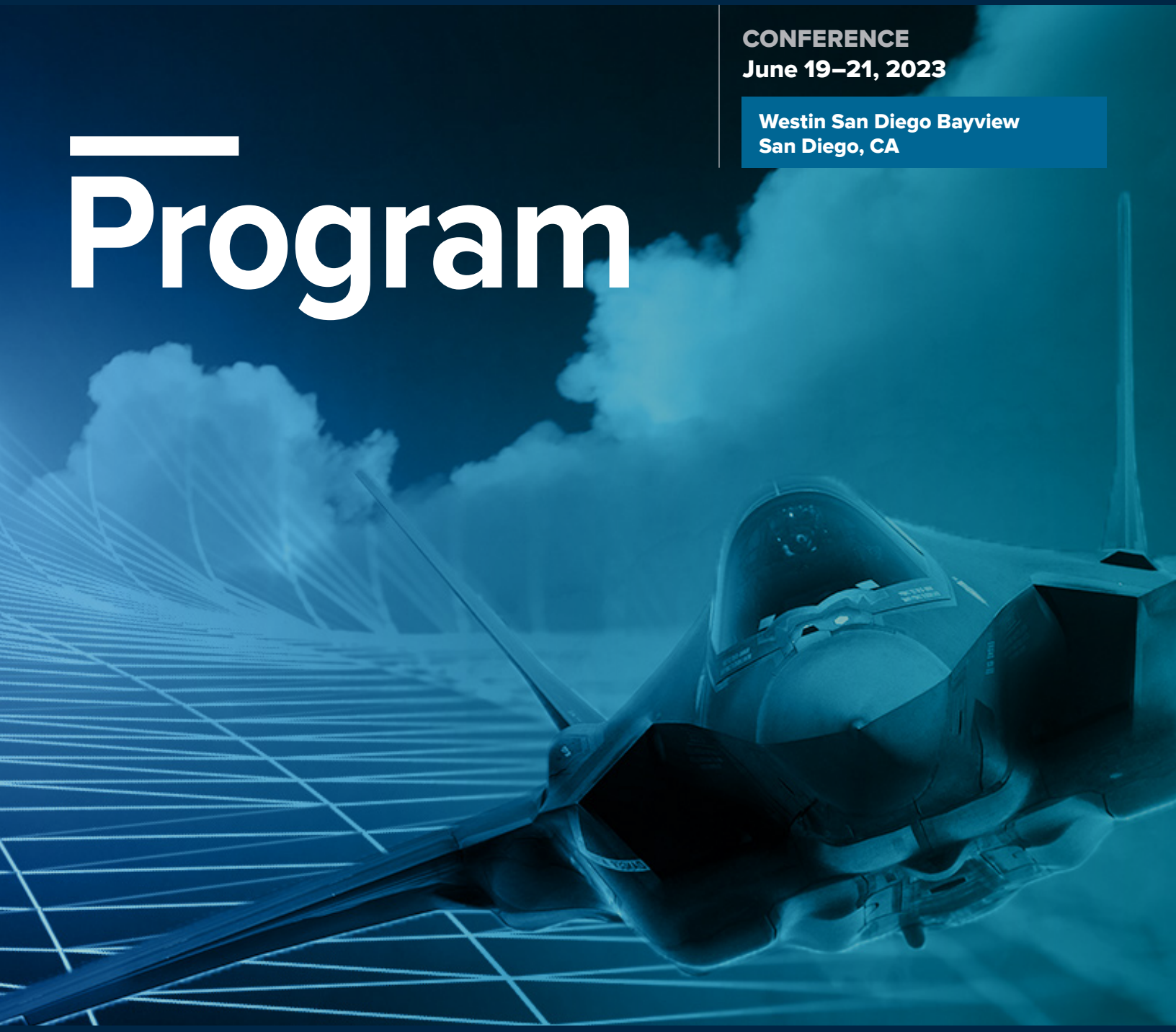
SSDM 2023

Aerospace Structures, Structural Dynamics, and Materials Conference

CONFERENCE
June 19–21, 2023

Westin San Diego Bayview
San Diego, CA

Program



https://event.asme.org/SSDM

ASME
SETTING THE STANDARD

Dear Esteemed Attendees,

It gives us great pleasure to welcome you to the inaugural Aerospace Structures, Structural Dynamics, and Materials (SSDM) Conference in San Diego, CA, USA! We are thrilled to have you join us for this exciting three-day event.

The mission of SSDM is to convene and serve the global aerospace structures, structural dynamics, and materials communities by providing a unique venue for researchers, engineers, and practitioners from around the world to share their latest findings and insights on the latest advances in the fields of aerospace structures, structural dynamics, and materials. The conference program has been thoughtfully designed to provide you with the latest information and insights while also allowing ample opportunities for networking and collaboration. In addition to continuing the legacy left behind by the AIAA/ASME/ASC/AHS/ASCE SDM conference almost a decade ago, SSDM seeks to rally all the talents the world has to meet current and future challenges of aerospace structures, structural dynamics, and materials.

During the conference, you will have the opportunity to attend four plenary lectures and parallel technical sessions, covering a broad range of topics such as advanced manufacturing of aerospace structures and materials, applications of AI/ML in aerospace structures and materials, hypersonic vehicles, eVTOLs, and many others. The conference will also feature an awards luncheon where we will recognize accomplished colleagues in our community and inspire the younger generations.

We are grateful for the visionary leadership from the ASME Aerospace Division, which gave birth to SSDM. We also want to sincerely thank the dedicated support from ASME staff, without whom it would be impossible to present this wonderful conference to you. Lastly, we deeply appreciate our plenary speakers, topic organizers, session chairs, authors, and sponsors. Without their combined efforts, this SSDM conference would not be possible.

We are confident that you will find the ASME SSDM Conference to be a valuable and enriching experience. We encourage you to take advantage of the many opportunities for learning, networking, and collaboration that the conference has to offer. Afterward, we will invite your feedback to help us prepare for SSDM 2024.

Thank you for your participation and contributions to the success of this conference.

Organizing Committee

Wenbin Yu, Erasmo Carrera, Erkan Oterkus, Xin-Lin Gao, Weihua Su, Zahra Sotoudeh, Evan Pineda, Yongming Liu

Organizing Committee Members

SSDM 2023 ORGANIZING COMMITTEE

Conference Chair
Wenbin Yu
Purdue University

Conference Vice Chair
Erasmo Carrera
Politecnico di Torino

Track Chair: Structures
Erkan Oterkus
University of Strathclyde, Glasgow

Vice Track Chair: Structures
Dr. Xin-Lin Gao
Southern Methodist University

Track Chair: Structural Dynamics
Weihua Su
University of Alabama

Vice Track Chair: Structural Dynamics
Zahra Sotoudeh
Cal Poly Pomona

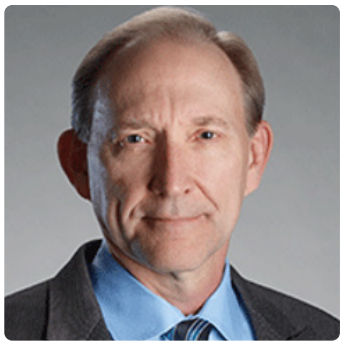
Track Chair: Materials
Evan Pineda
NASA Glenn Research Center

Vice Track Chair: Materials
Yongming Liu
Arizona State University
NASA Glenn Research Center

SSDM 2023 ADVISORY COMMITTEE

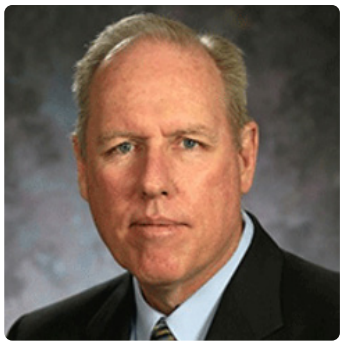
Carlos E. S. Cesnik

Clarence L. (Kelly) Johnson Professor of Aerospace Engineering
University of Michigan, Ann Arbor



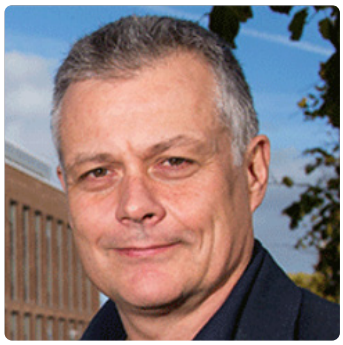
Stephen Engelstad

Senior Fellow, Lockheed Martin Aeronautics Company (Retired)
Senior Engineer, AS&M, Inc.



Ben H. Thacker, PhD, PE, FAIAA

Vice President Mechanical Engineering Southwest Research Institute



Paul Weaver

Bernal Chair Composite Materials and Structures,
Bernal Institute,
University of Limerick
and
Professor in Lightweight Structures,
Bristol Composites Institute
University of Bristol

Sponsors

PLATINUM SPONSORS

REGISTRATION INFORMATION

Ballroom Foyer, Level 2

- Sunday, June 18, 2:00PM–5:00PM
- Monday, June 19, 7:00AM–5:00PM
- Tuesday, June 20, 7:00AM–5:00PM
- Wednesday, June 21, 7:00AM–1:30PM

SPONSOR EXHIBIT HOURS

Visit our sponsors during the conference in the Ballroom Foyer, Level 2, during registration hours. Sponsors may also be presenting at the Sponsor Spotlight Presentations – be sure to check them out!

BADGE REQUIRED FOR ADMISSION

All conference attendees must have an official ASME SSDM 2023 badge at all times in order to gain admission to technical sessions, plenaries, and other conference events. Without a badge, you will not be granted admission to conference activities.

PRESENTER ATTENDANCE POLICY

According to ASME's Presenter Attendance Policy, if a paper is not presented at the conference, the paper will not be published in the official Archival Proceedings, which are registered with the Library of Congress and are abstracted and indexed. The paper also will not be published in the ASME Digital Collection and may not be cited as a published paper.

SESSION ROOM EQUIPMENT

Each session room is equipped with a screen, LCD projector, and laptop. Speakers should have a copy of their presentation loaded onto a memory stick. It is recommended that authors/speakers bring all visual aids with them.

ASME EVENTS APP

SSDM will utilize a mobile event app in place of a printed program to enhance the conference experience for attendees, speakers, exhibitors, and sponsors.

- Connect with Attendees
- View Speaker Profiles
- Search and Access Session Information
- Download Final Papers
- And More!
- All features may not be available at all events.

Keep an eye on your email for more information on how to access and navigate the ASME Events App!

General Conference Information

CONFERENCE MEALS

Breakfast will be served daily in the Crystal Ballroom between **7:00AM and 7:45AM**.

The Awards Luncheon will be on Tuesday, June 20, from **12:00PM to 1:30PM** in the Crystal Ballroom. Come and celebrate a select group for their contributions and achievements in aerospace engineering.

OPENING RECEPTION

Monday, June 19
6:00PM–7:00PM
Topaz/Broadway Terrace

All Conference registrants are invited to join their colleagues for light refreshments during the Monday evening event. Remember to bring your badge containing your ticket for a beverage on us!

In a casual atmosphere, greet friends, and meet the thinkers from around the world who are shaping the future of Aerospace Structures, Dynamics, and Materials.

BEVERAGE BREAKS

Morning and afternoon breaks will be provided in the Ballroom Foyer, Level 2. Come and meet our sponsors and join your fellow attendees for a few minutes of networking and discussion. The schedule is as follows:

Monday–Tuesday
9:00AM–9:30AM and 3:30PM–3:45PM

Wednesday
9:00AM–9:30AM

PHOTOGRAPHS/VIDEO/AUDIO RECORDINGS

Unless otherwise agreed to in a separate document, participants are reminded that material presented at ASME conferences is under copyright of ASME. As a result, ANY recording of the presentations is prohibited.

BEVERAGE BREAKS

You agree to release and hold harmless ASME from any and all claims, demands, and causes of action arising out of or relating to your participation in this event.

LIMITATION OF LIABILITY

You agree to release and hold harmless ASME from any and all claims, demands, and causes of action arising out of or relating to your participation in this event.

CONFERENCE PROCEEDINGS

Each attendee will receive an email with a unique code to access digital copies of all the papers accepted for presentation at the conference. The official conference archival proceedings will be published after the conference and will not include accepted papers that were not presented at the conference. The official conference proceedings are registered with the Library of Congress and are submitted for abstracting and indexing. The proceedings are published on the ASME Digital Library. You will be provided with an individual link to the online papers via email. In the event you do not receive the email, send a request to conferencepubs@asme.org.

