assessment of Active Flow Control Architectures for Commercial Aircraft** Y. Cai, Z. Gao, I. Chakraborty, S. Briceno, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1530 hrs AIAA-2017-1628 **Cruise Speed Sensitivity Study for Transonic Truss Braced Wing** D. Wells, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2017-1629 **Loads Certification of the Cirrus Aircraft SF50 Vision Jet®** R. Kelbe, N. Hill, T. Ladeinde, C. Venkatasubban, Cirrus Aircraft, Duluth, MN		

Thursday, 12 January 2017						
401-ACD-10 **1400 - 1700 hrs**	**CADWG: Concept Design Tools and Processes for Manufacturing and Certification of Aircraft**					**San Antonio 4**
Panelists: **Peter Schmollgruber** ONERA **Neal Pfeiffer** Mooney International **Luis Gonzalez-Linero** Embry-Riddle Aeronautical University **Nicholas Borer** NASA Langley Research Center						

Thursday, 12 January 2017						
402-AFM-9	**Small/Mini/Micro Aerial Vehicles**					**Grapevine 4**
Chaired by: T. RICHARDSON, University of Bristol and K. SHWEYK, Boeing Engineering Operations & Technology						
1400 hrs AIAA-2017-1630 **Performance Improvement of Small UAVs Through Energy-Harvesting Within Atmospheric Gusts** N. Gavrilovic, E. Benard, P. Pastor, J. Moschetta, Higher Institute of Aeronautics and Space, Toulouse, France	1430 hrs AIAA-2017-1631 **Flight Test Investigation of Stall/ Spin Detection Techniques for a Flying Wing UAS** H. Chao, H. Flanagan, P. Tian, University of Kansas, Lawrence, Lawrence, KS; S. Hagerott, Textron Aviation, Wichita, KS	1500 hrs AIAA-2017-1632 **Validation of Flight Power Modeling by Direct Measurement of a Flapping Wing Aerial Vehicle** J. Gerdes, Army Research Laboratory, Aberdeen Proving Ground, MD; S. Gupta, University of Southern California, Los Angeles, CA; H. Bruck, University of Maryland, College Park, College Park, MD	1530 hrs AIAA-2017-1633 **Sliding Mode Control of a Biomimetic Flapping Wing Micro Air Vehicle in Hover** J. Bluman, C. Kang, Y. Shtessel, University of Alabama, Huntsville, Huntsville, AL	1600 hrs AIAA-2017-1634 **Flight Testing and Preliminary Analysis for Global System Identification of Ornithopter Dynamics Using On-board and Off-board Data** S. Armanini, M. Karásek, C. de Visser, G. de Croon, M. Mulder, Delft University of Technology, Delft, The Netherlands	1630 hrs AIAA-2017-1635 **Stability Analysis of Longitudinal Dynamics of Hovering Flapping MAVs/Insects** A. Elsadek, Zewail City of Science and Technology, Giza, Egypt; H. Taha, University of California, Irvine, Irvine, CA; G. El-Bayoumi, Cairo University, Giza, Egypt	

Thursday, 12 January 2017						
403-AFM-10	**Aircraft Flight Dynamics, Handling Qualities, and Performance III**					**Grapevine 5**
Chaired by: A. LAMPTON, Systems Technology, Inc. and D. GINGRAS, Bihrle Applied Research Inc.						
1400 hrs AIAA-2017-1636 **Trim Analyses of Mass-Actuated Airplane in Steady-state Climb and Descent** S. Erturk, A. Dogan, University of Texas, Arlington, Arlington, TX	1430 hrs AIAA-2017-1637 **Dynamic Simulation and Control of Mass-Actuated Airplane** S. Erturk, A. Dogan, University of Texas, Arlington, Arlington, TX	1500 hrs AIAA-2017-1638 **Flight Performance Optimization of a Multi-Lift Rotorcraft Formation** J. Enciu, J. Horn, Pennsylvania State University, University Park, PA	1530 hrs AIAA-2017-1639 **Airdata-Sensor-based Relative Position Estimation for Receiver Aircraft in Aerial Refueling** H. Sevil, University of Texas, Arlington Research Institute, Fort Worth, TX; A. Dogan, University of Texas, Arlington, Arlington, TX	1600 hrs AIAA-2017-1640 **Novel Estimation of Pilot Performance Characteristics** E. Bachelder, San Jose State University, San Jose, CA; B. Aponso, NASA Ames Research Center, Moffett Field, CA	1630 hrs AIAA-2017-1641 **Assessment of a Scalogram-Based PIO Metric with Flight Test Data** D. Klyde, P. Schulze, Systems Technology, Inc., Hawthorne, CA; R. Mello, Embraer, São José dos Campos, Brazil; D. Mitchell, Mitchell Aerospace Research, Long Beach, CA	

Thursday, 12 January 2017						
404-AMT-14	**Simultaneous and/or Multidimensional Measurements**					**Grapevine B**
Chaired by: S. KEARNEY, Sandia National Laboratories and B. THUROW, Auburn University						
1400 hrs AIAA-2017-1642 **Volumetric calibration of a plenoptic camera** E. Hall, T. Fahringer, B. Thurow, Auburn University, Auburn, AL; D. Guildenbecher, Sandia National Laboratories, Albuquerque, NM	1430 hrs AIAA-2017-1643 **Visualization of an SBLI using Plenoptic BOS** C. Clifford, J. Klemkowsky, B. Thurow, Auburn University, Auburn, AL; N. Arora, F. Alvi, Florida State University, Tallahassee, FL	1500 hrs AIAA-2017-1644 **Tomographic PIV Measurement in a Bluff Body Wake Utilizing an Asymmetric Camera Conguration and Least Squares Matching** E. Fleischhauer, J. Dahlberg, P. Tkacik, S. Hellman, University of North Carolina, Charlotte, Charlotte, NC	1530 hrs AIAA-2017-1645 **A Plenoptic Multi-Color Imaging Pyrometer** P. Danehy, NASA Langley Research Center, Hampton, VA; W. Hutchins, Warwick High School, Hampton, VA; T. Fahringer, B. Thurow, Auburn University, Auburn, AL	1600 hrs AIAA-2017-1646 **3D OH LIF Measurements in a Lifted Flame** B. Halls, P. Hsu, L. Ethan, S. Roy, Spectral Energies, LLC, Dayton, OH; T. Meyer, Purdue University, West Lafayette, IN; J. Gord, Air Force Research Laboratory, Wright-Patterson AFB, OH		

Thursday, 12 January 2017						
405-APA-39	**Aerodynamic-Structural Dynamic Interactions II**					**Dallas 5**
Chaired by: C. PASILIAO, AFRL/RW and D. FINLEY, Lockheed Martin Aeronautics						
1400 hrs AIAA-2017-1647 **Multiple Equilibrium Points of Airfoil Flutter in Viscous Flow** F. Marti, F. Liu, University of California, Irvine, Irvine, CA	1430 hrs AIAA-2017-1648 **Flutter Study of NACA 64A010 Airfoil Using URANS and e^N Transition Models Coupled with an Integral Boundary Layer Code** F. Marti, F. Liu, University of California, Irvine, Irvine, CA	1500 hrs AIAA-2017-1649 **Numerical Study of Evolution of Air Pockets during Water Impact of a Flat-Bottom Structure** Q. Qu, G. Ji, P. Liu, X. Wu, Beihang University, Beijing, China; R. Agarwal, Washington University in St. Louis, St. Louis, MO	1530 hrs AIAA-2017-1650 **A High Efficiency Aeroelastic Analysis Method based on Rigid External Aerodynamic Force and Elastic Correction by High-Order Panel Method** Y. Liu, S. Zhu, Z. Wan, C. Yang, Beihang University, Beijing, China			

Thursday, 12 January 2017						
406-APA-40	**Special Session: Sensitivity Analysis and Uncertainty Quantification Evaluation for Realistic Problems II**					**Ft. Worth 3**
Chaired by: P. MORGAN, Ohio Aerospace Institute and R. GRAVES, Air Force Research Laboratory						
1400 hrs AIAA-2017-1651 **Studies of Aeroelastic Uncertainty Quantification for a Wind Tunnel Model and Test Program – Overview and Static Aeroelastic Analysis** A. Cunningham, Lockheed Martin Corporation, Fort Worth, TX	1430 hrs AIAA-2017-1652 **Aeroelastic Uncertainty Quantification Studies Using the S4T Wind Tunnel Model** M. Nikbay, National Institute of Aerospace, Hampton, VA; J. Heeg, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2017-1653 **Flutter Uncertainty Quantification for the S4T Model** I. Tartaruga, J. Cooper, University of Bristol, Bristol, United Kingdom; G. Georgiou, University of Liverpool, Liverpool, United Kingdom; H. Khodaparast, Swansea University, Swansea, United Kingdom	1530 hrs AIAA-2017-1654 **Development and Assessment of Uncertainty Quantification Methods for Ship Hydrodynamics** F. Stern, S. Volpi, N. Gaul, K. Choi, University of Iowa, Iowa City, Iowa City, IA; M. Diez, R. Broglia, National Research Council, Rome, Italy; et al.	1600 hrs AIAA-2017-1655 **Validation of Uncertainty Quantification Methods for High-Fidelity CFD of Ship Response in Irregular Waves** M. Diez, R. Broglia, D. Durante, A. Olivieri, E. Campana, National Research Council, Rome, Italy; F. Stern, University of Iowa, Iowa City, Iowa City, IA	1630 hrs AIAA-2017-1656 **Summary Findings from the AVT-191 Project to Assess Sensitivity Analysis and Uncertainty Quantification Methods for Military Vehicle Design** J. Benek, Air Force Research Laboratory, Wright-Patterson AFB, OH; J. Luckring, NASA Langley Research Center, Hampton, VA	

Thursday, 12 January 2017						
407-APA-41	**Airfoil/Wing/Configuration Aerodynamics III: Airfoil and Wing Optimization**					**Dallas 3**
Chaired by: B. DETERT, Boeing Commercial Airplanes and J. CODER, University of Tennessee						
1400 hrs AIAA-2017-1657 **Studies on Wingtip Geometries by Optimum Spanwise Lift Distribution Design Method** Y. Oda, K. Rinoie, University of Tokyo, Bunkyo, Japan; T. Yuhara, Japan Aerospace Exploration Agency (JAXA), Mitaka, Japan	1430 hrs AIAA-2017-1658 **Study on Aerodynamics of Annular Wing for Unmanned Aerial Vehicles** M. Debiasi, Y. Cui, M. Damodaran, National University of Singapore, Singapore, Singapore; J. Dela Cruz, J. Tan, Temasek Polytechnic, Singapore, Singapore; A. Raut , Indian Institute of Technology Gandhinagar, Palaj, India; et al.	1500 hrs AIAA-2017-1659 **Aerodynamics of an Airfoil in Dynamic Ground Effect during Take-Off** Q. Qu, L. Huang, P. Liu, T. Hu, Beihang University, Beijing, China; R. Agarwal, Washington University in St. Louis, St. Louis, MO				

Thursday, 12 January 2017						
408-APA-42	**Applied CFD II: Configuration Evaluation**					**Dallas 4**
Chaired by: J. AZEVEDO and R. DOWGWILLO, Boeing Engineering Operations & Technology						
1400 hrs AIAA-2017-1660 **Flow simulations of a high-speed train for investigating the ballast flight** J. Zhu, Z. Hu, U. Oza, University of Southampton, Southampton, United Kingdom	1430 hrs AIAA-2017-1661 **Comparison between Wall-modeled and Wall-resolved Large Eddy Simulations for the prediction of boundary-layer separation around the side mirror of a full-scale vehicle** K. Ambo, T. Yoshino, T. Kawamura, M. Teramura, Honda Motor Company, Ltd., Haga, Japan; D. Philips, G. Brès, Cascade Technologies, Inc., Palo Alto, CA; et al.	1500 hrs AIAA-2017-1662 **Aerodynamic Analysis of a High Maneuverability Airframe Utilizing Magnetic Resonance Velocimetry and Reynolds-Averaged Navier-Stokes Simulations** E. Youn, A. Waugh, Z. Livingston, M. Benson, B. Van Poppel, C. VerHulst, U.S. Military Academy, West Point, NY; et al.	1530 hrs AIAA-2017-1663 **Effect of the Impinging Height of Twin Jets in Tandem Through a Crossflow** J. Barata, A. Silva, D. Vieira, University of Beira Interior, Covilha, Portugal			

Thursday, 12 January 2017						
409-APA-43	**Special Session: Simulation of Rotor in Hover II**					**Dallas 2**
Chaired by: N. HARIHARAN, CREATE-AV and R. NARDUCCI, Boeing Defense, Space & Security						
1400 hrs AIAA-2017-1664 **Methods for Efficient Resolution of Vortical Structures of an S-76 Rotor in Hover** B. Lee, J. Hayes, B. Govindarajan, J. Baeder, University of Maryland, College Park, College Park, MD	1430 hrs AIAA-2017-1665 **CFD Hover Predictions Including Boundary-Layer Transition** B. Vieira, M. Kinzel, M. Maughmer, Pennsylvania State University, University Park, PA	1500 hrs AIAA-2017-1666 **Accurate predictions of hovering rotor flows using CFD** A. García, S. Colonia, G. Barakos, University of Glasgow, Glasgow, United Kingdom	1530 hrs AIAA-2017-1667 **Application of CREATE ™-AV Helios in Engineering Environment: Hover Prediction Assessment** T. Wong, Army Research, Development and Engineering Command, Redstone Arsenal, AL	1600 hrs AIAA-2017-1668 **Standardized Post-Processing and Visualization of Participants' Simulations of a Rotor in Hover** E. Duque, M. Burklund, A. Toyoda, Intelligent Light, Rutherford, NJ; N. Hariharan, CREATE AV Team, Lorton, VA		

Thursday, 12 January 2017						
410-APA-44/FD-53	**Special Session: Sensitivity Analysis of High-Fidelity Rotorcraft Computations**					**Dallas 6**
Chaired by: L. WANG, National Institute of Aerospace and G. KENNEDY, Georgia Institute of Technology						
1400 hrs AIAA-2017-1669 **Recent Advances in High-Fidelity Multidisciplinary Adjoint-Based Optimization with the NSU3D Flow Solver Framework** D. Mavriplis, E. Fabiano, E. Anderson, University of Wyoming, Laramie, Laramie, WY	1430 hrs AIAA-2017-1670 **Sensitivity Analysis of Multidisciplinary Rotorcraft Simulations** L. Wang, B. Diskin, National Institute of Aerospace, Hampton, VA; R. Biedron, E. Nielsen, NASA Langley Research Center, Hampton, VA; O. Bauchau, University of Maryland, College Park, College Park, MD	1500 hrs AIAA-2017-1671 **Adjoint-based derivative evaluation methods for flexible multibody systems with rotorcraft applications** K. Boopathy, G. Kennedy, Georgia Institute of Technology, Atlanta, GA	1530 hrs AIAA-2017-1672 **Sensitivity of Rotorcraft Hover Predictions to Mesh Resolution in Strand Grid Framework** 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	1600 hrs AIAA-2017-1673 **Robust Acoustic Objective Functions and Sensitivities in Adjoint-Based Design Optimizations** L. Lopes, NASA Langley Research Center, Hampton, VA	1630 hrs Oral Presentation **The efficient use of CFD in Rotorcraft Optimization** T. Schwarz, M. Wentrup, G. Wilke, German Aerospace Center (DLR), Braunschweig, Germany	

Thursday, 12 January 2017						
411-ASC-4	**Smart and Multifunctional Materials, Structural Health Monitoring and Damage Detection and Integrity**					**Palomino 3**
Chaired by: G. DAVIS, Jet Propulsion Laboratory and T. TURNER, NASA-Langley Research Center						
1400 hrs AIAA-2017-1674 **Effect of Triaxiality on Phase Transformation in $NI_{50.8}TI$ Notched Cylindrical Bars** F. Phillips, S. Jape, T. Baxevanis, D. Lagoudas, Texas A&M University, College Station, TX	1430 hrs AIAA-2017-1675 **Structural Health Management of Damaged Aircraft Structures Using Digital Twin Concept** B. Seshadri , National Institute of Aerospace, Hampton, VA; T. Krishnamurthy, NASA Langley Research Center, Hampton, VA	1500 hrs AIAA-2017-1676 **Assessment of Adhesively Bonded Joint Health Status using Wavelet Spectral Finite Element Method** N. Jayakody, R. Jha, A. Khalili, Mississippi State University, Mississippi State, MS; D. Samaratunga, The Aerospace Corporation, El Segundo, CA	1530 hrs AIAA-2017-1677 **Structural Health Monitoring of Skin-Stiffener Structures Using WSFE-based User Defined Elements in Abaqus** A. Khalili, R. Jha, N. Jayakody, Mississippi State University, Mississippi State, MS	1600 hrs AIAA-2017-1678 **Guided Wave Based Damage Assessment in X-COR Composite Sandwich Structures** G. Li, R. Neerukatti, A. Rajadas, A. Chattopadhyay, Arizona State University, Tempe, AZ; D. Huff, The Boeing Company, Mesa, AZ		

Thursday, 12 January 2017						
412-EXPL-2	**Novel Concepts for Solar System Exploration**					**Palomino 2**
Chaired by: S. BAUER, NASA LaRC and S. SHARMA, NASA Ames Research Center						
1400 hrs AIAA-2017-1679 **Mission to the Gravitational Focus of the Sun: A Critical Analysis** G. Landis, NASA Glenn Research Center, Cleveland, OH	1430 hrs AIAA-2017-1680 **Autoport Project: a Docking Station for Planetary Exploration Drones** A. Compagnin, A. Cenzato, E. Lungavia, N. Bagarello, A. Rossi, A. Reffo, University of Padova, Padova, Italy; et al.					

