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SYMPOSIUM GUIDE

The Forty-Second Annual

Dayton-Cincinnati Aerospace Sciences Symposium

Celebrating 100 years of Aerospace Research!
McCook Field Established as R&D Facility: 18 October 1917

MAJOR.W. SCHROEDER SET 30,900-FOOT TWO-MAN ALTITUDE RECORD IN PACKARD-LePERE LUSAC 11 BIPLANE AT McCOOK FIELD, SEPTEMBER 24, 1919
https://en.Wikipedia.org/wiki/McCook_Field

1 March 2017
Sinclair Conference Center
Dayton, Ohio

www.aiaa-daycin.org/dcass

Ohio Valley Section

Human Factors and Ergonomics Society

Society for the Advancement of Material and Process

Welcome

to the
42nd AIAA Dayton-Cincinnati Aerospace Sciences Symposium (DCASS)

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For over four decades, the AIAA Dayton-Cincinnati Aerospace Sciences Symposium has provided a unique venue for technical interchange with members of our regional aerospace community. The symposium showcases cutting-edge research with a one-day program that includes technical presentations across multiple areas of aerospace science and technology.

This year's program includes over 180 technical presentations in both morning and afternoon sessions. Our invited keynote speaker is Dr. Tom Crouch, Senior Curator, Aeronautics Department, Smithsonian National Air & Space Museum. This year's keynote presentation is entitled "McCook Field: Birthplace of American Military Air Power". Opening Remarks will be presented by the 2017 DCASS General Co-Chair, Lt Gen (Ret.) John L. "Jack" Hudson, Director, National Museum of the U.S. Air Force, WPAFB, OH.

This event has been organized by a group of dedicated volunteers who team throughout the year to make this meeting a success. This meeting would not be possible without their sustained effort. We thank the local leaders supporting DCASS as general co-chairs, and our co-sponsoring professional societies listed within this program. This meeting is also made possible by our corporate and educational sponsors shown on the back of this program. We thank them for their generous support.

Finally, we encourage folks to submit their votes for best art-in-science submissions. The best presentation and best art-in-science award winners will be recognized at the annual Dayton-Cincinnati Section Awards Banquet scheduled for May 24, 2017.

We hope you enjoy today's symposium, and we look forward to seeing you again next year!

Markus Rumpfkeil and Carl Hartsfield
2017 DCASS Executive Co-Chairs

42nd AIAA Dayton-Cincinnati Aerospace Sciences Symposium

Keynote Program

Welcome and Announcements:

Dr. Markus Rumpfkeil

2017 DCASS Executive Chair

Opening Remarks from the 2017 DCASS General Co-Chair:

Lt Gen (Ret.) John L. "Jack" Hudson, SES

Director, National Museum of the U.S. Air Force, WPAFB, OH

Keynote Address:

McCook Field: Birthplace of American Military Air Power

Dr. Tom Crouch

Senior Curator, Aeronautics Department, Smithsonian National Air & Space Museum

Army aviation emerged from WW I with little experience in aeronautical research and development. It was at McCook Field in the years following the armistice that a small group of engineers and aviators laid the foundation for American air power. The Air Service Engineering Division undertook research and development projects across the range of aeronautical technologies, from aerodynamics, structures and propulsion to ground breaking work in navigation and the design of new instruments. The test pilots assigned to McCook established an extraordinary tradition of competence and courage, testing the new ideas emerging from the workshops and testing facilities. Record setting speed, altitude and distance flights growing out of McCook programs made international headlines and demonstrated the growing capacity of the airplane as an instrument of war and peace. When McCook grew too small for safe flight operations, far-sighted citizens of Dayton insured the traditions established on the banks of the Miami River would be carried on at Wright Field, and the Gem City would remain the place where new ideas in military flight technology came from.

Tom Crouch is the senior curator, Aeronautics Department, at the Smithsonian National Air and Space Museum. A Smithsonian employee since 1974, he has served both the National Air and Space Museum and the National Museum of American History in a variety of curatorial and administrative posts. Prior to coming to the Smithsonian he was employed by the Ohio Historical Society as director of education (1969-1973) and as director, Ohio American Revolution Bicentennial Advisory Commission (1973-1974).

Dr. Crouch holds a BA (1962) from Ohio University, an MA (1968) from Miami University and a PhD (1976) from the Ohio State University. All of his degrees are in history. In addition, he holds the honorary degree of Doctor of Humane Letters, conferred in June 2001 by the Wright State University.

He is the author or editor of a number of books and many articles for both popular magazines and scholarly journals. Dr. Crouch has won a number of major writing awards, including the history book prizes offered by both the American Institute of Aeronautics and Astronautics and the Aviation/Space Writers Association. He received a 1989 Christopher Award, a literary prize recognizing "significant artistic achievement in support of the highest values of the human spirit," for *The Bishop's Boys: A Life of Wilbur and Orville Wright*. His book, *Wings: A History of Aviation From Kites to the Space Age*, won the AIAA Gardner-Lasser Literature Prize for 2005, an award presented to the best book selected in that year from all books in the field of aerospace history published in the last five years.

42nd AIAA Dayton-Cincinnati Aerospace Sciences Symposium

Join us in the Frederick Smith Auditorium (Room 150) at 9:40 (during the morning break) for a special introduction to the AIAA President-Elect Candidates!

JOHN S. LANGFORD

POSITION: Chairman and CEO of Aurora Flight Sciences in Virginia

NOTABLE: Led development of the Daedalus human-powered aircraft as an MIT graduate student. Worked at Lockheed Martin Skunk Works in Burbank, California, for two years on what would become the F-117 stealth fighter. Founded Aurora Flight Sciences in 1989. Co-founded a spinoff, Athena Technologies, in 1998. Grew up in Georgia.

AGE: 59

RESIDES: Falls Church, Virginia

EDUCATION: Ph.D. in aeronautics and public policy from MIT, 1987; Master of Science in aeronautics and astronautics, 1984; Master of Science in defense policy, 1983; Bachelor of Science in aeronautics, 1979, all from MIT.

FAVORITE SAYING: "Never let school interfere with your education."

VIGOR YANG

POSITION: Chair, Georgia Tech's School of Aerospace Engineering in Atlanta

NOTABLE: Identified root cause of combustion instability in the F-1 engines of the Saturn 5 rockets, and created instability models that aid today's designers. At Georgia Tech, established a "knowledge base" with details of rocket engines, including Russian RD-180s. Organized a symposium in 1993 that saw the first extensive contacts between rocket experts from the former Soviet Union and the West. Gave the 2016 AIAA von Kármán Lecture in Astronautics. Born in Taiwan; became a U.S. citizen in 1993.

AGE: 61

RESIDES: Atlanta

EDUCATION: Ph.D. in mechanical engineering, CalTech, 1984; Master of Science in mechanical engineering, Penn State, 1980; Bachelor of Science in power mechanical engineering, National Tsing Hua University, Taiwan

FAVORITE SAYING: "Look into the future."

Symposium Schedule At-A-Glance

Registration 7:00 AM – 2:00 PM

Corporate Exhibits 9:00 AM – 4:00 PM

Art in Science Competition 9:00 AM – 4:55 PM

First Block 8:10 AM – 9:30 AM

1	Combustion I	Room 116
2	Hypersonic Vehicles I	Room 119
3	Unmanned Aerial Systems I	Room 120
4	Optimization I	Room 127
5	Materials, Fatigue, and Fracture I	Room 131
6	Structures I	Room 133
7	Heat Transfer and Thermal Management I	Room 164
8	Aviation History, Education, and Policy	Room 165
9	Fluid Dynamics I	Room 171
10	Acoustics and Aircraft Design I	Room 231
11	Space I	Room 282

Second Block 10:10 AM – 11:30 AM

12	Combustion II	Room 116
13	Hypersonic Vehicles II	Room 119
14	Unmanned Aerial Systems II	Room 120
15	Optimization II	Room 127
16	Materials, Fatigue, and Fracture II	Room 131
17	Structures II	Room 133
18	Heat Transfer and Thermal Management II	Room 164
19	Imaging and Diagnostics	Room 165
20	Fluid Dynamics II	Room 171
21	Acoustics and Aircraft Design II	Room 231
22	Space II	Room 282

Keynote Program in Frederick C. Smith Auditorium (Room 150) 11:45 AM – 12:55 PM

Lunch in Great Hall 12:55 PM – 2:05 PM

Third Block 2:05 PM – 3:45 PM

23	Combustion III	Room 116
24	Hypersonic Vehicles III	Room 119
25	Unmanned Aerial Systems III	Room 120
26	Optimization III	Room 127
27	Materials, Fatigue, and Fracture III	Room 131
28	Turbomachinery I	Room 133
29	CFD Applications and Methods I	Room 164
30	Facilities	Room 165
31	Fluid Dynamics III	Room 171
32	Flight Dynamics and Controls I	Room 231
33	Space III	Room 282

Fourth Block 4:00 PM – 5:20 PM

34	Combustion IV	Room 116
35	Flow Control	Room 119
36	Unmanned Aerial Systems IV	Room 120
37	Optimization IV	Room 127
38	Materials, Fatigue, and Fracture IV	Room 131
39	Turbomachinery II	Room 133
40	CFD Applications and Methods II	Room 164
41	Uncertainty Quantification	Room 165
42	Experimental Applications and Methods	Room 171
43	Flight Dynamics and Controls II	Room 231
44	Space IV	Room 282

The abstracts for the talks presented today may be found on the AIAA Dayton-Cincinnati Section website: www.aiaa-daycin.org/dcass. The Executive Committee encourages the use of this website. The abstracts can be located under the "Attending" menu at the top of the Aerospace Sciences Symposium website.