Track Topics and Topic Organizers

STRUCTURES TOPICS	STRUCTURES TOPIC ORGANIZERS
General Topics of Aerospace Structures	Erkan Oterkus and Xin-Lin Gao
Adaptive and Multifunctional Structures	Xin-Lin Gao, Xing Ning, and Yeqing Wang
Advanced Manufacturing for Aerospace Structures	Yingtao Liu, Dong Lin, and Mehran Tehrani
Advances in Aerospace Structures	Luciano Demasi, Gaetano Giunta, and Wei Zhao
Applications of Artificial Intelligence/Machine Learning for Aerospace Structures	Yongming Liu, Xin Liu, and Fei Tao
Impact, Fatigue, Damage and Fracture of Composite Structures	Mehmet Dorduncu, Masaaki Nishikawa, and Weiyi Lu
Nonlinear Problems in Aerospace Structures	Erasmo Carrera and Alfonso Pagani
Nondestructive Evaluation and Structural Health Monitoring	Erkan Oterkus and Kaan Ozenc
Peridynamics and Its Applications	Erdogan Madenci, Selda Oterkus, and Ibrahim Guven
Structures in Extreme Environments	Zafer Kazanci and Phillip Deierling
Wind Energy	Erkan Oterkus, Pablo Jaen Sola, and Xiaowei Deng

Track Topics and Topic Organizers

STRUCTURAL DYNAMICS TOPICS	STRUCTURAL DYNAMICS TOPIC ORGANIZERS
General Topics of Structural Dynamics of Aerospace Structures	Weihua Su and Zahra Sotoudeh
Aero-, Servo-, Thermo-Elasticity of Hypersonic Aircraft and Missiles	Daning Huang and Weihua Su
Aero-, Servo-, Thermo-Elastic Optimization of Aerial Vehicles	Daning Huang
Aero-, Servo-, Thermo-Elasticity of Fixed-Wing Vehicles of All Scales	Wei Zhao and Marco Petrolo
Aeroelasticity and Aeromechanics of Rotorcraft, Vertical Lift Aircraft, and eVTOL	Jinwei Shen
Structural Dynamics of Launch Vehicle and Spacecraft	Yi Wang
Structural Dynamics and Control of Morphing Wing and Smart Structures	Weiqiu Chen, Chunli Zhang, and Hua Li
Nonlinear Dynamics, Flexible Multibody Dynamics	Jinwei Shen
Dynamic Loads, Response, Vibration and Alleviation of Aerospace Structures	Marco Petrolo
Computer Methods and Reduced Order Modeling	Yi Wang
Experimental Studies in Structural Dynamics	Weihua Su
Machine Learning in Structural Dynamics and Aeroelasticity	Zahra Sotoudeh
Model Uncertainties and Uncertainty Quantification in Structures and Structural Dynamics	Weihua Su

Track Topics and Topic Organizers

MATERIALS TOPICS	MATERIALS TOPIC ORGANIZERS
General Topics of Aerospace Materials	Evan Pineda and Yongming Liu
Advanced Manufacturing	Kun Fu, Paul Davidson, Marco Petrolo, Merhan Tehrani, Xiangfan Chen, and Mairianna Maiaru
Damage, Fatigue, and Fracture	Yongming Liu, Jaan Simon, Kumar Jois, Evan Pineda, and Ibrahim Guven
Emerging Materials Technology	Ibrahim Kaleel, Pavana Prabhakar, Kailong Jin, Shanmugam Kumar, Satchi Venkataraman, Paulina Montiel, and Xiangjia Li
Integrated Computational Materials Engineering	Mairianna Maiaru
Materials Development Using Artificial Intelligence	Marco Petrolo, Navid Zobeiry, Yongming Liu, and Joshua Stuckner
Materials for Extreme Environment	Marianna Maiaru, Pavana Prabhakar, Satchi Venkataraman, Paulina Montiel, and Evan Pineda
Micromechanics and Multiscale Modeling	Brett Bednarcyk, Jaan Simon, Marianna Maiaru, Satchi Venkataraman, and Paulina Montiel
Multifunctional Materials	Paria Naghipour, Samit Roy, Satchi Venkataraman, Shanmugam Kumar, Sui Yang, and Paulina Montiel
Nanomaterials	Samit Roy, Evan Pineda, and Marianna Maiaru
Rate Dependent Materials	Ibrahim Kaleel, Robert Goldberg, and Steven Arnold
Testing and Characterization	Marco Petrolo, Navid Zobeiry, James Ratcliffe, Satchi Venkataraman, and Paulina Montiel
Model Uncertainties and Uncertainty Quantification in Structures and Structural Dynamics	Weihua Su

Schedule at a Glance

PACIFIC TIME	SUNDAY – JUNE 18, 2023
2:00PM–5:00PM	REGISTRATION

PACIFIC TIME	MONDAY – JUNE 19, 2023
7:00AM–5:00PM	REGISTRATION
7:00AM–7:45AM	BREAKFAST (PROVIDED)
8:00AM–9:00AM	WELCOME REMARKS BY TOM COSTABILE, EXECUTIVE DIRECTOR/CEO ASME & WENBIN YU, CONFERENCE CHAIR, SSDM PLENARY - SUSAN PAISH - VICE PRESIDENT OF MECHANICAL STRUCTURAL ENGINEERING FOR BOEING DEFENSE , SPACE & SECURITY
9:00AM–9:30AM	BEVERAGE BREAK
9:30AM–12:00PM	TECHNICAL SESSIONS
12:00PM–1:30PM	LUNCH BREAK (ON OWN)
12:30PM–1:15PM	SPONSOR SPOTLIGHT PRESENTATIONS
1:30PM–3:30PM	TECHNICAL SESSIONS
3:00PM–3:45PM	BREAK
3:45PM–5:45PM	TECHNICAL SESSIONS
6:00PM–7:00PM	EVENING RECEPTION
7:00PM–8:00PM	TRACK MEETINGS (WELCOME ALL CURRENT AND POTENTIAL TOPIC ORGANIZERS)

PACIFIC TIME	TUESDAY – JUNE 20, 2023
7:00AM–5:00PM	REGISTRATION
7:00AM–7:45AM	BREAKFAST (PROVIDED)
8:00AM–9:00AM	PLENARY TALK - MAURÍLIO ALBANESE NOVAES JÚNIOR, CHIEF TECHNOLOGY OFFICER, EMBRAER
9:00AM–9:30AM	BEVERAGE BREAK
9:30 AM - 12:00PM	TECHNICAL SESSIONS
12:00PM–1:30PM	AWARDS LUNCHEON & PLENARY - DR. WAYNE JOHNSON, NASA AMES RESEARCH CENTER
1:45PM–3:45PM	TECHNICAL SESSIONS
3:45PM–4:00PM	BEVERAGE BREAK
4:00PM–6:00PM	TECHNICAL SESSIONS
7:00PM–9:00PM	AEROSPACE STRUCTURES & MATERIALS COMMITTEE MEETING (OPEN MEETING)

PACIFIC TIME	WEDNESDAY – JUNE 21, 2023
7:00AM–1:30PM	REGISTRATION
7:00AM–7:45AM	BREAKFAST (PROVIDED)
8:00AM–9:00AM	PLENARY - SERGIO PELLEGRINO SR. RESEARCH SCIENTIST, JET PROPULSION LABORATORY, CO-DIRECTOR, SPACE-BASED SOLAR POWER PROJECT, CALIFORNIA INSTITUTE OF TECHNOLOGY
9:00AM–9:30AM	BEVERAGE BREAK
9:30AM–12:00PM	TECHNICAL SESSIONS
12:00PM–1:30PM	SSDM ORGANIZING COMMITTEE MEETING (CLOSED)
12:00PM–1:30PM	LUNCH BREAK (ON OWN)
1:30PM–3:30PM	TECHNICAL SESSIONS

SSDM 2023 PLENARY SESSIONS

WELCOME REMARKS

Monday, June 19, 2023
8:00 AM

Thomas Costabile, P.E.
Executive Director/CEO, ASME

Wenbin Yu
SSDM 2023 Conference Chair

PLENARY SESSION

Monday, June 19, 2023
8:00AM–9:00AM
Presentation Title: Digitally Engineered Aerospace Structures @ Boeing

Susan Paish
Vice President of Mechanical Structural Engineering for
Boeing Defense, Space & Security

Susan (Sue) Paish is vice president of Mechanical Structural Engineering for Boeing Defense, Space & Security (BDS), where she is responsible for driving engineering excellence in BDS products and ensuring the technical integrity and success of BDS development and production programs. Her focus is on proactive risk identification and mitigation and rapid resolution of the top BDS mechanical structural technical risk/issues/opportunities and key technical decisions through personal engagement and leveraging the extensive knowledge base of Boeing's technical fellows and subject matter experts. Paish also serves as the BDS mechanical structural engineering capability leader, with leadership responsibility for about 3,000 mechanical structural engineers across BDS. Previously, Paish was director of Structures Engineering for BDS, where she was responsible for strengthening mechanical and structural engineering capabilities, implementing new strategies, and overseeing engineering functional excellence across all BDS programs. She also led the BDS Engineering Design Centers in Missouri, Pennsylvania, Washington, and the southern United States (Alabama, Florida, and Texas).

Paish also served as chief engineer for Boeing Global Services (BGS), where she led the engineering team through the business unit stand-up and was responsible for the technical excellence of the engineer and technologist workforce, as well as the technical integrity and safety of BGS products and services. She also oversaw compliance with the regulatory standards and acted as the primary technical interface with the Federal Aviation Administration.

Paish is a co-sponsor for Boeing's National Society of Black Engineers, focal for Boeing's American Society of Mechanical Engineers, and member of the Society of Women Engineers. Paish also serves as a board member for Ocean Institute in Dana Point, California. Paish holds a Bachelor of Science degree in Mechanical Engineering from the University of Manitoba.

Plenary Sessions

PLENARY SESSION

Tuesday, June 20, 2023
8:00AM–9:00AM
Presentation Title: Trends, Challenges and Opportunities in the Aeronautical Sector

Maurílio Albanese Novaes Júnior
Chief Technology Officer
Embraer

Senior executive with 18+ years of experience with solid international career, Maurílio is currently the Chief Technology Officer at Embraer. He started as Product Strategist in the Market Intelligence and Strategic Planning Team. He later held the position of Sales Support and Market Analysis Manager for Executive Aviation, based in Singapore. Later, as Conceptual Design Manager, he led several conceptual design projects (technical studies and business cases) for Commercial, Executive, Agricultural, and Defense Business Units. Maurílio holds a master degree in Aeronautical Engineering from Instituto Tecnológico de Aeronáutica & Executive Leadership Development Program from Fundação Dom Cabral in Brazil. Maurílio lives in Brazil, with his wife and daughter

THE SPIRIT OF ST. LOUIS MEDAL AWARD PLENARY SESSION

Tuesday, June 20, 2023
12:00PM–1:30PM
Presentation Title: Observations from Design of VTOL Advanced Air Mobility Aircraft

Maurílio Albanese Novaes Júnior
Chief Technology Officer
Embraer

Senior executive with 18+ years of experience with solid international career, Maurílio is currently the Chief Technology Officer at Embraer. He started as Product Strategist in the Market Intelligence and Strategic Planning Team. He later held the position of Sales Support and Market Analysis Manager for Executive Aviation, based in Singapore. Later, as Conceptual Design Manager, he led several conceptual design projects (technical studies and business cases) for Commercial, Executive, Agricultural, and Defense Business Units. Maurílio holds a master degree in Aeronautical Engineering from Instituto Tecnológico de Aeronáutica & Executive Leadership Development Program from Fundação Dom Cabral in Brazil. Maurílio lives in Brazil, with his wife and daughter branch of Ames Research Center. He was with NASA from 1981 to 1986, including a couple years as Assistant Branch Chief. In 1986, Dr. Johnson founded Johnson Aeronautics, and from 1986 to 1998 developed rotorcraft software. Since 1998 he has worked at the Aeromechanics Branch of NASA Ames Research Center. Dr. Johnson is author of the comprehensive analysis CAMRADII and the rotorcraft design code NDARC; and the books “Helicopter Theory” (1980) and “Rotorcraft Aeromechanics” (2013). Current activities are focused on design and analysis of vertical flight vehicles for Advanced Air Mobility and helicopters for Mars. He is a Fellow of AIAA and AHS, and an Ames Fellow, and has received the U.S. Army Commander’s Award for Civilian Service, NASA Medals for Exceptional Engineering Achievement and Exceptional Technology Achievement, the AHS Grover E. Bell Award, the NASA Ames H. Julian Allen Award, the AIAA Pendray Aerospace Literature Award, the 2010 AHS Alexander Nikolsky Honorary Lectureship, the 2014 Alexander Klemin Award of the American Helicopter Society, the 2023 Daniel Guggenheim Medal, and the 2023 ASME Spirit of St. Louis Medal.

PLENARY SESSION

Wednesday, June 21, 2023
8:00AM–9:00AM
Presentation Title: Deployable Structures for the Caltech Space Solar Power Project

Sergio Pellegrino
Joyce and Kent Kresa Professor of Aerospace and Civil Engineering
Jet Propulsion Laboratory Senior Research Scientist
Co-Director, Space-Based Solar Power Project
California Institute of Technology

Sergio Pellegrino is the Joyce and Kent Kresa Professor of Aerospace and Civil Engineering at the California Institute of Technology, JPL Senior Research Scientist and Co-Director of the Space Solar Power Project. He is a Fellow of the Royal Academy of Engineering, a Fellow of AIAA and a Chartered Structural Engineer. He has been President of the International Association for Shell and Spatial Structures (IASS) and is currently the Past President. He has been the founding chair of the AIAA Spacecraft Structures Technical Committee. He received a Pioneers' Award in 2002 from the Space Structures Research Center, University of Surrey, NASA Robert H. Goddard Exceptional Achievement Team Awards in 2009 and 2016, and the IASS Tsuboi Medal in 2022.

Awards

SSDM 2023 AWARDS

Several prestigious internationally recognized awards are given at the Annual SSDM Conference. These awards are very well recognized amongst the Aerospace SDM community.

THE SPIRIT OF ST. LOUIS MEDAL

The Spirit of St. Louis Medal is awarded for meritorious service in the advancement of aeronautics and astronautics. The medal was established in 1929 by Philip D. Ball, ASME Members, and Citizens of St. Louis, Missouri.