Thursday, 12 January 2017		
413-F360-8 **1400 - 1600 hrs**	**NASA Innovative Advanced Concepts (NIAC): Enabling Missions from Venus to Alpha Centauri**	**Texas C**

Moderator: Alvin Yew, Program Manager, NASA Innovative Advanced Concepts, Space Technology Mission Directorate, NASA

Panelists:

Geoff Landis
Scientist
NASA Glenn Research Center

Mason Peck
Associate Professor, Mechanical and Aerospace Engineering
Cornell University

Jonathan Sauder
Technologist, Technology Infusion Group
NASA Jet Propulsion Laboratory

Thursday, 12 January 2017						
414-FD-5	**Experimental Measurements in Stability and Transition**					**Grapevine 2**
Chaired by: K. CASPER, Sandia National Laboratories and D. BERRIDGE, Johns Hopkins University, Applied Physics Laboratory						
1400 hrs AIAA-2017-1681 **Measurements of Crossflow Instability Modes for HIFiRE-5 at Angle of Attack** M. Borg, R. Kimmel, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2017-1682 **Global Heat Flux Measurement Using Temperature-Sensitive Paint in High-Enthalpy Shock Tunnel HIEST** T. Nagayama, H. Nagai, Tohoku University, Sendai, Japan; H. Tanno, T. Komuro, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan	1500 hrs AIAA-2017-1683 **Hypersonic Boundary-Layer Transition Features from High-Speed Schlieren Images** R. Kennedy, S. Laurence, University of Maryland, College Park, College Park, MD; M. Smith, E. Marineau, Arnold Engineering Development Complex, Silver Spring, MD	1530 hrs AIAA-2017-1684 **Dependence of Turbulent Spot Initiation Rates on Hypersonic Boundary Layer Flow Parameters** S. Raghunath, University of Queensland, Brisbane, Australia; R. Narasimha, Jawaharlal Nehru Centre for Advanced Scientific Research, Bengaluru, India; D. Mee, University of Queensland, Brisbane, Australia	1600 hrs AIAA-2017-1685 **Influence of Perturbations on 3-D Hypersonic Shock Laminar Boundary Interactions** A. Leidy, I. Neel, R. Bowersox, Texas A&M University, College Station, TX; J. Schmisseur, University of Tennessee, Tullahoma, Tullahoma, TN		

Thursday, 12 January 2017						
415-FD-54	**Static and Dynamic Stall Control**					**Texas 1**
Chaired by: M. SAMIMY, The Ohio State University and M. VISBAL, USAF AFRL/RQVA						
1400 hrs AIAA-2017-1687 **Unsteady Flow Separation Control over a NACA 0015 using NS-DBD Plasma Actuators** A. Singhal, D. Castañeda, N. Webb, M. Samimy, Ohio State University, Columbus, OH	1430 hrs AIAA-2017-1688 **Experimental Study of Burst Ratio Effect for Dielectric-Barrier-Discharge Plasma Actuator for Separation Control** S. Sekimoto, Tokyo University of Science, Tokyo, Japan; N. Tanaka, Tohoku University, Sendai, Japan; T. Nonomura, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan; H. Nishida, Tokyo University of Agriculture and Technology, Koganei, Japan; K. Fujii, Tokyo University of Science, Tokyo, Japan	1500 hrs AIAA-2017-1689 **Numerical Simulation of Stall Flow Control over NACA0012 Airfoil with Contour Bump** L. Hao, Northwestern Polytechnical University, Xi'an, China				

Thursday, 12 January 2017						
416-FD-55	**Jet-Based Flow Control**					**Texas 2**
Chaired by: O. STALNOV, Technical University of Berlin Germany and R. WOSZIDLO, The Boeing Company						
1400 hrs AIAA-2017-1690 **Investigation of Crossflow Interaction of an Oscillating Jet** M. Hossain, R. Prenter, R. Lundgreen, L. Agricola, A. Ameri, J. Gregory, Ohio State University, Columbus, OH; et al.	1430 hrs AIAA-2017-1691 **Characterization of SaOB Actuators Interacting With Flat Plate Boundary Layers** J. Wilson, D. Schatzman, Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA; A. Seifert, Tel Aviv University, Tel Aviv, Israel; E. Arad, Rafael Advanced Defense Systems, Ltd., Haifa, Israel; L. Marom, N. Shay, Tel Aviv University, Tel Aviv, Israel; et al.	1500 hrs AIAA-2017-1692 **Nonlinear Interactions in Planar Jet Flow with Direct Turbulence Scale Excitation** T. Kreutzfeldt, University of Maryland, College Park, College Park, MD; J. Hrynuk, C. Kroninger, B. Glaz, Army Research Laboratory, Aberdeen Proving Ground, MD; P. Hareesh, V. Hrishikeshavan, University of Maryland, College Park, College Park, MD; et al.	1530 hrs AIAA-2017-1693 **Super-Lift Coefficient of Active Flow Control Airfoil: What is the Limit?** Y. Yang, G. Zha, University of Miami, Miami, FL	1600 hrs AIAA-2017-1694 **Numerical and Experimental Study of the Co-Flow Jet Airfoil Performance Enhancement** S. Zhang, B. Song, X. Yang, J. Xu, Northwestern Polytechnical University, Xi'an, China		

Thursday, 12 January 2017						
417-FD-56	**Boundary Layers and Shear Layers II**					**Texas 4**
Chaired by: J. SEIDEL, USAF Academy and T. MCLAUGHLIN, US Air Force Academy						
1400 hrs AIAA-2017-1695 **Analysis of Unstable Mode Structures in Hypersonic Boundary Layer** H. Tatematsu, Y. Ogino, N. Ohnishi, Tohoku University, Sendai, Japan; H. Tanno, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan	1430 hrs AIAA-2017-1696 **Turbulent Boundary Layer Response to Multiple Step Changes in Surface Roughness** J. George, MetroLaser, Inc., Laguna Hills, CA; G. Byun, R. Simpson, Applied University Research, Blacksburg, VA	1500 hrs AIAA-2017-1697 **Influence of Streamline Adverse Pressure Gradients on the Structure of a Mach 5 Turbulent Boundary Layer** N. Tichenor, PM&AM Research, Bryan, TX; I. Neel, A. Leidy, R. Bowersox, Texas A&M University, College Station, TX	1530 hrs AIAA-2017-1698 **In-Flight Measurements of Low-Altitude Marine Atmospheric Properties** G. Brian, J. Dansie, Department of Defence, Fishermans Bend, Australia; D. Newman, Quantitative Aeronautics Pty., Ltd., Glebe, Australia; J. Gibard, Department of Defence, Fishermans Bend, Australia			

Thursday, 12 January 2017						
418-FD-57	**Multiphase Flows II**					**Texas 3**
Chaired by: C. TSAI, Lockheed Martin Space Systems and M. SOTERIOU, United Technologies Research Center						
1400 hrs AIAA-2017-1700 **Direct numerical simulation of noise suppression by water injection in high-speed flows** J. Capecelatro, University of Michigan, Ann Arbor, Ann Arbor, MI; D. Buchta, University of Illinois, Urbana-Champaign, Urbana, IL	1430 hrs AIAA-2017-1701 **Numerical Investigation on the Flow Structure of Gaseous Jet Horizontally Injected into Water for Underwater Propulsion** L. Shipeng , Y. Tang, X. Zhang, Z. Liu, N. Wang, Beijing Institute of Technology, Beijing, China	1500 hrs AIAA-2017-1702 **A Numerical Parametric Study on the Air-Blast Atomization of a Planar Liquid Layer** R. Chiodi, O. Desjardins, Cornell University, Ithaca, NY	1530 hrs AIAA-2017-1703 **High Fidelity Simulation of the Impact of Pressure Conditions on Liquid Jet in Crossflow Atomization** X. Li, M. Soteriou, United Technologies Corporation, East Hartford, CT	1600 hrs AIAA-2017-1704 **Direct numerical simulations of turbulent multiphase flows undergoing evaporation** J. Palmore, O. Desjardins, Cornell University, Ithaca, NY		

Thursday, 12 January 2017						
419-FD-58	**Vortex Flows**					**Texas 5**
Chaired by: J. HARTWIG, NASA Glenn Research Center						
1400 hrs AIAA-2017-1705 **Better Insight into the Wingtip Vortex-Free Shear Layer Interaction** S. Gunasekaran, A. Altman, University of Dayton, Dayton, OH	1430 hrs AIAA-2017-1706 **Integral Surface Analysis of Vortical Lobed Nozzle Flows** A. Gehrke, O. Wuensch, University of Kassel, Kassel, Germany; M. Ruetten, German Aerospace Center (DLR), Göttingen, Germany	1500 hrs AIAA-2017-1707 **A Computational Fluid Dynamics Study of Swirling Flow Reduction by Using Anti-Vortex Baffle** H. Yang, CFD Research Corporation, Huntsville, AL	1530 hrs AIAA-2017-1708 **Proper Orthogonal Decomposition Analysis on the Hydrodynamic Effects of the Propulsor Geometries in Flapping Propulsion** P. Han, G. Liu, H. Dong, University of Virginia, Charlottesville, Charlottesville, VA			

Thursday, 12 January 2017						
420-FD-59	**Turbulence and Transition**					**Texas 6**
Chaired by: B. WHEATON, JHU Applied Physics Laboratory						
1400 hrs AIAA-2017-1709 **Enhancement of the Amplification Factor Transport Transition Modeling Framework** J. Coder, Pennsylvania State University, University Park, PA	1430 hrs AIAA-2017-1710 **Uncertainty Quantification and Sensitivity Analysis of SA Turbulence Model Coefficients in Two and Three Dimensions** J. Schaefer, A. Cary, M. Mani, P. Spalart, The Boeing Company, St. Louis, MO	1500 hrs AIAA-2017-1711 **Numerical Investigation of Transcritical-T Heat-and-Mass-Transfer Dynamics in Compressible Turbulent Channel Flow** K. Kim, Purdue University, West Lafayette, IN; J. Hickey, University of Waterloo, Waterloo, Canada; C. Scalo, Purdue University, West Lafayette, IN	1530 hrs AIAA-2017-1712 **A Physics-Informed Machine Learning Approach of Improving RANS Predicted Reynolds Stresses** J. Wang, J. Wu, H. Xiao, Virginia Polytechnic Institute and State University, Blacksburg, VA			

Thursday, 12 January 2017						
421-GNC-23	**Verification and Validation of Adaptive Systems II**					**Austin 2**
Chaired by: T. YUCELEN, Missouri University of Science & Technology and J. MUSE, AFRL/RQQA						
1400 hrs AIAA-2017-1713 **Robustness of Adaptive Control Systems to Unmodeled Dynamics: A Describing Function Viewpoint** H. Hussain, C. Sharma Subedi, A. Annaswamy, Massachusetts Institute of Technology, Cambridge, MA; E. Lavretsky, The Boeing Company, Huntington Beach, CA	1430 hrs AIAA-2017-1714 **Model Reference Neuroadaptive Control Revisited: How to Keep the System Trajectories on a Given Compact Set** E. Arabi, B. Gruenwald, T. Yucelen, University of South Florida, Tampa, FL; M. Fravolini, University of Perugia, Perugia, Italy; N. Nguyen, NASA Ames Research Center, Moffett Field, CA	1500 hrs AIAA-2017-1715 **Performance Optimizing Multi-Objective Adaptive Control with Time-Varying Reference Model Modification** N. Nguyen, K. Hashemi, NASA Ames Research Center, Moffett Field, CA; T. Yucelen, E. Arabi, University of South Florida, Tampa, FL	1530 hrs AIAA-2017-1716 **Approaches to Real-time Predictive Estimation of Loss-of-Control Events & Boundaries on Transport Aircraft** M. Rafi, J. Steck, A. Chakravarthy, Wichita State University, Wichita, KS; T. Yucelen, University of South Florida, Tampa, FL	1600 hrs AIAA-2017-1717 **On the Stability of Adaptive Control Systems in the presence of Control and State Dependent Unmodeled Dynamics** K. Dogan, B. Gruenwald, T. Yucelen, Missouri University of Science and Technology, Rolla, MO; J. Muse, Air Force Research Laboratory, Wright-Patterson AFB, OH		

Thursday, 12 January 2017						
422-GNC-24	**Elastic Aircraft and Load Alleviation**					**Austin 1**
Chaired by: M. BALAS, Embry-Riddle Aeronautical University and A. CHAKRAVARTHY, Wichita State University						
1400 hrs AIAA-2017-1718 **Gust-Load Alleviation of a Flexible Aircraft using a Disturbance Observer** R. Caverly, University of Michigan, Ann Arbor, Ann Arbor, MI; J. Forbes, McGill University, Montréal, Canada; B. Danowsky, Systems Technology, Inc., Hawthorne, CA; P. Suh, NASA Armstrong Flight Research Center, Edwards, CA	1430 hrs AIAA-2017-1719 **Optimal Control Allocation with Load Sensor Feedback for Active Load Suppression, Experiment Development** C. Miller, D. Goodrick, NASA Armstrong Flight Research Center, Edwards, CA	1500 hrs AIAA-2017-1720 **Optimal Control Allocation with Load Sensor Feedback for Active Load Suppression, Flight Test Results** C. Miller, D. Goodrick, NASA Armstrong Flight Research Center, Edwards, CA	1530 hrs AIAA-2017-1721 **Gust Load Alleviation Control for a Flexible Aircraft with Loss of Control Effectiveness** W. Fan, H. Liu, R. Kwong, University of Toronto, Toronto, Canada	1600 hrs AIAA-2017-1722 **Optimal Decentralized Controller with Output Feedback Design for an Elastically Shaped Aircraft Concept** W. Nobleheart, Nobleheart Products, LLC, Wichita, KS; N. Nguyen, NASA Ames Research Center, Moffett Field, CA		

Thursday, 12 January 2017						
423-GNC-25	**ATM and Operations**					**Grapevine D**
Chaired by: J. KROZEL, The Innovation Laboratory and S. SANKARARAMAN, SGT Inc., NASA Ames Research Center						
1400 hrs AIAA-2017-1723 **Eabling Technologies supporting Oceanic Trajectory-Based Operations** P. Hruz, Metron Aviation, Inc., Dulles, VA; J. Krozel, Innovation Laboratory, Inc., Portland, OR; W. Leber, PASSUR Aerospace, Stamford, CT; C. Cross, G. O'Keeffe, Metron Aviation, Inc., Dulles, VA	1430 hrs AIAA-2017-1724 **Uncertainty Quantification in Trajectory Prediction for Aircraft Operations** S. Sankararaman, M. Daigle, NASA Ames Research Center, Moffett Field, CA	1500 hrs AIAA-2017-1725 **Airline Dispatcher Cost Situational Awareness** J. Krozel, Innovation Laboratory, Inc., Portland, OR; W. Leber, C. Maccarone, PASSUR Aerospace, Stamford, CT	1530 hrs AIAA-2017-1726 **A Framework for Wind Sensitivity Analysis for Trajectory Tracking.** H. Escamilla, French Civil Aviation University, Toulouse, France; H. Bouadi, École Militaire Polytechnique, Alger, Algeria; F. Mora-Camino, French Civil Aviation University, Toulouse, France	1600 hrs AIAA-2017-1727 **Using Weather Translation and Machine Learning to Identify Similar Weather Impact Day** J. Chen, R. Kicinger, Metron Aviation, Inc., Dulles, VA; S. Schelling, J. Krozel, Innovation Laboratory, Inc., Portland, OR	1630 hrs AIAA-2017-1728 **Just On Time – A Concept for iPad Enabled Timely Accurate Continuous Descent Operations** H. Lenz, German Aerospace Center (DLR), Braunschweig, Germany	

Thursday, 12 January 2017						
424-GNC-26	**Spacecraft and Launch Trajectory and Planning**					**Grapevine 6**
Chaired by: J. REED, United Launch Alliance, LLC and K. BOLLINO, U.S. Air Force						
1400 hrs AIAA-2017-1729 **A Study on Rendezvous Trajectory Design Utilizing Invariant Manifolds of Cislunar Periodic Orbits** S. Ueda, N. Murakami, T. Ikenaga, Japan Aerospace Exploration Agency (JAXA), Sagamihara, Japan	1430 hrs AIAA-2017-1730 **A General Approach for Calculating Far-Field Orbital Rendezvous Maneuvers** M. Walsh, M. Peck, Cornell University, Ithaca, NY	1500 hrs AIAA-2017-1731 **Using Solar Sails to Transfer to the L5 Lagrange Point** A. Meras, C. Damaren, University of Toronto, Toronto, Canada	1530 hrs AIAA-2017-1732 **Fuel-Optimal Rocket Landing with Aerodynamic Controls** X. Liu, Beijing Institute of Technology, Beijing, China	1600 hrs AIAA-2017-1733 **A Multi-Objective Planning Method for Multi-Debris Active Removal Mission in LEO** Y. Liu, J. Yang, Northwestern Polytechnical University, Xi'an, China		

