ASME
DAYTON SECTION

The 12th Annual Dayton Engineering Sciences Symposium

November 1st 2016

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WELCOME

On behalf of the Organizing Committee, we are excited to welcome you to the 12th Annual Dayton Engineering Sciences Symposium (DESS 2016). Sponsored by the Dayton Section of the American Society of Mechanical Engineers (ASME), this symposium is intended to facilitate communication between members of the regional technical community and to provide a forum for students, engineers, and scientists to present their work and sharpen their technical presentation skills.

This year's symposium features over 130 technical presentations spanning a broad range of engineering and scientific topics. We are delighted to welcome Prof. Elizabeth Hsiao-Wecksler, Professor in the Department of Mechanical Science and Engineering at the University of Illinois at Urbana–Champaign, as our distinguished keynote speaker. We hope that her talk on "Bio-mechatronics: Using Technology to Improve Movement of People with Disabilities" will inspire you to use your own engineering expertise to impact those around you.

We hope that this event will serve to inspire innovation and encourage increased engagement and cooperation within the Dayton region's professional and student communities. Its success would not have been possible without all of your participation: speakers, session chairs, sponsors, students, faculty, government and industry representatives, organizing committee members, and the ASME Dayton Section Executive Board. We would like to express our sincere appreciation to all, especially to those listed below for their selfless dedication to make DESS 2016 a success.

Joseph D. Miller
Symposium Chair

Daniel R. Richardson
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Keynote – Sivaram Gogineni
Drew Caswell, Megan Reissman

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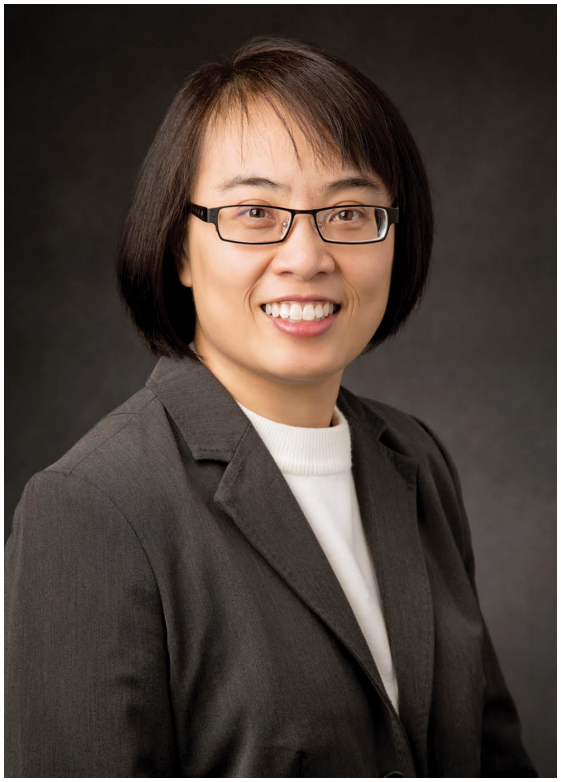
KEYNOTE SPEAKER

"Bio-mechatronics: Using Technology to Improve Movement of People with Disabilities"



Elizabeth Hsiao-Wecksler, PhD, is a Professor and Willett Faculty Scholar in the Department of Mechanical Science and Engineering (MechSE) at the University of Illinois at Urbana–Champaign. She is also currently MechSE's Associate Head of Undergraduate Programs. She is a leader in locomotion biomechanics and assistive device design with a focus on investigating and improving movement control and function in able-bodied and disabled populations. Professor Hsiao-Wecksler directs the Human Dynamics and Controls Laboratory (HDCL). Her research group uses methods from design, control theory, mechatronics, pneumatics and soft robotics, musculoskeletal biomechanics, and movement analysis. The HDCL's interest in assistive device development stems from a desire to improve function, mobility, and the quality of life of persons with disability. To address these areas, the HDCL has been involved in the development of pneumatically powered orthotic devices for the upper and lower extremities and multi-speed wheel systems for manual wheelchairs in conjunction with IntelliWheels, Inc., a Champaign, IL start-up that she co-founded. IntelliWheels is developing novel multi-geared wheels for manual wheelchairs to improve propulsion biomechanics and reduce shoulder loading. Her recent work has been supported by the National Science Foundation, National Institute of Health, and US Department of Homeland Security.