Recipient: Dr. Wayne Johnson
The 2023 Spirit of St. Louis Medal will be awarded to Dr. Wayne Johnson for his landmark advancements and contributions to vertical flight aeronautics, helicopter theory, and rotorcraft aeromechanics, and for developing computational codes that enabled the design of the first tiltrotor aircraft, eVTOL aircraft, and the Mars Helicopter Ingenuity.

ASME/BOEING STRUCTURES AND MATERIALS AWARD

Outstanding paper presented on the basis of originality and significance to the field.

Recipients: Wade C. Jackson, Andrew C. Bergan, Nathaniel W. Gardner, and Cheryl A. Rose from NASA Langley; Kenneth N. Segal from NASA Goddard; and Nalinda W. Waas from Wichita State University.

The 2023 ASME/Boeing Structures and Materials Award will be presented to AIAA Paper 2022-1007 entitled, “Experimental Observations of Damage States in Unnotched and Notched 3D Orthogonal Woven Coupons Loaded in Tension.”

DEDICATED SERVICE AWARD

In 1983, the ASME Board of Governors approved the establishment of the ASME Dedicated Service Award (DSA). It honors unusual dedicated voluntary service to the Society marked by outstanding performance, demonstrated effective leadership, prolonged and committed service, devotion, enthusiasm and faithfulness.

Recipient: Dr. Olesya Zhupanska
The 2023 ASME Dedicated Service Award will be presented to Dr. Olesya Zhupanska for her exceptional leadership and long-standing service to ASME for more than 15 years. She has made profound contributions to the ASME Congress Steering Committee, ASME Aerospace Division, and Aerospace Division Structures and Materials Committee.

***content current as of May 5, 2023. Please refer to the ASME Events App for updated information.**

MONDAY, 6/19/2023

01-02-01
ADAPTIVE AND MULTIFUNCTIONAL STRUCTURES
6/19/2023 **9:30AM TO 12:00PM - CRYSTAL II**

Chair: **Xin-Lin Gao - Southern Methodist University**
Chair: **Ke Li - Schlumberger**
Chair: **Ajit Roy - Air Force Research Laboratory**

9:30AM–10:00AM

Atomic Scale Multifunctional Materials Design

Technical Presentation Only: SSDM2023-110724

Ajit Roy - Air Force Research Laboratory
Jonghoon Lee - Air Force Research Laboratory
Sangwook Sihn - University of Dayton Research Institute,
Sergei Shenogin - University of Dayton Research Institute
Sabyasachi Ganguli - Air Force Research Laboratory

10:00AM–10:30AM

Recent Developments of Advanced Piezoelectric Energy Harvesters and Future Challenges

Technical Presentation Only: SSDM2023-110949

Tian Bing Xu - Old Dominion University

10:30AM–11:00AM

Metamaterial-Inspired Cylindrical Shells

Technical Presentation Only: SSDM2023-110574

Mitansh Doshi - The Pennsylvania State University
Xin Ning - The Pennsylvania State University

11:00AM–11:30AM

New Circular Cylindrical Kirchhoff-Love Shell Model Including Microstructure and Flexoelectric Effects

Technical Presentation Only: SSDM2023-106696

Gongye Zhang - Southeast University
Xin-Lin Gao - Southern Methodist University

11:30AM–12:00PM

Large-Scale Space Structure With Near-Zero Thermal Expansion Metamaterials

Technical Presentation Only: SSDM2023-105882

Bin Yu - University of Chinese Academy of Sciences
Zhao Xu - University of Chinese Academy of Sciences
Ruinan Mu - University of Chinese Academy of Sciences
Haifeng Zhao - University of Chinese Academy of Sciences

01-07-01
NONLINEAR PROBLEMS IN AEROSPACE STRUCTURES
6/19/2023 **9:30AM TO 12:00PM - OPAL**

Chair: **Xin-Lin Gao - Southern Methodist University**
Chair: **Ke Li - Schlumberger**
Chair: **Ajit Roy - Air Force Research Laboratory**

9:30AM–10:00AM

Practical Ductile Fracture Criterion Model for Metallic Aerospace Structure Static Strength Evaluations

Technical Paper Publication: SSDM2023-105345

Tsutomu Yoshida - Kawasaki Heavy Industruies, Ltd.
Takuya Ishida - Kawasaki Heavy Industries, Ltd.

10:00AM–10:30AM

Post-Buckling Analysis of Stringer-Reinforced Composite Wing Panel by Classical and CUF-Based Finite Elements and Effect of Material and Geometrical Uncertainties

Technical Paper Publication: SSDM2023-106606

Pedro H. Cabral - Embraer S.A.
Alex P. Do Prado - Embraer S.A.
Alfonso Pagani - Politecnico di Torino
Riccardo Augello - Politecnico di Torino
Erasmo Carrera - Politecnico di Torino

10:30AM–11:00AM

Nonlinear Analysis of Failure Onset and Free-Edge Stress State of Ultra-Thin Composite Booms

Technical Paper Publication: SSDM2023-107244

Riccardo Augello - Politecnico di Torino
Alfonso Pagani - Politecnico di Torino
Erasmo Carrera - Politecnico di Torino

11:00AM–11:30AM

Effect of Curvature on Dynamic Response of Dyneema Composite Panel Under Extreme Loading: A Numerical Study

Technical Paper Publication: SSDM2023-105939

Vivek Kumar - Indian Institute of Technology Delhi
Rohit Sankrityayan - Indian Institute of Technology Delhi
Anoop Chawla - Indian Institute of Technology Delhi
Devendra Kr. Dubey - Indian Institute of Technology Delhi

11:30AM–12:00PM

High-Temperature Material Models for the Lightning Strike Damage Predictions in Polymer Matrix Composites

Technical Presentation Only: SSDM2023-114925

Olesya Zhupanska - University of Arizona

Technical Sessions

03-06-01
MATERIALS DEVELOPMENT USING ARTIFICIAL INTELLIGENCE I
6/19/2023 **9:30AM TO 12:00PM - CORAL**

Chair: Evan Pineda - National Aeronautics and Space Administration
Chair: Joshua Stuckner - NASA Glenn Research Center
Chair: Ivan Gallegos - Michigan Technological University

9:30AM–10:00AM

A Theory-Guided Probabilistic Machine Learning Method to Minimize Process-Induced Deformations in Composite Structures

Technical Paper Publication: SSDM2023-106753

Caleb Schoenholz - University of Washington
Navid Zobeiry - University of Washington

10:00AM–10:30AM

An Optimization Strategy Based on Machine Learning and Layer-Wise Models to Minimize Process-Induced Deformations in CFRP Parts

Technical Paper Publication: SSDM2023-106945

Navid Zobeiry - University of Washington
Enrico Zappino - Politecnico di Torino
Caleb Schoenholz - University of Washington
Rebecca Masia - Politecnico di Torino
Marco Petrolo - Politecnico di Torino

10:30AM–11:00AM

A Theory-Guided Machine Learning and Reduced-Order Finite Element Modeling Framework to Accelerate Process Simulation of Aerospace Composite Parts

Technical Paper Publication: SSDM2023-107132

Huilong Fu - University of Washington
Navid Zobeiry - University of Washington

11:00AM–11:30AM

Physics-Informed Multitask Learning for Material Development

Technical Paper Publication: SSDM2023-108449

Yulun Wu - University of Illinois at Urbana-Champaign
Yumeng Li - University of Illinois at Urbana-Champaign

11:30AM–12:00PM

Advanced High-Temperature Alloy Design With Physics-Coupled Machine Learning Approach

Technical Presentation Only: SSDM2023-106447

Dongwon Shin - Oak Ridge National Laboratory

03-07-01
MATERIALS FOR EXTREME ENVIRONMENT I
6/19/2023 **9:30AM TO 12:00PM - CORAL**

Chair: Evan Pineda - National Aeronautics and Space Administration
Chair: Joshua Stuckner - NASA Glenn Research Center
Chair: Ivan Gallegos - Michigan Technological University

9:30AM–10:00AM

A Novel Framework for Accelerated Characterization of Pyrolysis Kinetics of High-Temperature Composites Using Theory-Guided Probabilistic Machine Learning

Technical Paper Publication: SSDM2023-105683

Paulina Portales Picazo - University of Washington
Alexander Gray - University of Washington
Navid Zobeiry - University of Washington

10:00AM–10:30AM

A Compositional Study of Regolith Composites With Carbon Nanotube Additives for Extraterrestrial Construction

Technical Paper Publication: SSDM2023-107092

Andrea Hoe - Syracuse University
Wenhua Lin - Syracuse University
Yeqing Wang - Syracuse University

10:30AM–11:00AM

An Equivalent Modeling Scheme of Cellular Structure Under Extreme Loading Using Finite Element Method

Technical Paper Publication: SSDM2023-107246

Praveen Verma - Indian Institute of Technology Delhi
Rohit Sankrityayan - Indian Institute of Technology Delhi
Anoop Chawla - Indian Institute of Technology Delhi
Sudipto Mukherjee - Indian Institute of Technology Delhi
Devendra K. Dubey - Indian Institute of Technology Delhi

11:00AM–11:30AM

Flexural Fatigue Behavior of Sea Water Conditioned Carbon/Epoxy-Nanoclay Composites

Technical Paper Publication: SSDM2023-107323

Md. Sarower Tareq - Michigan State University
Mahesh Hosur - Texas A&M University-Kingsville
Shaik Zainuddin - Tuskegee University

11:30AM–12:00PM

The Effect of Oxidation in Environmental Barrier Coatings Subject to Foreign Object Damage

Technical Paper Publication: SSDM2023-107437

Leland Hoffman - HX5

Michael Presby - NASA Glenn Research Center
Jamesa Stokes - NASA Glenn Research Center
Bryan Harder - NASA Glenn Research Center
Jon Salem - NASA Glenn Research Center

03-07-01
MATERIALS FOR EXTREME ENVIRONMENT I
6/19/2023 **9:30AM TO 12:00PM - IVORY**

Chair: Marco Petrolo - Politecnico di Torino
Chair: Weihua Su - The University of Alabama

9:30AM–10:00AM

Finite Element Modeling of an Origami-Inspired Deployable Solar Panel for CubeSat Applications

Technical Paper Publication: SSDM2023-106876

Andrea Troise - Politecnico di Bari
Alessandro Buscicchio - Politecnico di Bari
Vittorio Netti - Politecnico di Bari
Maria Cinefra - Politecnico di Bari

10:00AM–10:30AM

Are There Cases in Which Classical Beam Theories Fail to Compute the Fundamental Frequency?

Technical Paper Publication: SSDM2023-107271

Erasmo Carrera - Politecnico di Torino
Riccardo Augello - Politecnico di Torino
Marco Petrolo - Politecnico di Torino

10:30AM–11:00AM

Dynamic Analysis of Variable Thickness Shells in Aerospace Applications via CUF Adaptive Finite Elements

Technical Paper Publication: SSDM2023-108345

Maria Cinefra - Politecnico di Bari
Martino Carlo Moruzzi - Università di Bologna

11:00AM–11:30AM

Slope-Inertia Model for Rotating Timoshenko-Ehrenfest Beams

Technical Paper Publication: SSDM2023-108413

Apurva Sunil Rangari - Indian Institute of Technology, Kharagpur
Isaac Elishakoff - Florida Atlantic University
Korak Sarkar - Indian Institute of Technology, Kharagpur

11:30AM–12:00PM

Vibration Reduction of a Lift-Offset Co-Axial Rotorcraft System Using Individual Blade Control Approach

Technical Presentation Only: SSDM2023-110224

Seong Hyun Hong - Konkuk University
Dong Kyun Kim - Konkuk University
Sung Nam Jung - Konkuk Unviersity

01-04-01
ADVANCES IN AEROSPACE STRUCTURES
6/19/2023 **1:30PM TO 12:00PM - OPAL**

Chair: Luciano Demasi - San Diego State University
Chair: Gaetano Giunta - Luxembourg Institute of Science and Technology
Chair: Wei Zhao - Oklahoma State University

1:30PM–2:00PM

Buckling Load Optimization of Variable Thickness and Stiffness Composite Plate Using FEM and Semi-Analytical Method

Technical Paper Publication: SSDM2023-101265

Jeegar Vallabhbhai Patel - The University of Texas at Arlington
Sandesh Amgai - The University of Texas at Arlington
Paul Davidson - The University of Texas at Arlington

2:00PM–2:30PM

Architected Cellular Materials for Structure Design in Aerospace Applications

Technical Paper Publication: SSDM2023-107329

Sina Rastegarzadeh - University of Illinois at Chicago
Jida Huang - University of Illinois at Chicago
Jun Wang - Santa Clara University

2:30PM–3:00PM

Design of In-Plane and Thickness-Wise Functionally Graded Shells

Technical Paper Publication: SSDM2023-107956

Gokhan Serhat - KU Leuven

3:00PM–3:30PM

Hierarchical Modelling of Variable Stiffness Composite Plates Through Carrera's Unified Formulation

Technical Paper Publication: SSDM2023-108484

Domenico Andrea Iannotta - Luxembourg Institute of Science and Technology
Gaetano Giunta - Luxembourg Institute of Science and Technology
Marco Montemurro - École Nationale Supérieure d'Arts et Métiers

Technical Sessions

01-06-01
IMPACT, FATIGUE, DAMAGE AND FRACTURE OF COMPOSITE STRUCTURES
6/19/2023 **1:30PM TO 12:00PM - OPAL**

Chair: Mehmet Dorduncu - Erciyes University
Chair: Weiyi Lu - Michigan State University