Thursday, 12 January 2017						
425-GNC-27	**Control Theory, Analysis and Design II**					**Austin 5**
Chaired by: R. YEDAVALLI, The Ohio State University and A. NARANG-SIDDARTH, University of Washington						
1400 hrs AIAA-2017-1734 **A combined Averaging-Shooting Approach for the Trim Analysis of Hovering Insects/Flapping-Wing Micro-Air-Vehicles** A. Hassan, H. Taha, University of California, Irvine, Irvine, CA	1430 hrs AIAA-2017-1735 **Flutter Suppression for a Two Degree of Freedom Aeroeslastic Wing Section: a Structured H-infinity-Based Gain-Scheduling Approach with Explicit Hidden Coupling Terms Handling** H. Lhachemi, D. Saussie, G. Zhu, École Polytechnique de Montréal, Montréal, Canada	1500 hrs AIAA-2017-1736 **Centralized Predictive Control Allocation Scheme for V/STOL Aircrafts** W. Xiangyang, Tsinghua University, Beijing, China; B. Zhu, Nanjing University of Science and Technology, Nanjing, China; Z. Cheng, J. Zhu, Tsinghua University, Beijing, China	1530 hrs AIAA-2017-1737 **Optimal Guidance with Additional Thrust Controller For Various Flight Tasks** N. Indig, J. Ben-Asher, E. Sigal, Technion–Israel Institute of Technology, Haifa, Israel	1600 hrs AIAA-2017-1738 **Passivity-Based Magnetic Attitude Control with Impulsive Thrusting** B. Vatankhahghadim, C. Damaren, University of Toronto, Toronto, Canada	1630 hrs AIAA-2017-1739 **Simultaneous Arrival Control Algorithms for Weapon Target Assignment** K. Volle, J. Rogers, Georgia Institute of Technology, Atlanta, GA	

Thursday, 12 January 2017						
426-GNC-28	**Aerospace Robotics Guidance and Navigation**					**Austin 6**
Chaired by: H. LIU, University of Toronto and S. ULRICH, Carleton University						
1400 hrs AIAA-2017-1740 **Autonomous Navigation with Obstacle Avoidance for Unmanned Aircraft Systems using MILP** J. Devens, T. Bakker, R. Klenke, Virginia Commonwealth University, Richmond, VA	1430 hrs AIAA-2017-1741 **Acoustic Detection of UAS Technologies Using a Biologically-Inspired Wide-Band Integration Method** I. Movius, J. King, K. Barbor, M. Mondal, I. Faruque, University of Maryland, College Park, College Park, MD	1500 hrs AIAA-2017-1742 **Robust detection and tracking of ground vehicles using UAV** H. Oliveira, University of Porto, Porto, Portugal; S. P B, Indraprastha Institute of Information Technology Delhi, New Delhi, India; J. Sousa, University of Porto, Porto, Portugal	1530 hrs AIAA-2017-1743 **Neural Network Guidance for UAVs** K. Julian, M. Kochenderfer, Stanford University, Stanford, CA	1600 hrs AIAA-2017-1744 **Dynamic Re-Plan of the Loyal Wingman Optimal Control Problem** C. Humphreys, R. Cobb, D. Jacques, J. Reeger, Air Force Institute of Technology, Wright-Patterson AFB, OH	1630 hrs AIAA-2017-1745 **Dynamic Visual Servoing of a Rotary-wing Unmanned Aerial Vehicle Without Velocity Measurement** H. Xie, K. Low, Nanyang Technological University, Singapore, Singapore	

Thursday, 12 January 2017						
427-GTE-9/PGC-6	**Pressure Gain Combustion for Gas Turbines**					**Grapevine C**
Chaired by: V. RAMAN, University of Michigan						
1400 hrs AIAA-2017-1746 **Numerical and Analytical Assessment of a Coupled Rotating Detonation Engine and Turbine Experiment** D. Paxson, NASA Glenn Research Center, Cleveland, OH; A. Naples, Innovative Scientific Solutions, Inc., Dayton, OH	1430 hrs AIAA-2017-1747 **RDE Implementation into an Open-Loop T63 Gas Turbine Engine** A. Naples, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; R. Battelle, M. Wagner, F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2017-1748 **Influence of Actively Controlled Heat Release Timing on the Performance and Operational Characteristics of a Rotary Valve, Acoustically Resonant Pulse Combustor** J. Lisanti, W. Roberts, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia	1530 hrs AIAA-2017-1749 **Assessment of Incidence Loss and Shaft Work Production For Wave Rotor Combustor with Non-Axial Channels** R. Jagannath, S. Bane, Purdue University, West Lafayette, IN; M. Feyz, M. Nalim, Indiana University-Purdue University Indianapolis, Indianapolis, IN			

Thursday, 12 January 2017						
428-IS-9	**Probabilistic Rule-Based Systems**					**Ft. Worth 1**
Chaired by: F. ADOLF, DLR - German Aerospace Center						
1400 hrs AIAA-2017-1750 **Safe and Autonomous UAV Navigation using Graph Policies** T. Mannucci, E. Van Kampen, C. de Visser, Q. Chu, Delft University of Technology, Delft, The Netherlands	1430 hrs AIAA-2017-1751 **A Genetic Fuzzy Logic Based Approach to Solving the Aircraft Conflict Resolution Problem** A. Sathyan, University of Cincinnati, Cincinnati, OH; N. Ernest, Psibernetix, Inc., Cincinnati, OH; L. Lavigne, F. Cazaurang, University of Bordeaux, Bordeaux, France; M. Kumar, K. Cohen, University of Cincinnati, Cincinnati, OH	1500 hrs AIAA-2017-1752 **A Fuzzy-Logic-Based Solution to Dynamic Target Interception and Landing with a Small Multirotor Aircraft** N. Stockton, M. Kumar, K. Cohen, University of Cincinnati, Cincinnati, OH	1530 hrs Panel: Challenges to Production Intelligent Aerospace Systems The panel will discuss why intelligent systems and algorithms are not experiencing more widespread use by the aerospace user community. The goal of the panel will be to: a) identify the reasons why intelligent systems have not gained wider use in production aerospace vehicles, b) create the steps needed to facilitate such use, and c) including a) and b) into the Autonomy Roadmap which has been written by the Intelligent Systems Technical Committee. Moderator: John Valasek, Texas A&M University Panelists: **Jason Mukherjee**, AeroVironment; **Adrian Stoica**, NASA Jet Propulsion Laboratory; **Greg Tallant**, Lockheed Aeronautical Systems Company; **Kevin Wise**, The Boeing Company			

Thursday, 12 January 2017						
429-MDO-11	**Aircraft Design Optimization III**					**Mustang 1**
Chaired by: J. ZHANG, The University of Texas at Dallas and S. CHOI, Virginia Tech						
1400 hrs AIAA-2017-1753 **Study of a Boundary Layer Ingestion Configuration using a Fully Coupled Propulsion-RANS Model** J. Gray, NASA Glenn Research Center, Cleveland, OH; C. Mader, G. Kenway, J. Martins, University of Michigan, Ann Arbor, Ann Arbor, MI	1430 hrs AIAA-2017-1754 **Variable-Fidelity Multidisciplinary Design Optimization with Uncertain Design Variable for Innovative Control Effector of Tailless Aircraft** J. Park, Virginia Polytechnic Institute and State University, Blacksburg, VA; Y. Jo, Korea Advanced Institute of Science and Technology, Daejeon, South Korea; S. Choi, Virginia Polytechnic Institute and State University, Blacksburg, VA	1500 hrs AIAA-2017-1755 **Multi-Objective Aircraft Design Optimization for Low External Noise and Fuel Burn** C. Ilario da Silva, T. Orra, Embraer, São José dos Campos, Brazil; J. Alonso, Stanford University, Stanford, CA				

Thursday, 12 January 2017						
430-MST-15	**Modeling and Simulation of Air Vehicle Dynamics, Systems, and Environments**					**San Antonio 1**
Chaired by: D. CRIDER, National Transportation Safety Board						
1400 hrs AIAA-2017-1756 **Ventus – Towards a cost-effective phenomenological post-stall aerodynamic model add-on for upset recovery training** M. Roza, R. Van der Ploeg, M. Laban, Netherlands Aerospace Centre NLR, Amsterdam, The Netherlands	1430 hrs AIAA-2017-1757 **A Tailless Fighter Aircraft Model for Control-Related Research and Development** M. Niestroy, K. Dorsett, K. Markstein, Lockheed Martin Corporation, Fort Worth, TX	1500 hrs AIAA-2017-1758 **Modeling of Flight Dynamics and Pilot's Handling of a Hang Glider** Y. Ochi, National Defense Academy, Yokosuka, Japan	1530 hrs AIAA-2017-1759 **Aerodynamic Lateral-Directional Coefficients Modeling During Aircraft Design Phases** A. de Paula, F. Porto, Technological Institute of Aeronautics (ITA), São José dos Campos, Brazil; M. Sousa, Federal University of Itajubá, Itajubá, Brazil	1600 hrs AIAA-2017-1760 **A Four-Stage One-Dimensional Model for Rime, Mixed and Glaze Ice Accretion on Aerofoils** Z. Janjua, B. Turnbull, S. Hibberd, K. Choi, University of Nottingham, Nottingham, United Kingdom		

Thursday, 12 January 2017						
431-MST-16	**Modeling and Simulation in Education/Special Topics in Modeling and Simulation**					**Ft. Worth 7**
Chaired by: P. GRANT, University of Toronto and S. BEARD, NASA/ARC-AFS Aerospace Simulation R&D						
1400 hrs AIAA-2017-1761 **A Proposed Hardware in the Loop Gimbal Platform that Supports an Applied Graduate Controls Course** M. Smith, J. Reasoner, R. Fithen, Arkansas Technical University, Russellville, AR	1430 hrs AIAA-2017-1762 **Design, Build and Integration of a Low-Cost Self-Erecting Inverted Pendulum Mechanism** K. Turkoglu, B. Graham, San Jose State University, San Jose, CA	1500 hrs AIAA-2017-1763 **The Use of Modelling and Simulation to Give Students a HEADSTART into Aerospace Engineering** M. White, C. Dadswell, T. Fell, R. Coates, University of Liverpool, Liverpool, United Kingdom	1530 hrs AIAA-2017-1764 **Energy-Based Compressible Convective model Proper for Multiple field Dynamic Investigation: A Bond Graph Approach on FSI Problems** A. Zanj, F. He, Flinders University, Adelaide, Australia; P. Breedveld, University of Twente, Enschede, The Netherlands			

Thursday, 12 January 2017						
432-MST-17	**Modeling and Simulation Integration and Architectures**					**Ft. Worth 6**
Chaired by: P. ZAAL, NASA Ames Research Center and A. ELMILIGUI, NASA Langley Research Center						
1400 hrs AIAA-2017-1765 **Schedule Failure Analysis within the Horizon Simulation Framework** I. Lunsford, E. Mehiel, California Polytechnic State University, San Luis Obispo, San Luis Obispo, CA	1430 hrs AIAA-2017-1766 **The Horizon Simulation Framework v3.0** M. Yost, E. Mehiel, California Polytechnic State University, San Luis Obispo, San Luis Obispo, CA	1500 hrs AIAA-2017-1767 **A Virtual Laboratory for Aviation and Airspace Prognostics Research** C. Kulkarni, C. Teubert, G. Gorospe, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; C. Quach, NASA Langley Research Center, Hampton, VA; E. Hogge, Northrop Grumman Corporation, Hampton, VA	1530 hrs AIAA-2017-1768 **A Code Architecture to Streamline the Missile Simulation Life Cycle** R. Sells, DESE Research, Inc., Huntsville, AL	1600 hrs AIAA-2017-1769 **Integrated System Modeling in SysML for Small Satellites** L. Walker, D. Thomas, University of Alabama, Huntsville, Huntsville, AL		

Thursday, 12 January 2017						
433-NDA-9	**Model Calibration, Verification, and Validation**					**Mustang 2**
Chaired by: L. DOMYANCIC, Southwest Research Institute and T. WEST, NASA Langley Research Center						
1400 hrs AIAA-2017-1770 **Visualization of High Dimensional Turbulence Simulation Data using t-SNE** J. Wu, J. Wang, H. Xiao, Virginia Polytechnic Institute and State University, Blacksburg, VA; J. Ling, Sandia National Laboratories, Livermore, CA	1430 hrs AIAA-2017-1771 **Identification and quantification of spatial variability in the elastostatic properties of additively manufactured components** M. Faes, D. Moens, Catholic University of Leuven, Leuven, Belgium	1500 hrs AIAA-2017-1772 **Variance Reduction Estimation in Bayesian Inference** C. Li, S. Mahadevan, Vanderbilt University, Nashville, TN	1530 hrs AIAA-2017-1773 **Fuzzy Logic Controller Stability Analysis Using a Satisfiability Modulo Theories Approach** T. Arnett, B. Cook, University of Cincinnati, Cincinnati, OH; M. Clark, Air Force Research Laboratory, Wright-Patterson AFB, OH; K. Rattan, Wright State University, Dayton, OH	1600 hrs AIAA-2017-1774 **Design of Multi-Level Validation Experiments for Multi-Physics Systems** D. Villanueva, Universal Technology Corporation, Wright-Patterson AFB, OH; B. Smarslok, Air Force Research Laboratory, Wright-Patterson AFB, OH; G. Bartram, Universal Technology Corporation, Wright-Patterson AFB, OH	1630 hrs AIAA-2017-1775 **Bayesian Calibration of Spatially Varying Model Parameters with High-Dimensional Response** P. Nath, Z. Hu, S. Mahadevan, Vanderbilt University, Nashville, TN	

Thursday, 12 January 2017						
434-PC-24	**Advanced Combustion Concepts II**					**Grapevine 1**
Chaired by: E. LYNCH, Aerojet Rocketdyne and L. SMITH, United Technologies Research Center						
1400 hrs AIAA-2017-1776 **The Effect of Ozonolysis Activated Autoignition on Jet Flame Dynamics** X. Gao, W. Sun, Georgia Institute of Technology, Atlanta, GA; T. Ombrello, C. Carter, Air Force Research Laboratory, Wright-Patterson AFB, OH	1430 hrs AIAA-2017-1777 **Study of Nanosecond Pulsed High Frequency Discharge Ignition in a Flowing Methane/Air Mixture** J. Lefkowitz, T. Ombrello, Air Force Research Laboratory, Wright-Patterson AFB, OH	1500 hrs AIAA-2017-1778 **Demonstration of swirl-controlled 3D-printed mesoscale burner array using gaseous hydrocarbon fuels** C. Martin, R. Groetz, J. Yoo, State University of New York, Buffalo, NY; T. Lee, University of Illinois, Urbana-Champaign, Urbana, IL	1530 hrs AIAA-2017-1779 **Investigations of Microwave Stimulation of Turbulent Flames with Implications to Gas Turbine Combustors** C. Fureby, Swedish Defense Research Agency (FOI), Stockholm, Sweden; A. Ehn, E. Nilsson, P. Petterson, M. Aldén, Lund University, Lund, Sweden; T. Hurtig, Swedish Defense Research Agency (FOI), Stockholm, Sweden; et al.	1600 hrs AIAA-2017-1780 **Computations of a New Hydrogen-Oxygen Rocket Engine Based on Supermulti-jets Colliding with Pulse** R. Konagaya, K. Naitoh, T. Okamoto, K. Tsuru, Waseda University, Tokyo, Japan		

Thursday, 12 January 2017						
435-PC-25	**Turbulent Combustion: Flow/Chemistry interactions**					**Dallas 7**
Chaired by: I. BOXX, DLR - German Aerospace Center and E. MASTORAKOS, University of Cambridge						
1400 hrs AIAA-2017-1781 **Effect of Low-Temperature Reactivity on the Turbulent Combustion of n-Octane/iso-Octane Mixtures in a Reactor-Assisted Turbulent Slot Burner** C. Reuter, S. Won, Y. Ju, Princeton University, Princeton, NJ	1430 hrs AIAA-2017-1782 **Turbulence effects on the chemical pathways for premixed Methane/Air flames** D. Dasgupta, W. Sun, Georgia Institute of Technology, Atlanta, GA; M. Day, Lawrence Berkeley National Laboratory, Berkeley, CA; T. Lieuwen, Georgia Institute of Technology, Atlanta, GA	1500 hrs AIAA-2017-1783 **Reconfigurable Fan-Stirred Flame Bomb with Optical Access** A. Morones, V. Leon, E. Petersen, Texas A&M University, College Station, TX	1530 hrs AIAA-2017-1784 **Turbulence-Flame Interaction in the Wrinkled and Corrugated Flamelet Regimes** M. Geikie, C. Engelmann, A. Morales, R. Schale, K. Ahmed, University of Central Florida, Orlando, FL			

