

THURSDAY EVENTS

Welcome to the frontline of aerospace innovation! We are thrilled to host Region II's brightest minds as you share your research and explore the evolving frontiers of flight and space exploration. This conference is your opportunity to spark new connections, gain professional insights, and engage with the advancements driving our field forward. We look forward to a journey of discovery and collaboration as we continue to reach for new heights together!



8:00 AM Keynote
Location: Russell House Ballroom

JOSEPH G. PEÑA
Director & Chief Engineer
787 Interiors Design
Boeing Commercial Airplanes

Joseph leads a global team of over 400 professionals in developing innovative, certified cabin solutions for the Dreamliner fleet.



12:30 PM - 2:00 PM Luncheon
Location: Russell House Ballroom
Sponsored by Reed Integration

DR. LEE JASPER
Systems Engineer
Space Dynamics Laboratory

Lee leverages his expertise in astrodynamics and orbital debris to support AFRL and major satellite missions, including CubeSats and JPL's NISAR.

Sponsor Tables
Location: Russell House Lobby

Several sponsors will be onsite Thursday throughout the day. They will be available to discuss opportunities and programs with student attendees. This is a great opportunity to grow your professional network. Please stop by as your schedule allows.



Scan this QR code to access the full online version of the conference materials!

<https://region2.aiaastudentconference.org/collection/2026/>

THURSDAY - RUSSELL HOUSE THEATRE

Team Category

8:45 AM "Experimental Payload Analysis Concerning Known Radiation Effects and Degradations"; a team project by North Carolina State University

9:15 AM "Reaction Wheel Roll Stabilization and Control for an L1 High-Power Rocket"; a team project by Georgia Institute of Technology

9:45 AM "Prediction of Fin Flutter Via Vibrational Analysis"; a team project by Mississippi State University

10:15 AM - 10:30 AM Break

10:30 AM "Viability of Thermoformed Closed-Cell Foam Cores for Carbon Fiber Sandwich Rocket Fins"; a team project by Georgia Institute of Technology

11:00 AM "Managing Safety Hazards for a Liquid Rocket Engine Test Stand"; a team project by The University of Alabama in Huntsville

11:30 AM "Digital Twin Integration for Battery Life Estimation in the SWIFT-UAV Platform"; a team project by The University of South Carolina

12:00 PM "Characterizing Supersonic Jet Impingement Behavior"; a team project by Embry-Riddle Aeronautical University

12:30 PM - 2:00 PM Lunch

2:00 PM "Efficient Fan Design Using Propellers for Fan Array Wind Tunnels"; a team project by The University of Memphis

2:30 PM "Analytical Modeling of In-Flight Mass and Inertia Evolution in Hybrid Rockets"; a team project by Georgia Institute of Technology

3:00 PM "Aerodynamic Design and Performance of an Undergraduate-Designed Unpowered Hypersonic Glide Vehicle"; a team project by The University of Tennessee

3:30 PM - 3:45 PM Break

3:45 PM "Integrated Design and Analysis of a Low-Cost, Motor-Driven Airbrake System for a Sounding Rocket"; a team project by The University of Georgia

4:15 PM "Utilization of The Radiative Transfer Equation For High Precision Boundary Layer Modeling in Liquid Rocketry Applications"; a team project by The University of Alabama in Huntsville

THURSDAY - RUSSELL HOUSE ROOM 303

Team Category

8:45 AM "RANS Turbulent Model Assessment for Fan Array Wind Wall Facilities"; a team project by The University of Memphis

9:15 AM "Technical Challenges in Liquid Rocket Engine Control System Design & Implementation"; a team project by The University of Alabama in Huntsville

9:45 AM "Evaluating Numerical Solving Methods for Optimal Powered Descent"; a team project by Georgia Institute of Technology

10:15 AM - 10:30 AM Break

10:30 AM "CFD-Based Aerodynamic Modeling and Validation of Airbrake Integration for Apogee Control in a Sounding Rocket"; a team project by The University of Georgia

11:00 AM "Flight Testing Validation of Theoretical Stability Modeling for a 3D-Printed UAS"; a team project by Mississippi State University