Prof. Hsiao-Wecksler holds affiliate faculty positions in the Neuroscience Program, the Center on Health, Aging and Disability, the Beckman Institute, the Department of Bioengineering, and the Department of Industrial & Enterprise Systems Engineering at the University of Illinois at Urbana-Champaign, as well as membership in the national Center for Compact and Efficient Fluid Power. Prior to starting at the University of Illinois as an Assistant Professor in 2002, she was a post-doctoral fellow in the Integrated Rehabilitation Engineering Program at Harvard Medical School and Boston University. Before getting her PhD, she worked in various mechanical engineering positions at Xerox Corporation in Rochester, NY. She holds degrees in Mechanical Engineering from Cornell University (BS), Rochester Institute of Technology (MS), and the University of California – Berkeley (PhD). Professor Hsiao-Wecksler was elected to the Executive Board for the American Society of Biomechanics serving as the Program Chair for the 2012 Annual Meeting. She is a Fellow of the American Society of Mechanical Engineers (ASME) and Associate Editor for the ASME Journal of Medical Devices.

ASME Dayton Section

The American Society of Mechanical Engineers (ASME) is a 120,000 member professional organization focused on technical, educational, and research issues of the engineering and technology community. ASME sets internationally recognized industrial and manufacturing codes and standards that enhance public safety. The vision of ASME is to be the premier organization for promoting the art, science, and practice of mechanical and multidisciplinary engineering and allied sciences to our diverse communities throughout the world.

Setting the Standard ... in Engineering Excellence ...
in Knowledge, Community, & Advocacy ... for the benefit of humanity.

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Join us for DESS 2017 on Tuesday, October 31, 2017

Electronic Submission of Questions for Keynote Speaker

Questions for the keynote speaker may be submitted during the keynote talk using any of the following methods:

Email or text:
questions@asmedayton.com

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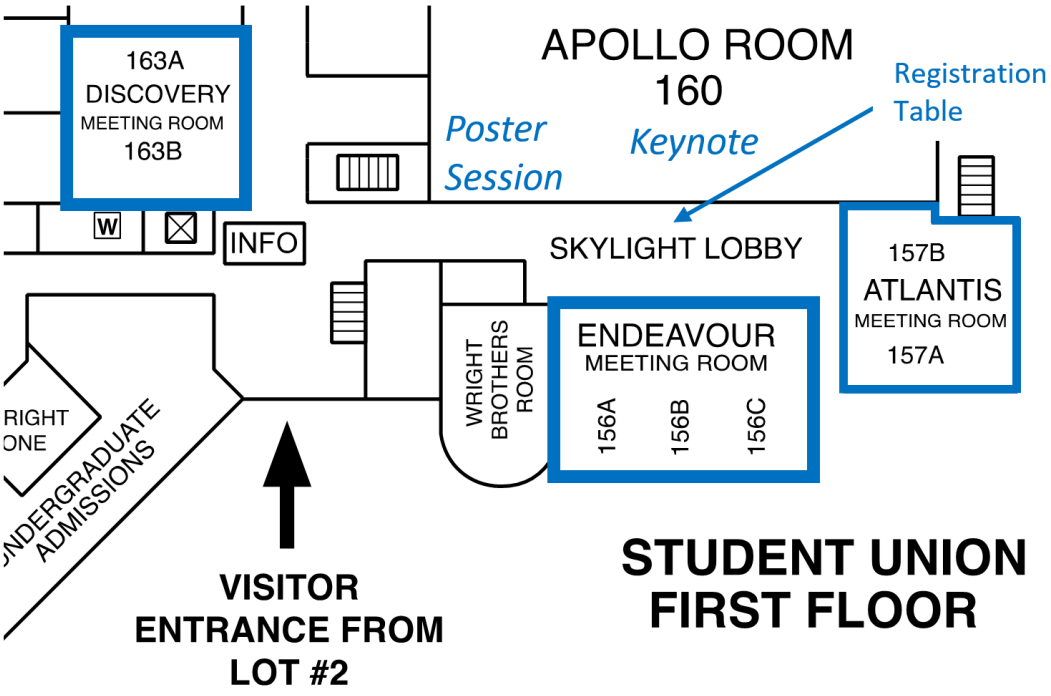
Room Locations



