



Greater Huntsville Section

Young Professional Symposium Agenda (tentative)

Location:

Dynetics Solutions Complex
1004 Explorer Blvd NW
Huntsville, AL 35806

Day 1 (Oct. 20, 2016)

7:00 – 8:00 AM

Registration, Coffee/Snacks, and Networking

8:00-9:00 AM

- *Conference Welcome and Keynote*
 - Dr. Steve Pierce, CTO, US Army-SMDC

9:00-11:40 AM Technical Presentations

- **Space Exploration and Environments (9:00 – 10:20)**
 - **9:00 – 9:20: Towards Von Neumann Probes: Architecture and Technologies for Exploration with Replicating Spacecrafts**
Kunning G. Xu, University of Alabama in Huntsville
 - **9:20 – 9:40: Investigations of desiccants and CO₂ sorbents for advanced exploration systems**
Gregory Cmarik, Jacobs ESSSA Group*
Jim Knox, NASA Marshall Space Flight Center
 - **9:40 – 10:00: Arusha Long Range Rover**
Leslie Smith, NASA Marshall Space Flight Center*
Robert Howard, Jr., NASA Johnson Space Center
Marie-Jeanne Steady Ndiaye, Boeing
 - **10:00-10:20: Thermal Control for Direct Imaging of Earthlike Exoplanets**
Thomas Brooks, NASA Marshall Space Flight Center
- **Modeling and Simulation (10:20-12:00)**
 - **10:20 – 10:40: Space Launch System Base Heating Test: Environments and Base Flow Physics**
Manish Mehta, Mark Seaford, NASA Marshall Space Flight Center
Kyle Knox, Jacobs ESSSA Group*
Aaron Dufrene, CUBRC
 - **10:40 – 11:00: In-Space Manufacturing Impacts on Logistics Mass and Risk for Long-Endurance Human Spaceflight**
Andrew Owens, Olivier de Weck, Massachusetts Institute of Technology*
 - **11:00-11:20: Missile End-Game Performance Modeling Using Machine Learning**
Kevin Albarado, Dynetics, Inc
 - **11:20-11:40: Thermal Modeling Challenges of the Iodine Satellite (iSAT)**
Stephanie Mauro, NASA Marshall Space Flight Center
 - **11:40-12:00: Application of Design of Experiments and Surrogate Modeling within the NASA Advanced Concepts Office, Earth-to- Orbit Design Process**
Mathew R. Zwack, Patrick D. Dees, Jacobs ESSSA Group*
James B. Holt, NASA Marshall Space Flight Center



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12:00 PM-1:00 PM

- **Lunch (Keynote)**
 - Dr. Jonn Kim, CEO, Geeks and Nerds Corp.

1:00 -3:40 PM

- **Materials and Structures**
 - **1:00 – 1:20: 3D Printing in Zero G Technology Demonstration Mission: Summary of On-Orbit Operations, Materials Testing, and Future Work**
Tracie Prater, Quincy Bean, Niki Werkheiser, Frank Ledbetter, NASA Marshall Space Flight Center*
 - **1:20 – 1:40: Additive Construction with Mobile Emplacement: An Automated Technology to Impact Deep Space Architecture and Improve Life on Earth**
Mallory Johnston, John Fikes, NASA Marshall Space Flight Center
Jennifer Edmunson, Michael Fiske, Jacobs ESSSA Group*
 - **1:40 – 2:00: 3-D Printed Pressure Vessel Design for Maximum Volume to Weight Optimization**
Brandon J. Straight, University of Alabama in Huntsville
 - **2:00-2:20: Full Build Thermal Modeling of the Selective Laser Melting Process**
Tom J. Stockman, Judith Schneider, University of Alabama Huntsville*
 - **2:20 – 2:40: Experimental Frequency Response Functions on Helicopter Drivetrains**
Matt Statham, Aviation Missile Research and Development Engineering Directorate (AMRDEC)
- **Guidance Navigation and Control**
 - **2:40 – 3:00: : Flex Dynamics Avoidance Control of the NEA Scout Solar Sail Spacecraft's Reaction Control System**
Brandon Stiltner, Jacobs ESSSA Group
Andrew Heaton, NASA Marshall Space Flight Center
Benjamin Diedrich, Dynamic Concepts, Inc, Jacobs ESSSA Group
Christopher Becker, NASA Marshall Space Flight Center
Juan Orphee, Jacobs ESSSA Group*
 - **3:00-3:20: Augmenting Conceptual Design Trajectory Tradespace Exploration with Graph Theory**
Patrick D. Dees, Mathew R. Zwack, Jacobs ESSSA Group
Stephen Edwards, Michael Steffens, NASA Marshall Space Flight Center*
 - **3:20-3:40 Time Domain Stability Margin Assessment Method**
Keith Clements, ERC, Jacobs ESSSA Group