1:30PM–2:00PM

Interface Characterization of Hybrid Composites Through DCB and ENF Experiments and Numerical Predictions

Technical Paper Publication: SSDM2023-103213

Andrew Seamone - University of Michigan
Shiyao Lin - University of Michigan
Anthony Waas - University of Michigan
Vipul Ranatunga - Air Force Research Laboratory

2:00PM–2:30PM

High Resolution Experimental Study of Damage Initiation in Cross-Ply Laminates Using Digital Volume Correlation

Technical Paper Publication: SSDM2023-106793

J. Fernando Rojas Sanchez - University of Michigan
Anthony Waas - University of Michigan

2:30PM–3:00PM

Machine Learning-Aided Cohesive Zone Modelling of Fatigue Delamination

Technical Paper Publication: SSDM2023-107351

Liang Zhang - AnalySwift LLC
Xin Liu - The University of Texas at Arlington
Su Tian - AnalySwift LLC
Zhenyuan Gao - Dassault Systèmes
Wenbin Yu - Purdue University

3:00PM–3:30PM

A Numerical and Experimental Shock Study on a Logging While Drilling Mockup Assembly

Technical Paper Publication: SSDM2023-107457

Fei Song - SLB
Amanda Olivio - SLB
Ke Li - SLB

03-08-01
MICROMECHANICS AND MULTISCALE MODELING I
6/19/2023 **1:30PM TO 3:30PM - PEARL**

Chair: Evan Pineda - National Aeronautics and Space Administration
Chair: Samit Roy - The University of Alabama
Chair: Ibrahim Guven - Virginia Commonwealth University

1:30PM–2:00PM

Multiscale Modeling of Semi-Crystalline Thermoplastics Using a Combination of Micromechanics and Molecular Dynamics

Technical Presentation Only: SSDM2023-100935

Evan Pineda - National Aeronautics and Space Administration
Jamal Husseini - University of Massachusetts Lowell
Joshua Kemppainen - Michigan Technological University
Gregory Odegard - Michigan Technological University

2:00PM–2:30PM

Stochastic Modeling of Mechanics of Materials

Technical Presentation Only: SSDM2023-104527

Haoran Wang - Utah State University

2:30PM–3:00PM

Deep Learning Driven Constitutive Model for Accelerated Crystal Plasticity Simulation

Technical Presentation Only: SSDM2023-106870

Md. Nurul Abedin - City, University of London
Sourena Yadegari - Helmholtz Centre for Environmental Research - UFZ
Sathiskumar Anusuya Ponnusami - City, University of London

3:00PM–3:30PM

Multiscale Analysis of Combined Progressive Damage and Thermal Conductivity in a 3D Woven Thermal Protection System Composite

Technical Presentation Only: SSDM2023-107324

Brett Bednarcyk - NASA Glenn Research Center
Peter Gustafson - Western Michigan University
Trenton Ricks - NASA Glenn Research Center
Evan Pineda - NASA Glenn Research Center
Pappu Murthy - NASA Glenn Research Center
Subodh Mital - NASA Glenn Research Center

03-05-01
NANOMATERIALS
6/19/2023 **1:30PM TO 3:30PM - CORAL**

Chair: Evan Pineda - National Aeronautics and Space Administration
Chair: Ibrahim Guven - Virginia Commonwealth University
Chair: Paria Naghipour - NASA Glenn Research Center

1:30PM–2:00PM

A Novel Atomistic-Continuum Concurrent Coupling Method for Simulating Fracture in Polymers

Technical Paper Publication: SSDM2023-107118

Sankha Subhra Aditya - The University of Alabama
Samit Roy - The University of Alabama

2:00PM–2:30PM

Modeling-Driven Damage Tolerant Design of Graphene Nanoplatelet/Carbon Fiber/Epoxy Hybrid Composite Panels for Full-Scale Aerospace Structures

Technical Presentation Only: SSDM2023-108492

Gregory Odegard - Michigan Technological University
Evan Pineda - NASA Glenn Research Center
Brett Bednarcyk - NASA Glenn Research Center

2:30PM–3:00PM

Electrical Conduction Mechanism in Van Der Waals Flake Thin Film

Technical Paper Publication: SSDM2023-108595

Ajit Roy - Air Force Research Laboratory
Jonghoon Lee - ARCTOS
Dhriti Nepal - Air Force Research Laboratory
John Ferguson - Air Force Research Laboratory

VIDEO SUBMISSION

Continuum Analysis of Geometrically-Nonlinear Behaviour of Carbon Nanotubes Under Combined Bending and Twisting Loads

Technical Presentation Only: SSDM2023-110480

Renuka Sahu - Indian Institute of Science
Sathiskumar Anusuya Ponnusami - City, University of London
Dineshkumar Harursampath - Indian Institute of Science

02-02-01
COMPUTER METHODS AND REDUCED ORDER MODELING
6/19/2023 **1:30PM TO 3:30PM - IVORY**

Chair: Yi Wang - University of South Carolina
Chair: Weihua Su - The University of Alabama

1:30PM–2:00PM

Geometrical Nonlinear Transient Analysis Through Direct and Reduced Order Methods

Technical Presentation Only: SSDM2023-107433

Rodolfo Azzara - Politecnico di Torino
Matteo Filippi - Politecnico di Torino
Alfonso Pagani - Politecnico di Torino
Erasmo Carrera - Politecnico di Torino

2:00PM–2:30PM

Truss Topology Optimization With Semidefinite Programming and Parametric Model Order Reduction

Technical Paper Publication: SSDM2023-108410

Varakini Sanmugadas - Virginia Tech
Rakesh Kapania - Virginia Tech

2:30PM–3:00PM

Hierarchical Variational Autoencoder Based Model Order Reduction for Parametric Fluid-Structure Interaction Phenomenon

Technical Presentation Only: SSDM2023-110523

SiHun Lee - Seoul National University
Sangmin Lee - Seoul National University
Cho Haeseong - Jeonbuk National University
Sangjoon Shin - Seoul National University

3:00PM–3:30PM

Computational Structural Acoustics and Aeroacoustics Based on the Finite Element, Boundary Element, and Model-Order Reduction Methods

Technical Presentation Only: SSDM2023-110851

Yijun Liu - Southern University of Science and Technology

01-04-02
ADVANCES IN AEROSPACE STRUCTURES
6/19/2023 **3:45PM TO 5:45PM - IVORY**

Chair: Luciano Demasi - San Diego State University
Chair: Gaetano Giunta - Luxembourg Institute of Science and Technology
Chair: Wei Zhao - Oklahoma State University

3:45PM–4:15PM

An Efficient High-Fidelity Design Tool for Advanced Tailorable Composites

Technical Presentation Only: SSDM2023-107302

Su Tian - Purdue University
Xin Liu - The University of Texas at Arlington
Liang Zhang - AnalySwift
Wenbin Yu - Purdue University

4:15PM–4:45PM

Modeling of Composite Structures by Using the Harlequin Variational Theorem

Technical Presentation Only: SSDM2023-109399

Luciano Demasi - San Diego State University

4:45PM–5:15PM

A Neural Network-Enhanced Reproducing Kernel Particle Method for Modeling Localization and Fracture

Technical Presentation Only: SSDM2023-109655

J. S. Chen - University of California, San Diego
Jonghyuk Beak - University of California, San Diego

5:15PM–5:45PM

Challenges in Topology Optimization for Complex Aerospace Structure and Design

Technical Presentation Only: SSDM2023-110657

H. Alicia Kim - University of California, San Diego

01-06-02
IMPACT, FATIGUE, DAMAGE AND FRACTURE OF COMPOSITE STRUCTURES
6/19/2023 **3:45PM TO 5:45PM - CRYSTAL II**

Chair: Mehmet Dorduncu - Erciyes University
Chair: Weiyi Lu - Michigan State University

3:45PM–4:15PM

High Velocity Impact Damage Assessment of Sandwich Panels With Uniform and Functionally Graded TPMS, Auxetic Re-Entrant Cellular Cores

Technical Paper Publication: SSDM2023-108370

Itkankhya Mahapatra - Indian Institute of Technology Madras
Velmurugan Ramachandran - Indian Institute of Technology Madras
Jayaganthan Rengaswamy - Indian Institute of Technology Madras

4:15PM–4:45PM

Low-Velocity Impact Analysis of Stiffened Composite Plates Using Higher-Order Layer-Wise Models

Technical Presentation Only: SSDM2023-105199

Salvatore Saputo - Politecnico di Torino

Manish Hassan Nagaraj - University of Massachusetts Lowell
Alfonso Pagani - Politecnico di Torino
Marco Petrolo - Politecnico di Torino
Erasmo Carrera - Politecnico di Torino

4:45PM–5:15PM

Assessment on the Aeroelastic Tailoring Constraints: From AML Criteria to Stress-Based Failure Indices Computed With Layer-Wise Unified Finite Elements

Technical Presentation Only: SSDM2023-106878

Alfonso Pagani - Politecnico di Torino
Alberto R. Sanchez-Majano - Politecnico di Torino
Marco Enea - Politecnico di Torino
Erasmo Carrera - Politecnico di Torino
Alex P. Do Prado - Embraer S.A.
Pedro H. Cabral - Embraer S.A.

5:15PM–5:45PM

Determination of Composite Design Allowables Based on Mechanics of Structure Genome and Multiscale Simulations

Technical Presentation Only: SSDM2023-107576

Haodong Du - Purdue University
Wenbin Yu - Purdue University

03-11-01
RATE DEPENDENT MATERIALS
6/19/2023 **3:45PM TO 5:45PM - IVORY**

Chair: Evan Pineda - National Aeronautics and Space Administration
Chair: Paria Naghipour - NASA Glenn Research Center
Chair: Joshua Kemppainen - Michigan Technological University

3:45PM–4:15PM

A Generalized Rate-Dependent Cohesive Zone Element Formulation for Delamination

Technical Presentation Only: SSDM2023-109626

Ibrahim Kaleel - NASA Glenn Research Center
Evan J. Pineda - NASA Glenn Research Center
Andrew C. Bergan - NASA Langley Research Center

4:15PM–4:45PM

Rate Dependent Behavior of UHMWPE Nanocomposite Fibers

Technical Presentation Only: SSDM2023-110871

Andrew Rocco - North Carolina State University
Vitor Prado Correia - Florida Atlantic University
Mark Pankow - North Carolina State University
Hassan Mahfuz - Florida Atlantic University

4:45PM–5:15PM

High-Throughput Characterization of Time-Dependent Polymer Membranes

Technical Presentation Only: SSDM2023-110890

Veli Ozdemir - University of Central Florida

Kawai Kwok - University of Central Florida

5:15PM–5:45PM

Machine Learning Potentials for 2D Materials

Technical Paper Publication: SSDM2023-108247

Shijie Sun - University of Illinois at Urbana-Champaign
Yumeng Li - University of Illinois at Urbana-Champaign

03-01-01
GENERAL TOPICS OF AEROSPACE MATERIALS
6/19/2023 **3:45PM TO 5:45PM - PEARL**

Chair: Evan Pineda - National Aeronautics and Space Administration
Chair: Kun Fu - University of Delaware
Chair: Joshua Stuckner - NASA Glenn Research Center

3:45PM–4:15PM

Probabilistic Fatigue Data Analysis Using Physics-Guided Mixture Density Networks

Technical Paper Publication: SSDM2023-104976

Jie Chen - Northwestern University
Yongming Liu - Arizona State University

4:15PM–4:45PM

Theory-Guided Machine Learning for Analysis of Multi-Physics Problems and Its Recent Applications to Aerospace Composites

Technical Presentation Only: SSDM2023-109301

Navid Zobeiry - University of Washington

4:45PM–5:15PM

How to Write a Digital-Ready Standard

Technical Presentation Only: SSDM2023-110690

Leslie McKay - SAE International

5:15PM–5:45PM

Predicting Effective Thermal Conductivity of Heterogeneous Microstructure Materials by Convolutional Neural Network

Technical Paper Publication: SSDM2023-105542

Chengcheng Shen - University of Chinese Academy of Sciences
Haifeng Zhao - University of Chinese Academy of Sciences
Qiang Sheng - University of Chinese Academy of Sciences

02-05-01
EXPERIMENTAL STUDIES IN STRUCTURAL DYNAMICS - I
6/19/2023 **3:45PM TO 5:45PM - IVORY**

Chair: Natsuki Tsushima - Japan Aerospace Exploration Agency
Chair: Weihua Su - The University of Alabama

3:45PM–4:15PM

Structural Characteristics of Wing Model for High-Speed Wind Tunnel Testing Fabricated by Combined Manufacturing of Additive and Subtractive Processes

Technical Paper Publication: SSDM2023-107010

Natsuki Tsushima - Japan Aerospace Exploration Agency
Kazuyuki Nakakita - Japan Aerospace Exploration Agency
Kenichi Saitoh - Japan Aerospace Exploration Agency

4:15PM–4:45PM

Experimental Studies of Freeplay-Induced Limit Cycle Oscillations on a T-Tail Model

Technical Paper Publication: SSDM2023-107013

Nicola Fonzi - Politecnico di Milano
Sergio Ricci - Politecnico di Milano
Eli Livne - University of Washington

4:45PM–5:15PM

Aeroelastic Test of a Strut-Braced Wing Model in the Framework of CS2-U-Harward Project