Dayton Engineering Sciences Symposium
Dayton Section of ASME

Wright State University
November 1, 2016

Room	Endeavour 156A	Endeavour 156B	Endeavour 156C	Discovery 163A	Discovery 163B	Atlantis 157A	Atlantis 157B
Time	SESSION 1 **Design and Optimization I** Chair: Dr. Daniel Richardson *SE*	SESSION 2 **Assistive Technology I** Chair: Prof. Tim Reissman *UD*	SESSION 3 **Biomedical I** Chair: Prof. Megan Reissman *UD*	SESSION 4 **Aircraft Systems & Modeling** Chair: Dr. Carl Tilmann *AFRL*	SESSION 5 **Manufacturing** Chair: Timothy Erdmann *ISSI*	SESSION 6 **Renewable & Clean Energy I** Chair: Prof. James Menart *WSU*	SESSION 7 **Undergraduate Competition I** Chair: Dr. Keith Rein *SE*
8:20AM	*DESS16-0123* A Cellworks Optimization Method for Air Vehicle Design *Hao Li - WSU* *Dr. Ramana V. Grandhi - WSU*	*DESS16-0079* Transfemoral Artificial Limbs for Amputees *Michael Graves - WSU* *Dr. Tarun Goswami - WSU*	*DESS16-0095* Experimental Assessment of the Effect of Bicuspid Aortic Valve Morphotype on Aortic Flow *Ashish Madan - WSU* *Andrew McNally - UND* *Dr. Philippe Sucosky - WSU*	*DESS16-0127* A thermal management system for a NASA next generation aircraft *Hayder Al-sarraf - WSU* *Rory Roberts - WSU* *Mitch Wolff - WSU*	*DESS16-0007* Geometric Deviation and the Effect on Fatigue Life for Additive Manufactured Ti 6Al-4V *Thaddeus Crowe - KHS* *Chris Howard - PA* *Onome Scott-Emaukpor - AFRL* *Tommy George - AFRL* *Casey Holycross - AFRL*		
8:40AM	*DESS16-0124* Implementing, Comparing and Improving Existing Multifidelity Techniques *Daniel Clark - WSU* *Admir Makas - WSU* *Ramana V. Grandhi - WSU*	*DESS16-0080* Transtibial Sockets for Amputees *Jordan Yaney - WSU* *Tarun Goswami - WSU*	*DESS16-0013* Intravascular blood flow velocimetry using optical flow method *Zifeng Yang - WSU* *Hongtao Yu - WSU* *George Huang - WSU* *Bryan Ludwig - WSU*	*DESS16-0122* Distributed Propulsion System for a Revolutionary Blended Wing Aircraft *Hashim Abada - WSU* *Mitch Wolff - WSU* *Rory Roberts - WSU*	*DESS16-0008* Investigation of Surface Roughness Effects on Material Behavior of Additive Manufactured Ti 6Al-4V *Christopher Howard - PA* *Thad Crowe - KHS* *Onome Scott-Emuakpor - AFRL* *Tommy George - AFRL* *Casey Holycross - AFRL*	*DESS16-0036* Development of Analytical Equations for Optimum Tilt for Single-Axis and Two-Axis Rotating Solar Panels for Clear-Sky Conditions *Gaurav Gugale - WSU* *Dr. James Menart - WSU*	
9:00AM	*DESS16-0125* Topology Optimization of Thermoelastic Structures via Level-Set Methods *David Neiferd - WSU* *Dr. Ramana V. Grandhi - WSU*	*DESS16-0090* Vacuum pressure as a tool to assess prosthetic socket fit and inform clinical decisions *Matthew Wernke - OWW* *Cameron Rink - OSU* *Jim Colvin - OWW* *Chandan Sen - OSU* *Alex Albury - OWW*	*DESS16-0099* Surface damage scoring and computational contact modeling of retrieved knee liners *Stephanie Suhr - WSU* *Chelsea Weiss - WSU* *Nathan Wright - WSU* *Elizabeth Soto - WSU* *Tarun Goswami - WSU*	*DESS16-0064* Exergy Analysis Applied to Aircraft Subsystems *Robert Foshee - WSU* *Marcus Bracey - WSU* *Rory Roberts - WSU* *Mitch Wolff - WSU* *Jon Zumberge - AFRL*	*DESS16-0093* An Initial Investigation of Microstructural Observations and Mechanical Properties fo Inconel 718 *Luke Sheridan - WSU* *Luke Sheridan - WSU* *Joy Gockel - WSU* *Onome Scott-Emuakpor - AFRL* *Tommy George - AFRL*	*DESS16-0040* Turbine Modeling for Run-of-the-River Hydropower *Sajjan Pokhrel - WSU* *James Menart - WSU* *Subramania I. Sritharan - CSU* *Fred E. Williams Jr. - CSU*	*DESS16-0011* Testing of a State-of-the-Art Rocket Barn *Erin Peiffer - UD* *Joshua Heyne - UD* *Adrian Padt - RW* *David Glover - RW*
9:20AM	*DESS16-0126* Multi-Fidelity Optimization with Multiple Fidelity Objective and Constraints *Christopher Fischer - WSU* *Ramana Grandhi - WSU* *Phil Beran - AFRL*	*DESS16-0114* 3D Printing on Steroids: Development Weight-Bearing Prosthetic Devices Quickly That Improve Socket Fit and Amputee Care. *Brad Poziembo - DAL*	*DESS16-0043* Characterization of Retrieved Total Ankle Replacement Liners *Dinesh Gundapaneni - WSU* *Tarun Goswami - WSU*	*DESS16-0121* Electrical storage for a NASA next generation aircraft *Saif Al-agele - WSU* *Rory Roberts - WSU* *Mitch Wolff - WSU*	*DESS16-0113* Correlating In-process Statistical Data Collected during SLM to As-built Material Properties, Microstructure, and Residual Stress in Ti-6Al-4V *Nathan Levkulich - WSU* *Dr. Nathan Klingbeil - WSU* *Dr. Greg Loughnane - WSU* *Dr. Joy Gockel - WSU*	*DESS16-0045* Analytical and Numerical Mathematical Models for the Energy Output of an Ocean Tidal Barrage *Peter Menart - CRHS* *James Menart - WSU*	*DESS16-0083* A Technical Investigation on the Collapse of the Hyatt Skywalk using a Beam Bending Analysis *Jordan Denen - CDU*
9:40AM	*DESS16-0133* Importance of the multi-fidelity analysis in multi-physics problems *Deep Atkare - WSU* *Dr. Ramana V. Grandhi - WSU*	*DESS16-0073* Integrated Myoelectric Liners to Improve Prosthetic Technology *Timothy Reissman - UD*	*DESS16-0088* Design of a Novel Multidirectional Fluid Shear Stress Bioreactor *Janet Liu - WSU* *Dr. Philippe Sucosky - WSU*	*DESS16-0035* Dynamic Modeling of a Supersonic Turbofan Engine *Robert Buettner - WSU* *Mitch Wolff - WSU* *Rory Roberts - WSU*	*DESS16-0117* Thermal Modeling of Powder (IN718) Bed Additive Manufacturing Process for Prediction of Surface Stresses *Chigozie Obidigbo - WSU* *Dr. Joy Gockel - WSU*	*DESS16-0056* A Look at the Optimum Slope of a Fixed Solar Panel for Maximum Energy Collection for a One Year Time Period *Salah Alhaidari - WSU* *Dr.James Menart - WSU*	*DESS16-0022* Design and Prototyping of a Shape-changing Rigid-body Human Foot in Gait *Tanner Rolfe - UD*
10:00AM	Break						