3:40-4:00 PM

- *Afternoon coffee break and networking time*

4:00-5:00 PM

- **Panel discussion on Space Entrepreneurship**
 - Lead Panelist: Chris Beaman, The Foundry
 - Panelist: Mark Becnel, RadioBro
 - Panelist: Dr. Edwin Ethridge, NASA-MSFC (ret),, Space Resources Extraction Technology, Inc.
 - Panelist: Tim Pickens, Pickens Innovations
 - Panelist: Anthony Brinkley, Zero Point Frontiers



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Day 2 (Oct. 21, 2016)

7:00 -8:00 AM

Registration, Coffee/Snacks, and Networking

8:00-9:00 AM

- **Keynote**
 - Fmr. Astronaut N. Jan Davis, Jacobs-ESSA Group

9:00-11:40 AM

- **Track 1: Aerodynamics and Acoustics**
 - **9:00 – 9:20: An Improved RBF Mesh Deformation Approach for Fluid-Structure Interaction Problems**
Mohamed M. Selim, Roy P. Koomullil, David R. McDaniel, University of Alabama in Birmingham*
 - **9:20 – 9:40: Application and Validation of a Physics-Base Flight Simulator for Optimized Airfoil Testing**
Michael Dunning, University of Alabama in Huntsville
 - **9:40 – 10:00: Flow Quality Characterization of a New Nozzle for a Mach 2 Wind Tunnel**
Adam J. Harris, Phillip A. Kreth, John D. Schmisseeur, University of Tennessee Space Institute*
 - **10:00 – 10:20: Advances in Aircraft Instrumentation Leveraging Small Spacecraft Design**
Mark Becnel, RadioBro Corporation
 - **10:20 – 10:40: Shock Wave/Turbulent Boundary Interactions on a Cylinder**
Stefen Lindörfer, Christopher Combs, Phillip Kreth, John Schmisseeur, University of Tennessee Space Institute*
 - **10:40 – 11:00: Visual Diagnostics of the Dynamics of Transitional Shock Wave Boundary Layer Interactions**
E. Lara Lash, Christopher S. Combs, Phillip A. Kreth, Emily A. Beckman, John D. Schmisseeur, University of Tennessee Space Institute*
 - **11:00 – 11:20: Optical Atmospheric Turbulence Characterization using sUAS Dual Beacon Differential Image Motion Monitor and Differential Temperature Measurements**
Alex Clark, Kratos Defense*
Daniel Whitney, University of Alabama in Huntsville
- **Track 2: Propulsion Systems and Architectures**
 - **9:00 – 9:20: Hydraulic Flow Simulators on the Two Axis Inertial Load Simulator**
Adam Dziubanek, NASA Marshall Space Flight Center
 - **9:20 – 9:40: Pore Size Distribution Characterization of Porous Hybrid**
Joe Buckley, George Nelson, University of Alabama in Huntsville*
 - **9:40 – 10:00: NPO Energomash and the Road to the RD180 and RD181 Engines**
Adam Kimberlin, NASA Marshall Space Flight Center



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- **10:00 – 10:20: Effects of Radiation Heating on Additively Printed Hybrid Fuel Grain Oxidizer-to-Fuel Ratio Shift**
Stephen A. Whitmore, Stephen L. Merkley, Utah State University*
- **10:20 – 10:40: Computational Fluid Dynamics Aided Analysis with 6 Degree of Freedom Dynamic Solver of Suborbital Single Stage Rocket Flight**
Christopher R. Simpson, Charles O'Neill, University of Alabama in Huntsville*
- **Special Topics:**
 - **10:40-11:00: Promoting Professional Organizations through STEM Education**
Dustin Poisson, InventEd, Raytheon, AIAA
 - **11:00-11:20: Research into Complex Systems Theory, Cognitive Engineering, and Human Mental Models in the Future of Engineering and Sociotechnical Systems**
Elizabeth Patterson, University of Alabama in Huntsville (ISEEM)/Bastion Technologies Inc.

11:30 AM-1:00 PM

- *Lunch (Keynote)*
 - Todd May, Director, NASA-MSFC

1:00-3:40 PM

- *Proposal writing with Dr. Frank Curran, MZNBLUE Corp., NASA GRC (ret.)*

3:40-4:00 PM

- *Afternoon coffee break, snacks and networking time*

4:00-5:00 PM

- *Panel discussion on Systems Engineering*
 - Lead Panelist: Dr. Dale Thomas, UAH
 - Panelist: Dr. Michael Griffin, Schafer Corp.
 - Panelist: Dr. Lisa Watson-Morgan, NASA-MSFC
 - Panelist: Julie Moquin, Lockheed Martin Corp.
 - Panelist: Thomas Channell, US Army-AMRDEC

*presenting author