Technical Presentation Only: SSDM2023-107209

Luca Marchetti - Politecnico di Milano
Francesco Toffol - Politecnico di Milano
Sergio Ricci - Politecnico di Milano
Nicola Paletta - IBK Innovation GmbH & Co.
Jacopo Beretta - IBK Innovation GmbH & Co.
Guillaume Arnoult - ONERA
Nicolo Fabbiane - ONERA

5:15PM–5:45PM

Effects of the Placement of Bolts on the Dynamical Characteristics of Asymmetric Bolted-Joint Beams

Technical Presentation Only: SSDM2023-110924Tharwat Elkabani - New Mexico State University

Dylan Allen - New Mexico State University
Marina Espinosa - New Mexico State University
Abdessattar Abdelkefi - New Mexico State University

TUESDAY, 6/20/2023

01-02-02
ADAPTIVE AND MULTIFUNCTIONAL STRUCTURES II
6/19/2023-6/20/2023 **9:30AM TO 12:00PM - OPAL**

Chair: Xin-Lin Gao - Southern Methodist University
Chair: Xin Ning - The Pennsylvania State University
Chair: Gongye Zhang - Southeast University

9:30AM–10:00AM

Thermal Buckling of a New Composite Beam Model Incorporating Piezoelectric, Flexoelectric and Semiconducting Effects

Technical Presentation Only: SSDM2023-105863

Gongye Zhang - Southeast University
Xin-Lin Gao - Southern Methodist University

10:00AM–10:30AM

Topology Morphing in Lattice Structures Through Tensile Buckling

Technical Paper Publication: SSDM2023-105679

Venkatesh Sundararaman - University of Limerick
Ciaran Mchale - University of Limerick
Matthew P. O'Donnell - University of the West of England
Isaac V. Chenchaih - University of Bristol
Paul M. Weaver - University of Limerick

10:30AM–11:00AM

Origami-Inspired Three-Dimensional Foldable and Deployable Multifunctional Electronics

Technical Presentation Only: SSDM2023-110761

Yao Yao - The Pennsylvania State University
Xin Ning - The Pennsylvania State University

11:00AM–11:30AM

Morphing Composite Cylindrical Lattices: An Overview

Technical Presentation Only: SSDM2023-106862

Ciarán Mchale - University of Limerick
Paul Weaver - University of Limerick

VIDEO SUBMISSION

Self-Propagation Deployable Space Structures Based on Bistable Mechanism

Technical Paper Publication: SSDM2023-105878

Jiaan Li - University of Chinese Academy of Sciences
Ruinan Mu - University of Chinese Academy of Sciences
Keyan Huo - University of Chinese Academy of Sciences
Lu Zhang - University of Chinese Academy of Sciences
Haifeng Zhao - University of Chinese Academy of Sciences

01-01-01
GENERAL TOPICS OF AEROSPACE STRUCTURES
6/20/2023 **9:30AM TO 12:00PM - TOPAZ**

Chair: Erkan Oterkus - University of Strathclyde
Chair: Xin-Lin Gao - Southern Methodist University

9:30AM–10:00AM

Damage Control Measures in Composites: BVID Damage Progression

Technical Paper Publication: SSDM2023-100771

Kais Jribi - Embry-Riddle Aeronautical University
Jonathan H. Gosse - Computational Engineering Software, LLC
Douglas J. Neill - Computational Engineering Software, LLC
Alberto W. Mello - Embry-Riddle Aeronautical University

10:00AM–10:30AM

A Review of Analytical Models for Determining the Behavior of Metallic Tubular Structures Submitted to Axial Crushing

Technical Paper Publication: SSDM2023-108398

Shreyas Anand - Technische Universität Delft
René Alderliesten - Technische Universität Delft
Saullo Giovani Pereira Castro - Technische Universität Delft

10:30AM–11:00AM

Design and Analysis of Periodic Lattice Beams for Wave Guiding and Vibration Attenuation

Technical Presentation Only: SSDM2023-108516

Maya Pishvar - California State University, Northridge
Peter L. Bishay - California State University, Northridge
Mosab Naser Nossor - California State University, Northridge

11:00AM–11:30AM

Aeroelastic Tailoring Building a Global Partnership

Technical Presentation Only: SSDM2023-110022

Pedro Higino Cabral - Embraer S.A.
Alex P. Do Prado - Embraer S.A.

11:30AM–12:00PM

Fully Analytic Solution Framework for General Thin-Walled Composite Beams Based on Mixed Variational Approach

Technical Presentation Only: SSDM2023-110409

Sung Jung - Konkuk University
Jae Seong Bae - Konkuk University

Technical Sessions

03-06-02
MATERIALS DEVELOPMENT USING ARTIFICIAL INTELLIGENCE II
6/20/2023 **9:30AM TO 12:00PM - CORAL**

Chair: Evan Pineda - National Aeronautics and Space Administration
Chair: Joshua Kemppainen - Michigan Technological University
Chair: Marco Petrolo - Politecnico di Torino

9:30AM–10:00AM

Hybrid Physics Constrained, Machine Learning Enhanced Design of Printable High-Temperature Strength Al Alloys

Technical Presentation Only: SSDM2023-106933

S. Mohadeseh Taheri-Mousavi - Carnegie Mellon University

10:00AM–10:30AM

Physics-Constrained Neural Network for Design and Feature-Based Optimization of Woven Composites

Technical Presentation Only: SSDM2023-106986

Haotian Feng - University of Wisconsin-Madison
Sabarinathan P. Subramaniyan - University of Wisconsin-Madison
Pavana Prabhakar - University of Wisconsin-Madison

10:30AM–11:00AM

Improving the Statistical Power of Measurements During Materials Synthesis

Technical Presentation Only: SSDM2023-108487

Branden Kappes - Contexualize, LLC
Michelle Daya - Contextualize, LLC
Lindsey Kuettner - Contextualize, LLC

11:00AM–11:30AM

Microstructure Quantification With Deep Learning Encoders Pre-Trained on a Massive Microscopy Dataset

Technical Presentation Only: SSDM2023-110672

Joshua Stuckner - National Aeronautics and Space Administration

11:30AM–12:00PM

Deep Learning Approaches for Full-Field Stress Prediction in Fiber-Reinforced Composites

Technical Presentation Only: SSDM2023-111457

Maryam Shakiba - University of Colorado Boulder
Marwa Yacouti - University of Colorado Boulder

03-07-02
MATERIALS FOR EXTREME ENVIRONMENT II
6/20/2023 **9:30AM TO 12:00PM - PEARL**

Chair: Evan Pineda - National Aeronautics and Space Administration
Chair: Paulina Diaz-Montiel - University of San Diego
Chair: Sui Yang - Arizona State University

9:30AM–10:00AM

Preparation of PEEK-Ni Composite Particles Using Ball Milling for Cold Spraying Coating on Fiber Reinforced Plastics

Technical Presentation Only: SSDM2023-105676

Chloe Zarader - The Pennsylvania State University
Caillin Ryan - The Pennsylvania State University
Justin Reiss - The Pennsylvania State University
Douglas Wolfe - The Pennsylvania State University
Namiko Yamamoto - The Pennsylvania State University

10:00AM–10:30AM

Mechanical Property of Phenolic Resin via Molecular Dynamics Using a Reactive Force-Field

Technical Presentation Only: SSDM2023-107578

Ivan Gallegos - Michigan Technological University
Joshua Kemppainen - Michigan Technological University
Gregory Odegard - Michigan Technological University

10:30AM–11:00AM

Reactive Molecular Dynamics Mechanical Properties Prediction of Furan Resin

Technical Presentation Only: SSDM2023-107589

Joshua Kemppainen - Michigan Technological University
Ivan Gallegos - Michigan Technological University
Aaron Krieg - Michigan Technological University
Gregory Odegard - Michigan Technological University

11:00AM–11:30AM

Leveraging Light-Matter Interactions for Investigation of the Shock Response of Elastomers

Technical Presentation Only: SSDM2023-110882

George Youssef - San Diego State University

11:30AM–12:00PM

Rain Drop Impact Damage Predictions at Hypersonic Conditions Using a Coupled Peridynamic-Computational Fluid Dynamics Approach

Technical Presentation Only: SSDM2023-110958

Riza Kaan Gonuleri - Virginia Commonwealth University

Manuel Viqueira Moreira - University of Maryland
Ugur Can - Virginia Commonwealth University
Christoph Brehm - University of Maryland
Ibrahim Guven - Virginia Commonwealth University

02-04-01
COMPUTATIONAL AEROELASTICITY AND STRUCTUAL DYNAMICS
6/20/2023 **9:30AM TO 12:00PM - IVORY**

Chair: Daning Huang - The Pennsylvania State University
Chair: Weihua Su - The University of Alabama

9:30AM–10:00AM

Enhancement of NX Nastran Flutter Prediction Capabilities and Use of Experimental Parameters in Aeroelastic Calculations

Technical Paper Publication: SSDM2023-106747

Giuseppe Maurizio Gagliardi - University of Naples Federico II
Mandar Kulkarni - Embry-Riddle Aeronautical University
Francesco Marulo - University of Naples Federico II

10:00AM–10:30AM

A Jacobi-Ritz Method for Aeroelastic Analysis of Swept Distributed Propulsion Aircraft Wing

Technical Paper Publication: SSDM2023-106970

Joshua Melvin - Oklahoma State University
Wei Zhao - Oklahoma State University

10:30AM–11:00AM

A Refined Rotordynamics Model Analysis Using 1D Beam Elements With Variable Section Based on CUF

Technical Paper Publication: SSDM2023-107042

Andrea Rubino - Politecnico of Bari
Maria Cinefra - Politecnico of Bari
Matteo Filippi - Politecnico of Torino

11:00AM–11:30AM

Aeroelastic Analysis of Vat Nano-Composite Plate

Technical Paper Publication: SSDM2023-107605

Prashanta Mahato - Indian Institute of Technology (ISM) Dhanbad
Pritam Mondal - Indian Institute of Technology (ISM) Dhanbad

01-03-01
ADVANCED MANUFACTURING FOR AEROSPACE STRUCTURES
6/20/2023 **1:30PM TO 3:30PM - TOPAZ**

Chair: Luciano Demasi - San Diego State University
Chair: Gaetano Giunta - Luxembourg Institute of Science and Technology

1:30PM–2:00PM

Manufacturing of Fiber Reinforced Polymer Composites With Embedded SMA Wires: Challenges and Opportunities

Technical Presentation Only: SSDM2023-108455

Maya Pishvar - **California State University, Northridge**
Daniel Sanchez - California State University, Northridge
Peter L. Bishay - California State University, Northridge

2:00PM–2:30PM

Mechanical and Material Characterization of 3D Printed Continuous Fiber Reinforced Photopolymer Matrix Composites

Technical Paper Publication: SSDM2023-106951

Peter Sandell - The University of Oklahoma
Christopher Billings - The University of Oklahoma
Yingtao Liu - The University of Oklahoma

2:30PM - 3:00PM

Lightweight Composites With 3D Printed Sensors for Real-Time Damage Detection

Technical Paper Publication: SSDM2023-107360

Daniel Fitzpatrick - The University of Oklahoma
Christopher Billings - The University of Oklahoma
Yingtao Liu - The University of Oklahoma

3:00PM - 3:30PM

A Metamodel Based on Basis Spline Hyper-Surfaces for Thermal Simulation of the Wire Arc Additive Manufacturing Process

Technical Presentation Only: SSDM2023-110610

Mathilde Zani - Ecole Nationale Supérieure d'Arts et Métiers
Marco Montemurro - Ecole Nationale Supérieure d'Arts et Métiers
Enrico Panettieri - Ecole Nationale Supérieure d'Arts et Métiers

01-05-01
APPLICATIONS OF ARTIFICIAL INTELLIGENCE/MACHINE LEARNING FOR AEROSPACE STRUCTURES
6/20/2023 **1:30PM TO 3:30PM - OPAL**

Chair: Yongming Liu - Arizona State University
Chair: Xin Liu - The University of Texas at Arlington
Chair: Fei Tao - Dassault Systemes Simulia Corp.