11:30 AM "System Architecture of a Reusable 1000 N N₂O/Paraffin-ABS Hybrid Rocket Lander"; a team project by Georgia Institute of Technology

12:00 PM "Optimizing Wing Structural Design: Evaluating Infill Geometry and Print Orientation on the Structural Integrity of PLA Components"; a team project by The University of Memphis

12:30 PM - 2:00 PM Lunch

2:00 PM "Conceptual Design of a Low-Complexity Ultralight Aircraft"; a team project by The University of South Carolina

2:30 PM "Material Selection and Structural Analysis of an Undergraduate-Designed Unpowered Hypersonic Glide Vehicle"; a team project by The University of Tennessee

3:00 PM "STARGATE: An Undergraduate Experimental Gridded Thruster Student Research Project"; a team project by The University of Alabama in Huntsville

3:30 PM - 3:45 PM Break

3:45 PM "Development and Characterization of a Closed-Loop Nitrous Throttling System for a Hybrid Rocket Lander"; a team project by Georgia Institute of Technology

4:15 PM "Fatigue Life for Mode-II Failure of Carbon Fiber Reinforced Polymer (CFRP) Composites"; a team project by Mississippi State University

4:45 PM "Design, Simulation and Testing of a Linear Quadratic Regulator for Attitude Control of a Fin-Tab Rocket"; a team project by Georgia Institute of Technology

Undergraduate Category

8:45 AM "Design and Analysis of an Active Airbrake System for Apogee Control in a 10,000-ft Class Suborbital Rocket"; Yuvasurya Vangala; Alonso Arregui Martinez; Georgia Institute of Technology

9:15 AM "Aerothermodynamic Analysis and High-Speed Schlieren Imaging of an Undergraduate-Designed Hypersonic Glide Vehicle"; Aaron Matheny; Isaac Smith; The University of Tennessee

9:45 AM "Under-cured HTPB in APCP effect on burn behavior"; Justin Sadler; Florida Institute of Technology

10:15 AM - 10:30 AM Break

10:30 AM "Expedient Radio Frequency Gridded Ion Thrusters"; Claude Blue; The University of Alabama in Huntsville

11:00 AM "Development of a Small-Scale Aeroelastic Apparatus for Limit Cycle Oscillation Data Collection"; Avaneesh Ravat; North Carolina State University

11:30 AM "Performance Characteristics of an Auto Rotating Lander under High-Speed Deployment"; Rais Nurhidajat; Vanderbilt University

12:00 PM "Design, Development, Implementation of UAS Checklists for Multi-Mission Operations"; Riley Womack; Caleb Caldwell; Kennesaw State University

12:30 PM - 2:00 PM Lunch

2:00 PM "Investigation of the Impact of Electrode Design & Material on Efficacy of Dust Removal for Martian Applications"; Rishita Mhatre; Viti Chandra; Georgia Institute of Technology

2:30 PM "A Review on Laser-Based Powder Bed Fusion Additive Manufacturing of Ceramics and Ceramics-based Composite Materials"; Heer Patel; Embry-Riddle Aeronautical University

3:00 PM "Towards Rocket Plume Assisted In-situ Construction Processes Supporting Extraterrestrial Exploration Activities"; Addison Holcomb; Katsumasa Kawahara; Louisiana State University

3:30 PM - 3:45 PM Break

3:45 PM "MHD Experiment on a Blunt Body in High-Enthalpy Argon Flow at the TennHET Arc Jet Facility"; Carson Waddell; The University of Tennessee

4:15 PM "Kármán-Pohlhausen Momentum-Integral Approximations for Non-Newtonian Boundary Layers over a Flat Plate"; Suzanne Feist; Auburn University

4:45 PM "Design and Analysis of Initial High-Powered Solid Rocket Motors by Kennesaw Rocketry Team"; James Carroll; Kennesaw State University

Undergraduate/Open Topic Categories

8:45 AM "Low Order Unsteady Aerodynamic Model for Gust Alleviation Through Wing Morphing"; Sebastian Mares; The University of North Carolina at Charlotte