Awards Information: The Dayton-Cincinnati Section of the AIAA is proud to continue its long-standing tradition of recognizing the best work presented at this symposium, as judged by the Session Chairs. This year, awards will be made in the following technical categories:

Category	Sessions	Category	Sessions
Combustion	1, 12, 23, 34	Unmanned Aerial Systems	3, 14, 25, 36
Hypersonics	2, 13, 24	Heat Transfer and Thermal Management	7, 18
Design and Optimization	4, 15, 26, 37	Computational Studies and Methods	29, 40
Materials, Fatigue, and Fracture	5, 16, 27, 38	Space	11, 22, 33, 44
Structures	6, 17	Experimental Methods and Diagnostics	19, 41, 42
Fluid Dynamics	9, 20, 31, 35	Turbomachinery	28, 39
Aircraft Design, Dynamics, and Control	10, 21, 32, 43	History, Education, and Infrastructure	8, 30

Session Chairs will provide scores based on the quality of the abstract, innovation and magnitude of effort, technical contribution, and presentation style. One winner will be selected for each technical category, and the presenters will be invited to the AIAA Annual Awards Banquet (free ticket!) to receive their awards!

AIAA Dayton-Cincinnati Section

Room	116	119	120	127	131
Time	SESSION 1 **Combustion I** Chair: Joshua S. Heyne *UD*	SESSION 2 **Hypersonic Vehicles I** Chair: Zachary White *AFRL*	SESSION 3 **Unmanned Aerial Systems I** Chair: Samuel Meyer *AFIT*	SESSION 4 **Optimization I** Chair: Kelly Cohen *UC*	SESSION 5 **Materials, Fatigue and Fracture I** Chair: Carl Hartsfield *AFIT*
8:10	*42DCASS-108* Effect of Rayleigh-Taylor Instability on Turbulent Flame Speed in a Backward-facing Step Curved Duct *Brandon Long - UDRI* *Alejandro Briones - UDRI* *Scott Stouffer - UDRI* *Brent Rankin - AFRL*	*42DCASS-007* CFD Analysis and Shape Optimization of the Internal Convective Cooling System of a Hypersonic Vehicle *Kan Liu - AFIT* *Dylan Stelzer - OSU* *Carl Hartsfield - AFIT* *David Liu - AFIT*	*42DCASS-038* Localization and Navigation of Aerial Vehicles in Indoor Environments using Actively Deployed Radio Beacons *Suyash Kulkarni - UC* *Manish Kumar - UC* *Kelly Cohen - UC*	*42DCASS-003* Persistent Intelligence, Surveillance, and Reconnaissance: A New Approach to the Persistent Monitoring Problem *Christopher Olsen - AFIT* *Donald L. Kunz - AFIT*	*42DCASS-065* Process Modeling of Additively Manufactured High Temperature Thermosets *Victoria Hutten - UDRI* *Brent Volk - AFRL* *Andrew Abbott - UDRI*
8:30	*42DCASS-155* Developing a Calculator for Generating Surrogate Jet Fuels with Target Physical and Chemical Properties *David Bell - UD* *Joshua S Heyne - UD*	*42DCASS-045* Optimization of a Scramjet Engine Using a Simplified CFD Model *Nate McGillivray - WSU* *Rory Roberts - WSU* *Mitch Wolff - WSU* *Mark Hagenmaier - AFRL* *Dean Eklund - AFRL*	*42DCASS-046* Cooperative Localization for Unmanned Vehicles: Centralized and Distributed Approach *Anusna Chakraborty - UC* *Rajnikant Sharma - UC*	*42DCASS-008* Comparison of Unified and Sequential-Approximate Approaches to Multifidelity Optimization *Dean Bryson - UD* *Markus Rumpfkeil - UD*	*42DCASS-137* The Quantification of Porosity Distributions in Direct Metal Laser Sintered Inconel 718 *Luke Sheridan - WSU* *Sonya Sokhey - WSU* *Joy Gockel - WSU* *Onome Scott-Emuakpor - AFRL* *Tommy George - AFRL*
8:50	*42DCASS-002* Evaluating the Viability of Planar-Laser Induced Fluorescence to Determine the Constituents of Exhaust Plumes *Christine Robinson - AFIT*	*42DCASS-095* Analysis of Windward Side Hypersonic Boundary Layer Transition on Blunted Cones at Angle of Attack *Matthew Tufts - OAI* *Roger L. Kimmel - AFRL*	*42DCASS-047* Implementation of Cooperative Timing Mission for a Moving Target using Cooperative Localization *Sohum Misra - UC* *Rajnikant Sharma - UC*	*42DCASS-064* Solving State Constrained Pursuit-Evasion Minimax Problems Using Semi-Direct Collocation *Ryan Carr - AFIT* *Richard Cobb - AFIT* *Meir Pacther - AFIT* *Scott Pierce - AFIT*	*42DCASS-162* Modeling of Additive Manufacturing Process to Determine the Feasibility of Using Low Coefficient of Thermal Expansion Materials *Chigozie Obidigbo - WSU* *Joy Gockel - WSU*
9:10	*42DCASS-161* Predicting Combustion Phenomena Based on Random Forest Modelling *Jeremy Carson - UD* *Joshua Heyne - UD*	*42DCASS-087* Computational Prediction of HYMETS Arc-Jet Flow with KATS *Umran Duzel - UKY* *Olivia Schroeder - UKY* *Alexandre Martin - UKY*	*42DCASS-066* Key factors for drone design in implementation of 4G/LTE for control of small UAS *Jim Herner - WSU* *Jason Gottweis - WSU* *Josh Childers - WSU* *Thomas Easton - WSU*	*42DCASS-107* Topology Optimized Perforators Using Additive Manufacturing Techniques *Zachariah Provchy - AFIT* *Anthony Palazotto - AFIT*	*42DCASS-174* Creep of Hi-Nicalon Fiber Tows at 700 ˚C in air and in Silicic Acid-Saturated Steam *Ronald Mitchell - AFIT* *Marina Ruggles-Wrenn - AFIT*
9:30	Break				
9:40	Room 150 - Frederick Smith Auditorium				
10:00	Break				

Affiliation Abbreviations

ADD - Agency for Defence Development
AFIT - Air Force Institute of Technology
AFLCMC - Air Force Life Cycle Management Center
AFRL - Air Force Research Laboratory
ANL - Argonne National Laboratory
ASTAR - Alpha STAR Corporation
CCH - Cincinnati Childrens Hospital
GHI - GoHypersonic Inc.
GWU - George Washington University
ISSI - Innovative Scientific Solutions Inc.
MU - Miami University
MVH - Miami Valley Hospital
NDSU - North Dakota State University
NRC - National Research Council
NRL - Naval Research Laboratory
OAI - Ohio Aerospace Institute
OSU - The Ohio State University
P&G - Procter & Gamble
PCKA - PC Krause & Associates
PSI - Psibernetix Inc
PU - Purdue University

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42nd Dayton-Cincinnati Aerospace Sciences Symposium