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Room	Endeavour 156A	Endeavour 156B	Endeavour 156C	Discovery 163A	Discovery 163B	Atlantis 157A	Atlantis 157B
Time	SESSION 8 **Design & Optimization II** Chair: Prof. Richard Cobb *AFIT*	SESSION 9 **Assistive Technology II** Chair: Prof. Tim Reissman *UD*	SESSION 10 **Combustion & Diagnostics I** Chair: Dr. A.J. Rolling *AFRL*	SESSION 11 **Fluid Dynamics & CFD I** Chair: Dr. Samir Naboulsi *AFRL*	SESSION 12 **Materials** Chair: Prof. Ramana Grandhi *WSU*	SESSION 13 **Thermal & Fluid Systems** Chair: Dr. Michael List *AFRL*	SESSION 14 **Undergraduate Competition II** Chair: Prof. Darren Holland *CDU*
10:20AM	*DESS16-0010* Micromirror Mass Reduction Design Study and Experimental Demonstration *Harris Hall - AFRL* *Andrew Green - AFRL* *Sarah Dooley - AFRL* *Jason Schmidt - AFRL* *LaVern Starman - AFRL*	*DESS16-0119* Below-Elbow Prosthetic for Amputees *Samuel Nusbaum - WSU* *Tarun Goswami - WSU*	*DESS16-0012* Two-photon femtosecond planar laser induced fluorescence measurements of carbon monoxide in flames. *Daniel Richardson - AFRL* *Sukesh Roy - SE* *James R Gord - AFRL*	*DESS16-0055* Effect of Rayleigh-Taylor Instability on Fuel Consumption Rate in a High Pressure High-G Combustor *Brandon Long - UDRI* *Alejandro M. Briones - UDRI* *Scott D. Stouffer - UDRI* *Brent A. Rankin - AFRL*	*DESS16-0051* Evaluating the Scuffing Wear Performance of Aircraft Gas Turbine Lubricants Using the FZG-Ryder Rig *Alexander Fletcher - UDRI* *Peter J. John, Ph.D. - UDRI* *Lewis Rosado, Ph.D. - AFRL* *Patrick T. Hellman - AFRL*	*DESS16-0032* Simulation of an Automatic Commercial Ice Maker *Haithem Murgham - UD* *David Myszka - UD* *Vijay Bahel - ECT* *Rajan Rajendran - ECT* *Kurt Knapke - ECT*	*DESS16-0096* Thin Film Sensor Application to the LSWT for Low Pressure Turbine Measurements *Emma Veley - WSU* *Mitch Wolff - WSU* *Christopher R. Marks - AFRL* *Richard Anthony - AFRL* *Rolf Sondergaard - AFRL*
10:40AM	*DESS16-0052* Optimal Airborne Trajectories to Minimize Uncertainty in Target Localization *Michael Zollars - AFIT* *Dr. Richard Cobb - AFIT*	*DESS16-0044* The influence of carbon composite and plastic ankle foot orthoses on balance, gait and fatigue in individuals with multiple sclerosis *Sarah Hollis - UD* *Hannah Clark, Tamara Erlich - UD* *Tessa Hill, Paige Ingram - UD* *Kayla Kress, Lindsey Weisman - UD* *Dr. Kimberly Bigelow - UD* *Dr. Kurt Jackson - UD*	*DESS16-0067* Laser-Induced Breakdown Spectroscopy for Fuel/Air Ratio Measurements in High-pressure Hydrocarbon Flames *Paul Hsu - SE* *Mikhail Slipchenko, Sukesh Roy - SE* *Naibo Jiang,Jason Mance - SE* *Yue Wu, Mark Gragston - UTK* *Cary Smith, Zhili Zhang - UTK* *Joseph Miller, James Gord - AFRL*	*DESS16-0100* Dynamic-Measurement Uncertainty Quantification (D-MUQ) *Tommy Baudendistel - PCKA* *Jon Zumberge, PhD - AFRL*	*DESS16-0071* The Effect of Anisotropy in the Constitutive Relationship of Additively Manufactured 15-5PH Stainless Steel Subjected to High Strain Rates *Joy Gockel - WSU* *Anthony Palazotto - AFIT*	*DESS16-0075* Statistically Determining Functional Dependencies in Fire Retardant Aerial Drop Ground Coverage *Saad Qureshi - UD* *Aaron Altman - UD*	*DESS16-0097* Velocity Measurement Verification Using a Three Component Laser Doppler Velocimetry System *Jacob Dickel - WSU* *Mitch Wolff and Philip Bear - WSU* *Christopher R. Marks - AFRL* *Rolf Sondergaard - AFRL* *Young Wu and Clayton Davis - AFA*