Thursday, 12 January 2017						
436-PC-26	**Soot/Pyrolysis**					**Ft. Worth 2**
Chaired by: Y. JU, Princeton University and H. CHELLIAH, University of Virginia						
1400 hrs AIAA-2017-1785 **Large Eddy Simulations of a Sooting Lifted Turbulent Jet-Flame** C. Eberle, German Aerospace Center (DLR), Stuttgart, Germany; P. Gerlinger, University of Stuttgart, Stuttgart, Germany; M. Aigner, German Aerospace Center (DLR), Stuttgart, Germany	1430 hrs AIAA-2017-1786 **Assessment of Differential Diffusion Effects on Soot Evolution in Piloted Non-premixed Turbulent Flames** H. Lalit, J. Gore, H. Wang, Purdue University, West Lafayette, IN	1500 hrs AIAA-2017-1787 **Experimental and Modeling Investigation of Pyrolytic Carbon Deposition Relevant to Fuel Film Cooling in Rocket Engines** P. Gokulakrishnan, R. Joklik, C. Fuller, Combustion Science & Engineering, Inc., Columbia, MD; R. Vander Wal, J. Abrahamson, Pennsylvania State University, University Park, PA	1530 hrs AIAA-2017-1788 **Vortex Dynamics and Soot Formation in a Dump Combustor** V. Katta, Innovative Scientific Solutions, Inc., Dayton, OH; W. Roquemore, Air Force Research Laboratory, Wright-Patterson AFB, OH	1600 hrs AIAA-2017-1789 **Detailed-Chemistry Study of Soot Nano-Aerosol Formation in a Stagnation-Point Reverse-Flow Combustor** M. Darbandi, M. Saidi, M. Ghafourizadeh, Sharif University of Technology, Tehran, Iran; G. Schneider, University of Waterloo, Waterloo, Canada	1630 hrs AIAA-2017-1790 **A computational study of soot formation in opposed-flow diffusion flame interacting with vortices** P. Selvaraj, H. Im, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia	

Thursday, 12 January 2017						
437-PC-27	**Model Validation for Propulsion Workshop II**					**San Antonio 6**
Chaired by: A. COMER, Air Force Institute of Technology and V. SANKARAN, US Air Force/AFRL/RQRC						
1400 hrs AIAA-2017-1791 **Grid Convergence in LES of Bluff Body Stabilized Flames** V. Sankaran, United Technologies Corporation, East Hartford, CT; T. Gallagher, Georgia Institute of Technology, Atlanta, GA	1430 hrs AIAA-2017-1792 **Advanced LES Models for Turbulent Combustion** A. Potturi, Metacomp Technologies, Inc., Agoura Hills, CA; J. Edwards, North Carolina State University, Raleigh, NC	1500 hrs AIAA-2017-1793 **Application of Detached Eddy Simulation to a Bluff Body Flame Stabilizer in Duct Flow** J. West, C. Groth, University of Toronto, Toronto, Canada	1530 hrs AIAA-2017-1794 **Model Validation for Propulsion – On the TFNS Subgrid Models for a Bluff Body Stabilized Flame** C. Wey, NASA Glenn Research Center, Cleveland, OH			

Thursday, 12 January 2017						
438-PC-28	**Shock Tubes**					**Austin 4**
Chaired by: H. CHELLIAH, University of Virginia and J. MILLER, Air Force Reseach Laboratory						
1400 hrs AIAA-2017-1795 **Shock-Tube Studies of Tri-Ethyl-Phosphate (TEP) Kinetics at High Temperatures** O. Mathieu, W. Kulatilaka, E. Petersen, Texas A&M University, College Station, TX	1430 hrs AIAA-2017-1796 **High-Speed Imaging of the Dynamics of H_2/O_2 Ignition at Low to Moderate Temperatures in a Shock Tube** E. Ninnemann, O. Pryor, S. Barak, B. Koroglu, J. Sosa, K. Ahmed, University of Central Florida, Orlando, FL; et al.	1500 hrs AIAA-2017-1797 **Shock-tube Time-history Measurements of CO and H_2O Using IR Laser Absorption** C. Mulvihill, O. Mathieu, E. Petersen, Texas A&M University, College Station, TX	1530 hrs AIAA-2017-1798 **Shock Tube Measurements of Jet and Rocket Fuel Ignition Delay Times** D. Davidson, J. Shao, T. Parise, R. Hanson, Stanford University, Stanford, CA	1600 hrs AIAA-2017-1799 **Instability Analysis of the Separated Boundary Layer in Shock Tubes** K. Grogan, M. Ihme, Stanford University, Stanford, CA		

Thursday, 12 January 2017						
439-PC-29	**Laminar Flames I**					**San Antonio 3**
Chaired by: W. KULATILAKA, Texas A & M University and E. BARBOUR, The Aerospace Corpation						
1400 hrs Oral Presentation **Invited Review: Progress and challenges of plasma assisted combustion** Y. Ju, Princeton University, Princeton, NJ	1430 hrs AIAA-2017-1800 **Response of Premixed Stoichiometric $CH_4/O_2/CO_2$ Flames to Strain; the Role of Chemistry and Transport** N. Chakroun, D. Michaels, S. Shanbhogue, A. Ghoniem, Massachusetts Institute of Technology, Cambridge, MA	1500 hrs AIAA-2017-1801 **Major species measurements and simulation of partially-premixed, cellular, tubular H2-air flames** D. Tinker, C. Hall, R. Pitz, Vanderbilt University, Nashville, TN	1530 hrs AIAA-2017-1802 **Accuracy of plug-ow assumption in the analysis of laminar ow reactors: an exploration of ideal operating conditions** H. Chelliah, M. Rahimi, University of Virginia, Charlottesville, Charlottesville, VA			

Thursday, 12 January 2017						
440-PDL-12	**DBD Plasma Actuators II**					**Ft. Worth 4**
Chaired by: J. ZIMMERMAN, CU Aerospace						
1400 hrs AIAA-2017-1803 **Airfoil Stall Hysteresis Control with DBD Plasma actuation** E. Batlle, R. Pereira, M. Kotsonis, Delft University of Technology, Delft, The Netherlands	1430 hrs AIAA-2017-1804 **Influence of Voltage Waveform on Electrohydrodynamic Force in a Dielectric-Barrier-Discharge Plasma Actuator** S. Sato, N. Ohnishi, Tohoku University, Sendai, Japan	1500 hrs AIAA-2017-1805 **Shock Wave/Boundary Layer Control Using Nanosecond Reptitively Pulsed Dielectric Barrier Discharges** K. Newnam, R. Jagannath, P. Stockett, P. Wu, L. Rajendran, S. Bane, Purdue University, West Lafayette, IN	1530 hrs AIAA-2017-1806 **Simulation of Reduced Air Plasma Reactions for Nanosecond-Pulse Dielectric Barrier Discharge** S. Ahn, J. Chae, H. Kim, K. Kim, Seoul National University, Seoul, South Korea	1600 hrs AIAA-2017-1807 **Modeling of a Sliding Nanosecond Dielectric Barrier Discharge Actuator for Flow Control** K. Kourtzanidis, L. Raja, University of Texas, Austin, Austin, TX	1630 hrs AIAA-2017-1808 **Improving the Performance of a Plasma Actuator Model for DBD and Multi-Encapsulated Electrode Actuators** J. Laten, R. LeBeau, Saint Louis University, St. Louis, MO	

Thursday, 12 January 2017						
441-PDL-13	**Diagnostics and Experimental Techniques**					**Ft. Worth 5**
Chaired by: R. MILES, Princeton University and K. XU, University of Alabama in Huntsville						
1400 hrs AIAA-2017-1809 **Development of a Femtosecond Laser Electric Field Probe for Non-Species Dependent Measurements** B. Goldberg, A. Dogariu, Princeton University, Princeton, NJ; S. O'Byrne, University of New South Wales at the Australian Defence Force Academy, Canberra, Australia; R. Miles, Princeton University, Princeton, NJ	1430 hrs AIAA-2017-1810 **A parametric investigation of repetitively pulsed nanosecond duration discharges in argon** R. Manoharan, T. Boyson, S. O'Byrne, University of New South Wales at the Australian Defence Force Academy, Canberra, Australia	1500 hrs AIAA-2017-1811 **Electric Field Measurements in a Quasi-Two-Dimensional Ns Pulse Discharge in Atmospheric Air** M. Simeni Simeni, Ohio State University, Columbus, OH; B. Goldberg, Princeton University, Princeton, NJ; C. Zhang, Chinese Academy of Sciences, Beijing, China; K. Frederickson, W. Lempert, I. Adamovich, Ohio State University, Columbus, OH	1530 hrs AIAA-2017-1812 **Plasma Engine Performance Estimate by Optical Analysis of Exhaust Plume** D. M R, S. T. S., M. P, Indian Institute of Science, Bengaluru, India			

Thursday, 12 January 2017						
442-SD-22	**Special Session: Adaptive Aeroelastic Wing Shaping Control II**					**Appaloosa 2**
Chaired by: E. TING, SGT and B. STANFORD, NASA Langley Research Center						
1400 hrs AIAA-2017-1813 **Optimal Control Surface Layout for an Aeroservoelastic Wingbox** B. Stanford, NASA Langley Research Center, Hampton, VA	1430 hrs AIAA-2017-1814 **Computational Results for the KTH-NASA Wind-Tunnel Model Used for Acquisition of Transonic Nonlinear Aeroelastic Data** W. Silva, P. Chwalowski, C. Wieseman, NASA Langley Research Center, Hampton, VA; D. Eller, U. Ringertz, Royal Institute of Technology (KTH), Stockholm, Sweden	1500 hrs AIAA-2017-1815 **Development of an Integrated Nonlinear Aeroservoelastic Flight Dynamic Model of the Truss-Braced Wing Aircraft** E. Ting, Stinger Ghaffarian Technologies, Inc., Moffett Field, CA; D. Chaparro, MORI Associates, Inc., Moffett Field, CA; N. Nguyen, NASA Ames Research Center, Moffett Field, CA	1530 hrs AIAA-2017-1816 **Uncertainty Quantification of the FUN3D-Predicted Flutter Boundary on the NASA CRM** B. Stanford, S. Massey, NASA Langley Research Center, Hampton, VA	1600 hrs AIAA-2017-1817 **LPV Model Development for a Flexible Wing Aircraft** 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; N. Nguyen, NASA Ames Research Center, Moffett Field, CA		

Thursday, 12 January 2017						
443-SD-23	**Dynamic Loads, Response, Vibration, and Stability of Aerospace Vehicles II**					**Appaloosa 3**
Chaired by: A. DATTA, Science & Technology Corporation and B. GLAZ, U. S. Army Research Laboratory (APG)						
1400 hrs AIAA-2017-1818 **Design and Wind Tunnel Test Validation of Gust Load Alleviation Systems** S. Ricci, A. De Gaspari, L. Riccobene, F. Fonte, Technical University of Milan, Milan, Italy	1430 hrs AIAA-2017-1819 **Buffet Load Alleviation on the Fin of a High Performance Training Aircraft** S. Ricci, J. Beretta, F. Fonte, Technical University of Milan, Milan, Italy; D. Monti, Leonardo Company, Venegono Inferiore, Italy	1500 hrs AIAA-2017-1820 **Usage Analysis of BAe-146 Airtankers in USFS Service** L. Kliment, K. Rokhsaz, Wichita State University, Wichita, KS	1530 hrs AIAA-2017-1821 **Diffuse Acoustic Field Shaping in Acoustic Boundary Element Method using Gradient Based Optimization Technique** D. Inoyama, R. Agarwal, T. Stoumbos, Orbital ATK, Dulles, VA	1600 hrs AIAA-2017-1822 **Challenges in Using Measured Data to Assess Payload Stresses and Fatigue Life** M. Baker, ATA Engineering, Inc., San Diego, CA		

Thursday, 12 January 2017						
444-SD-24	**Dynamic Testing Techniques and System Identification II**					**Appaloosa 4**
Chaired by: M. BOESWALD, DLR - German Aerospace Center and S. SMITH, University of Kentucky						
1400 hrs AIAA-2017-1823 **Flutter Flight Testing at Gulfstream Aerospace Using Advanced Signal Processing Techniques** P. Taylor, Gulfstream Aerospace Corporation, Savannah, GA; R. Moreno, Altran, Madrid, Spain; N. Banavara, R. Narisetti, L. Morgan, Gulfstream Aerospace Corporation, Savannah, GA	1430 hrs AIAA-2017-1824 **Efficient ground vibration testing of aircraft based on output-only modal analysis during taxi** Y. Govers, J. Sinske, J. Schwochow, G. Jelicic, R. Buchbach, J. Springer, German Aerospace Center (DLR), Göttingen, Germany; et al.	1500 hrs AIAA-2017-1825 **Online Monitoring of Aircraft Modal Parameters during Flight Test based on permanent Output-Only Modal Analysis** G. Jelicic, J. Schwochow, Y. Govers, J. Sinske, R. Buchbach, J. Springer, German Aerospace Center (DLR), Göttingen, Germany	1530 hrs AIAA-2017-1826 **Full-field Structural Dynamics by Video Motion Manipulation** Y. Yang, C. Farrar, D. Mascarenas, Los Alamos National Laboratory, Los Alamos, NM	1600 hrs AIAA-2017-1827 **OMA Study on the Structural Dynamic Properties of a Launcher Vehicle Using Flight Data** M. Eugeni, G. Coppotelli, F. Mastroddi, P. Gaudenzi, University of Rome "La Sapienza", Rome, Italy; S. Muller, B. Troclet, Airbus, Les Mureaux, France	1630 hrs AIAA-2017-1828 **Flight Loads Analysis and Measurements of External Stores on an Atmospheric Research Aircraft** W. Krueger, V. Handojo, T. Klimmek, German Aerospace Center (DLR), Göttingen, Germany	

Thursday, 12 January 2017						
445-STR-11	**Other Topics in Structures II**					**Appaloosa 1**
Chaired by: M. SENSMEIER, Embry-Riddle Aeronautical University and G. HRINDA, NASA-Langley Research Center						
1400 hrs AIAA-2017-1829 **Evaluation of Low Cost Additive Manufacturing Techniques for Small Rocket Nozzles** L. Kunka, J. Jacob, Oklahoma State University, Stillwater, OK	1430 hrs AIAA-2017-1830 **Optimal Design of Curvilinearly Stiffened Shells** K. Singh, W. Zhao, R. Kapania, Virginia Polytechnic Institute and State University, Blacksburg, VA	1500 hrs AIAA-2017-1831 **A Micromechanics Based Processing Model for the Curing Response of 2D Triaxially Braided Textile Composites** D. Zhang, W. Chen, University of Connecticut, Storrs, Storrs, CT	1530 hrs AIAA-2017-1832 **Modeling Thin-Walled Beams using VAM** M. Gupta, D. Hodges, Georgia Institute of Technology, Atlanta, GA			

Thursday, 12 January 2017						
446-TES-2	**Fossil Fuel Power Technologies II**					**Mustang 3**
Chaired by: N. SYRED, Cardiff University and B. DAM, WoodWard						
1400 hrs AIAA-2017-1833 **Swirlers Effectiveness in Turbulent Transverse Jet Mixing Uniformity** T. Elgammal, R. Amano, University of Wisconsin, Milwaukee, Milwaukee, WI	1430 hrs AIAA-2017-1834 **Study of High Intensity Turbluent Flow Over a Backward Facing Step Using 10kHz Particle Image Velocimetry** M. de la Torre, A. Acosta-Zamora, N. Love, A. Choudhuri, University of Texas, El Paso, El Paso, TX	1500 hrs AIAA-2017-1835 **Effect of N_2-CO_2 Mixture on Entrainment and Emission in a High Intensity Combustor** A. Said, E. Darby, A. Gupta, University of Maryland, College Park, College Park, MD	1530 hrs AIAA-2017-1836 **Study on the Use of HiCOP Fuel for Gas Turbine Combustors** H. Fujiwara, K. Okai, M. Makida, K. Shimodaira, T. Mizuno, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan; S. Noda, Environmental Energy, Tokyo, Japan; et al.	1600 hrs AIAA-2017-1837 **Study of Aeration by Using Pulsating Air Flow** R. Amano, University of Wisconsin, Milwaukee, Milwaukee, WI; A. Alkhalidi, German-Jordanian University, Amman, Jordan; A. Alkhafaji, University of Wisconsin, Milwaukee, Milwaukee, WI		

Thursday, 12 January 2017						
447-TES-3	**Emerging Energy Technologies I**					**Palomino 1**
Chaired by: S. SHERIF, University of Florida and A. VISHWANATH, GE						
1400 hrs AIAA-2017-1838 **Aircraft-Blended Winglet Performance Analyses** E. Khalil, H. Helal, Cairo University, Cairo, Egypt; O. Abdellatif, Benha University, Cairo, Egypt; G. ElHarriri, Cairo University, Cairo, Egypt	1430 hrs AIAA-2017-1839 **Slotted airfoils for increasing the aerodynamic efficiency** S. Beyhaghi, R. Amano, University of Wisconsin, Milwaukee, Milwaukee, WI	1500 hrs AIAA-2017-1840 **Commercial Aircraft Cabins' Ventilation Systems** E. Khalil, A. Azzazi, G. ElHarriri, T. AbouDeif, Cairo University, Cairo, Egypt	1530 hrs AIAA-2017-1841 **Effect of Raked Winglet on Aircraft Performance** E. Khalil, H. Helal, Cairo University, Cairo, Egypt; O. Abdellatif, Benha University, Cairo, Egypt; G. ElHarriri, Cairo University, Cairo, Egypt			