133	164	165	171	231	282	Room
SESSION 6 **Structures I** Chair: Eric Swenson *AFIT*	SESSION 7 **Heat Transfer and Thermal Managment I** Chair: Marc Polanka *AFIT*	SESSION 8 **Aviation History, Education, and Policy** Chair: Andrew Kididis *AFIT*	SESSION 9 **Fluid Dynamics I** Chair: Andrew Lingenfelter *AFIT*	SESSION 10 **Acoustics and Aircraft Design I** Chair: Aaron Altman *UD*	SESSION 11 **Space I** Chair: Joshua Hess *AFIT*	Time
42DCASS-031 Analysis of Additively Manufactured Metal Lattice Structures by Linear Finite Element Analysis *Christopher Box - AFIT*	*42DCASS-078* Computational Analysis of an Ultra Compact Combustor with Conjugate Heat Transfer *Brian Bohan - AFIT* *Marc D. Polanka - AFIT* *James L. Rutledge - AFIT*	*42DCASS-192* The Proposed Southwest Ohio Regional Jetport, 1961-1962 *Janet Bednarek - UD*	*42DCASS-027* Effects of Aerating Orifice Diameter on Two-Phase Flow Structures in Aerated Liquid Injectors Using X-Ray Techniques *Travis Tidball - TTI* *Kuo-Cheng Lin - TTI* *Alan Kastengren - ANL* *Campbell Carter - AFRL*	*42DCASS-130* Flow Measurements from a Supersonic Rectangular Nozzle Exhausting Over a Flat Surface *Florian Baier - UC* *Pablo Mora - UC* *Ephraim Gutmark - UC* *Kailas Kailasanath - NRL*	*42DCASS-018* Formation Flight of Earth Satelites on KAM Torus using Classical Orbital Elements *Marissa Reabe - AFIT* *William Wiesel - AFIT*	8:10
42DCASS-128 Evaluating the Inclusion of an Optimized and Deformable Internal Structure on an Airfoil's Aerodynamic Response *Joshua Lee - AFIT* *Anthony Palazotto - AFIT* *Donald Kunz - AFIT*	*42DCASS-080* Relating Film Cooling at Low and High Temperatures *Christopher Vorgert - AFIT* *Marc D. Polanka - AFIT* *James L. Rutledge - AFIT*	*42DCASS-198* McCook Field, at the Forefront of Twentieth Century Parachute Technology Development *Andrew Kididis - AFLCMC*	*42DCASS-179* Refined Insight Into The Wingtip Vortex - Free Shear Layer Interaction *Sidaard Gunasekaran - UD* *Aaron Altman - UD*	*42DCASS-194* Aspects of Supersonic Jet Noise for Three-stream Engines *Christopher Ruscher - SE* *Sivaram Gogineni - SE* *Alex Giese - AFRL* *Thomas Ferrill - AFRL*	*42DCASS-053* Analysis of Model Fidelity Impact on Light Curve Prediction for Geostationary Satellites *Rachel Oliver - AFIT*	8:30
42DCASS-141 Topology Optimization of Thermoelastic Structures via Level-set Methods *David Neiferd - WSU* *Ramana V. Grandhi - WSU*	*42DCASS-125* Relative Contributions to Overall Effectiveness in Turbine Blade Leading Edge Cooling *Carol Bryant - AFIT* *James L. Rutledge - AFIT* *Marc D. Polanka - AFIT*	*42DCASS-004* Ground-Based Sense and Avoid for the Air Force Research Laboratory and State of Ohio *Arthur Huber - AFRL*	*42DCASS-152* Performance analysis of open and ducted wind turbines *Tariq Khamlaj - UD* *Markus Rumpfkeil - UD*	*42DCASS-040* The Design and Optimization of a Variable Camber Compliant Wing *Ryan Petrie - AFIT*	*42DCASS-050* Utilizing Future Launches of Centaur Rocket Bodies to Deorbit Large Debris in Polar and Sun-synchronous Orbits. *Krista Roth - AFIT*	8:50
42DCASS-067 Coupled Multi-Scale Approach for Improved Design of FDM Printed Parts *Solomon Duning - UDRI* *Brian Czapor - UDRI* *Gyaneshwar P. Tandon - UDRI* *Cody Godines - ASTAR* *Frank Abdi - ASTAR*	*42DCASS-196* Cooling System for 0.1 kN Thrust Micro-Engines: Concept Design Using Additive Manufacturing *Matteo Ugolotti - UC* *Mayank Sharma - UC* *Zachary Williams - UC* *Justin Ouwerkerk - UC* *Siddharth S. Balachandar - UC*	*42DCASS-006* BAEROCATS: University of Cincinnati Spacecraft Design Capstone *Chirau Patel - UC* *Chase Hartman - UC* *Justas Jodele - UC* *Gaurav Patel - UC*	*42DCASS-039* Prediction of Hydrodynamic Ram Cavity Contraction using Orifice Mass Flow, Cavity Geometry, and Projectile Kinetic Energy Dissipation *Andrew Lingenfelter - AFIT* *David Liu - AFLCMC*	*42DCASS-118* Distributed Lift: An Unconventional Approach *Muhammad Omar Memon - UD* *Daniel Kowalski - UD* *Aaron Altman - UD*	*42DCASS-127* Constellation Architecture Design for Persistent Space Situational Awareness of Direct Ascent to Geosynchronous Orbit *Laura Broch - AFIT*	9:10
Break						9:30
Introduction of AIAA President-elect Canidates - Dr. John Langford and Dr. Vigor Yang						9:40
Break						10:00

SE - Spectral Energies LLC
SLU - St. Louis University
TTI - Taitech Inc.
UBIMS - Univ. Bordeaux, IMS-lab, UMR CNRS 5218, F-33405 Talence, France
UC - University of Cincinnati
UCT - University of Connecticut
UD - University of Dayton
UDRI - University of Dayton Research Institute
UES - UES Inc.
UIUC - University of Illinois at Urbana-Champaign
UKY - University of Kentucky
UL - University of Louisville
UMD - University of Minnesota Duluth
UMEA - Umea University
UND - University of Notre Dame
UTC - Universal Technology Corp.
UTK - University of Tennessee-Knoxville
UTL - Univeristy of Toledo
WKU - Western Kentucky University
WSU - Wright State University
WVU - West Virginia University

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Room	116	119	120	127	131
Time	SESSION 12 **Combustion II** Chair: Brent Rankin *AFRL*	SESSION 13 **Hypersonic Vehicles II** Chair: Tadeusz Masternak *AFRL*	SESSION 14 **Unmanned Aerial Systems II** Chair: Carl Hartsfield *AFIT*	SESSION 15 **Optimization II** Chair: Richard Snyder *AFRL*	SESSION 16 **Materials, Fatigue and Fracture II** Chair: Marina Ruggles-Wrenn *AFIT*
10:10	*42DCASS-109* Mechanism of Valved Pulsejet Operation *Justas Jodele - UC* *Vijay Anand - UC* *Ethan Knight - UC* *Ephraim Gutmark - UC*	*42DCASS-149* Atmospheric Impacts on Optimal Range of Hypersonic Boost-Glide Vehicles *Melissa Dunkel - AFIT* *Richard Cobb - AFIT*	*42DCASS-024* Iterative Genetic Fuzzy Logic System for Solving the Aircraft Conflict Resolution Problem *Anoop Sathyan - UC* *Nicholas D. Ernest - PSI* *Loïc Lavigne - UBIMS* *Franck Cazaurang - UBIMS* *Manish Kumar - UC*	*42DCASS-134* Bayesian Inspired Multi-Fidelity Optimization - Transcending Traditional Bi-Fidelity Optimization *Christopher Fischer - WSU* *Ramana Grandhi - WSU* *Kelly Cohen - UC*	*42DCASS-063* Characterization of the Lode = -1 Meridian on the Al-2024 Failure Surface for *MAT_224 in LS-DYNA *Robert Lowe - UD* *Jeremy Seidt - OSU* *Amos Gilat - OSU*
10:30	*42DCASS-110* Rotating detonations through ethylene-air mixtures in a hollow combustor *Vijay Anand - UC* *Andrew St. George - UC* *Ephraim Gutmark - UC*	*42DCASS-096* Conceptual-Level Design Process for Hypersonic Systems *Jose Camberos - AFRL* *Zachary White - AFRL* *Brendan Rooney - AFRL* *Dalton Baier - AFRL*	*42DCASS-123* System Design of an Autonomous Quadcopter for Indoor Exploration *Hans Guentert - UC* *Bryan Brown - UC* *Nick Stockton - UC* *Justin Ouwerkerk - UC* *Manish Kumar - UCT* *Kelly Cohen - UCT*	*42DCASS-011* Application of a Genetic Algorithm and K-Means Clustering for Planetary Exploration Using a UAV Swarm *Chase Hartman - UC* *Seth Holsinger - UC* *Kelly Cohen - UC*	*42DCASS-115* Fatigue Behaviour of an Advanced Melt Infiltrated Sic/Sic Composite at 1200˚C in Air and in Steam *Nicholas Boucher - AFIT* *Marina B. Ruggles-Wrenn - AFIT*
10:50	*42DCASS-153* Preliminary Experimental Characterization of Centerbodiless RDE Emissions *William Stoddard - UC* *Vijay Anand - UC* *Andrew St. George - UC* *Robert Driscoll - UC* *Brian Dolan - UC* *Rodrigo Villalva - UC*	*42DCASS-129* Trajectory Trades of Reusable Hypersonic Vehicle Design *Malia Stephens - AFRL* *Justas Jodele - UC* *Jarred Wilhite - UC* *Ephraim Gutmark - UC*	*42DCASS-089* Vision-based Indoor Navigation of an Autonomous and Interactive Unmanned Aerial System *Hongyun (Elliot) Lee - OSU*	*42DCASS-017* Controller Design and Energy Optimization for Lower Limb Exoskeleton *Ameya Chamnikar - UC* *Gaurav Patil - UC* *Manish Kumar - UC* *Tamara Lorenz - UC*	*42DCASS-132* Creep and oxidation of Hafnium Diboride in Air at 1500°C *Thomas Bowen - AFIT* *Marina-Ruggles Wrenn - AFIT*
11:10	*42DCASS-117* Experimental Characterization of Heat Transfer Coefficients in a Rotating Detonation Engine *Samuel Meyer - AFIT* *Marc D. Polanka - AFIT* *Frederick R. Schauer - AFRL* *Richard J. Anthony - AFRL*		*42DCASS-048* Bridge Inspection using Simultaneous Localization and Mapping *Srijanee Biswas - UC* *Rajnikant Sharma - UC*	*42DCASS-035* A Robust Solution to Distributed Multi-Agent Path Planning Using Genetic Fuzzy Pareto and Game Theory *Mohammadreza Radmanesh - UC* *Rumit Kumar - UC* *Manish Kumar - UC* *Kelly Cohen - UC* *Donald French - UC*	*42DCASS-195* RF Impedance Sensing of DNA based on Graphene *Sheena Hussaini - WSU*
11:30	Break				
11:45	Room 150 - Frederick Smith Auditorium **Welcome & Announcements** Dr. Markus Rumpfkeil, *42nd DCASS General Chair* **Special Award Presentation** AIAA Region III Engineer of the Year (Dr. Roger Kimmel)				
12:55	Lunch				

