

Call for Papers

The AIAA Structural Dynamics Technical Committee is sponsoring a Special Session on:

Aeroelastic/Aeroservoelastic Demonstrators & Testing

AIAA SciTech 2023

January 23-27, 2023
Gaylord National Harbor
National Harbor, MD

The session will focus on the unique aspects and challenges associated with designing and testing of aeroelastic or aeroservoelastic demonstrators. Such challenges include: dynamic scaling of demonstrators to reflect presence of specific structural dynamic phenomena or to replicate in a scaled manner real flying aircrafts, design of control systems capable of exploiting aeroelasticity in a beneficial manner or mitigating/suppressing potentially harmful aeroelastic instabilities such as flutter and LCO and, last but not least, design and devices for testing. Subscale models, wind tunnel models or simply remotely piloted vehicles offer some direct benefits as new technologies can be developed and tested (in a safe environment) at relatively lower cost with respect to a full-scale test campaign.

These aspects and many more impose unique challenges and demand for multidisciplinary considerations and design practices. This session will highlight recent experimental and computational efforts aimed to design test and evaluate design passive design solutions, active control systems and their effects on the static or dynamic response of aeroelastic demonstrators. The committee welcomes submissions from industry, government, academia and small businesses.

Make sure to select the “Aeroelastic/Aeroservoelastic Demonstrators & Testing” topic option under “Structural Dynamics” during submission.

For more information, please contact the session organizer:

Dr. Alessandro Scotti
alessandro.scotti@bluewin.ch
Pilatus Aircraft Ltd

Call for Papers

The AIAA Structural Dynamics Technical Committee is sponsoring a Special Session on:

Business Aviation Aeroelasticity and Structural Dynamics

AIAA SciTech 2023

January 23-27, 2023
Gaylord National Harbor
National Harbor, MD

The session will focus on the unique aspects and challenges associated with designing and certifying business jets. Such challenges include higher operational altitudes, faster operational speeds, and unique airport operating constraints. These aspects and many more impose unique design requirements and thus novel design solutions for the world's business jet manufacturers, especially in times where time is premium leading to higher speed requirements and sustainability is coming to the fore, requiring consideration of economy, sustainable fuels and reduced fuel consumption. This special session will focus on how considerations of aeroelasticity and structural dynamics are helping shape the future of business aviation. Topics of interest may include, but are not limited to: flutter, loads, aeroservoelasticity, flight testing, novel solutions, computational aspects. The committee welcomes submissions from industry, government, academia and small businesses.

Make sure to select the “Business Aviation Aeroelasticity and Structural Dynamics” topic option under “Structural Dynamics” during submission.

For more information, please contact the session organizer:

Mr. Paul Taylor
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Call for Papers

The AIAA Structural Dynamics Technical Committee is sponsoring a Special Session on:

International collaborations advancing materials, propulsion and combustion technologies

AIAA SciTech 2023

January 23-27, 2023
Gaylord National Harbor
National Harbor, MD

Advances in propulsion and power generation have consistently been focus areas of international interest. New and disruptive collaborative research in advanced materials, propellants and combustion provide an insight to how interdependencies operate where different physical mechanisms in combustion affect materials and how this integrates with the overall engine system performance. Collaborative research outcomes in these areas will lead to the design of optimized combustion performance that need reliable material systems to enable advanced technologies in propulsion and energy. The integrated focus on the fundamental sciences in materials, propulsion and combustion will address the key limitations to achieving energy goals that interdisciplinary research facilitates. The session will further highlight the benefit of diverse expertise, experimental and simulation facilities that international partnerships have offered in the research topics.

Make sure to select the “International collaborations advancing materials, propulsion and combustion technologies” topic option under “Structural Dynamics” during submission.