1:30PM–2:00PM

Predicting Stress in Structures Using Convolutional Neural Networks

Technical Paper Publication: SSDM2023-107057

Ryan Truhn - Manhattan College
Masoud Masoumi - Manhattan College

2:00PM–2:30PM

A Combined Finite Element and Machine Learning Approach to Accelerate Calibration and Validation of Numerical Models for Prediction of Failure in Aerospace Composite Parts

Technical Paper Publication: SSDM2023-107538

Amirali Eskandariyun - University of Washington
Ashith Joseph - University of Washington
Alexandru Stere - The Boeing Company
Alan Byar - The Boeing Company
Sergey Fomin - The Boeing Company
Mohammed Kabir - The Boeing Company
John Dong - The Boeing Company
Navid Zobeiry - University of Washington

2:30PM–3:00PM

Machine Learning Assisted Composite Rotor Blade Planform Design

Technical Paper Publication: SSDM2023-109144

Fei Tao - Dassault Systemes
Su Tian - Purdue University
Haodong Du - Purdue University
Wenbin Yu - Purdue University

3:00PM–3:30PM

Optimization of a Creased, Thin Elastic Plate to Maximize Flexural Stiffness

Technical Presentation Only: SSDM2023-107410

Avinkrishnan Ambika Vijayachandran - University of Michigan
Othman Oudghiri-Idrissi - University of Michigan
Andrea Poli - University of Michigan
Xiaoming Mao - University of Michigan
Ellen Arruda - University of Michigan
Serife Tol - University of Michigan
Anthony Waas - University of Michigan

01-06-03
IMPACT, FATIGUE, DAMAGE AND FRACTURE OF COMPOSITE STRUCTURES
6/20/2023 **1:30PM TO 3:30PM - CRYSTAL II**

Chair: Mehmet Dorduncu - Erciyes University
Chair: Weiyi Lu - Michigan State University

1:30PM–2:00PM

Analysis of the Effects of Welding Induced Residual Stress on Fatigue Crack Growth of Welded Joints

Technical Presentation Only: SSDM2023-109313

Yahiya Ahmed Kedir - University of Stavanger

2:00PM–2:30PM

Enhanced Liquid Nanofoam Filler and Tube Interaction Under Dynamic Impact

Technical Presentation Only: SSDM2023-110633

Mingzhe Li - Georgia Institute of Technology
Fuming Yang - Michigan State University
Weiyi Lu - Michigan State University

2:30PM–3:00PM

Analysis of Ply Transition Regions in Localized Hybrid Metal/CFRP Composite Laminates Under Tensile Loading

Technical Presentation Only: SSDM2023-110813

Rommel Pineda - San Diego State University
Satchi Venkataraman - San Diego State University

3:00PM–3:30PM

Peridynamics for Predicting Fatigue Behavior of Modulus Graded Plates

Technical Presentation Only: SSDM2023-110896

Ugur Altay - Turkish Aerospace Industries
Mehmet Dorduncu - Erciyes University
Suat Kadioglu - Middle East Technical University

03-12-01
TESTING AND CHARACTERIZATION I
6/20/2023 **1:30PM TO 3:30PM - PEARL**

Chair: Evan Pineda - National Aeronautics and Space Administration
Chair: Yongming Liu - Arizona State University
Chair: Paulina Diaz-Montiel - University of San Diego

1:30PM–2:00PM

A Machine Learning Framework for In-Situ Microstructural and Kinetics Analysis of Thermoplastic Composites While Processing Under a Polarized Microscope

Technical Paper Publication: SSDM2023-105758

Shuangshan Li - University of Washington
Mathew Wynn - University of Washington
Navid Zobeiry - University of Washington

2:00PM–2:30PM

Quantification of Material and Geometric Defects Variability in Fiber-Reinforced Composites With Ply Waviness Defects

Technical Paper Publication: SSDM2023-106565

Paulina Diaz-Montiel - University of San Diego
Gabriela Gonzalez Ayala - San Diego State University
Adrian Rivera - San Diego State University
Rebekah Mauk - University of San Diego
Coleman Reiner - San Diego State University
Satchi Venkataraman - San Diego State University

2:30PM–3:00PM

Effects of Thermal Residual Stress and Asymmetry on the Characterization of Interface Fracture Toughness in Hybrid Composite Laminates

Technical Paper Publication: SSDM2023-107076

Andrew Giles - General Atomics

Satchi Venkataraman - San Diego State University

3:00PM–3:30PM

Characterization of Ply-Waviness Manufacturing Defect in Composite Aerospace Laminates by Ultrasonic Scattering Analysis

Technical Presentation Only: SSDM2023-110771

Nathan Machak - San Diege State University
Margherita Capriotti - San Diego State University
Paulina Díaz-Montiel - University of San Diego
Gabriela Ayala - San Diego State University
Satchi Venkataraman - San Diego State University

03-04-01
EMERGING MATERIALS TECHNOLOGY I
6/20/2023 **1:30PM TO 3:30PM - CORAL**

Chair: Evan Pineda - National Aeronautics and Space Administration
Chair: Pavana Pavana - University of Wisconsin
Chair: Kailong Jin - Arizona State University

1:30PM–2:00PM

Design and Analysis of Shape Memory Spring Tires for Martian and Lunar Rover Vehicles

Technical Presentation Only: SSDM2023-110683

Paria Naghipour - HX5

Santo Padula Ii - NASA Glenn Research Center
Colin Creager - NASA Glenn Research Center
Heather Oravec - The University of Akron

2:00PM–2:30PM

Development of a Bio-Inspired Sweeping Wing Structure by Utilizing the Emerging Materials in Advanced Additive Manufacturing

Technical Paper Publication: SSDM2023-107298

Velda Basak Soydas - Texas A&M University-Kingsville
Larry Peel - Texas A&M University-Kingsville

2:30PM–3:00PM

Fabricating Machine Elements Using Hydrogel-Infused Additive Manufacturing

Technical Paper Publication: SSDM2023-107356

Anil Saigal - Tufts University
Seneca Jackson Velling - California Institute of Technology
Akash Dhawan - California Institute of Technology
Maria Azcona Baez - California Institute of Technology
Miguel Nocum - California Institute of Technology
Julia R. Greer - California Institute of Technology

3:00PM–3:30PM

Multifunctional Performance of Nanoengineered Auxetics: 3D Printing, Experiments, and Computational and Data-Driven Modeling

Technical Presentation Only: SSDM2023-106863

Johannes Schneider - University of Glasgow
Kumar Shanmugam - University of Glasgow
Vinayak Krishnamurthy - Texas A&M University
Ergun Akleman - Texas A&M University
Ramakrishna Tipireddy - Pacific Northwest National Laboratory
Kai Lupo - Texas A&M University
Matthew Ebert - Texas A&M University

Technical Sessions

02-01-02
DYNAMIC LOADS, RESPONSE, VIBRATION AND ALLEVIATION OF AEROSPACE STRUCTURES - II
6/20/2023 **1:30PM TO 3:30PM - IVORY**

Chair: Wei Zhao - Oklahoma State University
Chair: Weihua Su - The University of Alabama

1:30PM–2:00PM

Free Vibration Analysis of Rotating Rayleigh Cantilever Beam Using P-Type Finite Element Method

Technical Paper Publication: SSDM2023-108468

Dipannoy Dhar - Indian Institute of Technology, Kharagpur
Korak Sarkar - Indian Institute of Technology, Kharagpur

2:00PM–2:30PM

Experimental Validation of Cubesat On-Orbit Vibration Data via Ground Tests

Technical Presentation Only: SSDM2023-110259

Deven Mhadgut - Virginia Tech
Austin Phoenix - Virginia Tech
Jonathan Black - Virginia Tech
Gustavo Gargioni - Virginia Tech
Robert Engebretson - Virginia Tech

2:30PM–3:00PM

Nonlinear Model Predictive Control of Urban Air Mobility Aircraft for Vibration Suppression and Trajectory Tracking

Technical Paper Publication: SSDM2023-107346

Jessica Santos Martins Nunes - The University of Alabama

Weihua Su - The University of Alabama

3:00PM–3:30PM

Resonance Prediction for an Assembly of Two Parts Having Similar Frequencies

Technical Presentation Only: SSDM2023-110427

Tuan Nguyen - Raytheon Technologies

01-04-03
ADVANCES IN AEROSPACE STRUCTURES
6/20/2023 **1:30PM TO 3:30PM - OPAL**

Chair: Luciano Demasi - San Diego State University
Chair: Gaetano Giunta - Luxembourg Institute of Science and Technology
Chair: Wei Zhao - Oklahoma State University

3:45PM–4:15PM

Exploring Optimal Topologies of Stiffened Panels for Postbuckling

Technical Presentation Only: SSDM2023-110665

Sheng Chu - University of California, San Diego
Carol Featherston - Cardiff University
David Kennedy - Cardiff University
Hyunsun Kim - University of California, San Diego

4:15PM–4:45PM

Additive Manufacturing of Reinforced Honeycomb Structures

Technical Presentation Only: SSDM2023-110893

George Youssef - San Diego State University

4:45PM–5:15PM

Adjoint Based Topology Optimization of a Bioinspired Aircraft Wing for Flutter Reduction

Technical Presentation Only: SSDM2023-110969

Ekaterina Antimirova - University of California, Berkeley
Aaron Machuca - University of California, Berkeley

VIDEO SUBMISSION

Effect of Pre-Load on JRC of Conventional Aerospace Bolted Joints

Technical Paper Publication: SSDM2023-108416

Varadanam Medepalli - NIT Warnagal & Defence R&D Laboratory
Kishore Kumar Kalahasti - Defence R&D Laboratory
Bangarubabu Popuri - National Institute of Technology

5:15PM – 5:45PM

Numerical Study of Buckling-Driven Mechanisms to Control Adaptive Composite Wings

Technical Presentation Only: SSDM2023-108429

Chiara Bisagni - Delft University of Technology

01-05-02
APPLICATIONS OF ARTIFICIAL INTELLIGENCE/MACHINE LEARNING FOR AEROSPACE STRUCTURES
6/20/2023 **3:45PM TO 5:45PM - TPOPAZ**

Chair: Yongming Liu - Arizona State University
Chair: Xin Liu - University of Texas at Arlington
Chair: Fei Tao - Dassault Systemes Simulia Corp.

3:45PM–4:15PM

An Autonomous Hybrid Physics and Machine Learning Modeling Framework for Certification of Aircraft

Technical Presentation Only: SSDM2023-109314

Ashith Joseph - University of Washington
Alexandru Stere - The Boeing Company
Mohammed Kabir - The Boeing Company
Alan Byar - The Boeing Company
Sergey Fomin - The Boeing Company
Amirali Eskandariyun - University of Washington
John Dong - The Boeing Company
Navid Zobeiry - University of Washington

4:15PM–4:45PM

Multiscale Thermal-Mechanical Analysis of Tow-Steered Composite Plate Structures Using a Mixed-Fidelity Neural Network Model

Technical Presentation Only: SSDM2023-110781

Xin Liu - The University of Texas at Arlington
Su Tian - AnalySwift
Bangde Liu - The University of Texas at Arlington
Shravani Potdar - The University of Texas at Arlington
Wenbin Yu – AnalySwift

4:45PM–5:15PM

Predicting Mechanical Behavior of Additively Manufactured Mechanical Metamaterials Using Point Cloud Representation Learning

Technical Presentation Only: SSDM2023-110876

Zehao Ye - The University of Texas at Arlington
Xin Liu - The University of Texas at Arlington
Bo Peng - Dassault Systemes Simulia Corp
Chen Kan - The University of Texas at Arlington

01-11-01
WIND ENERGY
6/20/2023 **1:30PM TO 3:30PM - CRYSTAL II**

Chair: Erkan Oterkus - University of Strathclyde
Chair: Xiaowei Deng - University of Hong Kong

3:45PM–4:15PM

Real-Time Monitoring of Offshore Wind Turbines by Using IFEM

Technical Presentation Only: SSDM2023-109764

Erkan Oterkus - University of Strathclyde
Mingyang Li - Jiangsu University of Science and Technology
Yildirim Dirik - University of Strathclyde
Selda Oterkus - University of Strathclyde
Islam Amin - Port Said University

4:15PM–4:45PM

Development of Test Rig for Accurate Estimation of Structural Damping of Wind Turbine Blade Composites Through Experimental Modal Analysis

Technical Paper Publication: SSDM2023-108462

Euan Brough - University of Strathclyde
David Nash - University of Strathclyde
Abbas Mehrad Kazemi Amiri - University of Strathclyde
Philippe Couturier - Siemens Gamesa Renewable Energy, Inc.
Vitor Luiz Reis - Siemens Gamesa Renewable Energy, Inc.

4:45PM–5:15PM

An Evaluation Model of Optimal Limits in Wind Farm Layout Optimization Problem

Technical Presentation Only: SSDM2023-105899

Kun Yang - The University of Hong Kong
Xiaowei Deng - The University of Hong Kong

5:15PM–5:45PM

Structural Performance of Wind Turbines Under Active Yaw Control and Wake Effects

Technical Presentation Only: SSDM2023-107242

Ruiyang He - The Hong Kong Polytechnic University
Hongxing Yang - The Hong Kong Polytechnic University
Xiaowei Deng - The University of Hong Kong

Technical Sessions

03-02-01
ADVANCED MANUFACTURING I
6/20/2023 **3:45PM TO 5:45PM - PEARL**

Chair: Evan Pineda - National Aeronautics and Space Administration
Chair: Mehran Tehrani - University of California, San Diego
Chair: Kun Fu - University of Delaware

3:45PM–4:15PM

Robotic Additive Manufacturing of Lunar Regolith/Polymer Composite Through Simultaneous Localization and Additive Manufacturing

Technical Presentation Only: SSDM2023-106490

Mohammad Azami - Concordia University
Pierre-Lucas Aubin-Fournier - Concordia University
Krzysztof (Chris) Skonieczny - Concordia University

4:15PM–4:45PM

High-Speed and High-Resolution 3D Printing of Conductive Self-Healing Hydrogels via µClip

Technical Presentation Only: SSDM2023-107171

Wenbo Wang - Arizona State University
Siying Liu - Arizona State Univertsity
Luyang Liu - Arizona State University
Xiangfan Chen - Arizona State University

4:45PM–5:15PM

High-Speed, High-Resolution 3D Printing of Architected Piezoelectric Structures Using µClip

Technical Presentation Only: SSDM2023-107558

Siying Liu - Arizona State University
Wenbo Wang - Arizona State University
Xiangfan Chen - Arizona State University

5:15PM–5:45PM

Damage Propagation in Additively Manufactured Fiber-Reinforced Composites, Including the Effects of Curing

Technical Presentation Only: SSDM2023-111292

Maryam Shakiba - University of Colorado Boulder
Sina Niazi - Virginia Tech

03-04-02
EMERGING MATERIALS TECHNOLOGY II
6/20/2023 **3:45PM TO 5:45PM - CORAL**

Chair: Evan Pineda - National Aeronautics and Space Administration
Chair: Xiangfan Chen - Arizona State University
Chair: Ajit Roy - Air Force Research Laboratory