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133	164	165	171	231	282	Room
SESSION 17 **Structures II** Chair: Chad Hale *AFIT*	SESSION 18 **Heat Transfer and Thermal Managment II** Chair: James Rutledge *AFIT*	SESSION 19 **Imaging and Diagnostics** Chair: Nathan Webb *OSU*	SESSION 20 **Fluid Dynamics II** Chair: Prashant Khare *UC*	SESSION 21 **Acoustics and Aircraft Design II** Chair: Caleb Barnes *AFRL*	SESSION 22 **Space II** Chair: Eric Swenson *AFIT*	Time
42DCASS-058 Optimal Design of a Hexakis Icosahedron Vacuum Based Lighter than Air Vehicle *Joseph Schwemmer - AFIT* *James Chrissis - AFIT* *Anthony Palazotto - AFIT*	*42DCASS-079* Development of a Thermal Testing Apparatus for Rigid, High Porosity, Materials using Comparative Cut-Bar Apparatus *Marcus Irvan - UKY* *Christopher T. Barrow - UKY* *Ashley N. Keen - UKY* *John F. Maddox - UKY*	*42DCASS-009* Spatially localized, gas-phase temperature measurements through the ceramic walls of a flow reactor and jet-stirred reactor using Radar REMPI *Joseph Miller - AFRL* *Mark Gragston - UTK* *Yue Wu - UTK* *Zhili Zhang - UTK* *Robert Stachler - UD*	*42DCASS-042* Boiling and Evaporation Waves *Trace Kuberski - UKY* *Jose Grana-Otero - UKY* *Joshua Heyne - UD* *Scott Stouffer - UDRI*	*42DCASS-168* Turboelectric Distributed Propulsion System for a Next Generation Aircraft *Hashim Abada - WSU* *Rory Roberts - WSU* *Mitch Wolff - WSU*	*42DCASS-019* Hall Effect Thruster Characterization Through Potential, Magnetic, and Optical Measurements *Nick Hyatt - AFIT* *Carl Hartsfield - AFIT*	10:10
42DCASS-094 A Study of Quasi-Static and Dynamic Analyses of a Hexakis Icosahedron Frame for Use in a Vacuum Lighter Than Air Vehicle *Jordan Snyder - AFIT* *Anthony Palazotto - AFIT*	*42DCASS-083* Validation of the KATS Material Response Solver with Arc-Jet Experiments *Olivia Schroeder - UKY* *Haoyue Weng - UKY* *Alexandre Martin - UKY*	*42DCASS-016* High-repetition-rate interferometric and filtered Rayleigh scattering velocimetry *Naibo Jiang - SE* *Josef J. Felver - SE* *Mikhail N. Slipcheenko - SE* *Sukesh Roy - SE* *Jordi Estevadeordal -NDSU* *Andrew D. Cutler - GWU*	*42DCASS-159* Supersonic Nozzle Design, Analysis, and Fabrication *Michael Kurtz - GHI* *Adam Culler - GHI* *Lance Jacobsen - GHI* *James R. Gord - AFRL*	*42DCASS-171* Electrical Power-Generation for a NASA Next Generation Aircraft *Saif Alagele - WSU* *Rory Roberts - WSU* *Mitch Wolff - WSU*	*42DCASS-126* Satellite Signal Classification using RF-DNA Techniques *Patrick Dunkel - AFIT* *Eric Swenson - AFIT*	10:30
42DCASS-144 Longitudinal Damage Detection in a Beam Using Lamb Wave Based Finite Element Analysis *Chad Hale - AFIT* *Chan Yik Park - ADD* *Anthony N. Palazotto - AFIT*	*42DCASS-055* Multi-Dimensional Surface Chemistry Comparison of Iso-Q Arcjet Cases *Justin Cooper - UKY* *Haoyue Weng - UKY* *Alexandre Martin - UKY*	*42DCASS-044* Satellite Propulsion Spectral Signature Detection and Analysis *Pamela Wheeler - AFIT* *Richard Cobb - AFIT* *Carl Hartsfield - AFIT* *Benjamin Prince - AFRL*	*42DCASS-077* PIV Investigation into Cross-stream Behavior in Wing Wake Free Shear Layers: Challenges and Results *Muhammad Omar Memon - UD* *Aaron Altman - UD*	*42DCASS-176* Aerodynamic Analysis of a Blended Wing Body Aircraft utilizing Electric Propulsion *Jay Abhilash Vora - WSU* *Rory Roberts - WSU* *Mitch Wolff - WSU*	*42DCASS-157* Space Mission Design in a Multi-Body Environment: An Investigation of High-Altitude Orbits for Transfers, Reconstitution, and Unconventional Missions *John Brick - AFIT* *Christopher D. Geisel - AFIT*	10:50
42DCASS-100 Structural Analysis of a Composite Truss 3D Printed in Space *Jacob Downey - AFIT*	*42DCASS-119* Synthetic Vortex Interaction with Film Cooling Effectiveness *Aaron Wheeler - UC* *Paul Aghasi - UC* *Ephraim Gutmark - UC*	*42DCASS-112* Four-dimensional laser-induced fluorescence measurements of OH *Ben Halls - SE* *Paul Hsu - SE* *Naibo Jiang - SE* *Mikhail N. Slipchenko - SE* *Ethan Legge - SE* *Sukesh Roy - SE*	*42DCASS-139* Universality of local dissipation scales in turbulent boundary layer flows with and without Free-Stream Turbulence *Sabah Alhamdi - UKY* *Sean C.C. Bailey - UKY* *Terrence R. Meyer - PU* *James R. Gord - AFRL*	*42DCASS-178* Modeling of a Fin-Plate Heat Exchanger for use in a NASA Next Generation Aircraft *Hayder Al-Sarraf - WSU* *Rory Roberts - WSU* *Mitch Wolff - WSU*	*42DCASS-133* Project CATiSE: CubeCats Applied Training in Space Exploration *Evan Smith - UC*	11:10
Break						11:30
Room 150 - Frederick Smith Auditorium **Opening Remarks & Introduction of Keynote Presenter** Lt Gen (Ret.) John L. "Jack" Hudson, SES, Director, National Museum of the U.S. Air Force Keynote Address **McCook Field: Birthplace of American Military Air Power** Dr. Tom Crouch, *Senior Curator, Smithsonian National Air & Space Museum*						11:45
Lunch						12:55