Thursday, 12 January 2017						
448-TP-12	**Direct Simulation Monte Carlo Methods**					**Austin 3**
Chaired by: K. STEPHANI, University of Illinois at Urbana-Champaign						
1400 hrs AIAA-2017-1842 **DSMC implementation of compact state-specific N2+O dissociation and exchange models** I. Borges Sebastiao, H. Luo, M. Kulakhmetov, A. Alexeenko, Purdue University, West Lafayette, IN	1430 hrs AIAA-2017-1843 **DSMC Acceleration Techniques Applied to Shock Heated and Recirculating Flows** N. Singh, S. Poovathingal, T. Schwartzentruber, University of Minnesota, Minneapolis, Minneapolis, MN	1500 hrs AIAA-2017-1844 **DSMC Computations of Separation over a `Tick' model in Hypersonic High Enthalpy Transitional Flows** R. Prakash, S. Gai, S. O'Byrne, University of New South Wales at the Australian Defence Force Academy, Canberra, Australia	1530 hrs AIAA-2017-1845 **Detailed DSMC Surface Chemistry Modeling of the Oxidation of Carbon-Based Ablators** K. Swaminathan Gopalan, A. Borner, K. Stephani, University of Illinois, Urbana-Champaign, Urbana, IL; N. Mansour, NASA Ames Research Center, Moffett Field, CA			

Thursday, 12 January 2017						
449-WE-10	**Wind Energy Control and Optimization II**					**Texas D**
Chaired by: C. BOTTASSO, Technichse Universität München						
1400 hrs AIAA-2017-1846 **Multi-fidelity Optimization of Horizontal Axis Wind Turbines** M. McWilliam, F. Zahle, C. Pavese, J. Blasques, Technical University of Denmark, Risø, Denmark	1430 hrs AIAA-2017-1847 **Inverse Design of a Dual-Rotor Wind Turbine using a Prescribed Wake Vortex Lattice Method** A. Rosenberg, A. Sharma, Iowa State University, Ames, IA	1500 hrs AIAA-2017-1848 **Inverse Design of Horizontal Axis Wind Turbine Blades** B. Moghadassian, A. Sharma, Iowa State University, Ames, IA	1530 hrs AIAA-2017-1849 **Propagation of Uncertainties Through Wind Turbine Models for Robust Design Optimization** C. Bottasso, P. Bortolotti, J. Loganathan, Technical University of Munich, Munich, Germany	1600 hrs AIAA-2017-1850 **Aerodynamic Shape Optimization of Wind Turbine Blades for Reducing Power Production Losses due to Ice Accretion** O. Yirtici, I. Tuncer, S. Ozgen, Middle East Technical University, Ankara, Turkey	1630 hrs AIAA-2017-1851 **Modeling of Tethered Kite Apparent Velocity Dynamics Based on Effective Attitude Tracking** H. Li, D. Olinger, M. Demetriou, Worcester Polytechnic Institute, Worcester, MA	

Thursday, 12 January 2017		
450-NW-19 **1530 - 1600 hrs**	**Thursday Afternoon Networking Coffee Break**	**Session Room Foyers**

Thursday, 12 January 2017		
451-NW-20 1730 - 1930 hrs	**Women at SciTech Social Hour and Keynote**	Texas C

Open to all attendees

The Workplace of the Future: Technology Traps and Leadership Challenges
Mary "Missy" Cummings
Professor, School of Engineering, Duke University
Director, Humans and Autonomy Laboratory, Duke Robotics

Friday

Friday, 13 January 2017		
452-NW-21 0700 - 0730 hrs	**Friday Early Morning Coffee Break**	Session Room Foyers

Friday, 13 January 2017		
453-SB-5 0730 - 0800 hrs	**Friday Morning Speakers' Briefing**	Session Rooms

Friday, 13 January 2017		
454-PLNRY-7 0800 - 0900 hrs	**Friday Morning Plenary: Next-Generation Workforce**	Texas A & B

Moderator: Darryll Pines, Dean, A. James Clark School of Engineering, University of Maryland

Panelists:

Curt Carlson
Founder & Chief Executive Officer
The Practice of Innovation

Jaiwon Shin
Associate Administrator, Aeronautics Mission Directorate
NASA

Dennis Todd
Vice President, Engineering—Services and Support
Boeing Commercial Airplanes

Graham Warwick
Technology Managing Editor
Aviation Week & Space Technology

Friday, 13 January 2017		
455-NW-22 0900 - 0930 hrs	**Friday Morning Networking Coffee Break**	Session Room Foyers

Friday, 13 January 2017						
456-ABPSI-3	**Nozzles and Propulsion Design**					Dallas 1
Chaired by: E. LOTH, University of Virginia and L. LEAVITT, N A S A						
0930 hrs AIAA-2017-1852 **Performance Prediction of External Nozzle with Clustered Entrance** T. Isono, Tohoku University, Sendai, Japan; S. Tomioka, N. Sakuranaka, Japan Aerospace Exploration Agency (JAXA), Kakuda, Japan	1000 hrs AIAA-2017-1853 **Relating a Jet-Surface Interaction Experiment to a Commercial Supersonic Transport Aircraft Using Numerical Simulations** V. Dippold, D. Friedlander, NASA Glenn Research Center, Cleveland, OH	1030 hrs AIAA-2017-1854 **A Study of Engine Parameters and Shaft Configuration on Transport Aircraft Performance** I. Garnica, T. Takahashi, Arizona State University, Tempe, AZ				

Friday, 13 January 2017						
457-ACD-11	**Special Purpose Aircraft**					**Pecos 3**
Chaired by: R. BARRETT and J. WELSTEAD, NASA Langley Research Center						
0930 hrs AIAA-2017-1855 **Next-Generation Regional Jet Transport Conceptual Design** M. Benassi, C. Hrdina, E. Horton, E. Hadder, T. Takahashi, Arizona State University, Tempe, AZ	1000 hrs AIAA-2017-1856 **Boarding and Turnaround Process Assessment of Single- and Twin-Aisle Aircraft** M. Schmidt, Munich Aerospace e.V., Taufkirchen, Germany; P. Heinemann, M. Hornung, Bauhaus Luftfahrt e.V., Taufkirchen, Germany	1030 hrs AIAA-2017-1858 **Particle Swarm Optimization with Surrogate Modelling for Passive Vortex Generators** J. Fox, C. Bil, R. Carrese, RMIT University, Melbourne, Australia	1100 hrs AIAA-2017-1859 **Reconfigurable Internal Weapons Carriage System for Small Fighter Aircraft** M. Anderson, K. Teope, U.S. Air Force Academy, Colorado Springs, CO	1130 hrs AIAA-2017-1860 **Natural Laminar Flow Wing Design for a Low-Boom Supersonic Aircraft** H. Ishikawa, ASIRI Corporation, Tokyo, Japan; Y. Ueda, Try-Angle, Inc., Tokyo, Japan; N. Tokugawa, Japan Aerospace Exploration Agency (JAXA), Tokyo, Japan	1200 hrs AIAA-2017-1857 **Wing-body junction redesign with CAD-based parametrization including moving intersection** S. Xu, S. Timme, University of Liverpool, Liverpool, United Kingdom; O. Mykhaskiv, J. Mueller, Queen Mary University of London, London, United Kingdom	

Friday, 13 January 2017						
458-AFM-11	**Aircraft Flight Dynamics, Handling Qualities, and Performance IV**					**Grapevine 5**
Chaired by: N. DEVARAKONDA, The Ohio State University and N. HALL, Lockheed Martin						
0930 hrs AIAA-2017-1861 **Non-Centroidal Equations of Motion for Flight Simulation** G. Howe, Gulfstream Aerospace Corporation, Savannah, GA	1000 hrs AIAA-2017-1862 **Dynamic Soaring – Kinetic Energy and Inertial Speed** G. Sachs, B. Grüter, Technical University of Munich, Garching, Germany	1030 hrs AIAA-2017-1863 **Online Damage Case Identification for Database-driven Safe Flight Envelope Prediction System** Y. Zhang, C. de Visser, Q. Chu, Delft University of Technology, Delft, The Netherlands				

Friday, 13 January 2017						
459-AFM-12	**Aerodynamic Prediction Methods**					**Grapevine 4**
Chaired by: K. DORSETT, Lockheed Martin Aeronautics and M. PHILLIPS, NASA						
0930 hrs AIAA-2017-1864 **Main Rotor Downwash Effect on Separation Characteristics of External Stores** O. Kapulu, Turkish Aerospace Industries, Inc., Ankara, Turkey; O. Tekinalp, Middle East Technical University, Ankara, Turkey	1000 hrs AIAA-2017-1865 **Flight Test Maneuver Design and Aerodynamic Parameter Estimation for Single Use Autonomous Gliding Air Vehicles** V. Yavuztürk, E. Topbas, Ü. Kutluay, TUBITAK, Ankara, Turkey; Y. Yazicioglu, Middle East Technical University, Ankara, Turkey	1030 hrs AIAA-2017-1866 **Revised Indicial Aerodynamics for Parametric Search and Design Analysis** A. Da Ronch, University of Southampton, Southampton, United Kingdom; M. Righi, Zürich University of Applied Sciences, Winterthur, Switzerland; M. Berci, University of Leeds, Leeds, United Kingdom	1100 hrs AIAA-2017-1867 **Experimental and Numerical Investigation of Flight Dynamics of a Generic Lambda Wing Configuration** D. Nelson, University of Colorado, Colorado Springs, Colorado Springs, CO; J. Irving, BAE Systems, Warton, United Kingdom; M. Ghoreyshi, A. Jirasek, A. Lofthouse, U.S. Air Force Academy, Colorado Springs, CO	1130 hrs AIAA-2017-1868 **Calibration and accuracy determination of airdata system for a modern fighter aircraft** S. Jain, K. C, Y. Yarlagadda, National Aerospace Laboratories, Bengaluru, India; A. Saraf, A. Goyal, Aeronautical Development Agency, Bengaluru, India	1200 hrs AIAA-2017-1869 **Determination of Water Droplet Collection Efficiency: An Empirical Model** A. Anttho, A. Mohiudeen, K. Kara, Khalifa University, Abu Dhabi, United Arab Emirates	

Friday, 13 January 2017						
460-APA-45	**Special Session: Simulation of Rotor in Hover III**					**Dallas 2**
Chaired by: N. HARIHARAN, CREATE-AV and E. REED, Sikorsky Aircraft						
0930 hrs AIAA-2017-1870 **Application of Hover Prediction Methodologies to Anhedral Tip Shapes** L. Sankar, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2017-1871 **CFD Performance and Turbulence Transition Predictions on an Installed Model-scale Rotor in Hover** R. Jain, U.S. Army Aviation and Missile Research Development and Engineering Center, Moffett Field, CA	1030 hrs AIAA-2017-1872 **Measured Boundary Layer Transition and Rotor Hover Performance at Model Scale** A. Overmeyer, P. Martin, Army Aviation and Missile Research Development and Engineering Center, Hampton, VA				

Friday, 13 January 2017						
461-ASC-6	**Modeling, Simulation, and Optimization of Adaptive Structures, Space and Planetary Systems and Subsystems**					**Palomino 3**
Chaired by: D. DOYLE, USAF and J. JOO, AFRL/RQVC						
0930 hrs AIAA-2017-1873 **A Finite Beam Element Framework for Variable Stiffness Structures** T. Macquart, A. Pirrera, P. Weaver, University of Bristol, Bristol, United Kingdom	1000 hrs AIAA-2017-1874 **Computational Modeling of a Mechanized Bench-Top Apparatus for Leading-Edge Slat Noise Treatment Device Prototypes** T. Turner, J. Moore, NASA Langley Research Center, Hampton, VA; D. Long, Analytical Mechanics Associates, Inc., Hampton, VA	1030 hrs AIAA-2017-1875 **Modeling and Design of Shape Memory Alloy-based Origami Structures with Smooth Folds** E. Peraza Hernandez, D. Hartl, D. Lagoudas, Texas A&M University, College Station, TX	1100 hrs AIAA-2017-1876 **BILL-E: Robotic Platform for Locomotion and Manipulation of Lightweight Space Structures** B. Jenett, Massachusetts Institute of Technology, Cambridge, MA; K. Cheung, NASA Ames Research Center, Moffett Field, CA	1130 hrs AIAA-2017-1877 **Experimental Characterization of a Composite Morphing Radiator Prototype in a Relevant Thermal Environment** C. Bertagne, J. Whitcomb, D. Hartl, Texas A&M University, College Station, TX; L. Erickson, NASA Johnson Space Center, Houston, TX	1200 hrs AIAA-2017-1878 **Design and Fabrication of a Composite Morphing Radiator Panel Using High Conductivity Fibers** J. McQuien, C. Bertagne, J. Whitcomb, D. Hartl, Texas A&M University, College Station, TX; L. Erickson, NASA Johnson Space Center, Houston, TX	

Friday, 13 January 2017						
462-FD-10	**Flow Stability Analysis**					**Pecos 4**
Chaired by: G. RIGAS, Caltech and S. RAGHUNATH, The University of Queensland						
0930 hrs AIAA-2017-1879 **Bi-Global Stability Analysis of Compressible Channel Flow over Complex Impedance Walls** I. Rahbari, C. Scalo, Purdue University, West Lafayette, IN	1000 hrs AIAA-2017-1880 **Secondary Stability Analysis of Crossflow Vortices using BiGlobal Theory on PIV Base Flows** K. Groot, J. Serpieri, M. Kotsonis, Delft University of Technology, Delft, The Netherlands; F. Pinna, von Kármán Institute for Fluid Dynamics, Rhode-Saint-Genèse, Belgium	1030 hrs AIAA-2017-1881 **Stability of wall-bounded fows using one-way spatial integration of Navier-Stokes equations** G. Rigas, T. Colonius, California Institute of Technology, Pasadena, CA; M. Beyar, The Boeing Company, Huntington Beach, CA				

Friday, 13 January 2017						
463-FD-60	**Control of High Speed Flows**					**Texas 1**
Chaired by: N. WEBB, The Ohio State University and C. CLIFFORD, Auburn University						
0930 hrs AIAA-2017-1882 **The Effects of High-Frequency, Supersonic Microjet Injection on a High-Speed Cavity Flow** P. Kreth, University of Tennessee, Tullahoma, Tullahoma, TN; F. Alvi, Florida State University, Tallahassee, FL	1000 hrs AIAA-2017-1883 **LES Study on Unsteadiness of Shock Boundary Layer Interaction** X. Dong, Y. Yang, J. Tang, C. Liu, University of Texas, Arlington, Arlington, TX	1030 hrs AIAA-2017-1884 **Numerical and Experimental Frequency Response of Plasma Synthetic Jet Actuators** M. Chiatto, L. de Luca, University of Naples "Federico II", Naples, Italy	1100 hrs AIAA-2017-1885 **High-Speed Flow Mixing Using High-Frequency Pulsed Microactuators** J. Solomon, Tuskegee University, Tuskegee, AL			

Friday, 13 January 2017						
464-FD-61	**Jet Flow Experiments**					**Texas 2**
Chaired by: S. SILTON, US Army Research Laboratory and X. LIU, San Diego State University						
0930 hrs AIAA-2017-1886 **Simultaneous Planar PIV and sDIC Measurements of an Axisymmetric Jet Flowing Across a Compliant Surface** R. Hortensius, J. Dutton, G. Elliott, University of Illinois, Urbana-Champaign, Urbana, IL	1000 hrs AIAA-2017-1887 **Multi-Measurement Correlations in the Near-Field of a Complex Supersoinc Jet Using Time-Resolved Schlieren Imaging** A. Tenney, T. Coleman, J. Lewalle, M. Glauser, Syracuse University, Syracuse, NY; S. Gogineni, Spectral Energies, LLC, Dayton, OH	1030 hrs AIAA-2017-1888 **Flow Field Characteristics of Non-Axisymmetric Jets at High Temperatures** R. Vemula, G. Valentich, R. Kumar, Florida State University, Tallahassee, FL	1100 hrs AIAA-2017-1889 **An Experimental Study of Momentum-Driven Unsteady Jets** S. Artham, Z. Zhang, E. Gnanamanickam, Embry-Riddle Aeronautical University, Daytona Beach, FL	1130 hrs AIAA-2017-1890 **Time-Resolved Flow Field Measurements of Momentum Driven Pulsed, Transient Jets** Z. Zhang, D. Seth, S. Artham, J. Leishman, E. Gnanamanickam, Embry-Riddle Aeronautical University, Daytona Beach, FL		

Friday, 13 January 2017						
465-FD-62	**Multiphase Flows III**					**Texas 3**
Chaired by: J. HARTWIG, NASA Glenn Research Center						
0930 hrs AIAA-2017-1891 **Spray-Wall Interactions Modeling** A. Silva, C. Rodrigues, J. Barata, University of Beira Interior, Covilha, Portugal	1000 hrs AIAA-2017-1892 **Aerodynamic Breakup and Secondary Drop Formation for a Liquid Metal Column in a Shock-Induced Cross-Flow** Y. Chen, E. DeMauro, J. Wagner, Sandia National Laboratories, Albuquerque, NM; M. Arienti, Sandia National Laboratories, Livermore, CA; D. Guildenbecher, P. Farias, Sandia National Laboratories, Albuquerque, NM; et al.					