9:15 AM "Design, Manufacturing, and Testing of a Data Acquisition System (DAS) for Use in the Development of Control Systems for Fixed-Wing Unmanned Aerial Systems (UAS)"; Tucker Jaudon; Austin Hoff; Mississippi State University

9:45 AM "A Transient URANS Workflow for Stability-Derivative Estimation of a Fixed-Wing sUAS Including External Payload and Landing Gear Aerodynamics"; Harsh Gupta; The University of Georgia

10:15 AM - 10:30 AM Break

10:30 AM "On Volkov's Momentum-Integral Formulation of Viscous and Thermal Boundary Layers for Flow over a Flat Plate"; Charles Davis; Auburn University

11:00 AM "Unified Design Standard for High-Speed, Mission-Adaptive Avionics Development Platforms"; Cheng Liu; Mohammed Abdeen; Georgia Institute of Technology

11:30 AM "DFT and NEB Investigation of Magnesium-Catalyzed Methane Dissociation for Enhanced Propellant Energy Density in ISRU-Based Interplanetary Fuel Production"; Kinga Wysocka; Embry-Riddle Aeronautical University

12:00 PM "Investigating the Aerodynamic Impacts of Laser-Based Ablation on Carbon Fiber in a Mach 3.5 Shock/Boundary-Layer Interaction"; Seth Pickman; Jalen Johnson; The University of Tennessee

12:30 PM - 2:00 PM Lunch

2:00 PM "Rayleigh Loss Estimation Using One-Dimensional Flow Analysis for LPRE"; Sawyer Morgan; Auburn University

2:30 PM "Effects of Current and Voltage Uncertainty on Triple Langmuir Probe Measurements"; Whitney Reinkoester; Florida Institute of Technology

3:00 PM "Modeling and Stability Analysis of Inertial Roll Coupling in Supersonic Sounding Rockets"; Saptak Das; Georgia Institute of Technology

3:30 PM - 3:45 PM Break

3:45 PM "Development of an Integrated Thrust Vectoring System for Nozzle-Augmented Electric Ducted Fans"; Emily Yang; Tennessee Technological University

4:15 PM "Review of Mars Rover Wheel Design and Mobility Performance on Slopes and Regolith"; Gabriela Rodriguez; The University of Florida *

4:45 PM "Improvements of the Thermal Protection System from Apollo to Modern Spacecraft"; Kari Curtin; Florida Institute of Technology *

THURSDAY - RUSSELL HOUSE ROOM 305

Graduate/Outstanding Branch Categories

8:45 AM "Novel Shock-Tube Test Facility Modification for Testing Dynamic Behavior of Carbon Fiber Airframes subjected to impulsive shock loading"; Jonathan Zak; Vanderbilt University

9:15 AM "Burnback Analysis and Optimization of Star Grains Using the Level Set Method."; Hossam Adel; Auburn University

9:45 AM "An Experimental Framework for Evaluating Lunar Regolith Adhesion on Bio-Inspired Ceramic 3D-printed Laminates"; Alyssa Vega; Ashley Tirado Pujols; Embry-Riddle Aeronautical University

10:15 AM - 10:30 AM Break

10:30 AM "Human-Supervised CFAR Autotuning for Maritime Sensing"; Nathan Kirk; JC Vaught; The University of South Carolina

11:00 AM "A Stochastic Dissipation Model for Predicting Macroscale Burn Behavior of HMX from Microstructural Statistics"; Philip Melton; Louisiana State University

11:30 AM "LLM Transonic Wing Optimization"; Jason Rupram; The University of Georgia

12:00 PM "Effect of Locational Optimization of Electronic Ducted Fan Propulsion Systems on the Aerodynamic Efficiency of a Wing"; Charles Savage; Ryan Maier; Tennessee Technological University

12:30 PM - 2:00 PM Lunch

2:00 PM "Advances in Resident Space Object Identification with Unresolved Optical Space Imagery"; Abigail Miller; Embry-Riddle Aeronautical University

