

AIAA SciTech 2023

Structures Technical Committee

AIAA SciTech 2023
January 23-27, 2023
National Harbor, MD

The Structures Technical Discipline covers any aero-structure-, aircraft- and/or spacecraft- (e.g., launch vehicles) related science and technology in design, analysis, computer modeling, optimization, manufacturing, and testing. Its topics include the latest development in both traditional structures and innovative concepts, ranging from coupons and components to vehicles and comprising metallic, composite, and/or hybrid materials. It also covers refinement, improvement and development of current approaches, and exploration in structural repair, damage, fatigue, fracture, stability, and manufacturing. Papers on advancements in durability, damage tolerance, aging, fail-safe and/or safe life are also encouraged. We welcome papers on best practices, historical lessons learned, and advances in structural applications. **Papers on other topics in structures not explicitly mentioned above are also strongly encouraged.**

AIAA Structures Technical Discipline at SciTech 2023 will include joint sessions in 3D Woven Composites, Analysis for Structures in Extreme Environments, Artificial Intelligence for Structures and Materials, Model-Based Design for Complex Structures, NASA Vision 2040, Structural Optimization, and Survivable Structures. There will also be Special Sessions in Memory of Dr. Paul Lagacé and Dr. Dewey Hodges.

We are inviting your team to submit a paper for the AIAA Structures Technical Discipline at SciTech 2023. The major deadlines are as follows:

31 Mar	Abstract Submissions Open
01 Jun	Extended Abstract (≥1000 words) Submission Deadline
31 Aug	Author Notification of Paper Acceptance/Session Chair Notices Sent
09 Sep	Manuscript Submissions Open
05 Dec	Manuscript Submission Deadline

For more information, contact the AIAA Technical Discipline Chair for SciTech 2023:

Ellen McIsaac
Lockheed Martin Corporation
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661-572-7678

Examples of session topics are listed below, however this list is not exclusive. **Other topics in structures not explicitly listed below are also welcomed.**

Traditional Session Topics:

Typical sessions over the last 5 years

- Aircraft and Spacecraft Structural Design, Analysis, Test and Manufacturing
- Buckling and Stability of Aircraft and Spacecraft Structures
- Composite Structural Analysis, Design, Testing and Manufacturing
- Design, Analysis, Test, and Certification of Additive Structures
- Fatigue and Fracture of Structures
- Impact Damage and Residual Strength
- Innovative and Multifunctional Aerospace Structures
- Structural Joints and Repairs
- Best Practices, Lessons Learned, and Advances in Structural Applications

Joint Sessions with other TCs:

- 3D Woven Composite Materials and Structures
- Artificial Intelligence and Machine Learning for Problems in Structures and Materials
- Design, Analysis, and Testing of Structures in Extreme Environments
- Model-Based Design Applied to Complex Systems and Structures
- NASA Vision 2040
- Structural Optimization and Multiscale Modeling
- Survivable Structures

Special Sessions for SciTech 2023:

- Organic Matrix Composites Process-to-Performance Evaluation, Research, and Analysis (OPPERA)

“In Memory of” Sessions:

- Special Session in Memory of Dr. Paul Lagacé
- Special Session in Memory of Dr. Dewey Hodges

Other Topics in Structures:

This list of session topics is not exclusive. Papers on other topics in structures are also strongly encouraged.

Additional information on joint special sessions is attached.

Call for Papers

The AIAA Structures Technical Committee and the Materials Technical Committees are sponsoring a joint Special Session on

3D Woven Composites Materials and Structures

AIAA SciTech 2023
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The AIAA (American Institute of Aeronautics and Astronautics) Structures and the Materials Technical Committees solicits papers with recent research, technological advancements, and systems-level perspectives on **3D Woven Composites Materials and Structures** within the AIAA SciTech conference. It is the intention to examine advances relevant to aerospace materials and structures including:

- Design, analysis, and test of 3D woven materials and structures for aircraft and launch vehicle applications
- New analysis methods for 3D woven material and structural design and evaluation
- Imaging and microstructural evaluation of 3D woven materials and structures
- Novel observations of material and structural response characteristics resulting from mechanical and/or thermal loading
- Analysis method developments for process modeling, including weaving, compaction, infusion, and/or cure of 3D woven preforms
- Qualification/certification approaches and challenges for 3D woven materials and structures

The committee welcomes submissions from government, industry, academia, and small businesses.