Friday, 13 January 2017						
466-GNC-29	**Verification and Validation of Adaptive Systems III**					**Austin 2**
Chaired by: T. YUCELEN, Missouri University of Science & Technology and J. MUSE, AFRL/RQQA						
0930 hrs AIAA-2017-1893 **Sensor Blending with an Application to Robust Direct Adaptive Control of a Non-minimum Phase Aircraft** M. Balas, A. Norriega, R. Anderson, Embry-Riddle Aeronautical University, Daytona Beach, FL	1000 hrs AIAA-2017-1894 **Cost Detectability and Stability of Multiple Model-based Adaptive Controllers Using Data-Driven Control Theory** K. Dogan, K. Rajagopal, S. Balakrishnan, Missouri University of Science and Technology, Rolla, MO	1030 hrs AIAA-2017-1895 **Decentralized Adaptive Stabilization of Large-Scale Active-Passive Modular Systems** B. Gruenwald, E. Arabi, T. Yucelen, University of South Florida, Tampa, FL; A. Chakravarthy, Wichita State University, Wichita, KS; D. McNeely, S. Balakrishnan, Missouri University of Science and Technology, Rolla, MO	1100 hrs AIAA-2017-1896 **Nonlinear Adaptive Control of Quadrotor UAVs with Run-Time Safety Assurance** R. Avram, X. Zhang, Wright State University, Dayton, OH; J. Muse, M. Clark, Air Force Research Laboratory, Wright-Patterson AFB, OH			

Friday, 13 January 2017						
467-GNC-30	**Entry, Descent and Landing GNC Technology II**					**Austin 4**
Chaired by: J. CARSON, NASA Jet Propulsion Laboratory and P. LU, San Diego State University						
0930 hrs AIAA-2017-1897 **Synopsis of Precision Landing and Hazard Avoidance (PL&HA) Capabilities for Space Exploration** E. Robertson, NASA Johnson Space Center, Houston, TX	1000 hrs AIAA-2017-1898 **A Rigid Mid Lift-to-Drag Ratio Approach to Human Mars Entry, Descent, and Landing** R. Sostaric, C. Cerimele, E. Robertson, NASA Johnson Space Center, Houston, TX; J. Garcia, NASA Ames Research Center, Moffett Field, CA	1030 hrs AIAA-2017-1899 **Automated Re-entry System using FNPEG** W. Johnson, Intuitive Machines, Inc., Houston, TX; P. Lu, San Diego State University, San Diego, CA; S. Stachowiak, NASA Johnson Space Center, Houston, TX	1100 hrs AIAA-2017-1900 **Aerocapture Guidance for a Human Mars Mission** K. Webb, P. Lu, Iowa State University, Ames, IA; A. Dwyer Cianciolo, NASA Langley Research Center, Hampton, VA	1130 hrs AIAA-2017-1901 **Application of a Fully Numerical Guidance to Mars Aerocapture** D. Matz, NASA Johnson Space Center, Houston, TX; P. Lu, San Diego State University, San Diego, CA; G. Mendeck, R. Sostaric, NASA Johnson Space Center, Houston, TX		

Friday, 13 January 2017						
468-GNC-31	**Spacecraft and Launch Estimation and Sensors**					**Grapevine 6**
Chaired by: K. BOLLINO, U.S. Air Force and S. STARIN, NASA-Goddard Space Flight Center						
0930 hrs AIAA-2017-1902 **Recursive Inertia Estimation with Semidefinite Programming** Z. Manchester, Harvard University, Cambridge, MA; M. Peck, Cornell University, Ithaca, NY	1000 hrs AIAA-2017-1903 **Prediction of Lunar Reconnaissance Orbiter Reaction Wheel Assembly Angular Momentum Using Regression Analysis** R. DeHart, NASA Goddard Space Flight Center, Greenbelt, MD	1030 hrs AIAA-2017-1904 **Three-Axis Attitude Estimation Using Rate-Integrating Gyroscopes** J. Crassidis, State University of New York, Amherst, NY; F. Markley, NASA Goddard Space Flight Center, Greenbelt, MD	1100 hrs AIAA-2017-1905 **Investigating Cross-Axis Sensitivity and Misalignment in an Angular Accelerometer Measurement Unit** D. Jatiningrum, C. de Visser, M. van Paassen, Q. Chu, M. Mulder, Delft University of Technology, Delft, The Netherlands			

Friday, 13 January 2017						
469-GNC-32	**Emerging Micro Air Vehicle Capabilities**					**Austin 5**
Chaired by: H. CHAO, University of Kansas and J. LANGELAAN, Pennsylvania State University						
0930 hrs AIAA-2017-1907 **A Quasi Polar Local Occupancy Grid Approach for Vision-based Obstacle Avoidance** J. Geng, J. Langelaan, Pennsylvania State University, University Park, PA	1000 hrs AIAA-2017-1908 **Dynamic Soaring in Finite-Thickness Wind Shears: an Asymptotic Solution** G. Bousquet, M. Triantafyllou, J. Slotine, Massachusetts Institute of Technology, Cambridge, MA	1030 hrs AIAA-2017-1909 **Control Strategies for Flight in Extreme Turbulence** M. Abdulrahim, A. Mohamed, S. Watkins, RMIT University, Melbourne, Australia	1100 hrs AIAA-2017-1910 **Wake Encounter Simulation and Flight Validation with UAV Close Formation Flight** P. Tian, A. He, H. Chao, Z. Zheng, University of Kansas, Lawrence, Lawrence, KS; Y. Gu, West Virginia University, Morgantown, WV			

Friday, 13 January 2017						
470-GNC-33	**Aerospace Robotics**					**Austin 6**
Chaired by: S. ULRICH, Carleton University and J. SASIADEK, Carleton University						
0930 hrs AIAA-2017-1911 **Quadcopter Experimental Evaluation of Nonlinear Dynamic Inversion Coupled with Fourier Transform Regression** M. AlAbsi, T. Fields, University of Missouri, Kansas City, Kansas CIty, MO	1000 hrs AIAA-2017-1912 **Experimental Validation of the Selective Velocity Obstacle method for Autonomous Collision Avoidance** C. Cheung, Y. Jenie, E. Van Kampen, Delft University of Technology, Delft, The Netherlands	1030 hrs AIAA-2017-1913 **Curvature Constrained Lyapunov Vector Field for Stand-off Target Tracking** A. Pothen, A. Ratnoo, Indian Institute of Science, Bengaluru, India	1100 hrs AIAA-2017-1914 **Control of Departure and Approach Maneuvers of Tiltwing VTOL Aircraft** P. Hartmann, M. Schütt, D. Moormann, RWTH Aachen University, Aachen, Germany	1130 hrs AIAA-2017-1915 **Fixed Wing Aircraft Perching** M. Vedantam, S. Keshmiri, G. Garcia, W. Huang, University of Kansas, Lawrence, Lawrence, KS		

Friday, 13 January 2017						
471-GNC-34	**Intelligent and Cooperative Control in AE Applications**					**Austin 1**
Chaired by: I. WEINTRAUB and J. WARNER						
0930 hrs AIAA-2017-1916 **Autonomous Flightworthiness Determination for Modular Vertical Lift Vehicles** J. Warner, J. Rogers, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2017-1917 **An Optimal Aircraft Defense Strategy for the Active Target Defense Scenario** I. Weintraub, 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-2017-1918 **Game Theoretic Trajectory Negotiation Mechanism for Merging Air Traffic Management** S. Park, P. Menon, Optimal Synthesis, Inc., Los Altos, CA	1100 hrs AIAA-2017-1919 **Grid-Free Search and Exploration using Modified Cyclic Pursuit** D. Mukherjee, Technion–Israel Institute of Technology, Haifa, Israel; D. Ghose, Indian Institute of Science, Bengaluru, India	1130 hrs AIAA-2017-1920 **Machine Learning Approach for Finding Similar Weather-Impacted Situations in En Route Airspace** S. Schelling, J. Krozel, Innovation Laboratory, Inc., Portland, OR	1200 hrs AIAA-2017-1921 **Machine Learning for Efficient Sampling-Based Algorithms in Robust Multi-Agent Planning Under Uncertainty** J. Quindlen, J. How, Massachusetts Institute of Technology, Cambridge, MA	

Friday, 13 January 2017						
472-GTE-10	**New Engine Architectures II**					**Grapevine 2**
Chaired by: M. ATTIA, Embry-Riddle Aeronautical University						
0930 hrs AIAA-2017-1922 **Development and Application of GT-HEAT for the Electrically Variable Engine(TM) Design** D. Trawick, C. Perullo, Georgia Institute of Technology, Atlanta, GA; M. Armstrong, D. Snyder, Rolls-Royce Group plc, Indianapolis, IN; J. Tai, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1000 hrs AIAA-2017-1923 **Cycle Selection and Sizing of a Single-Aisle Transport with the Electrically Variable Engine(TM) (EVE) for Fleet Level Fuel Optimization** C. Perullo, D. Trawick, Georgia Institute of Technology, Atlanta, GA; M. Armstrong, Rolls-Royce Group plc, Indiannapolis, IN; J. Tai, D. Mavris, Georgia Institute of Technology, Atlanta, GA	1030 hrs AIAA-2017-1924 **Modeling and Design of a Partially Electric Distributed Aircraft Propulsion System with GT-HEAT** J. Gladin, D. Trawick, C. Perullo, J. Tai, D. Mavris, Georgia Institute of Technology, Atlanta, GA				

Friday, 13 January 2017						
473-GTE-11	**Numerical Tools II**					**Grapevine 3**
Chaired by: M. RICKLICK, Embry Riddle Aeronautical University						
0930 hrs AIAA-2017-1925 **Numerical Simulation of Cascade Flows Using Block-Structured Cartesian Mesh** M. Koike, Kanazawa Institute of Technology, Hakusan, Japan; D. Sasaki, Kanazawa Institute of Technology, Kanazawa, Japan; T. Misaka, K. Shimoyama, S. Obayashi, Tohoku University, Sendai, Japan; K. Hirakawa, IHI Corporation, Nishitama, Japan; et al.	1000 hrs AIAA-2017-1926 **Performance Modeling of Gas Turbine Engines Using Inverse Solution Methods** J. Delimont, C. Nolen, A. McClung, Southwest Research Institute, San Antonio, TX	1030 hrs AIAA-2017-1927 **Effect of Gradient Reconstruction Method on Transonic Fan Performance** F. Carpenter, P. Cizmas, Texas A&M University, College Station, TX				

Friday, 13 January 2017						
474-HSABP-9/PGC-8	**Pressure Gain Combustion - Rotating and Pulse Detonation Engines**					**San Antonio 2**
Chaired by: S. STANLEY, Aerojet Rocketdyne and T. KAEMMING, Innovative Scientific Solutions Incorporated						
0930 hrs AIAA-2017-1928 **Experimental Study of the Ignition Process in Rotating Detonation Engines** M. Fotia, J. Hoke, Innovative Scientific Solutions, Inc., Dayton, OH; F. Schauer, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2017-1929 **Study of Shock Wave Transmission by Detonation Wave Interaction with Contact Discontinuity** J. Peace, F. Lu, University of Texas, Arlington, Arlington, TX	1030 hrs AIAA-2017-1930 **Exergy analysis of pulse detonation engine with linear power generator** R. Bello, F. Lu, University of Texas, Arlington, Arlington, TX	1100 hrs AIAA-2017-1931 **High-Pressure Rotating Detonation Engine Testing and Flameholding Analysis with Hydrogen and Natural Gas** D. Stechmann, S. Heister, S. Sardeshmukh, Purdue University, West Lafayette, IN	1130 hrs AIAA-2017-1932 **Experimental Study of Liquid Injector Elements for Use in Rotating Detonation Engines** W. Anderson, D. Lim, S. Heister, Purdue University, West Lafayette, IN	1200 hrs AIAA-2017-1933 **Oriented Jet In Crossflow Turbulence Generator for Confined Flame Acceleration in Moving Mixtures** J. Lowe, M. Attia, Embry-Riddle Aeronautical University, Daytona Beach, FL	

Friday, 13 January 2017						
475-MDO-12/NDA-10	**Optimization Under Uncertainty II**					**Mustang 1**
Chaired by: D. ALLAIRE, Texas A&M University and A. CHAUDHURI, Massachusetts Institute of Technology						
0930 hrs AIAA-2017-1934 **Design Optimization Under Uncertainty Using the Multipoint Approximation Method** Y. Korolev, V. Toropov, Queen Mary University of London, London, United Kingdom; S. Shahpar, Rolls-Royce Group plc, Derby, United Kingdom	1000 hrs AIAA-2017-1935 **Optimal Approximations of Coupling in Multidisciplinary Models** R. Baptista, Y. Marzouk, K. Willcox, Massachusetts Institute of Technology, Cambridge, MA; B. Peherstorfer, University of Wisconsin, Madison, Madison, WI	1030 hrs AIAA-2017-1936 **Multifidelity, Multidisciplinary Uncertainty Quantification with Non-Intrusive Polynomial Chaos** T. West, C. Gumbert, NASA Langley Research Center, Hampton, VA	1100 hrs AIAA-2017-1937 **The relevance of reliability-based topology optimization in preliminary phases of aerospace structural design** C. Lopez, A. Baldomir, S. Hernandez, University of A Coruña, A Coruña, Spain	1130 hrs AIAA-2017-1938 **Robust Aeroelastic Design Optimization of Hypersonic Vehicle with Uncertainties in Aerodynamic Loads, Heat Flux, and Structure** Z. Du, Z. Wan, Y. Dai, S. Zhu, C. Yang, Beihang University, Beijing, China	1200 hrs AIAA-2017-1939 **Stochastic Design Optimization of Microstructures with Utilization of a Linear Solver** P. Acar, S. Srivastava, V. Sundararaghavan, University of Michigan, Ann Arbor, Ann Arbor, MI	

Friday, 13 January 2017						
476-MST-18	**Modeling and Simulation of Propulsion Systems**					**Ft. Worth 6**
Chaired by: S. KOWALCHUK, Sandia National Laboratories						
0930 hrs AIAA-2017-1940 **Design of a Transient Variable Cycle Turbine Engine Model for System Integration with Controls** R. Buettner, R. Roberts, M. Wolff, Wright State University, Dayton, OH; A. Behbahani, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2017-1941 **Cessna Citation X Engine Model Identification and Validation in the Cruise Regime from Flight Tests based on Neural Networks combined with Extended Great Deluge Algorithm** M. Zaag, R. Botez, University of Québec, Montréal, Canada	1030 hrs AIAA-2017-1942 **Identification and Validation of the Cessna Citation X Engine Component Level Modeling with Flight Tests** P. Bardela, R. Botez, University of Québec, Montréal, Canada	1100 hrs AIAA-2017-1943 **Design and Benchmarking of a Network-In-the-Loop Simulation for Use in a Hardware-In-the-Loop System** E. Aretskin-Hariton, NASA Glenn Research Center, Cleveland, OH; G. Thomas, N&R Engineering, Inc., Parma Heights, OH; J. Kratz, D. Culley, NASA Glenn Research Center, Cleveland, OH	1130 hrs AIAA-2017-1944 **Application of Immersed Boundary Method with Wall Injection for Solid Rocket Motor Internal Flow** T. Hirose, S. Ogawa, D. Sasaki, Kanazawa Institute of Technology, Hakusan, Japan; Y. Fukushima, S. Obayashi, Tohoku University, Katahira, Japan		

Friday, 13 January 2017						
477-MVC-5	**Solution Adaptive Meshing and Error Estimation**					**Palomino 1**
Chaired by: C. OLLIVIER GOOCH, University of British Columbia and W. JONES, NASA-Langley Research Center						
0930 hrs AIAA-2017-1945 **An Adaptive Conservative ALE Approach to Deal with Large Boundary Displacements in Three-Dimensional Inviscid Simulations** B. Re, A. Guardone, Technical University of Milan, Milan, Italy; C. Dobrzynski, French Institute for Research in Computer Science and Control (INRIA), Talence, France	1000 hrs AIAA-2017-1946 **Comparison of Anisotropic Mesh Adaptation for Turbomachinery Flows** G. Vivarelli, N. Qin, University of Sheffield, Sheffield, United Kingdom; S. Shahpar, Rolls-Royce Group plc, Derby, United Kingdom	1030 hrs AIAA-2017-1947 **A Truncation Error Based Anisotropic Mesh Adaptation Metric for CFD** T. Phillips, C. Ollivier Gooch, University of British Columbia, Vancouver, Canada				

Friday, 13 January 2017						
478-NDA-11	**Uncertainty Quantification II**					**Mustang 2**
Chaired by: N. CHENNIMALAI KUMAR, General Electric Global Research Center and P. JOSHI, Heinkel Engineering GmbH						
0930 hrs AIAA-2017-1948 **Construction of Multi-Fidelity Locally Optimized Surrogate Models for Uncertainty Quantification** M. Rumpfkeil, University of Dayton, Dayton, OH; K. Hanazaki, Nagaoka University of Technology, Niigata, Japan; P. Beran, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2017-1949 **A Model Reification Approach to Fusing Information from Multifidelity Information Sources** W. Thomison, D. Allaire, Texas A&M University, College Station, TX	1030 hrs AIAA-2017-1950 **Quantifying the Impact of Different Model Discrepancy Formulations in Coupled Multidisciplinary Systems** S. Friedman, S. Ghoreishi, D. Allaire, Texas A&M University, College Station, TX	1100 hrs AIAA-2017-1951 **A multifidelity multilevel Monte Carlo method for uncertainty propagation in aerospace applications** G. Geraci, Stanford University, Stanford, CA; M. Eldred, Sandia National Laboratories, Albuquerque, NM; G. Iaccarino, Stanford University, Stanford, CA	1130 hrs AIAA-2017-1952 **Uncertainty Analysis of Turbulence Model Closure Coefficients for Wall-Bounded Attached and Separated Flows** A. Erb, S. Hosder, Missouri University of Science and Technology, Rolla, MO	1200 hrs AIAA-2017-1953 **Value Driven Optimization in an Uncertain Marketplace and Quantifying Uncertainty with the Gini Coefficient** M. Wang, H. Kannan, C. Bloebaum, Iowa State University, Ames, IA	