3:45PM–4:15PM

Rapid 3D Printing of Nanoporous Copper Powders via Micro-Clip

Technical Presentation Only: SSDM2023-107375

Luyang Liu - Arizona State University
Natalya Kublik - Arizona State University
Bruno Azeredo - Arizona State University
Xiangfan Chen - Arizona State University

4:15PM–4:45PM

Chemically Recyclable Crosslinked Polydiene Elastomers for Vat Photopolymerization-Based 3D Printing

Technical Presentation Only: SSDM2023-106974

Kailong Jin - Arizona State University
Saleh Alfarhan - Arizona State University
Tengteng Tang - Arizona State University
Xiangjia Li - Arizona State University

4:45PM–5:15PM

Studies on the Processing and Characterization of Fiber Reinforced/Epoxy-Nanoclay Composites

Technical Paper Publication: SSDM2023-107279

Rajashekar Mogiligidda - Texas A&M University-Kingsville
Mahesh Hosur - Texas A&M University-Kingsville

5:15PM–5:45PM

Anisotropic Gold Nanostar Metamaterials

Technical Presentation Only: SSDM2023-110815

Shuai Feng - Arizona State University
Blake Povilus - Arizona State Univeristy
Ting-Jung Chang - Arizona State University
Sui Yang - Arizona State University

02-07-01
MACHINE LEARNING IN STRUCTURAL DYNAMICS AND AEROELASTICITY
6/20/2023 **3:45PM TO 5:45PM - IVORY**

Chair: Zahra Sotoudeh - California State Polytechnic University, Pomona
Chair: Weihua Su - The University of Alabama

3:45PM–4:15PM

Data-Driven Prediction of Aircraft Vibration Environment During Unsteady Flight Dynamics

Technical Presentation Only: SSDM2023-110674

Stéphane Février - Université Paris-Saclay, CNRS
Stéphane Nachar - Dassault Aviation
Lionel Mathelin - Université Paris-Saclay, CNRS
Frédéric Giordano - Dassault Aviation
Bérengère Podvin - Université Paris-Saclay, CNRS

4:15PM–4:45PM

Machine Learning Based Airfoil Shape Optimization to Delay Onset of Flutter

Technical Presentation Only: SSDM2023-110760

Jiyoung Jung - University of California, Berkeley
Grace Gu - University of California, Berkeley

4:45PM–5:15PM

An Adaptive Optimization Methodology in the Aerodynamic Analysis of a Free-Form Deformed Finite Wing Structure Using Deep Learning Algorithms

Technical Presentation Only: SSDM2023-110910

Zilan Zhang - University of California, Berkeley
Yu Ao - Shanghai Jiaotong University
Shaofan Li - University of California, Berkeley
Grace Gu - University of California, Berkeley

5:15PM–5:45PM

Experimental Calculation of Coupling Loss Factor for Different Joint Connection

Technical Presentation Only: SSDM2023-109281

Zahra Sotoudeh - California State Polytechnic University, Pomona
Angel Juarez - California State Polytechnic University, Pomona
Stephie Soloarivony - California State Polytechnic University, Pomona
Tyler Wainwright - California State Polytechnic University, Pomona

WEDNESDAY, 6/21/2023

01-02-01
ADAPTIVE AND MULTIFUNCTIONAL STRUCTURES I
6/21/2023 **9:30AM TO 12:00PM - OPAL**

Chair: Xin Ning - The Pennsylvania State University
Chair: Xin-Lin Gao - Southern Methodist University

9:30AM–10:00AM

Design and Optimization of Bird-Bone-Like Aircraft Wing Structures

Technical Presentation Only: SSDM2023-110575

Sepideh Ebad Sichani - The Pennsylvania State University
Xin Ning - The Pennsylvania State University

10:00AM–10:30AM

A Variable Camber Piezocomposite Rotor: Aerodynamic Parametric Analysis

Technical Paper Publication: SSDM2023-108441

Bharg Shah - Rutgers University
Onur Bilgen - Rutgers University

10:30AM–11:00AM

Design of Deployable Rotor Blades Based on Snapping Instabilities

Technical Presentation Only: SSDM2023-110875

Annan Mashin - University of Central Florida
David Malyszek - University of Central Florida
Bowen Li - University of Central Florida
Michael Kinzel - University of Central Florida
Kawai Kwok - University of Central Florida

1:00AM–11:30AM

Bio-Inspired Electronic Skin for Morphing Wings

Technical Presentation Only: SSDM2023-110814

Nikhil Ashok - The Pennsylvania State University
Xin Ning - The Pennsylvania State University

11:30AM–12:00PM

Deployable Mechanical Metamaterials With Multistep Programmable Transformation

Technical Presentation Only: SSDM2023-110801

Zhiqiang Meng - Tsinghua University

01-01-02
GENERAL TOPICS OF AEROSPACE STRUCTURES
6/21/2023 **9:30AM TO 12:00PM - TOPAZ**

Chair: Erkan Oterkus - University of Strathclyde
Chair: Xin-Lin Gao - Southern Methodist University

9:30AM–10:00AM

Mechanical Model of Tomoe-Type Kirigami Structure Avoiding Creases in Flexible Printed Wiring on a Deployable Membrane

Technical Presentation Only: SSDM2023-110658

Shoko Arita - Shizuoka University
Momonari Doi - Shizuoka University
Yasuyuki Miyazaki - Japan Aerospace Exploration Agency

10:00AM–10:30AM

Energy Flow Configuration and Aeroelastic Stability of Flying Wing Aircraft

Technical Presentation Only: SSDM2023-110857

Mojtaba Moshtaghzadeh - Florida International University
Pezhman Mardanpour - Florida International University

10:30AM–11:00AM

Variational Asymptotic Analysis of Steel Cord-Rubber Composite

Technical Presentation Only: SSDM2023-110970

Fang Jiang - Envision Energy

11:00AM–11:30AM

Ultrasonic Guided Waves Sensitivity to Impact Damage Modes in Composite Stiffened Aerospace Panels

Technical Presentation Only: SSDM2023-110637

Kalib Varela - San Diego State University
Kyle Huynh - San Diego State University
Margherita Capriotti - San Diego State University
Hyungsuk Eric Kim - NAVAIR Fleet Readiness Center Southwest
Andrew Ellison - Matroid Inc.
Hyonny Kim - University of California, San Diego
Francesco Lanza Di Scalea - University of California, San Diego

11:30AM–12:00PM

Ultrasonic Guided Waves Scattering Spectra by Hybrid Global-Local Method for Quantitative Non-Destructive Evaluation

Technical Presentation Only: SSDM2023-110705

Mingyue Zhang - San Diego State University
Luis Escalona - San Diego State University
Antonino Spada - The University of Palermo
Margherita Capriotti - San Diego State University

01-09-01
GENERAL TOPICS OF AEROSPACE STRUCTURES
6/21/2023 9:30AM TO 12:00PM - CRYSTAL I

Chair: Erkan Oterkus - University of Strathclyde
Chair: Erdogan Madenci - The University of Arizona
Chair: Ibrahim Guven - Virginia Commonwealth University

9:30AM–10:00AM

Peridynamic Modeling of Sand Particle Impact Damage in Charring Materials Due to Ablation

Technical Presentation Only: SSDM2023-107476

Erdogan Madenci - The University of Arizona
Yanan Zhang - The University of Arizona
Sundaram Vinod Anicode - The University of Arizona

10:00AM–10:30AM

A Peridynamic Study on High Strain Rate Ceramic Material Response

Technical Presentation Only: SSDM2023-109508

Ugur Can - Virginia Commonwealth University
Ibrahim Guven - Virginia Commonwealth University

10:30AM–11:00AM

Non-Ordinary State-Based Viscoelastic Peridynamic Model

Technical Presentation Only: SSDM2023-109763

Yakubu Kasimu Galadima - University of Strathclyde
Selda Oterkus - University of Strathclyde
Erkan Oterkus - University of Strathclyde
Islam Amin - University of Strathclyde
Abdel-Hameed El-Aassar - Desert Research Center
Hosam Shawky - Desert Research Center

11:00AM–11:30AM

Modeling of Dynamic Crack Propagation by Coupling the Boundary Element Method and the Bond-Based Peridynamics

Technical Presentation Only: SSDM2023-110869

Yijun Liu - Southern University of Science and Technology
Yang Yang - Southern University of Science and Technology

11:30AM–12:00PM

Deformation and Damage in Metallic Structures Due to High-Speed Soft and Hard Particle Impacts

Technical Presentation Only: SSDM2023-110923

Riza Kaan Gonuleri - Virginia Commonwealth University
Ibrahim Guven - Virginia Commonwealth University

01-11-02
WIND ENERGY
6/21/2023 9:30AM TO 12:00PM - CRYSTAL II

Chair: Erkan Oterkus - University of Strathclyde
Chair: Xiaowei Deng - University of Hong Kong

9:30AM–10:00AM

Tonality Mitigation of WTG Drivetrains by Applying Advanced Materials to Powertrain Components

Technical Presentation Only: SSDM2023-109038

Alexander Kari - Geislinger GmbH
Martin Cardaun - Center for Wind Power Drives
Wilhem Schünemann - Center for Wind Power Drives
Ralf Schelenz - Center for Wind Power Drives
Christof Sigle - Geislinger GmbH

10:00AM–10:30AM

Comparison Between 1D Beam Model With 2D Cross-Sectional Analysis and 3D FEA Model for Wind Blade

Technical Presentation Only: SSDM2023-110506

Rong Chiu - Purdue University
Akshat Bagla - Purdue University
Wenbin Yu - Purdue University

03-03-01
DAMAGE, FATIGUE, AND FRACTURE I
6/21/2023 9:30AM TO 12:00PM - PEARL

Chair: Evan Pineda - National Aeronautics and Space Administration
Chair: Emily Zeitunian - Aerospace Corporation

9:30AM–10:00AM

A Micro-Scale Numerical Investigation of Internal and Interfacial Void Defects in Adhesive on Failure Behavior of Adhesively-Bonded Materials With Rough Surfaces

Technical Paper Publication: SSDM2023-105653

Yao Qiao - Pacific Northwest National Laboratory
Seunghyun Ko - Pacific Northwest National Laboratory
Avik Samanta - Pacific Northwest National Laboratory
Daniel Merkel - Pacific Northwest National Laboratory
Yongsoon Shin - Pacific Northwest National Laboratory
Anthony Guzman - Pacific Northwest National Laboratory
Ethan Nickerson - Pacific Northwest National Laboratory
Jose Ramos - Pacific Northwest National Laboratory
Kevin Simmons - Pacific Northwest National Laboratory

10:00AM–10:30AM

Investigations on Natural Frequency Shifts of a Cantilever Beam With a Spherical Void Defect

Technical Paper Publication: SSDM2023-107146

Jeremy West - California State University Chico
Trevor Folden - California State University Chico
Dennis O'Connor - California State University Chico

10:30AM–11:00AM

Effects of Manufacturing Processes on Composite Progressive Damage Responses

Technical Paper Publication: SSDM2023-107460

Sai Krishna Meka - Purdue University
Ryan Scott Enos - Purdue University
Dianyun Zhang - Purdue University

11:00AM–11:30PM

Self-Healing of Fatigue Delamination in Thermoset Composites Using Thermoplastic Healants

Technical Paper Publication: SSDM2023-108435

Nilesh Vishe - The University of Alabama
Sameer Mulani - The University of Alabama
Samit Roy - The University of Alabama

03-03-02
DAMAGE, FATIGUE, AND FRACTURE
6/21/2023 **9:30AM TO 12:00PM - CORAL**

Chair: Evan Pineda - National Aeronautics and Space Administration
Chair: Yongming Liu - Arizona State University
Chair: Satchi Venkataraman - San Diego State University

9:30AM–10:00AM

Fatigue Life Prediction of Unidirectional CFRP Specimen Based on Micro-Scale Mechanical Field

Technical Presentation Only: SSDM2023-106841

Yoshikawa Nobuhiro - The University of Tokyo
Naoki Morita - University of Tsukuba
Yuka Sahara - The University of Tokyo
Masahiro Hojo - Japan Aerospace Exploration Agency

10:00AM–10:30AM

A Multi-Mechanism Framework for Cure-Informed Probabilistic Progressive Failure Analysis of Composite Structures

Technical Presentation Only: SSDM2023-107090

Minh Hoang Nguyen - University of Michigan
Royan Dmello - University of Michigan
Anthony Waas - University of Michigan

10:30AM–11:00AM

Bayesian Identification of Input Parameters to Simulate Progressive Damage in Composites

Technical Presentation Only: SSDM2023-107641

Johannes Reiner - Deakin University

11:00AM–11:30AM

Hydrogen-Assisted Fatigue Crack Growth Model for Life Prediction With Pre-Existing Corrosion

Technical Presentation Only: SSDM2023-110899

Kaushik Kethamukkala - Arizona State University

Yongming Liu - Arizona State University

11:30AM–12:00PM

Multiscale Modeling of Anisotropic Elasticity and Fracture in 3D Printed Polymers

Technical Presentation Only: SSDM2023-110928

Jun Li - University of Massachusetts Dartmouth

02-06-01
STRUCTURAL DYNAMICS AND CONTROL OF MORPHING WING AND SMART STRUCTURES
6/21/2023 **9:30AM TO 12:00PM - IVORY**

Chair: Yao Qiao - Pacific Northwest National Laboratory
Chair: Weihua Su - The University of Alabama
Chair: Hua Li - Zhejiang University