11:00AM	*DESS16-0060* UAV Minimun Weighted Latency Tours *Christopher Olsen - AFIT*	*DESS16-0101* Artificial Foot Device *Christen Wendel - AFRL* *Dr. Tarun Goswami - WSU*	*DESS16-0017* On the Streamlining of the Alternative Jet Fuels Certification Process: An Overview of the National Jet Fuels Combustion Program *Joshua Heyne - UD*	*DESS16-0037* 3D Computational Analysis of Endwall Contours in Low Pressure Turbines *Jacob Sharpe - WSU* *Mitch Wolff - WSU* *Rolf Sondergaard - AFRL*	*DESS16-0094* Analysis of the Effects of Additive Manufacturing on the Material Properties of 15-5PH Stainless Steel *Eric Lum - AFIT* *Dr. Anthony Palazotto - AFIT* *Allison Dempsey - AFRL*	*DESS16-0049* Simulation-based Comparison and Performance Analysis of Zero-Dimensiona and One-Dimensional Models of Human Blood-Flow Network *Roussel Rahman - WSU* *George P. Huang - WSU*	*DESS16-0087* Exploring Heat Transfer *Michael Robertson - CDU*
11:20AM	*DESS16-0108* Heavy Lift UAS Design Optimization *Justin Ouwerkerk - UC*	*DESS16-0128* Prosthetic Hands since 2005 *Benjamin Davis - WSU*	*DESS16-0028* On the Use of Statistical Analysis Techniques to Determine Driving Factors in Combustion Processes *Jeremy Carson - UD* *Tyler Hendershott - UDRI* *Scott Stouffer - UDRI* *Joshua Heyne - UD*	*DESS16-0104* Advancing DoD High Performance Computing Capabilities with Hardware Accelerators *Virginia Ross - AFRL* *Kevin L. Schoen - AFRL*	*DESS16-0109* Quantitative characterization of alpha and beta microstructures for single- and multi-layer builds of additive manufactured Ti-6Al-4V *Laura Gliebe - WSU* *Nathan Klingbeil - WSU* *Gregory Loughnane - WSU*	*DESS16-0059* Self Contained Cryogenic Power and Thermal Management System Model *Nathan Butt - WSU* *Sean Nuzum - BAH* *Dr. Mitch Wolff - WSU* *Dr. Rory Roberts - WSU*	*DESS16-0031* The Sinclair Community College Guitar Labs 2 HP, chain driven, vacuum assisted, low maintenance Fret Slotting Gang Saw *Andrew Shaffer - SCC* *Colin Bayman - SCC* *Ethan Kern - SCC* *Matt Mongin - SCC*
11:40AM	*DESS16-0021* Optimal Design of a Hexakis Icosahedron Vacuum Based Lighter than Air Vehicle *Joseph Schwemmer - AFIT* *Dr. James Chrissis - AFIT* *Dr. Anthony Palazotto - AFIT*	*DESS16-0066* Cross Crawl Ambulatory Device *Alex Kreider - WSU* *Courtney Ballard - WSU* *Vanessa Madrigal - WSU* *Ashley Miller - WSU* *Tarun Goaswani, Ph.D - WSU*	*DESS16-0072* Developing a Calculator for Generating Surrogate Jet Fuels with Target Chemical and Physical Properties *David Bell - UD* *Joshua S. Heyne - UD*	*DESS16-0029* Dynamical Features of a Supersonic Multistream Jet with an Aft-Deck *Cory Stack - OSU* *Datta V. Gaitonde - OSU*		*DESS16-0111* Performance Analysis of a Hybrid Solid Oxide Full Cell/Gas Turbine System *Venkata Adithya Chakravarthula - WSU* *Rory Roberts - WSU* *Mitch Wolff - WSU*	