Friday, 13 January 2017						
479-PC-30	**Flame Stabilization/Blow Out**					**San Antonio 1**
Chaired by: A. CASWELL, USAF AFRL/RQTC and S. SHANBHOGUE						
0930 hrs AIAA-2017-1954 **Lean Blowout and Ignition Characteristics of Conventional and Surrogate Fuels Measured in a Swirl Stabilized Combustor** S. Stouffer, T. Hendershott, J. Monfort, University of Dayton, Dayton, OH; J. Diemer, Innovative Scientific Solutions, Inc., Dayton, OH; E. Corporan, P. Wrzesinski, Air Force Research Laboratory, Wright-Patterson AFB, OH; et al.	1000 hrs AIAA-2017-1955 **Large-Eddy Simulations of Fuel Effect on Gas Turbine Lean Blow-out** L. Esclapez, P. Ma, Stanford University, Stanford, CA; E. Mayhew, University of Illinois, Urbana-Champaign, Urbana, IL; R. Xu, Stanford University, Stanford, CA; S. Stouffer, University of Dayton, Dayton, OH; T. Lee, University of Illinois, Urbana-Champaign, Urbana, IL; et al.	1030 hrs AIAA-2017-1956 **Parametric Study of Alternating Flow Patterns in Non-Reacting Multiple-Swirl Flows** B. Dolan, R. Villalva Gomez, E. Gutmark, University of Cincinnati, Cincinnati, OH				

Friday, 13 January 2017						
480-PC-31	**Jets in Cross-Flow**					**Austin 3**
Chaired by: J. OEFELEIN, Sandia National Laboratories and V. ACHARYA, Georgia Institute of Technology						
0930 hrs AIAA-2017-1957 **Digital Holographic Analysis of the Breakup of Aerated Liquid Jets in Supersonic Crossflow** K. Sallam, Oklahoma State University, Stillwater, OK; K. Lin, Taitech, Inc., Beavercreek, OH; S. Hammack, C. Carter, Air Force Research Laboratory, Wright-Patterson AFB, OH	1000 hrs AIAA-2017-1958 **Structures and Temporal Evolution of Liquid Jets in Supersonic Crossflow** K. Lin, Taitech, Inc., Beavercreek, OH; M. Lai, Wayne State University, Detroit, MI; T. Ombrello, C. Carter, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2017-1959 **Filtered Rayleigh Scattering Measurements of Liquid Nitrogen Jets in Subcritical and Supercritical Crossflows** A. Cross, General Electric Company, Niskayuna, NY; J. Estevadeordal, North Dakota State University, Fargo, ND; M. Masquelet, K. McManus, General Electric Company, Niskayuna, NY	1100 hrs AIAA-2017-1960 **On the Ignition and the Combustion of Supercritical Fuel Jet-In-Cross-Flow** K. Gottiparthi, R. Sankaran, Oak Ridge National Laboratory, Oak Ridge, TN; J. Oefelein, Sandia National Laboratories, Livermore, CA	1130 hrs AIAA-2017-1961 **Effect of orifice geometry on spray characteristics of liquid jet in cross flow** Y. Song, D. Hwang, K. Ahn, Chungbuk National University, Cheongju, South Korea		

Friday, 13 January 2017						
481-PC-32	**Laminar Flames II**					**San Antonio 3**
Chaired by: D. GLAZE, Sandia National Laboratories and Y. JU, Princeton University						
0930 hrs AIAA-2017-1962 **Laminar Flame Speeds of Dilute Triethyl Phosphate in H_2- and CH_4-Air Mixtures** T. Sikes, N. Niemiec, W. Kulatilaka, E. Petersen, Texas A&M University, College Station, TX	1000 hrs AIAA-2017-1963 **Effects of n-Alkane Chain Length on Cool Diffusion Flames** C. Reuter, M. Lee, S. Won, Y. Ju, Princeton University, Princeton, NJ	1030 hrs AIAA-2017-1964 **Effect of "prompt" dissociation of formyl radical on high temperature oxidation of formaldehyde in the study of 1,3,5-trioxane pressurized laminar flame speeds** H. Zhao, J. Fu, Y. Ju, Princeton University, Princeton, NJ	1100 hrs AIAA-2017-1965 **The effect of radiation on the dynamics of near limit cool flames and hot flames** Y. Ju, Princeton University, Princeton, NJ; E. Lin, Princeton High School, Princeton, NJ; C. Reuter, Princeton University, Princeton, NJ			

Friday, 13 January 2017		
482-PC-33 **0930 - 1130 hrs**	**Combustor Advances Enabled by Advanced Manufacturing**	**Grapevine 1**
Panelists: **Andrew Ihnen** Naval Air Warfare Center **Lance Smith** UTRC **Jeffrey Haynes** Aerojet Rocketdyne **Jean-Francois Rideau** Microturbo Safran		

Friday, 13 January 2017		
483-PC-34 **0930 - 1230 hrs**	**Model Validation for Propulsion Workshop: Closing Session**	**Palomino 2**
The Model Validation for Propulsion (MVP) workshop is an open forum, bringing together researchers and modelers to help improve our understanding and capabilities of modeling turbulent reacting flows in relevant aerospace propulsion systems. This session includes a panel discussion on Best Practices in Reacting Large Eddy Simulations and closes with an opportunity for participants to provide feedback for future workshop forums.		

Friday, 13 January 2017						
484-PDL-14	**Plasma and Laser Physics II**					**Ft. Worth 5**
Chaired by: J. ZIMMERMAN, CU Aerospace and M. PANESI, University of Illinois at Urbana Champaign						
0930 hrs AIAA-2017-1966 **Numerical simulation of dissociation kinetics in the Penning discharge plasma using 2D modified drift-diffusion model** S. Surzhikov, Russian Academy of Sciences, Moscow, Russia; D. Storozhev, All-Russian Scientific Research Institute of Automatics, Moscow, Russia	1000 hrs AIAA-2017-1967 **Progress in Development of a Chemical CO Laser Driven by a Chemical Reaction between Carbon Vapor and Oxygen** E. Jans, K. Frederickson, M. Yurkovich, Z. Eckert, J. Rich, I. Adamovich, Ohio State University, Columbus, OH	1030 hrs AIAA-2017-1968 **Experimental and Numerical Investigations of a Pulsed Nanosecond Streamer Discharge in CO2** M. Pachuilo, D. Levko, L. Raja, P. Varghese, University of Texas, Austin, Austin, TX	1100 hrs AIAA-2017-1969 **Laser Induced "Counter" Convection in Water** M. Shneider, Princeton University, Princeton, NJ; V. Semak, Virtual Laser Application Design, State College, PA	1130 hrs AIAA-2017-1970 **Computational Studies of Positive and Negative Streamers in Bubbles Suspended in Distilled Water** A. Sharma, D. Levko, L. Raja, University of Texas, Austin, Austin, TX	1200 hrs AIAA-2017-1971 **Experiments on a Plasma-based Metamaterial at Microwave Fequencies** E. Matlis, A. Hoffman, T. Corke, University of Notre Dame, Notre Dame, IN	1230 hrs AIAA-2017-1972 **Modeling of Dual-Pulse Laser Ignition** A. Tropina, Kharkiv National University, Kharkiv, Ukraine; M. Shneider, R. Miles, Princeton University, Princeton, NJ

Friday, 13 January 2017						
485-PDL-15	**Plasma Assisted Combustion and Ignition II**					**Ft. Worth 4**
Chaired by: A. STARIKOVSKIY, Princeton University and S. BANE, Purdue University- Sch of Aero and Astro						
0930 hrs AIAA-2017-1973 **Proper Orthogonal Decomposition for Flame Dynamics of Microwave Plasma Assisted Swirl Stabilized Premixed flames** R. Rajasegar, C. Mitsingas, E. Mayhew, T. Lee, University of Illinois, Urbana-Champaign, Urbana, IL; J. Yoo, State University of New York, Buffalo, NY	1000 hrs AIAA-2017-1974 **Volumetric Plasma Discharge in a Coaxial Electrode Configuration Using Repetitively Pulsed Nanosecond Discharges** R. Jagannath, K. Newnam, P. Stockett, P. Wu, S. Bane, Purdue University, West Lafayette, IN; M. Nalim, Indiana University-Purdue University Indianapolis, Indianapolis, IN	1030 hrs AIAA-2017-1975 **First experiments on plasma assisted supersonic combustion at LAERTE facility** A. Vincent-Randonnier, ONERA, Palaiseau, France; S. Leonov, University of Notre Dame, Notre Dame, IN; D. Packan, ONERA, Palaiseau, France	1100 hrs AIAA-2017-1976 **Laser Ignition of Propane-Air Mixtures Using a Dual-Pulse Technique** C. Dumitrache, R. VanOsdol, C. Limbach, A. Yalin, Colorado State University, Fort Collins, CO	1130 hrs AIAA-2017-1977 **Mechanism of Plasma-Assisted Ignition for H2 and C1-C5 Hydrocarbons** A. Starikovskiy, Princeton University, Princeton, NJ		

Friday, 13 January 2017						
486-SD-25	**Active/Passive Vibration Control, Isolation, Stability Augmentation, Damping**					**Appaloosa 3**
Chaired by: W. WELSH, Sikorsky Aircraft Corporation and S. LIGUORE, Boeing Engineering Operations & Technology						
0930 hrs AIAA-2017-1978 **Vibration Theory for Damping Control of 2D-deployable Linked Panel Structures in Space** M. Takatsuka, Nagoya University, Nagoya, Japan	1000 hrs AIAA-2017-1979 **Modeling and Analysis of Damping Performance of Hard Coatings in Turbomachinery** M. Tidball, J. Slater, Wright State University, Dayton, OH; J. Brown, B. Langley, T. George, Air Force Research Laboratory, Wright-Patterson AFB, OH	1030 hrs AIAA-2017-1980 **Transient Analysis of Anti-symmetric Cross-Ply and Angle-Ply Laminated Composite Plates Using Nurbs-Based Isogeometric Analysis** A. Gupta, A. Ghosh, Indian Institute of Technology Kharagpur, Kharagpur, India	1100 hrs AIAA-2017-1981 **Lattice-based Discrete Structure Modeling and Control for Large Flexible Space Structure Applications** N. Cramer, University of California, Santa Cruz, Santa Cruz, CA; S. Swei, K. Cheung, NASA Ames Research Center, Moffett Field, CA; D. Cellucci, Cornell University, Ithaca, NY; B. Jenett, Massachusetts Institute of Technology, Cambridge, MA; M. Teodorescu, University of California, Santa Cruz, Santa Cruz, CA	1130 hrs AIAA-2017-1982 **Multi-fidelity Modeling of Interfacial Micromechanics for Off-Aligned Polymer/Carbon Nanotube Nanocomposites** R. Kopp, Pennsylvania State University, University Park, PA; B. Glaz, F. Gardea, Army Research Laboratory, Aberdeen Proving Ground, MD; E. Smith, Pennsylvania State University, University Park, PA	1200 hrs AIAA-2017-1983 **Characteristics and control of base-excited dynamical system through a vibration absorber energy harvester** H. Abdelmoula, New Mexico State University, Las Cruces, NM; H. Dai, Huazhong University of Science and Technology, Wuhan, China; A. Abdelkefi, New Mexico State University, Las Cruces, NM; L. Wang, Huazhong University of Science and Technology, Wuhan, China	

Friday, 13 January 2017						
487-SD-26	**Structural Dynamic Modeling of Beams, Cables, Membranes, Plates and Shells**					**Appaloosa 4**
Chaired by: J. KOSMATKA, University of California, San Diego and J. SLATER, Wright State University						
0930 hrs AIAA-2017-1984 **Dynamic analysis of the continuous fluid-structure system based on Timoshenko model and considering damping** X. Zhang, M. Zhu, H. Liang, Beihang University, Beijing, China	1000 hrs AIAA-2017-1985 **Random Eigenvalue Analysis for the Free Vibration of Rotating Beams Using Inverse Problem Approach** K. Sarkar, R. Ganguli, D. Ghosh, Indian Institute of Science, Bengaluru, India	1030 hrs AIAA-2017-1986 **Geometrically-exact, fully intrinsic analysis of pretwisted beams under distributed follower forces** P. Mardanpour, E. Izadpanahi, S. Rastkar, Florida International University, Miami, FL; S. Fazelzadeh, Shiraz University, Shiraz, Iran; D. Hodges, Georgia Institute of Technology, Atlanta, GA	1100 hrs AIAA-2017-1987 **Vibration of Long Rectangular Composite Plates and Buckling of such Plates under Shear and Axial loads** H. Eslami, Embry-Riddle Aeronautical University, Daytona Beach, FL; N. Khalili, Gulfstream Aerospace Corporation, Savannah, GA; U. Gandi, Embry-Riddle Aeronautical University, Daytona Beach, FL	1130 hrs AIAA-2017-1988 **An Investigation of Factors Affecting Vibration Comfort of Quayside Crane Cab** W. Li, Y. Li, H. Wang, L. Zhao, Shanghai Zhenhua Heavy Industry Company, Ltd., Shanghai, China		

Friday, 13 January 2017						
488-STR-12	**Failure Analysis and Prediction**					**Appaloosa 1**
Chaired by: S. DORMOHAMMADI, AlphaSTAR Corp. and G. MABSON, Boeing Engineering Operations & Technology						
0930 hrs AIAA-2017-1989 **Numerical Investigation of Longer Life Combustion Chambers of Liquid Rocket Engines Based on Coupled Thermal-fluid-structure Simulation** H. Amakawa, H. Negishi, M. Nishimoto, S. Hori, Japan Aerospace Exploration Agency (JAXA), Tsukuba, Japan	1000 hrs AIAA-2017-1990 **Stochastic multiscale approach to predict failure initiation and progression in composite materials** S. Sanei, E. Barsotti, R. Fertig, University of Wyoming, Laramie, Laramie, WY	1030 hrs AIAA-2017-1991 **Modeling of Bird Strike to a Composite Helicopter Rotor Blade** Z. Eren, S. Tataroglu, D. Balkan, Z. Mecitoglu, Istanbul Technical University, Istanbul, Turkey	1100 hrs AIAA-2017-1992 **Micromechanics-Based Fatigue Life Prediction of Composites** S. Arnold, P. Murthy, B. Bednarcyk, E. Pineda, NASA Glenn Research Center, Cleveland, OH; S. Mital, University of Toledo, Toledo, OH; P. Naghipour, Ohio Aerospace Institute, Brook Park, OH			

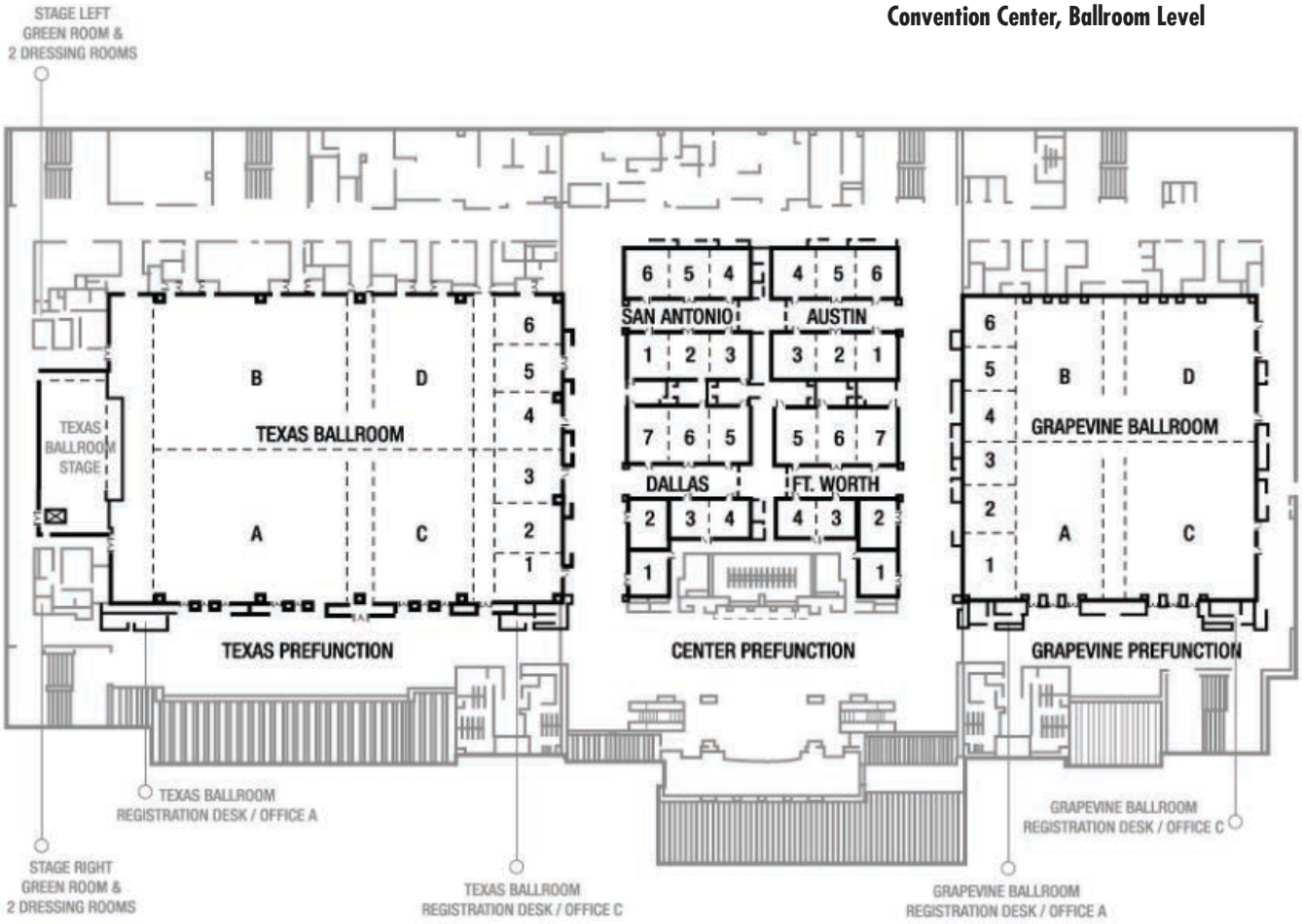
Friday, 13 January 2017						
489-TES-4	**Emerging Energy Technologies II**					**Mustang 3**
Chaired by: A. AGRAWAL, The University of Alabama and N. LOVE, The University of Texas El Paso						
0930 hrs AIAA-2017-1993 **Numerical Analysis of Air Distribution Systems in Aircraft passengers' Cabins** E. Khalil, R. AbdelMaksoud, W. AbdelMaksoud, A. Fahim, Cairo University, Cairo, Egypt	1000 hrs AIAA-2017-1994 **Thermal Comfort Analyses in Naturally Ventilated Handball Arena Utilizing CFD Techniques** E. Khalil, A. Masoud, A. Ibrahim, E. ElBialy, Cairo University, Cairo, Egypt	1030 hrs AIAA-2017-1995 **Temperature Distributions in an Underground Road Tunnel: Effect of Car fire Heat Release** W. Sweda, E. Khalil, O. Huzzayyin, Cairo University, Cairo, Egypt	1100 hrs AIAA-2017-1996 **Simulation of Air Flow Pattern in a Room with Ceiling Mounted Circulator** E. Khalil, A. ElDegwy, Cairo University, Cairo, Egypt	1130 hrs AIAA-2017-1997 **Embedded Void Approach for Nitride Based Multi-Junction Photovoltaic Cells** S. Salah, T. Hatem, British University in Cairo, Cairo, Egypt; E. Khalil, Cairo University, Cairo, Egypt; S. Bedair, North Carolina State University, Raleigh, NC; W. AbdelMaksoud, Cairo University, Cairo, Egypt		