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Room	116	119	120	127	131
Time	SESSION 23 **Combustion III** Chair: Paul Litke *AFRL*	SESSION 24 **Hypersonic Vehicles III** Chair: Jose Camberos *AFRL*	SESSION 25 **Unmanned Aerial Systems III** Chair: David Jacques *AFIT*	SESSION 26 **Optimization III** Chair: Markus Rumpfkeil *UD*	SESSION 27 **Materials, Fatigue and Fracture III** Chair: Ryan Ohara *AFIT*
14:05	*42DCASS-140* Effect of Gas Compression on Propane-Air Flames in Industrial Passages *Sinan Demir - WVU* *V'yacheslav Akkerman - WVU*	*42DCASS-015* Measurements of Crossflow Instability Modes for HIFiRE 5 at Angle of Attack *Matthew Borg - AFRL* *Roger L. Kimmel - AFRL*	*42DCASS-124* System design of a Variable Pitch Quadcopter Autopilot *Hans Guentert - UC* *Manish Kumar - UC*	*42DCASS-165* Genetic Algorithm Optimization of Geosynchronous Earth Orbit Space Situational Awareness Systems via Parallel Evaluation of Executable Architectures *Steven Wachtel - AFIT* *Jordan Stern - AFIT* *John Colombi - AFIT* *David Meyer - AFIT* *Richard Cobb - AFIT*	*42DCASS-068* Influence of Matrix Conversion on Development of Fiber-Matrix Interfacial Strength in Polymer Matrix Composites *Ray Coomer - UDRI* *G. P. Tandon - UDRI* *Nicholas J. Pagano - UES* *Tara M. Storage - AFRL*
14:25	*42DCASS-071* Propagation Velocities for Neighboring Triple Flames *Stephen Grib - UKY* *Michael W. Renfro - UKY*	*42DCASS-097* HIFiRE 5b Launch Campaign and Flight *David Adamczak - AFRL* *Roger Kimmel - AFRL* *Douglas Dolvin - AFRL*	*42DCASS-029* Vision based target geolocation and tracking using a quadrotor platform *Sarthak Kukreti - UC* *Manish Kumar - UC* *Kelly Cohen - UC*	*42DCASS-166* Simplex Methods for Optimal Control of Unmanned Aircraft Flight Trajectories *Michael Zollars - AFIT* *Richard G. Cobb - AFIT*	*42DCASS-183* Temperature Dependent Indentation Response of High Temperature NiTiHf Shape Memory Alloys *Peizhen Li - UKY* *Haluk E. Karaca - UKY* *Yang-Tse Cheng - UKY*
14:45	*42DCASS-177* Computational Study of Non-equidiffusive Flame Propagation in Obstructed Channels *Gbolahan Idowu - WVU* *Abdulafeez Adebiyi - WVU* *Damir Valiev - UMEA* *V'yacheslav Akkerman - WVU*	*42DCASS-098* Influence of the External Aeroshell on the HIFiRE-6 using High-Fidelity Simulations *Nicholas Bisek - AFRL*	*42DCASS-052* Implementing Path Planning and Obstacle Avoidance for AUVSI SUAS Competition *Nathaniel Richards - UC* *Nicklas O. Stockton - UC* *Kelly Cohen - UC* *Manish Kumar - UC*	*42DCASS-169* Level Set Based Cellular Division Method for Structure Conceptual Design *Hao Li - WSU* *Ramana Grandhi - WSU*	*42DCASS-021* Time-Dependent Validation of Finite Element Strain Distribution of a Plastically-Deformed Plate via Digital Image Correlation *Kevin Knapp - AFIT* *Anthony Palazotto - AFIT* *Onome E. Scott-Emuakpor - AFRL* *Casey Holycross - AFRL* *Tommy George - AFRL*
15:05	*42DCASS-070* NOx Formation in Light-Hydrocarbon, Premixed Flames *Rob Hughes - UKY* *Jose Grana-Otero - UKY*	*42DCASS-122* HIFiRE-6 Flight Vehicle Design *Zach Gaston - GHI* *Adam Culler - GHI* *Lance Jacobsen - GHI* *Kevin Park - GHI*	*42DCASS-025* Fuzzy Route Planning for Land Surveying Drones *Brandon Kunkel - UC* *Kelly Cohen - UC* *Manish Kumar - UC*	*42DCASS-172* Optimal Finite-Thrust Guidance for Insertion into and Maintenance of Relative Motion Teardrop Trajectories *Eric Prince - AFIT* *Richard Cobb - AFIT*	*42DCASS-106* Analysis of the Effects of Additive Manufacturing on the Material Properties of 15-5PH Stainless Steel *Eric Lum - AFIT* *Anthony Palazotto - AFIT* *Allison Dempsey - AFIT*
15:25	*42DCASS-116* Power Loss Pathways and Energy Balance of Two Small Four-Stroke Internal Combustion Engines *Jason Blantin - AFIT* *Marc D. Polanka - AFIT* *Paul J. Litke - AFIT* *Jacob A. Baranski - ISSI*	*42DCASS-136* HIFiRE-5b Flight Experiment Results *Roger Kimmel - AFRL* *David Adamczak - AFRL* *DSTG AVD Brisbane Team - Other*	*42DCASS-037* PDE Based Trajectory Planning for Unmanned Air Vehicles *Mohammadreza Radmanesh - UC* *Manish Kumar - UC* *Kelly Cohen - UC* *Donald French - UC*	*42DCASS-054* On the Effects of System Characteristics and Reference Command as Humans Learn to Control Aerospace Systems *Seyyedalireza Seyyedmousavi - UKY* *Faina Matveeva - UKY* *Xingye Zhang - UKY* *T. M. Seigler - UKY* *Jesse B. Hoagg - UKY*	*42DCASS-185* Fatigue Effects of Laser Shock Peening Over Minimally Detectable Partially-Through Thickness surface Crack *David Eisensmith - AFIT* *Anthony Palazotto - AFIT* *Kristina Langer - AFRL* *Thomas Spradlin - AFRL* *Stefano Coratello - UDRI*
15:45	Break				

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133	164	165	171	231	282	Room
SESSION 28 **Turbomachinery I** Chair: David Munday *UC*	SESSION 29 **CFD Applications and Methods I** Chair: Yongsheng Lian *UL*	SESSION 30 **Facilities** Chair: Carl Hartsfield *AFIT*	SESSION 31 **Fluid Dynamics III** Chair: Mark Reeder *AFIT*	SESSION 32 **Flight Dynamics and Controls I** Chair: Donald Kunz *AFIT*	SESSION 33 **Space III** Chair: Eric Swenson *AFIT*	Time
42DCASS-005 Fillet Influence on Transonic Axial Compressor Performance Predictions at Multiple Tip Clearance Heights *Rebecca Howard - AFRL* *Michael List - AFRL* *Steven Puterbaugh - UTC*	*42DCASS-076* Retrospective Cost Adaptive Reynolds-Averaged Navier-Stokes k-omega Models for Unsteady Turbulent Flow *Zhiyong Li - UKY* *Sean C.C. Bailey - UKY* *Jesse B. Hoagg - UKY* *Alexandre Martin - UKY*	*42DCASS-101* The Evaluation of a ROM for a Piezoelectric Shaker Table *Anthony Palazotto - AFIT* *Randall Hodkin - AFIT* *Anthony Palazotto - AFIT*	*42DCASS-191* Shock-Trapping Capability of Various Controlled Cavities in a Supersonic Flow *Nathan Webb - OSU* *Dennis Omari - OSU* *Mo Samimy - OSU*	*42DCASS-028* Analyzing the Concept of Global Minima for the Travelling Salesman Problem. *Prateek Sahay - UC* *Kelly Cohen - UC*	*42DCASS-082* Noncommutative Attitude Control of Small Satellites *Shaoqian Wang - UKY* *Jesse B. Hoagg - UKY* *T. Michael Seigler - UKY*	14:05
42DCASS-012 A Computational Study of a Through-Flow Wave Rotor's Compression Efficiency *Michael McClearn - AFRL* *Fred R. Schauer - AFRL* *John Hoke - ISSI*	*42DCASS-075* Multiphysics Modeling and Simulation of Multiphase Flows *Prashant Khare - UC*	*42DCASS-131* Overview of the Plasma Research Facilities at the University of Kentucky *Helmut Koch - UKY* *Michael W. Winter - UKY*	*42DCASS-193* Gust Interaction and Aeroelastic Response of an Airfoil at Transitional Reynolds Numbers *Caleb Barnes - AFRL*	*42DCASS-032* Adaptive Control for Rejection of Sinusoidal Disturbances Acting on an Unknown System: Theory and Application to Aerospace Systems *Mohammadreza Kamaldar - UKY* *Jesse B. Hoagg - UKY*	*42DCASS-088* Dynamic Modeling of Spacecraft Behaviors *Justin Sadowski - AFIT*	14:25
42DCASS-073 Review of Turbine Endwall Losses *Mary Jennerjohn Christianer - SLU* *Mark McQuilling - SLU*	*42DCASS-102* Multiphase flow simulation using moment of fluid method *Yongsheng Lian - UL*	*42DCASS-111* Design and Achievements of the Modular Polysonic Research Facility at Parks College *Sally Warning - SLU* *Miranda Pizzella - SLU* *Mary Jennerjohn Christianer - SLU* *Mark McQuilling - SLU*	*42DCASS-147* A Comparison of Liquid Jets in a Gaseous Crossflow *Beau Stegemann - AFIT* *Marc D. Polanka - AFIT*	*42DCASS-033* A Discrete-Time Flocking Algorithm with Application to Autonomous Unmanned Air Vehicles *Brandon Wellman - UKY* *Jesse B. Hoagg - UKY*	*42DCASS-164* An Analysis of Radio-Frequency Geolocation Techniques for Satellite Design *Daniel Barnes - AFIT*	14:45
42DCASS-099 Surface Mounted Thin Film Sensors for Unsteady Flow Measurements in a Low Speed Wind Tunnel *Emma Veley - AFRL* *Christopher Marks - AFRL* *Rolf Sondergaard - AFRL* *Richard Anthony - AFRL* *Mitch Wolff - WSU*	*42DCASS-163* Detached-Eddy Simulation of a Supersonic Reattaching Shear Layer *Tim Leger - OAI* *Nicholas Bisek - AFRL* *Jonathan Poggie - PU*	*42DCASS-084* Use of a Mobile Robotic Manipulator as a Testbed for Scalable Software Architecture Supporting Intelligent Operations *Divya Ravichandran - UC* *Catharine McGhan - UC*	*42DCASS-150* A Cleanly Seeded PIV Analysis of Two Geometries in Supersonic Flows *Christopher Hoskins - AFIT* *Mark Reeder - AFIT*	*42DCASS-043* Stability Analysis of a Quadcopter Using Genetic Algorithm Tuned LQR Controller *Zachary Carlton - UC* *Austin Ottaway - UC* *Kelly Cohen - UC* *Wei Wei - UC*	*42DCASS-170* Evaluation of Networked Satellite Command & Control Via Internet Conduit *Cameron Cunningham - AFIT*	15:05
	42DCASS-158 Modelling of Flame Acceleration due to Wall Friction in a Dusty-Gaseous Environment with Various Dust Distributions *Torli Bush - WVU* *Sinan Demir - WVU* *Hayri Sezer - WVU* *V'yacheslav Akkerman - WVU*	*42DCASS-197* Transient Startup Simulations for a Large Mach 6 Quiet Ludwieg Tube *Joseph Jewell - NRC* *Thomas J. Juliano - UND*	*42DCASS-020* Thrust Coefficient Losses in Additively Manufactured Low Thrust Nozzles *Christopher Tommila - AFIT* *Carl Hartsfield - AFIT*	*42DCASS-072* Autonomous Destination Seeking and Obstacle Avoidance for Rotorcraft: A Backstepping Model-Reference Controller *Thomas Kirven - UKY* *Jesse Hoagg - UKY*	*42DCASS-113* Maneuver Detection and Characterization Using Wavelets for Geosynchronous Spacecraft *Brian Pitman - AFIT* *Richard G. Cobb - AFIT*	15:25
Break						15:45