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12:00PM	**160 - Apollo Room** Lunch and Networking (Visit Buffet and be Seated)						
12:30PM	**Welcome & Opening Remarks:** Joseph Miller, *12th DESS Chair* **Keynote Address:** "Bio-mechatronics: Using Technology to Improve Movement of People with Disabilities" Elizabeth Hsiao-Wecksler, Ph.D., *Professor and Willett Faculty Scholar in the Department of Mechanical Science and Engineering (MechSE) at the University of Illinois at Urbana Champaign*						
1:40PM	Break						
Room	Endeavour 156A	Endeavour 156B	Endeavour 156C	Discovery 163A	Discovery 163B	Atlantis 157A	Atlantis 157B
Time	SESSION 15 **Design & Optimization III** Chair: Dr. Kazuko Fuchi *UDRI*	SESSION 16 **Biomechanics I** Chair: Prof. Megan Reissman *UD*	SESSION 17 **Combustion & Diagnostics II** Chair: Dr. Brent Rankin *AFRL*	SESSION 18 **Fluid Dynamics & CFD II** Chair: Dr. Virginia Ross *AFRL*	SESSION 19 **Structures & Fatigue I** Chair: Prof. Marcelo Dapino *OSU*	SESSION 20 **Engineering Education** Chair: Dr. Jose Camberos *AFRL*	SESSION 21 **Undergraduate Research I** Chair: Dr. Andrew Caswell *AFRL*
2:00PM	*DESS16-0069* Spatial Mechanism Analysis and Synthesis by Special Unitary Matrices *Saleh M. Almestiri - UD* *Andrew Murray - UD* *David Myszka - UD*	*DESS16-0057* Balance, Mobility, and Stepping: Differences between Young Adults, Older Fallers, and Older Non-Fallers *Lianna Nordwig - UD* *Dr. Kimberly Bigelow - UD*	*DESS16-0063* Creating a Well-Stirred Reactor Environment for Biomass Combustion Analysis and Assessment *Sari Mira - UD* *Joshua Heyne - UD*	*DESS16-0046* Insights into the Wingtip Vortex – Free Shear Layer Interaction *Sidaard Gunasekaran - UD* *Dr. Aaron Altman - UD*	*DESS16-0034* Design and Dynamic Analysis of a Unique Structure Under an Internal Vacuum *Jordan Snyder - AFIT* *Dr. Anthony Palazotto - AFIT*	*DESS16-0001* Visualizing STEM Learning: A Pedagogical Use of 3D Printing *Adedeji Badiru - AFIT* *Annabelle Sharp - AFIT* *Anna Maloney - AFIT* *Samantha Bozada - AFIT* *Matthew Loh - AFIT*	*DESS16-0115* Design, Analysis, and Fabrication of a Cyclogyro Rotorcraft *Benjamin Busic - CDU* *Andrew J Ellicott - CDU* *Krister R Samuelson - CDU*
2:20PM	*DESS16-0076* Gamma-Ray Imaging using a Rotating Scatter Mask and Detector Assembly: Simulation Comparisons *Julie Logan - AFIT* *Dr. Darren E Holland - CDU* *LTC Buckley E O'Day - AFIT* *Dr. Larry W. Burggraf - AFIT*	*DESS16-0041* Postural Control in Breast Cancer Patients Receiving Taxane-Based Chemotherapy *Scott Monfort - OSU* *Robyn Patrick - OSU* *Xueliang Pan - OSU* *Maryam B. Lustberg - OSU* *Ajit M.W. Chaudhari - OSU*	*DESS16-0009* Ignitability of Premixed Ethylene and Air in a Toroidal Jet-Stirred Reactor *Robert Stachler - UD* *Joseph K. Lefkowitz - AFRL* *Timothy M. Ombrello - AFRL* *Scott D. Stouffer - UDRI* *Joshua S. Heyne - UD* *Joseph D. Miller - AFRL*	*DESS16-0014* Investigation of dynamic store separation out of a cavity utilizing a low speed wind tunnel. *Drew Bower - AFIT* *LT James Sellers - AFIT*	*DESS16-0039* In Situ Validation of Residual Stress Gradients in Plastically Deformed Vibration-Based Fatigue Plates *Kevin Knapp - AFIT* *Anthony Palazotto - AFIT* *Onome E. Scott-Emuakpor - AFRL* *Casey Holycross - AFRL* *Tommy George - AFRL*	*DESS16-0065* Ohio Lean Building and Workforce Development Project Provides Real World Experience *Robert Gilbert - SCC*	*DESS16-0077* Artificial Foot *Ronald Richardson - WSU* *Sean Saffle - WSU* *Samuel DeRoy - WSU* *Jaspreet Singh - WSU* *Tarun Goswami, Ph.D. - WSU*