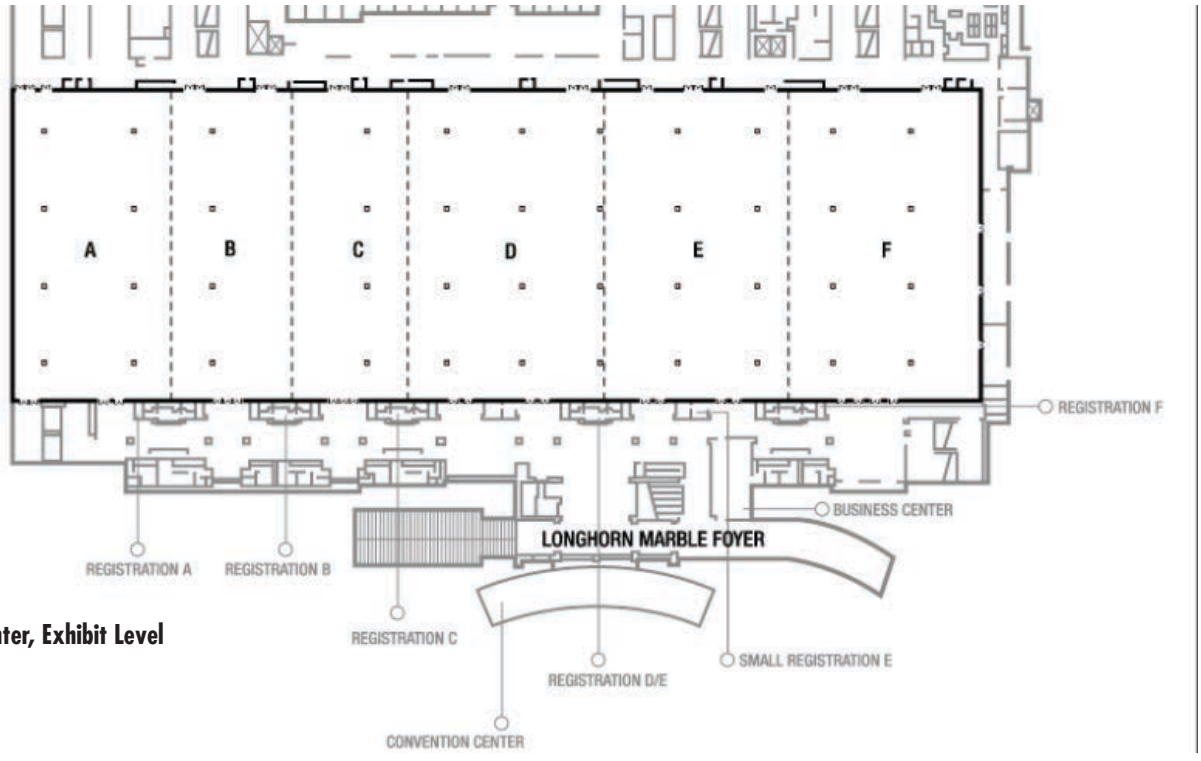
Friday, 13 January 2017						
490-WE-11	**Computational Methods for Wind Turbine Aerodynamics**					**Dallas 7**
Chaired by: D. MANIACI, Sandia National Laboratories and J. SITARAMAN, University of WY						
0930 hrs AIAA-2017-1998 **An Advanced Actuator Line Method for Wind Energy Applications and Beyond** M. Churchfield, S. Schreck, National Renewable Energy Laboratory, Golden, CO; L. Martinez, C. Meneveau, Johns Hopkins University, Baltimore, MD; P. Spalart, The Boeing Company, Seattle, WA	1000 hrs AIAA-2017-1999 **Improving Airfoil Lift Prediction** G. Ramanujam, H. Ozdemir, Energy Research Center of the Netherlands, Petten, The Netherlands	1030 hrs AIAA-2017-2000 **A Computationally-Efficient Panel Code for Unsteady Airfoil Modelling Including Dynamic Stall** A. Gonzalez-Salcedo, M. Aparicio-Sanchez, X. Munduate, CENER, Sarriguren, Spain; R. Palacios, J. Graham, Imperial College London, London, United Kingdom; O. Pires, CENER, Sarriguren, Spain; et al.	1100 hrs AIAA-2017-2001 **Fast Multilevel Panel Method for Wind Turbine Rotor Flow Simulations** A. van Garrel, C. Venner, H. Hoeijmakers, University of Twente, Enschede, The Netherlands	1130 hrs AIAA-2017-2002 **Development of a Partially Stochastic Unsteady Aerodynamics Model** M. Lennie, J. Wendler, G. Pechlivanoglou, C. Nayeri, C. Paschereit, Technical University of Berlin, Berlin, Germany; D. Greenblatt, Technion–Israel Institute of Technology, Haifa, Israel	1200 hrs AIAA-2017-2003 **Unsteady Interacting Boundary Layer Method** H. Ozdemir, Energy Research Center of the Netherlands, Petten, The Netherlands; A. van Garrel, University of Twente, Enschede, The Netherlands; A. Koodly Ravishankara, Purdue University, West Lafayette, IN; F. Passalacqua, Technical University of Milan, Milan, Italy; H. Seubers, Delft University of Technology, Delft, The Netherlands	

Author/Session Chair Index

VENUE MAP

Convention Center, Ballroom Level

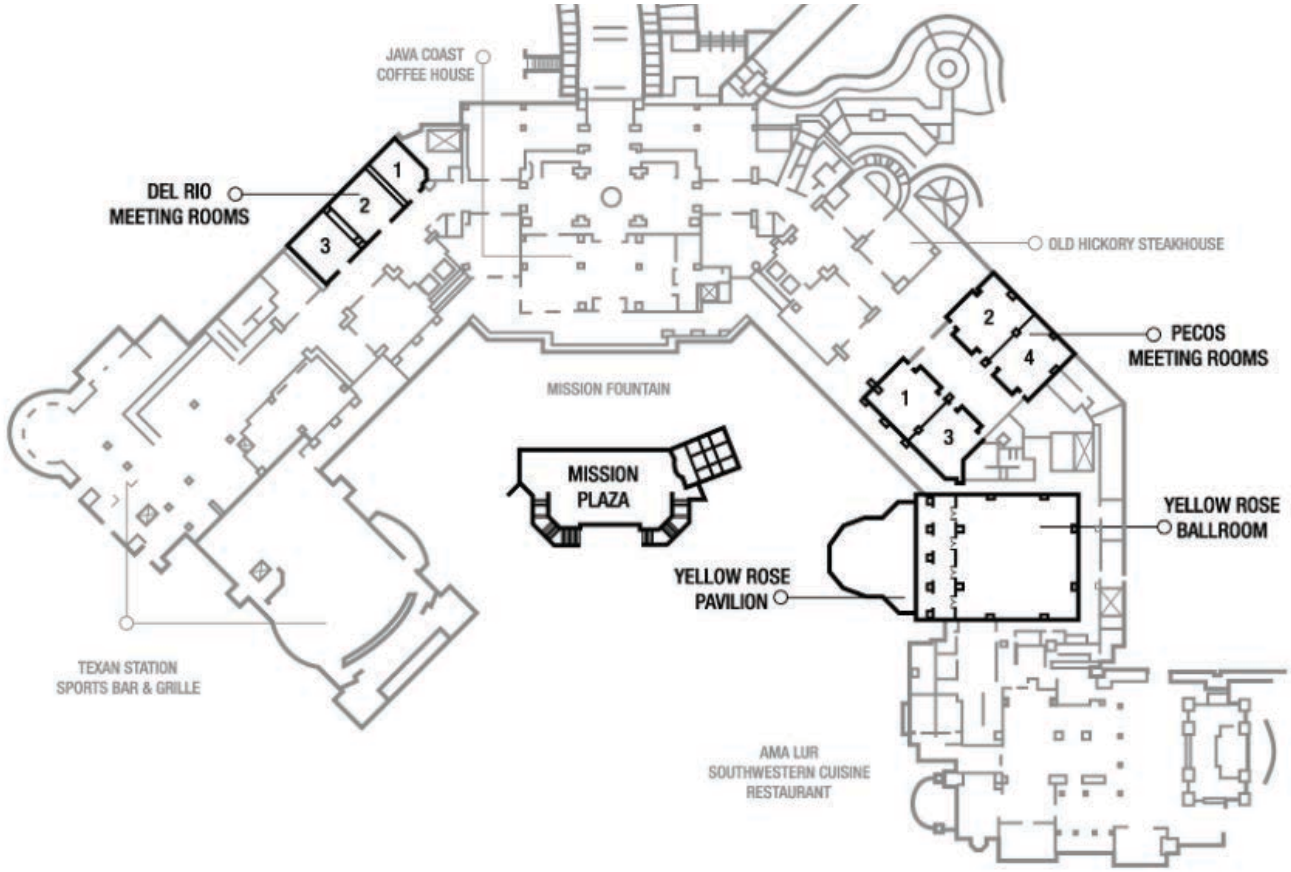




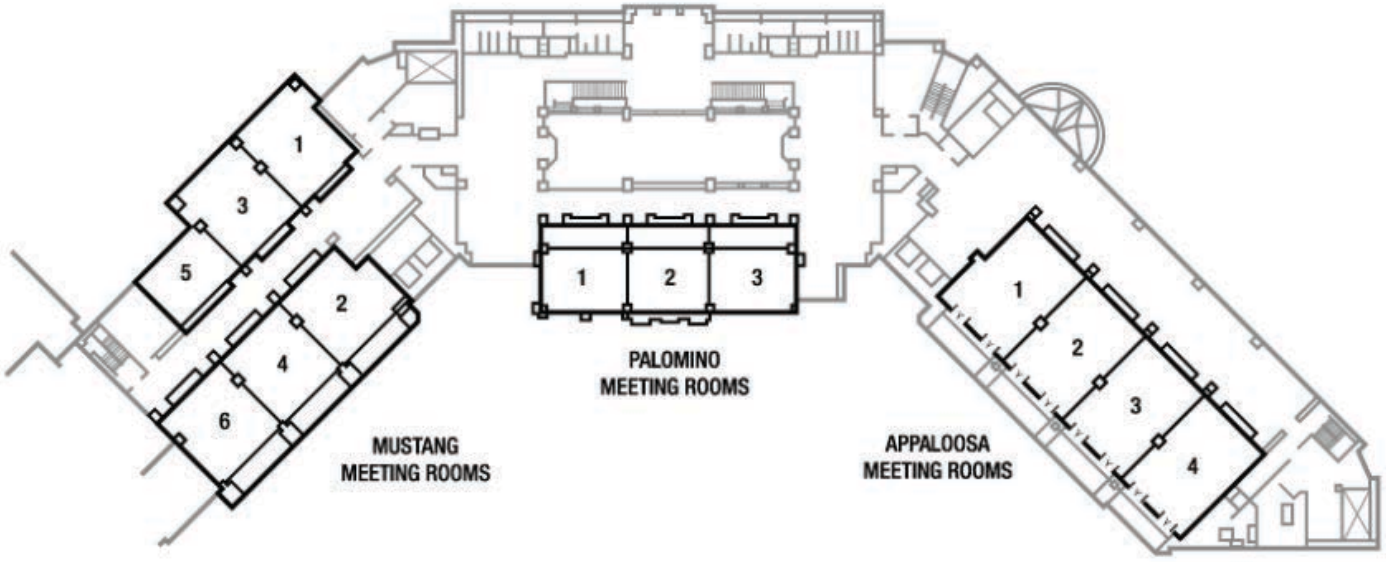
Convention Center, Exhibit Level

VENUE MAP

Lone Star Tower (hotel side) Lobby Level

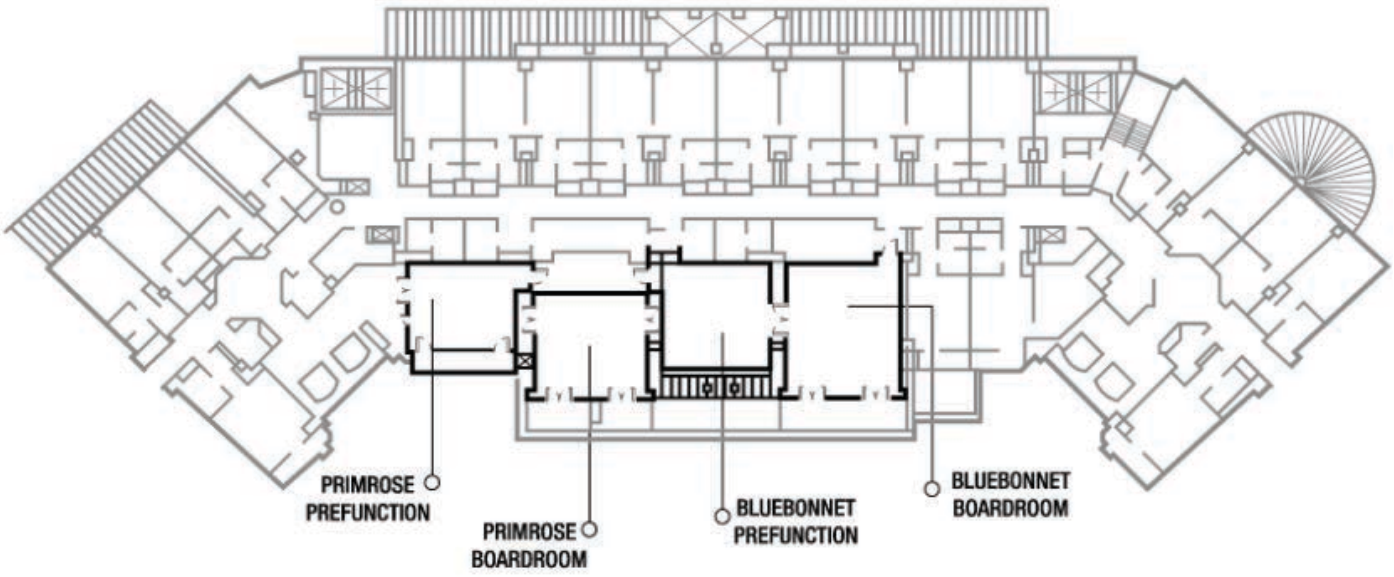


Lone Star Tower (hotel side) 3rd Floor



VENUE MAP

Lone Star Tower (hotel side) 4th Floor



*** Committee Meeting Rooms in hotel suites 6333 and 6355 are located on the 6th floor in the Gaylord on the hotel side.**

Notes

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- 55th AIAA Aerospace Sciences Meeting
- AIAA Atmospheric Flight Mechanics Conference
- AIAA Information Systems—AIAA Infotech @ Aerospace
- AIAA Guidance, Navigation, and Control Conference
- AIAA Modeling and Simulation Technologies Conference
- 19th AIAA Non-Deterministic Approaches Conference
- 58th AIAA/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference
- 10th Symposium on Space Resource Utilization
- 4th AIAA Spacecraft Structures Conference
- AIAA/AAS Space Flight Mechanics Meeting
- 35th Wind Energy Symposium

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