

Call for Papers

The AIAA Structures Technical Committee and the Adaptive Structures Technical Committee is sponsoring a Special Session on

Metamaterials and Adaptive Structures for Flow Control

AIAA SciTech 2026
January 12-16, 2026
Hyatt Regency Orlando
Orlando, FL

The AIAA (American Institute of Aeronautics and Astronautics) Adaptive Structures Technical Committee and Fluid Dynamics Committee solicit papers with recent research, technological advancements, and systems-level perspectives on **flow control methods using metamaterials and adaptive structures**. The interactions at the flow-surface interfaces govern critical phenomena for aerospace systems, such as the onset of turbulence and heat transfer. Adaptive systems leveraging smart materials, structural nonlinearity, and instabilities have been used to adjust their response to achieve intelligent flow control. Recent developments in mechanics, material science, and manufacturing have resulted in engineered materials or metamaterials that display properties uncommon in structures made of naturally occurring materials. The adequate design of the response of such metamaterials offers opportunities to achieve semi-passive and passive flow control. This special session aims to provide a forum that crosses the borders of metamaterials and adaptive structures communities to motivate synergies and idea exchange, resulting in novel and effective flow control mechanisms. Potential topics could include the following:

- Metamaterials and phononic crystals with engineered dynamic responses for flow control
- Fluid-structure interactions with metamaterials
- Novel metamaterial/metastructure designs for passive flow and thermal control
- Turbulent boundary layers and/or shock wave/boundary layer interactions with metamaterials
- Adaptive material systems for flow control
- Nonlinear and multistable systems for flow control
- Flexible/compliant structures fluid-induced interactions

The committee welcomes submissions from government, industry, academic, and small businesses. All abstracts are peer-reviewed.

Extended abstracts of no less than 1,000 words are due **May 22, 2025**
Author notification of paper acceptance on or about **August 25, 2025**
Final manuscript due **December 2, 2025**

Detailed deadline information, abstract preparation instructions, and policies can be found at:
<https://www.aiaa.org/SciTech/call-for-content/call-for-papers>

Make sure to select “Metamaterials and Adaptive Structures for Flow Control” topic option under “Adaptive Structures” technical discipline when prompted during submission.

For more information, contact one of the following organizers:

Dr. Andres F. Arrieta
Dr. Abigail Juhl
Dr. Kathryn Matlack

Purdue University
AFRL/RXESM
University of Illinois
Urbana-Champaign

arrieta@purdue.edu
abigail.juhl.1@us.af.mil
kmatlack@illinois.edu

Call for Papers

The AIAA Structures Technical Committee and the Adaptive Structures Technical Committee is sponsoring a Special Session on

Physically and Mechanical Embodied Computing in Aerospace Systems

AIAA SciTech 2026
January 12-16, 2026
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Orlando, FL

The AIAA (American Institute of Aeronautics and Astronautics) Adaptive Structures Technical Committee solicits papers with recent research, technological advancements, and systems-level perspectives on the emerging field of mechanical intelligence and embodied physical computation in material systems and adaptive structures. Recently, physically embodied and mechanical computing has emerged as an alternative paradigm that departs from the transistor and binary logic paradigm, embracing a biologically inspired approach in which memory and computation occur concurrently and physically collocated. This paradigm offers concrete paths for merging standard functions of adaptive structures, such as sensing and shape reconfiguration, with computational substrates that leverage multi-physics couplings to realize autonomous systems capable of displaying highly integrated sense, compute, and react loops. This special session aims to provide a forum that crosses the borders of adaptive structures and embodied intelligent matter communities to motivate synergies and idea exchange, resulting in novel pathways to achieving intelligent structural systems with learning, memory, and decision-making capabilities embedded in the mechanical domain. Potential topics could include the following:

- Physical reservoir computers for flow sensing and computation
- Mechanical signal processing and memory formation in adaptive structures
- Embodied shape control from mechanical instabilities
- Fluid dynamics-based physical reservoirs
- Fluid-structure interactions for physical computation
- Neuromorphic computing for aerospace structures
- Bioinspired mechanisms for sensing and memory formation
- Mechanical computing for morphing applications

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Make sure to select “Physically and Mechanical Embodied Computing in Aerospace Systems” topic option under “Adaptive Structures” technical discipline when prompted during submission.

For more information, contact one of the following organizers:
Dr. Andres F. Arrieta Purdue University

arrieta@purdue.edu

Call for Papers

The AIAA Structures Technical Committee and the Adaptive Structures Technical Committee is sponsoring a Special Session on

Structural Health Monitoring & Non-Destructive Evaluation

AIAA SciTech 2026
January 12-16, 2026
Hyatt Regency Orlando
Orlando, FL

The AIAA (American Institute of Aeronautics and Astronautics) Structures Technical Committee and Adaptive Structures Technical Committee solicit papers with recent research, technological advancements, and systems-level perspectives on **Structural Health Monitoring (SHM)** as a means to evaluate the integrity of structure by acquiring and analyzing data from sensors and then processing the data to determine the presence of structural damage. As the technology and reliability of SHM sensors mature, the industry will be able to implement SHM systems as an alternative to conventional non-destructive inspections (NDI) such as visual, eddy current, ultrasonic and X-ray inspection methods. An advantage of SHM systems is the ability to assess structure without direct physical access. The introduction of composite materials into the aerospace industry has required many in the **Non-Destructive Evaluation (NDE)** community to re-evaluate their well-established techniques on composite and hybrid material systems. This has led to the development of In-Situ NDI systems. As novel monitoring systems are developed, they must be designed to meet the current standards established by the civil and military aviation authorities. Potential topics could include the following:

- Probability of Detection for SHM
- Novel SHM systems for Metallic and Composite Structures
- Computational approaches for SHM
- SHM Reliability and Durability
- Novel sensing for damage detection
- Ultrasonics
- Non-Destructive Inspection Techniques
- Fiber optics, Thermography, Eddy Current and X-Ray techniques
- Prognostic and Health Management
- Condition Based Maintenance
- Certification of SHM systems

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Make sure to select “Structural Health Monitoring & Non-Destructive Evaluation” topic option under “Structures” or “Adaptive Structures” technical discipline when prompted during submission.

For more information, contact one of the following organizers:

Zeb Tidwell
Rich Manwell
Dr. Marcias Martinez

The Boeing Company
Textron Aviation
Clarkson University

zeb.tidwell@boeing.com
rmanwell@txtav.com
mmartine@clarkson.edu