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Room	116	119	120	127	131
Time	SESSION 34 **Combustion IV** Chair: Nicholas Bisek *AFRL*	SESSION 35 **Flow Control** Chair: Donald Rizzetta *AFRL*	SESSION 36 **Unmanned Aerial Systems IV** Chair: Shaaban Abdallah *UC*	SESSION 37 **Optimization IV** Chair: Joshua Hess *AFIT*	SESSION 38 **Materials, Fatigue and Fracture IV** Chair: Anthony Palazotto *AFIT*
16:00	*42DCASS-180* Characterization of a Methane-Air Microflame Burner with TaN Seed Particles through Emission Spectroscopy *Zhaojin Diao - UKY* *Michael Winter - UKY*	*42DCASS-001* Effect of Compressibility on Plasma-Based Transition Control for a Wing with Leading-Edge Excrescence *Donald Rizzetta - AFRL* *Miguel R. Visbal - AFRL*	*42DCASS-060* UAVs for Emergency Sample Collection in Hazardous and Inhospitable Environments *Lydia Smoot - UC* *Vince Dechellis - UC* *Kelly Cohen - UC*	*42DCASS-023* Offline Evolutionary Learning for Vision-based Landing of a Quadcopter using Fuzzy Logic *Nicklas Stockton - UC* *Manish Kumar - UC* *Kelly Cohen - UC*	*42DCASS-175* The influence of SLM process parameters and aging on shape memory response of Ni 50.8 Ti 49.2 alloy *Soheil Saedi - UKY* *Mohammad Elahinia - UTL* *Haluk Karaca - UKY*
16:20	*42DCASS-156* Temperature Distribution of the Exit Plane from an Ultra Compact Combustor *Edwin Hornedo - AFIT* *Marc D. Polanka - AFIT* *Brian T. Bohan - AFIT* *Larry P. Goss - ISSI*	*42DCASS-030* Computational Optimization Under Uncertainty of Active Flow Control Jet *Luke Welch - AFIT* *Jacob A. Freeman - AFIT* *Philip S. Beran - AFRL*	*42DCASS-049* Design Optimization of a Heavy Lift VTOL UAS *Justin Ouwerkerk - UC* *Kelly Cohen - UC* *Shabban Abdallah - UC*	*42DCASS-014* Air Transport of Rescue Pod using Collaborating UAVs during Emergency Evacuations/Disaster Management *Shraddha Barawkar - UC* *Manish Kumar - UC* *Kelly Cohen - UC*	*42DCASS-041* Investigating the effectiveness of TiAlN coating on carbide tools during flood coolant and dry machining of aerospace material Ti-6Al-4V *Muhammad Jahan - MU* *G.K. Arbuckle - WKU*
16:40	*42DCASS-182* Different Regimes of Premixed Flame Propagation in Open Obstructed Pipes *Abdulafeez Adebiyi - WVU* *Damir Valiev - UMEA* *V'yacheslav Akkerman - WVU*	*42DCASS-154* Stall Cell Formation in Post-Stall Flow over a Boeing Vertol VR-7 Airfoil *Ata Esfahani - OSU* *Nathan Webb - OSU* *Mo Samimy - OSU*	*42DCASS-061* Small Robotic Manipulator Integration with UAV *Jishu Medhi - UC* *Catharine McGhan - UC*	*42DCASS-026* Development of an exoskeleton for sit-to-stand (STS) transition support based on multimodal action intent recognition *Gaurav Patil - UC* *Lilian Rigoli - UC* *Michael J. Richardson - UC* *Anca Ralescu - UC* *Adam Kiefer - UC* *Manish Kumar - UC* *Tamara Lorenz - UC*	*42DCASS-086* Development of VISTA, an open-source Avcoat material database *Ali Omidy - UKY* *Justin M. Cooper - UKY* *Haoyue Weng - UKY* *Alexandre Martin - UKY*
17:00	*42DCASS-181* Modelling of Flame Propagation in Channels with Nonslip Walls: The Impacts of the Lewis Number and the Thermal Expansion Coefficient *Swathi Reddy Shetty - WVU* *Sinan Demir - WVU* *Damir Valiev - UMEA* *V'yacheslav Akkerman - WVU*	*42DCASS-160* Control of Dynamic Stall over a NACA 0015 using NS-DBD Plasma Actuators *David Castaneda - OSU* *Achal Singhal - OSU* *Nathan Webb - OSU* *Mo Samimy - OSU*	*42DCASS-093* Derived Angle of Attack Algorithm Characterization for sUAS *Matthew McCrink - OSU* *James W. Gregory - OSU*	*42DCASS-036* Area Coverage Based On Lévy Foraging Hypothesis Applied to Robot Swarm Emulating Ant Foraging Behavior *Aditya Deshpande - UC* *Manish Kumar - UC* *William Nafstad - UMD* *Subramanian Ramakrishnan - UMD*	*42DCASS-135* Studying the Effect of Boundary Conditions on a Micromechanics Based Material Model in Determining the Elastic Properties of Unidirectional Composites *Sandeep Medikonda - UC* *Ala Tabiei - UC* *Rich Hamm - P&G*
17:20	Adjourn				

Affiliation Abbreviations

ADD - Agency for Defence Development
AFIT - Air Force Institute of Technology
AFLCMC - Air Force Life Cycle Management Center
AFRL - Air Force Research Laboratory
ANL - Argonne National Laboratory
ASTAR - Alpha STAR Corporation
CCH - Cincinnati Childrens Hospital
GHI - GoHypersonic Inc.
GWU - George Washington University
ISSI - Innovative Scientific Solutions Inc.
MU - Miami University
MVH - Miami Valley Hospital
NDSU - North Dakota State University
NRC - National Research Council
NRL - Naval Research Laboratory
OAI - Ohio Aerospace Institute
OSU - The Ohio State University
P&G - Procter & Gamble
PCKA - PC Krause & Associates
PSI - Psibernetix Inc
PU - Purdue University