2:30 PM "Exact Beltramanian Solution of the Bidirectional Vortex Motion in a Capped Ellipsoidal Cyclonic Rocket Engine"; Patrick Eid; Auburn University

3:00 PM "Design, Build, and Fly a Lightweight, Rigid, Modular 3D-Printed UAV"; Azizur Rahman; Achintya Kumar Saha; Tennessee Technological University

3:30 PM - 3:45 PM Break

3:45 PM "Florida Tech AIAA: Expanding Student Opportunity on the Space Coast and Beyond"; Daria Astaire; Florida Institute of Technology †

4:00 PM "Engaging School Spirit and Aerospace Innovation: The MSU AIAA Tailgate Experience"; Daniel Hurley; Mississippi State University †

4:15 PM "Exploring New Horizons: Supporting Future Engineers in the Georgia Tech Community and Beyond"; Isabelle Pinto; Rishita Mhatre; Georgia Institute of Technology †

4:30 PM "How to Plan Your Conference: the University of South Carolina's Guide to Large Event Planning"; Michael Cargill; Alberto Diaz; The University of South Carolina †

4:45 PM "AIAA at The University of Georgia"; Connor Perrine; Brianna Wong; The University of Georgia †

5:00 PM "From Rocky Top to the Classroom: K-12 STEM Outreach by the Volunteers"; Cole Perry; Carson Waddell; Alyssa Bice; The University of Tennessee †

† Outstanding Student Branch Activity Category

FRIDAY - RUSSELL HOUSE THEATRE

Team Category

8:00 AM "Solar Physics Observer & Transmitter (S.P.O.T.)"; a team project by Embry-Riddle Aeronautical University

8:30 AM "Transpiration Cooling for Reusable Heat Shields During Earth Reentry"; a team project by Mississippi State University

9:00 AM "Design of a 1000 N N₂O/Paraffin-ABS Hybrid Rocket Engine for a Reusable VTVL Lander"; a team project by Georgia Institute of Technology

9:30 AM "Investigation of Bio-Inspired Multi-Stage Architecture Effects on Lunar Mission Performance"; a team project by The University of Georgia

10:00 AM - 10:15 AM Break

10:15 AM "Open Source Design and Analysis of a Rocket Engine Fluid System"; a team project by The University of Alabama In Huntsville

10:45 AM "GNCSIM: A High-Fidelity 6-DOF Simulation Framework for Closed-Loop Rocket Navigation and Control"; a team project by Georgia Institute of Technology

11:15 AM "Applications of Modular Component Fixed-Wing Tilt-Rotor Unmanned Aerial Systems in the Monitoring and Restoration of Forest Health"; a team project by North Carolina State University

FRIDAY - RUSSELL HOUSE ROOM 303

Team Category

8:00 AM "Numerical Study of Modified Airfoil Cross-Sections in Grid Fin Aerodynamics"; a team project by Georgia Institute of Technology

8:30 AM "Intel Array for Non-Static Application: A Mobile Approach to Ground Stations"; a team project by North Carolina State University

9:00 AM "Design and Optimization of Wheel Geometries for Enhanced Maneuverability and Resilience in Lunar Rovers"; a team project by The University of Georgia

9:30 AM "Project NIGHT: Nuclear Isotopic Gas Hall Thruster"; a team project by The University of Alabama in Huntsville

10:00 AM - 10:15 AM Break

10:15 AM "High-Power Laser Testing of Phenolic Impregnated Carbon Ablators Under Flight-Relevant Heat-Flux Conditions"; a team project by The University of Tennessee

10:45 AM "Analysis and Optimization of Additively Manufactured Propellers for Heavy Lift Drones"; a team project by Mississippi State University

11:15 AM "Numerical Analysis and Precursor Detonation Tube Design for Continuously Rotating Detonation Engine Development"; a team project by Embry-Riddle Aeronautical University

11:45 AM "Computational Analysis of Ice Accretion Roughness on Aerodynamic Performance"; a team project by Georgia Institute of Technology