Extended abstracts of no less than 1,000 words will be due on or about **June 1, 2022**
Author notification of paper acceptance on or about **August 31, 2022**
Final manuscript due **December 5, 2022**

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

Make sure to select the “3D Woven Composites Materials and Structures” topic option under “Structures” or “Materials” technical discipline when prompted during submission.

For more information, contact one of the following organizers:

Dr. Brett Bednarczyk
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Prof. Prasad Potluri
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Prof. Marianna Maiaru
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Call for Papers

The AIAA Structures Technical Committee and the Materials Technical Committee are sponsoring a Joint Special Session on

Artificial Intelligence and Machine Learning for Problems in Structures and Materials

AIAA SciTech 2023

January 23-27, 2023

National Harbor, MD

The AIAA (American Institute of Aeronautics and Astronautics) Structures and Materials Technical Committees solicit papers with recent research, technological advancements, and systems-level perspectives in **Artificial Intelligence and Machine Learning for Problems in Structures and Materials** within the AIAA SciTech conference. Artificial Intelligence and machine learning (deep learning included) technologies offer the potential to revolutionize and streamline current processes to develop and qualify materials and improve our design process for aerospace structures. These sessions will examine applications of various artificial intelligence and machine learning technologies to develop new material further and structural applications and their application to design and qualification/certification. Applications to all aero-structures, aircraft and spacecraft (such as launch vehicles), are welcome.

The committee welcomes submissions from government, industry, academic, and small businesses.

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Author notification of paper acceptance on or about **August 31, 2022**

Final manuscript due **December 5, 2022**

Detailed deadline information, abstract preparation instructions, and policies can be found at:

<https://www.aiaa.org/SciTech/presentations-papers/call-for-papers>

Make sure to select the “Artificial Intelligence and Machine Learning for Problems in Structures and Materials” topic option under “Structures” or “Materials” when prompted technical discipline when prompted during submission.

For more information, contact one of the following organizers:

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Dr. Steven Wanthal
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Call for Papers

The AIAA Structures Technical Committee and the Materials Technical Committee are sponsoring a Joint Special Session on

Design, Analysis, and Testing of Structures in Extreme Environments

AIAA SciTech 2023

January 23-27, 2023

National Harbor, MD

The AIAA (American Institute of Aeronautics and Astronautics) Structures Technical Committee and the Materials Technical Committee are soliciting papers with recent research, technological advancements, and systems-level perspectives on **Design, Analysis, and Testing of Structures in Extreme Environments** within the AIAA SciTech conference. It is the intention to examine advances including:

- Special considerations for materials, design, analysis, and testing of structures in extreme environments (e.g. hypersonic; entry descent, and landing; aircraft and rocket engine; space/planetary exploration; and cryogenic applications)
- Design, analysis, and test methods for materials in extreme environments (e.g. additive structures, lattice structures, high temperature composites)
- Design and Analysis methods for combined and/or coupled loads, including modeling, design optimization, and multi-disciplinary analysis (fluid, thermal, and structural interactions; optics; deployable structures)

The committee welcomes submissions from government, industry, academic, and small businesses.

Extended abstracts of no less than 1,000 words are due **June 1, 2022**

Author notification of paper acceptance on or about **August 31, 2022**

Final manuscript due **December 5, 2022**

Detailed deadline information, abstract preparation instructions, and policies can be found at:

<https://www.aiaa.org/SciTech/presentations-papers/call-for-papers>

Make sure to select the “Design, Analysis, and Testing of Structures in Extreme Environments” topic option under “Materials” or “Structures” when prompted during submission.