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133	164	165	171	231	282	Room
SESSION 39 **Turbomachinery II** Chair: Rolf Sondergaard *AFRL*	SESSION 40 **CFD Applications and Methods II** Chair: Jeffrey Komives *AFIT*	SESSION 41 **Uncertainty Quantification** Chair: Ha-Rok Bae *WSU*	SESSION 42 **Experimental Applications and Methods** Chair: Michael Renfro *UKY*	SESSION 43 **Flight Dynamics and Controls II** Chair: Donald Kunz *AFIT*	SESSION 44 **Space IV** Chair: Richard Cobb *AFIT*	Time
42DCASS-184 T-Blade3: A Novel Curvature-Based Design Tool for High Performance Rotating and Fixed-Wing Devices *Karthik Balasubramanian - UC* *Mark G. Turner - UC* *Kiran Siddappaji - UC*	*42DCASS-145* Power-Thermal Emulation of Subcomponents for Full-Body Aircraft Simulation *Jack Chalker - WSU* *Jack Brendlinger - WSU* *Dominic Dierker - WSU* *Mitch Wolff - WSU* *Tommy Baudendistel - PCKA*	*42DCASS-010* Construction of Multi-Fidelity Surrogate Models for Uncertainty Quantification *Markus Rumpfkeil - UD* *Philip Beran - AFRL*	*42DCASS-057* Using Frame Transformations to Properly Stream Data from Multiple Sources *Tom Franco - UC* *George T. Black - UC*	*42DCASS-074* Evaluating the Flying Qualities of an Autonomous Variable Stability Aircraft *Ali Hamidani - AFIT*	*42DCASS-138* Additively Manufactured Spacecraft Thermal Control System *Dan Lanzo - AFIT* *Carl Hartsfield - AFIT*	16:00
42DCASS-142 Modeling a Dynamic Variable Cycle Engine in Simulink *Robert Buettner - WSU* *Rory Roberts - WSU* *Mitch Wolff - WSU* *Alireza Behbahani - AFRL*	*42DCASS-143* 1D-3D Multi-scale Computational Modeling for Blood Flow in Intracranial Aneurysms and Stenoses *Hongtao Yu - WSU* *George P. Huang - WSU* *Zifeng Yang - WSU* *Bryan R. Ludwig - MVH*	*42DCASS-121* Calibration and Uncertainty Quantification of Open Source AVCOAT Similar VISTA Material Model Using Bayesian Inference *Przemyslaw Rostkowski - UIUC* *Marco Panesi - UIUC*	*42DCASS-090* Comparisons of Measured and Modeled Aero-thermal Distributions for Complex Hypersonic Configurations *Denton Sagerman - UD* *Markus P. Rumpfkeil - UD* *Nastasija Dasque - AFRL* *Barry Hellman - AFRL*	*42DCASS-013* Model identification and control of a convertible aircraft *Tudor-Bogdan Airimitoaie - UBIMS* *Loïc Lavigne - UBIMS* *Christophe Farges - UBIMS* *Kelly Cohen - UC* *Franck Cazaurang - UBIMS*	*42DCASS-167* Testing and Evaluating Deployment Profiles of the Canisterized Satellite Dispenser (CSD) *Stephen Tullino - AFIT* *Eric D. Swenson - AFIT*	16:20
42DCASS-114 Performance of Partitioned Pulse Detonation Combustors-Axial Turbine System *Ethan Knight - UC* *Andrew St. George - UC* *Robert Driscoll - UC* *Vijay Anand - UC* *Ephraim Gutmark - UC*	*42DCASS-173* Evaluating the Influence of Vessel Wall Thickness and Blood Rheology on Hemodynamic and Mechanical Variables in Turner Syndrome *Dhananjay Radhakrishnan Subramaniam - UC* *Ephraim J. Gutmark - UC* *Iris Gutmark-Little - CCH*	*42DCASS-146* A Non-Deterministic Metamodeling Framework for Aircraft Design Under Mixed Uncertainty *Daniel Clark - WSU* *Ha-Rok Bae - WSU*	*42DCASS-091* Calibration methodology for a dynamic two strut store balance *Ryan Schmit - AFRL* *James Grove - AFRL* *Rudy Johnson - AFRL*	*42DCASS-022* Position, Attitude and Fault Tolerant Control of Tilt Rotor Quadcopter *Rumit Kumar - UC* *Manish Kumar - UC* *Franck Cazaurang - UBIMS* *Kelly Cohen - UC*	*42DCASS-092* Sensing Satellite Articulation using Computer Vision *David Curtis - AFIT* *Richard G. Cobb - AFIT*	16:40
42DCASS-199 Measurement Stability Analysis of Fuel-Air Ratio using Correlation between Laser-Induced-Breakdown Signal and Electron Generation *Anil Patnaik - SE* *Paul S. Hsu - SE* *Yue Wu - UTK* *Mark Gragston - UTK* *Zhili Zang - UTK* *James R. Gord - AFRL* *Sukesh Roy - SE*	*42DCASS-120* One-Dimensional Model of Lithium-Ion Battery *Ashwin Borakhadikar - WSU* *James Menart - WSU*	*42DCASS-105* Investigation of Aerothermoelastic Model Sensitivity under Transitional Fluid Loading in High Speed Flow *Zachary Riley - UTC* *Benjamin Smarslok - AFRL*	*42DCASS-059* Investigation of Dynamic Store Separation out of a Cavity Utilizing a Low Speed Wind Tunnel *Drew Bower - AFIT*	*42DCASS-081* Dual-Arm Manipulation Methods with a Humanoid Robot *Matthew Verbryke - UC* *Catharine McGhan - UC*	*42DCASS-085* Process of Providing a Small-Payload Return from International Space Station *James Sparks - UKY* *Evan C. Whitmer - UKY* *Gabriel I. Myers - UKY* *Courtney C. Montague - UKY* *Suzanne W. Smith - UKY* *Alexandre Martin - UKY*	17:00
Adjourn						17:20

SE - Spectral Energies LLC
SLU - St. Louis University
TTI - Taitech Inc.
UBIMS - Univ. Bordeaux, IMS-lab, UMR CNRS 5218, F-33405 Talence, France
UC - University of Cincinnati
UCT - University of Connecticut
UD - University of Dayton
UDRI - University of Dayton Research Institute
UES - UES Inc.
UIUC - University of Illinois at Urbana-Champaign
UKY - University of Kentucky
UL - University of Louisville
UMD - University of Minnesota Duluth
UMEA - Umea University
UND - University of Notre Dame
UTC - Universal Technology Corp.
UTK - University of Tennessee-Knoxville
UTL - Univeristy of Toledo
WKU - Western Kentucky University
WSU - Wright State University
WVU - West Virginia University

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ACS Dayton Section	Dr. Eugeniya (Jenny) Iskrenova-Ekiert	chair@daytonacs.org
SAS Ohio Valley Section	Dr. Jamie Gengler	jamie.gengler.ctr@wpafb.af.mil
IEST Greater Ohio Chapter	Dr. Roland Watts	rolandjw@zoomtown.com
Affiliated Societies Council	Dr. Lyle Lockwood	llockwood@utcdayton.com

AMERICAN INSTITUTE OF AERONAUTICS AND ASTRONAUTICS

AIAA Dayton-Cincinnati Section

DAYTON-CINCINNATI SECTION

Volunteers Wanted!!!

If you are a seasoned, well-connected AIAA Fellow, a scientist with other useful skills (photography? publishing?), an aspiring new graduate, or anything in between, we want your help!!!

We have numerous opportunities on our local council for people of all ages and skills. Get involved! We need your ideas and elbow grease to serve and mentor our technical community.

We are always looking for new Council Members. Contact any of our current officers listed below or via our web site at: https://info.aiaa.org/Regions/central/DayCin/default.aspx
and volunteer to lead or help with any of these positions:

Section Chair	Jayesh Mehta	ISEM, LLC		The buck stops here for the execution of all section activities!
Vice Chair	Jeff Hetzel	AFLCMC	937-255-1862	Develop the program agenda for the year and train to become the future chair.
Treasurer	Darius Sanders	AFRL/RQ	937-255-7636	Collect the money and keep the books.
Secretary	Don Rizzetta	AFRL/RQ	937-713-7104	Record the minutes, document the decisions, and assist with official council correspondence.
General Council Members	(Elected Positions)			Contribute your ideas and connections. Volunteer to lead specific programs and activities.
Newsletter Editor	Michael List	AFRL/RQ	937-255-7047	Keep our membership informed of our activities, events, and other news of professional interest.
Webmaster	Margo Ratcliff	NASIC	937-672-4042	Keep website up-to-date with fresh information by working closely with Newsletter Editor and event planners.
Membership Chair	Caleb Barnes	AFRL/RQ	937-713-7103	Promote membership at meetings and events, including membership upgrades and service opportunities within the sectional, regional, and national communities of the AIAA.