FRIDAY - RUSSELL HOUSE ROOM 203

Undergraduate Category

8:00 AM "Experimental Validation of Nonlinear Adaptive Sliding Mode Control on a Two-Degree-Of-Freedom Helicopter System"; Samuel Newport; The University of Alabama in Huntsville

8:30 AM "Exploration of the Effects of the Resin Curing Process on the Deformation of Formlabs Rigid 10K 3D Prints of Varying Thicknesses"; Carolina Rebelo; Alexander Dorsey; Georgia Institute of Technology

9:00 AM "Aero-Acoustic Optimization and Experimental Validation of a NACA 2415 Toroidal UAV Propeller"; Abhinav Das; The University of North Carolina at Charlotte

9:30 AM "On the Compressible High-Speed Flow Analysis of a Tapered Slab Rocket Motor"; Andre Salles; Auburn University

10:00 AM - 10:15 AM Break

10:15 AM "Custom Trajectory Analysis Software for Spaceflight: Aerodynamic Heating Analysis of a Two-Person Moon-Return Vehicle"; Jacob Menssen; Georgia Institute of Technology

10:45 AM "Design and Trade Study Evaluation of a Modular Fixed-Wing UAS for Wildfire Detection and Post-Fire Recovery"; Phillip Chvosta; North Carolina State University

11:15 AM "Next Generation of Aerospace Innovators from a Space-Themed Educational Board Game"; Stefanina Adrianza; Sreenidhi Muppiri; The University of Georgia

11:45 AM "Acoustic Enhancement of Water Electrolysis for Efficient Oxygen Production in Microgravity"; Sanjay Karthik; Aidan Sherin; The University of Florida

FRIDAY - RUSSELL HOUSE ROOM 205

Freshman/Sophomore Open Topic Category

8:00 AM "University of South Carolina's Path to the Stars: A Developing Space Program"; Jacob Boutin; The University of South Carolina

8:30 AM "AI-Enhanced Control and Aerodynamic Optimization for Hypersonic Flight"; Ethan Wiseman; Brian Lopez; The University of Florida

9:00 AM "Integrated Air Defense Systems with Focus on Intercepting Technology"; Emily Marshall; Florida Institute of Technology

9:30 AM "Applications for Quantum Optimization Algorithms in Low-Thrust Spaceflight Navigation"; Aneesh Sattiraju; Skyler Kim; Georgia Institute of Technology

10:00 AM - 10:15 AM Break

10:15 AM "Experimental Validation of a CFD-Based Blade Element Theory Disk Model for a Small Quadrotor UAV"; Junzhe Liu; Vanderbilt University

10:45 AM "Comparative Analysis of Energy Absorption Efficiency in Triply Periodic Minimal Surface (TPMS) vs. Honeycomb Lattices for Lunar Lander Primary Strut Attenuation."; Gabriel Brazzeal; Kenza Rih; The University of Florida

11:15 AM "How Do Various Atmospheric Temperatures Affect the Structural Component of Rocket Nozzles?"; Suhani Dondapati; Kiara Saldanha; Georgia Institute of Technology

11:45 AM "The Future of Space Exploration: Exploring Challenges and Solutions Within the Field of Aerospace Medicine"; Alyssa Bice; The University of Tennessee

FRIDAY - RUSSELL HOUSE ROOM 305

High School Category

8:00 AM "The Future of Air-Taxi Networks in Global Smart Cities"; Saksham Garg; Denmark High School

8:30 AM "Real-Time Digital Twin Implementation for Predictive Maintenance of UAVs Using Embedded Sensor Fusion and Machine Learning"; Naren Pai; William G. Enloe High School

9:00 AM "Computational Analysis of Propeller-Wing Interaction: Quantifying Blown Lift on a NACA 4412 Airfoil"; Tejus Peri; Ansh Mishra; Alliance Academy for Innovation

9:30 AM "Modular Rocket Design for Rapid and Reconfigurable Experimentation"; a team project by Oconee County High School

10:00 AM - 10:15 AM Break

10:15 AM "Computational System-Level Analysis of Hydrogen-Fueled In-Orbit Refueling Architectures for Payload Optimization Using Medium-Class Launch Vehicles"; a team project by Lambert High School

10:45 AM "Passive Nozzle-Exit Design for Reducing Ice-Supersaturated Wakes and Contrail Persistence"; a team project by Northview High School et al.