For more information, contact one of the following organizers:

Marlana Goldsmith
Ellen McIsaac
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Call for Papers

The AIAA Materials, Structures, and Multidisciplinary Design Optimization (MDO) Technical Committees are sponsoring a Joint Special Session on

NASA Vision 2040

AIAA SciTech 2023
January 23-27, 2023
National Harbor, MD

The AIAA (American Institute of Aeronautics and Astronautics) Materials, Structures and MDO Technical Committees are soliciting papers with recent research, technological advancements, and systems-level perspectives that address the various gaps and actions identified in the 2040 Vision study within the AIAA SciTech conference. NASA's Vision 2040: A roadmap for Integrated, Multiscale Materials and System Modeling and Simulation, described in NASA CR 2018-219771, defines the potential 25-year future state required for integrated multiscale modeling of materials and systems (e.g., load-bearing structures) to accelerate the pace and reduce the expense of innovation in future aerospace and aeronautical systems. This roadmap is a *community consensus* document and is a result of over 450 professionals' input. Specifically, papers discussing activities within 5 of the 9 key element areas will be considered: 1) Models and Methodologies, 2) Multiscale Measurement, & Characterization Tools and Methods, 3) Optimization & Optimization Methodologies, 6) Data, Informatics, and Visualization, and 8) Education & Training. The goal is to provide a forum for discussion of academia, industrial, and government activities that are ongoing with respect to building the 2040 cyber-physical-social ecosystem that enable successful implementation of ICME best practices and culture.

The committee welcomes submissions from government, industry, academic, and small businesses.

Extended abstracts of no less than 1,000 words are due **June 1, 2022**
Author notification of paper acceptance on or about **August 31, 2022**
Final manuscript due **December 5, 2022**

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

Make sure to select the “NASA Vision 2040” topic option under “Materials” or “Structures” or “MDO” when prompted during submission.

For more information, contact one of the following organizers:

Steven M. Arnold (Materials TC)
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Brett Bednarczyk (Structures TC)
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Call for Papers

The AIAA Structures Technical Committee and the Survivability Technical Committee are sponsoring a Joint Special Session on

Survivable Structures

AIAA SciTech 2023
January 23-27, 2023
National Harbor, MD

The AIAA (American Institute of Aeronautics and Astronautics) Structures Technical Committee and the Survivability Technical Committee are soliciting papers with recent research, technological advancements, and systems-level perspectives on **Survivable Structures** within the AIAA SciTech conference. Survivability improvements for air and space systems increasingly rely on the development of new structural designs, which must be lightweight but also satisfy a demanding set of mechanical, thermal, electromagnetic, or other requirements. Topics of interest include but are not limited to design, analysis, modeling, optimization, and/or testing of:

- Novel structural designs for impact mitigation and stress wave management
- Crashworthy structures
- Multifunctional structures for survivability
- Designs that incorporate structural health monitoring or self-healing
- Additively manufactured structural components with properties optimized for specific applications
- Improved ballistic protection systems for rotary-wing aircraft
- Improved thermal protection systems for spacecraft
- Low observability structures

The committee welcomes submissions from government, industry, academic, and small businesses.

Extended abstracts of no less than 1,000 words are due **June 1, 2022**
Author notification of paper acceptance on or about **August 31, 2022**
Final manuscript due **December 5, 2022**

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

Make sure to select the “Survivable Structures” topic option under “Structures” or Survivability” when prompted during submission.

For more information, contact one of the following organizers:

Joshuah Hess
Carrell McAllister
Ellen McIsaac

Survivability
Survivability
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Call for Papers

The AIAA Structural Dynamics Technical Committee and the Structures Technical Committee are sponsoring a Joint Special Session

In Memory of Professor Dewey Hodges

AIAA SciTech 2023
January 23-27, 2023
National Harbor, MD

The AIAA (American Institute of Aeronautics and Astronautics) Structural Dynamics Technical Committee and the Structures Technical Committee are soliciting papers in memory of Professor Dewey Hodges. 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.

Extended abstracts of no less than 1,000 words are due **June 1, 2022**
Author notification of paper acceptance on or about **August 31, 2022**
Final manuscript due **December 5, 2022**

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

Make sure to select the “Special Session in Memory of Dr. Dewey Hodges” topic option under “Structural Dynamics” or “Structures” when prompted during submission.

For more information, contact one of the following organizers:

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