Honors/Awards Chair	Marc Polanka	AFIT/ENY	937-255-3636 x4714	Run the section awards program, promote national award opportunities within the section, and plan the year-end awards banquet.
Public Policy Chair	Oliver Leembruggen	Sumaria Systems	937-656-8502	Keep the section informed on AIAA, governmental, and public policy issues from all levels that are important to the aerospace community.
Young Professional Chair	Available			Represent the interests and concerns of our future leaders.
STEM K-12 Outreach	Troy Soileau & Jose Camberos	NASIC & AFRL	937-672-3848 937-713-7055	Advocate the aerospace profession to youth by organizing innovative education activities in the name of AIAA.
University Coordinator	Aaron Altman	UD	937-229-5353	Coordinates Technical Committee activities with the section.
Technical Committee Coordinator	Available			Coordinates Technical Committee activities with the section
Historian	Marc Polanka	AFIT/ENY	937-255-3636 x4714	Provides historical perspective on Section plans and maintains documentation on Section activity for historical file.
Career and Workforce Development Chair	Rob Mitchel	AFLCMC	937-904-4504	Promote programs for professional development, and keep the section informed of employment opportunities.
Affiliated Societies Delegate & Regional Representatives	Sivaram Gogineni	Spectral Energies	937-266-9570	Liaison between our section and the AIAA Regional Activities Council. Represent the section on Dayton Affiliated Societies Council.
Industry Focal Point	Margo Ratcliff	NASIC	937-672-4042	Industry Focal Point
Social Media Outreach	Oliver Leembruggen	Sumaria Systems	937-656-8502	Focal point for providing session news and events through various social media outlets.

Dayton-Cincinnati Aerospace Sciences Symposium
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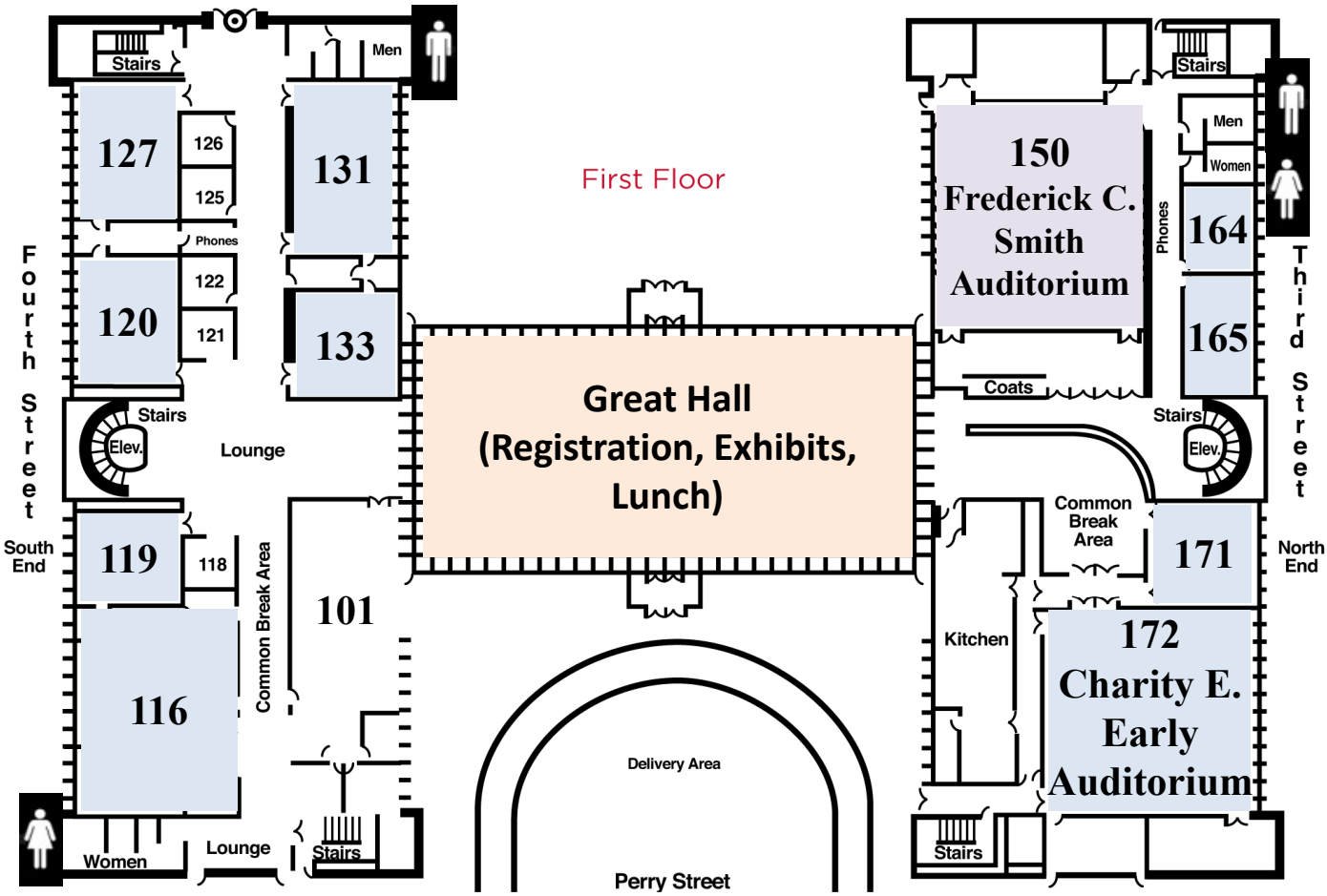

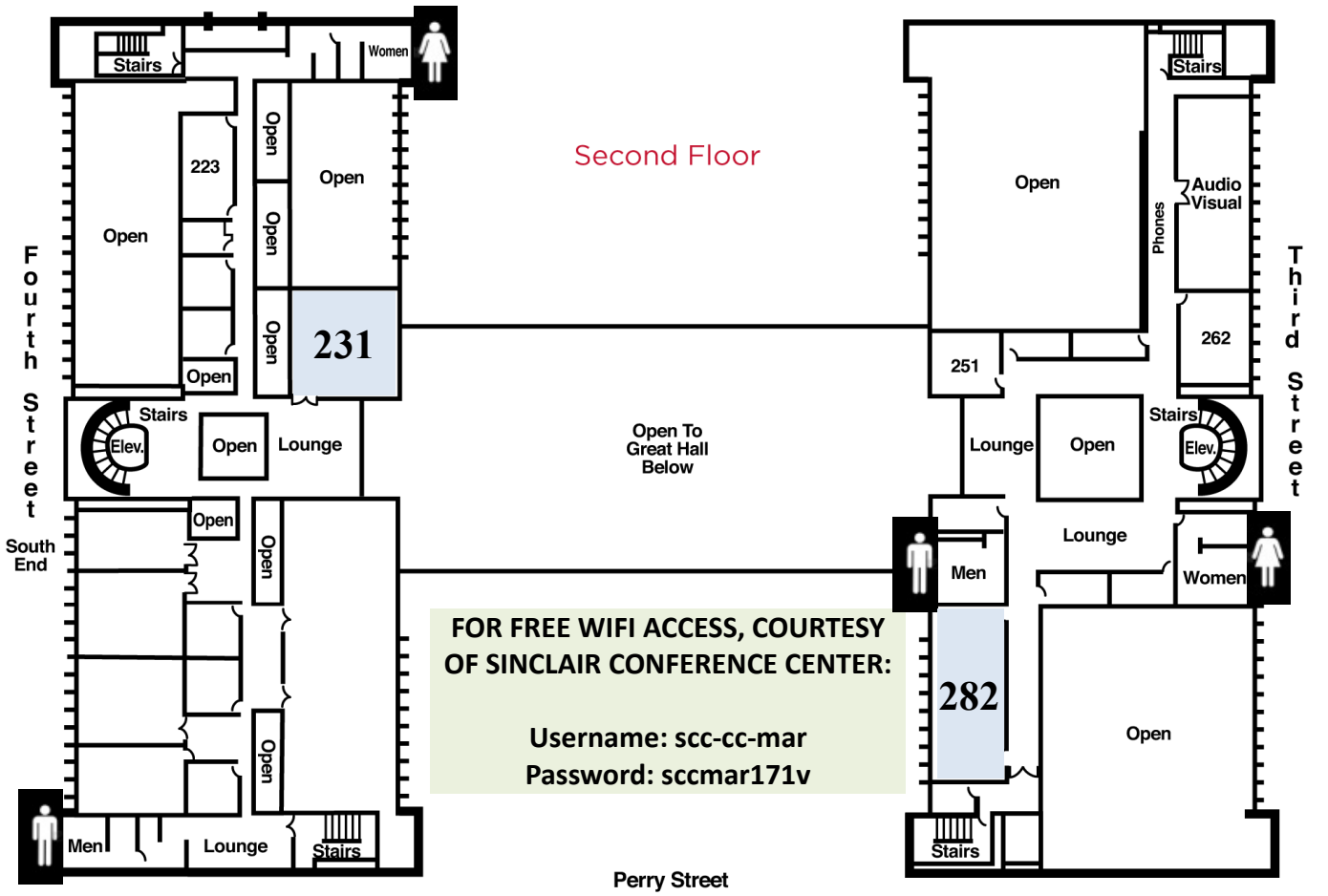

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AIAA Dayton-Cincinnati Section

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1 March 2017,
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An opportunity for companies to informally discuss options with the brightest local students from numerous local and regional Universities; AIAA Education outreach will also be on hand.

An excellent forum for students to learn about career options and collaborative opportunities in the Dayton - Cincinnati region. For additional information see our website at http://www.aiaa-daycin.org/