11:15 AM "Integrated Aero-Structural Optimization of Bio-Inspired and Generative AI Airfoils with Internal Lattice Architectures"; Saahil Doshi; Cashton Isaac; Oconee County High School

CONFERENCE INFO

For a more detailed look at the planned events, please refer to our comprehensive conference booklet. This supplemental resource includes full speaker biographies, schedules, and maps for navigating the Russell House and parking. It also features a "Local Exploration" guide to help you make the most of your time in Columbia and at the nearby Shaw Air Force Base expo.

ACKNOWLEDGEMENTS

The AIAA Region II Sections are now in their 71st year of participation in sponsoring the Region II Student Conference. Special thanks to all of the volunteers on the Region II Student Conference Committee, the faculty advisors, the on-site judges, and the technical paper judges.



FOUNDATION

Thanks to the AIAA Foundation for their generous financial support of all of the AIAA Regional Student Conferences. The AIAA Foundation provides award funding for the undergraduate, graduate, team, and high school categories.

SPONSORS

Thanks are offered to those companies, groups, universities and individuals whose financial assistance, equipment, and/or services made this conference possible.

National Sponsors

AIAA Foundation

Platinum Plus Sponsor

University of South Carolina

Platinum Sponsor

Boeing

Molinaroli College of Engineering and Computing

Gold Sponsors

Reed Integration

USC Department of Mechanical Engineering

Silver Sponsors

Amentum

Onyx Aerospace

Bronze Sponsors

Busek

Correlated Solutions

Don and Ruth Kaderbek

Dr. E. Stan Powell (Memorial Gift)

Dr. L. Michael Freeman (Memorial Gift: UA Alumni)

Contributors

Alan and Nikki Lowrey

BAE Systems

Classic Engineering, LLC

Earthly Dynamics

KUKA Robotics

SC Innovates

South Carolina Research Authority (SCRA)



77th ANNUAL SOUTHEASTERN
REGIONAL STUDENT CONFERENCE
March 26-27, 2026

Hosted by

The University of South Carolina

AIAA Student Branch Chair

Michael Cargill

Faculty Advisor

Dr. Wout De Backer

The Molinaroli College of Engineering and Computing

Hilton Garden Inn Columbia/Harbison

Russell House

Columbia, South Carolina

PARTICIPATING UNIVERSITIES

Auburn University

Embry-Riddle Aeronautical University, Daytona Beach

Florida Institute of Technology

Georgia Institute of Technology

Kennesaw State University

Louisiana State University

Mississippi State University

North Carolina State University

Tennessee Tech University

Tuskegee University

University of Alabama in Huntsville

University of Alabama, Tuscaloosa

University of Central Florida

University of Florida

University of Georgia

University of Memphis

University of North Carolina at Charlotte

University of South Carolina

University of Tennessee

Vanderbilt University

Western Governors University

AWARDS BANQUET

5:30 PM Social

Location: The Founders Zone
at Williams-Brice Stadium

6:30 PM Awards Banquet

Location: The Founders Zone
at Williams-Brice Stadium

THE HONORABLE CHARLES F. BOLDEN JR.

Major General,
United States Marine Corps (Ret.)
12th NASA Administrator
Founder & CEO Emeritus,
The Charles F. Bolden Group



Join us for the Awards Banquet sponsored by Boeing to celebrate the best of Region III! We'll honor outstanding achievements and announce winners across all categories. It's a perfect evening to enjoy a great meal and engaging company while celebrating our community's excellence.

Prize winners and professional attendees are invited to attend the Winners' Reception immediately following the awards banquet.

PARTICIPATING HIGH SCHOOLS

Alliance Academy for Innovation

California High School

Denmark High School

Enloe High School

Kennesaw Mountain High School

Northview High School

Oconee County High School

Upstate Preparatory Academy