9:30AM–10:00AM

Dynamic Aeroelastic Response of Camber Morphing Aircraft

Technical Paper Publication: SSDM2023-106523

Kensuke Soneda - The University of Tokyo
Natsuki Tsushima - Japan Aerospace Exploration Agency
Tomohiro Yokozeki - The University of Tokyo
Taro Imamura - The University of Tokyo

10:00AM–10:30AM

A Novel Method for Estimating Deformation and Stress Fields in Layered Composites Induced by Internal Defects and External Environmental Loads

Technical Presentation Only: SSDM2023-106775

Ernian Pan - National Yang Ming Chiao Tung University

10:30AM–11:00AM

A Global-Local Modeling Approach for the Wave Propagation Analysis in Reinforced Panels With Integrated Piezoelectric Sensors

Technical Presentation Only: SSDM2023-107227

Enrico Zappino - Politecnico di Torino
Jamal Najd - Université de Technologie de Compiègne
Erasmo Carrera - Politecnico di Torino
Walid Harizi - Université de Technologie de Compiègne
Zoheir Aboura - Université de Technologie de Compiègne

11:00 AM–11:30 AM

A New Maneuver Design and Dynamic Control Strategy for Gull-Like Aircraft

Technical Presentation Only: SSDM2023-110856

Shibo Jin - Beihang University
Zihao Zhang - Beihang University
Zizhen Wang - Beihang University
Ziyan Wang - Beihang University
Xingrong Huang - **Beihang University**
Guanxin Hong - Beihang University

1:30AM–12:00PM

Piezoelectric Actuation Technology Inventions in the Last Two Decades

Technical Presentation Only: SSDM2023-110943

Tian Bing Xu - Old Dominion University

01-03-02
ADVANCED MANUFACTURING FOR AEROSPACE STRUCTURES
6/21/2023 **1:30PM TO 3:30PM - TOPAZ**

Chair: Erkan Oterkus - University of Strathclyde
Chair: Yingtao Liu - The University of Oklahoma
Chair: Dong Lin - Oregon State University
Chair: Mehran Tehrani - University of California, San Diego

1:30PM–2:00PM

Roadmap for an Orbital Satellite Factory

Technical Presentation Only: SSDM2023-111545

Jacob Rome - The Aerospace Corporation

Matthew Obenchain - The Aerospace Corporation
Kelvin Chen - The Aerospace Corporation
Christopher Hartney - The Aerospace Corporation
Vinay Goyal - The Aerospace Corporation
Alejandro Trujillo - The Aerospace Corporation

2:00PM - 2:30PM

Moving Towards a Print Then Use Framework for Additive Manufacturing

Technical Presentation Only: SSDM2023-111806

Jacob Rome - The Aerospace Corporation
Vinay Goyal - The Aerospace Corporation
Brett Soltz - The Aerospace Corporation
Glenn Bean - The Aerospace Corporation
Xueyong Qu - The Aerospace Corporation
Evgueni Todorov - The Aerospace Corporation

2:30PM–3:00PM

Finite Element Analysis of the Thermo-Mechanical Behavior of Liquid Rocket Engines Thrust Chambers

Technical Paper Publication: SSDM2023-107212

Michele Ferraiuolo - CIRA
Bruno Rizzo - University of Salerno
Roberto Guglielmo Citarella - University of Salerno
Venanzio Giannella - University of Salerno
Michele Perrella - University of Naples

3:00PM – 3:30PM

Large Scale AMCM manufacturing process to control the composite's microstructures

Invited Talk

Vipin Kumar, Ph.D. - R&D Associate Staff Member, Composites and Fiber Manufacturing, Energy & Transportation Science Division, Oak Ridge National Laboratory

Technical Sessions

01-11-03
WIND ENERGY
6/21/2023 **9:30AM TO 12:00PM - CRYSTAL II**

Chair: Erkan Oterkus - University of Strathclyde
Chair: Xiaowei Deng - University of Hong Kong

1:30PM–2:00PM

The Effect of the Shape of a Wind Farm on Its Power Generation Efficiency

Technical Presentation Only: SSDM2023-110778

Zhikun Dong - University of Hong Kong
Xiaowei Deng - University of Hong Kong

2:00PM–2:30PM

Machine Learning-Based Dynamic Wake Modelling of Large-Scale Offshore Wind Farm

Technical Presentation Only: SSDM2023-110796

Qiulei Wang - University of Hong Kong
Xiaowei Deng - University of Hong Kong

2:30PM - 3:00PM

Multi-Objective Cooperative Control of Wind Farm Using a Double-Layer Machine Learning Framework

Technical Presentation Only: SSDM2023-110799

Shanghui Yang - University of Hong Kong
Xiaowei Deng - University of Hong Kong

3:00PM–3:30PM

A Critical Evaluation of Large Scale Direct-Drive Wind Turbine Electrical Machines Manufacturing Techniques Considering Sustainability Aspects and Recyclability Issues

Technical Presentation Only: SSDM2023-110872

Pablo Jaen Sola - Edinburgh Napier University
Magnus Bichan - Edinburgh Napier University
Andrew Jack - Edinburgh Napier University

01-11-03
ADVANCED MANUFACTURING II
6/21/2023 **1:30PM TO 3:30PM - CORAL**

Chair: Evan Pineda - National Aeronautics and Space Administration
Chair: Navid Zobeiry - University of Washington
Chair: Marco Petrolo - Politecnico di Torino

1:30PM–2:00PM

Thermal Enhancement of SIC Nanocomposites Fabricated via Liquid Crystal Templating Assisted Vat Photopolymerization

Technical Presentation Only: SSDM2023-107590

Tengteng Tang - Arizona State University
Saleh Alfarhan - Arizona State University
Kailong Jin - Arizona State University
Xiangjia Li - Arizona State University

2:00PM–2:30PM

Unraveling the Foundations for In-Situ Consolidated Automated Fiber Placement

Technical Presentation Only: SSDM2023-110464

Mehran Tehrani - University of California, San Diego
Pratik Koirala - The University of Texas at Austin

2:30PM–3:00PM

Multifunctional Design and Additive Manufacturing of Carbon Fiber Structural Battery Composites Using a Drop-on-Demand Method With In-Situ Consolidation

Technical Presentation Only: SSDM2023-110816

Xiangyang Dong - Missouri University of Science and Technology
Yuekun Chen - Missouri University of Science and Technology

3:00PM–3:30PM

Discrete Element Method Simulation for Binder Jet Additive Manufacturing of Ceramic Materials

Technical Presentation Only: SSDM2023-110940

Noah Whitney - University of Massachusetts Dartmouth
Zhijian Pei - Texas A&M University
Chao Ma - Texas A&M University
Jun Li - University of Massachusetts Dartmouth

03-08-02
MICROMECHANICS AND MULTISCALE MODELING II
6/21/2023 **1:30PM TO 3:30PM - CORAL**

Chair: Evan Pineda - National Aeronautics and Space Administration
Chair: Cindy Li - Arizona State University

1:30PM–2:00PM

Thermomechanical Design of Tailorable Composites and Hybrid Material Systems

Technical Presentation Only: SSDM2023-107326

Su Tian - Purdue University

Xin Liu - The University of Texas at Arlington

Liang Zhang - AnalySwift

Wenbin Yu - Purdue University

2:00PM–2:30PM

Mechanistic Machine Learning Method for Multiscale Analysis of Injection-Molded Composites

Technical Presentation Only: SSDM2023-107355

Haoyan Wei - Ansys Inc.
C. T. Wu - Ansys Inc.
Wei Hu - Ansys Inc.
Tung-Huan Su - Ansys Inc.

2:30PM–3:00PM

Comparisons Between In-Situ Micro-Scale Transverse Compression Experiments and Modeling Methods of Numerical Finite Elements and Semi-Analytical Micromechanics

Technical Presentation Only: SSDM2023-110366

Emily Zeitunian - The Aerospace Corporation
Ivan Gallegos - Michigan Technological University
Evan Pineda - NASA Glenn Research Center
Mark Flores - Air Force Research Laboratory
Gregory Odegard - Michigan Technological University

3:00PM–3:30PM

Infill Density Effect on the Mechanical Characteristics of Cryo-Treated PETG Structures Developed Using Fused Filament Fabrication Method

Technical Paper Publication: SSDM2023-108423

K. E. Reby Roy - TKM College of Engineering

Jiby George Joseph - TKM College of Engineering
Aravind Jayarajan - TKM College of Engineering

02-05-02
EXPERIMENTAL STUDIES IN STRUCTURAL DYNAMICS - II
6/21/2023 **1:30PM TO 3:30PM - OPAL**

Chair: Haifeng Zhao - University of Chinese Academy of Sciences
Chair: Weihua Su - The University of Alabama

1:30PM–2:00PM

Experimental Validation of Plate Stiffening via Crumpling

Technical Presentation Only: SSDM2023-107411

Othman Oudghiri-Idrissi - University of Michigan, Ann Arbor
Hrishikesh Danawe - University of Michigan, Ann Arbor
Avinkrishnan A. Vijayachandran - University of Michigan, Ann Arbor
Andrea A. Poli - University of Michigan, Ann Arbor
Xiaoming Mao - University of Michigan, Ann Arbor
Anthony M. Waas - University of Michigan, Ann Arbor
Ellen Arruda - University of Michigan, Ann Arbor
Serife Tol - University of Michigan, Ann Arbor

2:00PM–2:30PM

Passive Non-Invasive Nondestructive Testing Method Based on Environmental Noise in Bionic Aircraft

Technical Presentation Only: SSDM2023-110797

Xun Wang - Beihang University
Yifan Ren - Beihang University
Ziyan Wang - Beihang University
Zihao Zhang - Beihang University
Qihang Qin - Beihang University
Xingrong Huang - Beihang University

2:30PM–3:00PM

Characteristics and Dynamics of Asymmetric Bolted-Joint Beams Under the Influence of Wear

Technical Presentation Only: SSDM2023-110930

Tharwat Elkabani - New Mexico State University

Dylan Allen - New Mexico State University
Marina Espinosa - New Mexico State University
Abdessattar Abdelkefi - New Mexico State University

3:00PM–3:30PM

Effects of Accelerometers' Positions on the Dynamical Responses of Complex Systems

Technical Presentation Only: SSDM2023-110823

Jonah Madrid - New Mexico State University
Ezekiel Granillo - New Mexico State University
Adam Takeshita - New Mexico State University
Abdessattar Abdelkefi - New Mexico State University

3:30PM–4:00PM

Experimental Comparative Studies on the Dynamical Responses of Additively Manufactured Cantilever Beams

Technical Presentation Only: SSDM2023-110939

Nicholas Hall - New Mexico State University
Micah Guajardo - New Mexico State University
Mason Curtin - New Mexico State University
Luis Corral - New Mexico State University
Megan Trujillo - New Mexico State University
Abdessattar Abdelkefi - New Mexico State University

VIDEO SUBMISSION

Engineered Material Arresting Systems Based on the Use of Rubber

Technical Paper Publication: SSDM2023-107143

Daniele Dipasquale - International Academy of Aviation Industry, King Mongkut's Institute of Technology Ladkrabang
Siamak Khosroshahi - Queen Mary University of London
Teo Mudric - University of Rijeka
Prasert Prapamonthon - International Academy of Aviation Industry, King Mongkut's Institute of Technology Ladkrabang
Soemsak Yooyen - International Academy of Aviation Industry, King Mongkut's Institute of Technology Ladkrabang

02-03-01
STUDIES IN AEROSPACE STRUCTURAL DYNAMICS
6/21/2023 **1:30PM TO 3:30PM - IVORY**

Chair: Zhangxian Yuan - Worcester Polytechnic Institute
Chair: Weihua Su - The University of Alabama

1:30PM–2:00PM

Design of In-Space 3D Printable Spacecraft Incorporating Metamaterial Technologies

Technical Presentation Only: SSDM2023-103965

Othman Oudghiri-Idrissi - University of Michigan, Ann Arbor
Avinkrishnan A. Vijayachandran - University of Michigan, Ann Arbor
James P. Mcinerney - University of Michigan, Ann Arbor
Andrea A. Poli - University of Michigan, Ann Arbor
Wei-Chun Lu - University of Michigan, Ann Arbor
Hrishikesh Danawe - University of Michigan, Ann Arbor
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Anthony M. Waas - University of Michigan, Ann Arbor
Ellen Arruda - University of Michigan, Ann Arbor
Serife Tol - University of Michigan, Ann Arbor

2:00PM–2:30PM

Tunable Ultra-Low Frequency Isolator With Quasi-Zero Stiffness Metamaterials

Technical Paper Publication: SSDM2023-105883

Keyan Huo - University of Chinese Academy of Sciences
Zihao Yuan - University of Chinese Academy of Sciences
Ruinan Mu - University of Chinese Academy of Sciences
Ke Wang - University of Chinese Academy of Sciences
Haifeng Zhao - University of Chinese Academy of Sciences

VIDEO SUBMISSION

Nonlinear Response of Contact Interface With Nanoscale Fractal Roughness Under Harmonic Excitation for Jointed Structures

Technical Paper Publication: SSDM2023-108295

Yunyun Sun - Wuhan University
Bing Wu - Wuhan University
Shijing Wu - Wuhan University
Hongguang Li - Shanghai Jiao Tong University

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