For more information, please contact the session organizer:

Dr. Seetha Raghavan
seetha.raghavan@ucf.edu
University of Central Florida

Call for Papers

The AIAA Structural Dynamics Technical Committee is sponsoring a Special Session on:

Dr. Dewey Hodges Memorial Session

AIAA SciTech 2023

January 23-27, 2023

Gaylord National Harbor

National Harbor, MD

This memorial session will celebrate Prof. Hodges's contributions to the areas of structures, structural dynamics, and aeroelasticity. We invite you to submit your extended abstract on topics related to or built on his contributions, particularly advanced beam, plate, and shell theories and fixed-wing and rotary-wing aeroelasticity. The abstract will undergo the usual review process for AIAA SciTech.

Make sure to select the “Special Session: Dr. Dewey Hodges Memorial Session” topic option under “Structural Dynamics” during submission.

For more information, please contact the session organizers:

Dr. Zahra Sotoudeh

zsotoudeh@cpp.edu

California State Polytechnic University, Pomona.

Dr. Mayuresh Patil

mp57@gatech.edu

GeorgiaTech, Atlanta

Call for Papers

The AIAA Structural Dynamics Technical Committee is sponsoring a Special Session on:

Design, Modeling & Testing of ASE Demonstrator for the FLEXOP & FLiPASED EU Project

AIAA SciTech 2023

January 23-27, 2023

Gaylord National Harbor

National Harbor, MD

The FLiPASED project aims at coupling aeroservoelastic disciplines closer in the aircraft preliminary design stage, where not only structures and aerodynamics but also controls are jointly designed in an MDO framework. In current aircraft design the full **coupling** between **aeroelasticity, gust response, flight control methods and instrumentation and certification aspects** are not exploited to the maximum extent. The additional goal of FLiPASED is to drastically improve the **performance** of the design tools and processes for future aircraft, utilizing active control possibilities of all aerodynamic surfaces, leading to gains in both recurring and non-recurring cost aspects. A common set of models, coupled with joint requirements are developed in an RCE collaborative environment what enables a multidisciplinary-optimized design for the entire aircraft, leading to more optimized overall aircraft performance.

The approach relies on observing the aeroservoelastic behaviour of the aircraft with **advanced sensors**, and keeping it under tight control by **active flutter, gust suppression and wing shape control**, since **aeroelastic tailoring** introducing lighter, longer, more flexible wings lead to higher amplitude structural dynamics responses.

The project utilizes a 7 m span demonstrator aircraft, called T-FLEX, built in the FLEXOP project and many of the theoretical developments are applied to this platform. This demonstrator has been extensively modelled and tested, including a GVT campaign and flight tests. The project partners have developed tools to model the aircraft in a parametric manner and automatically design various control laws for the changing design models. Moreover, the dynamical models are augmented with induced drag predictions to address wingshape optimization along the mission at multiple design points utilizing the movable aerodynamic control surfaces. To better understand the aero-structures-control interaction the GVT campaign included active control experiments.

Make sure to select the “Design, Modeling & Testing of ASE Demonstrator for the FLEXOP & FLiPASED EU Project” topic option under “Structural Dynamics” during submission.

For more information, please contact the session organizer:

Dr. Thiemo Kier

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Deutsches Zentrum für Luft- und Raumfahrt e.V. (DLR)

Call for Papers

The AIAA Structural Dynamics Technical Committee is sponsoring a Special Session on:

Advances in Whirl Flutter Testing and Prediction

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Whirl flutter is a dynamic aeroelastic instability caused by interactions between the aerodynamic and gyroscopic forces on a rotor or propeller and a flexible support (e.g., nacelle, wing). Future vertical lift and electric vertical takeoff-landing configurations require new research efforts in whirl flutter testing and prediction. This session will highlight recent experimental and computational efforts aimed to advance the fundamental understanding of whirl flutter instabilities and support the design of novel aerospace vehicles affected by these dangerous phenomena. The special session will provide a comprehensive overview of the state of whirl flutter research and ease collaboration among academic, government, and industry partners invested in this topic.

Make sure to select the “Advances in Whirl Flutter Testing and Prediction” topic option under “Structural Dynamics” during submission.

For more information, please contact the session organizer:

Dr. Cristina Riso
criso@gatech.edu
Georgia Tech, Atlanta