2:40PM	*DESS16-0086* Genetic Fuzzy Trees for Closed-Loop, Time-Optimal Control of Dynamic Systems *Nathaniel Richards - UC* *Dr. Kelly Cohen - UC* *Dr. Manish Kumar - UC*	*DESS16-0026* Nonlinear Analysis of Balance Data in the Easter Seals Adult Day Services Population *Taylor Schmitmeyer - UD* *Kim Bigelow - UD* *Kurt Jackson - UD*	*DESS16-0062* Optical diagnostics for studying bluff body flame holder dynamics *Chris Fugger - SE* *Andrew Caswell - AFRL* *Brent Rankin - AFRL* *Joe Miller - AFRL* *James Gord - AFRL*	*DESS16-0089* Experimental Evaluation of Turbulent Structures and Loss Production Mechanisms in a High Lift Low Pressure Turbine *Philip Bear - WSU* *Mitch Wolff - WSU* *Andreas Gross - NMSU* *Chris Marks - AFRL* *Rolf Sondergaard - AFRL*	*DESS16-0048* Residual Stress Evaluation of Laser Shock Peening Over a Partial Through the Thickness Crack *David Eisensmith - AFIT* *Dr. Anthony Palazotto - AFIT* *Dr. Stefano Coratello - UDRI* *Dr. Kristina Langer - AFRL*	*DESS16-0130* The Cradle of Aviation *Wayne Lundberg - AFLCM* *Andrew Kididis - AFLCM*	*DESS16-0103* Modeling the Behavior of Synovial Fluid in Total Joint Replacement Devices *Maisin Elkins - WSU* *Dinesh Gundapaneni - WSU* *Tarun Goswami - WSU*
3:00PM	*DESS16-0038* Topology Optimized Penetrating Warheads Against Multi-Layered Targets *Zachariah Provchy - AFIT* *Dr. Anthony Palazotto - AFRL*	*DESS16-0018* Optimization Prediction Of Muscle Forces During Walking Are Influenced By Objective Function *Elijah Kuska - UD* *Dr. Allison Kinney - UD*	*DESS16-0105* Preliminary study of the impact of vitiation products on engine-relevant combustion properties *Kyle Brady - ISSI* *Joshua Sykes - ISSI* *Brent A. Rankin - AFRL* *Andrew Caswell - AFRL*	*DESS16-0027* Cross-stream evolution of the free shear layer behind a wing with changes in angle of attack *Muhammad Omar Memon - UD* *Aaron Altman - UD*	*DESS16-0005* Laminated steel structures made via Ultrasonic Additive Manufacturing *Tianyang Han - OSU* *Leon Headings - OSU* *Prof. Marcelo Dapino - OSU*	*DESS16-0132* The Wizards of Wright *Wayne Lundberg - AFLCM* *Krista Gerhardt - AFRL*	*DESS16-0116* A genetic fuzzy approach to controlling the F4 fighter jet elevator in approach condition. *Nicklas Stockton - UC* *Kelly Cohen - UC*
3:20PM	Break						

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Room	Endeavour 156A	Endeavour 156B	Endeavour 156C	Discovery 163A	Discovery 163B	Atlantis 157A	Atlantis 157B
Time	SESSION 22 **Design & Optimization IV** Chair: Prof. Ha-rok Bae *WSU*	SESSION 23 **Biomechanics II** Chair: Prof. Megan Reissman *UD*	SESSION 24 **Biomedical II** Chair: Prof. Tim Reissman *UD*	SESSION 25 **Fluid Dynamics & CFD III** Chair: Dr. Ryan Schmit *AFRL*	SESSION 26 **Structures & Fatigue II** Chair: Prof. Anthony Palazotto *AFIT*	SESSION 27 **Renewable & Clean Energy II** Chair: Dr. Scott Stouffer *UDRI*	SESSION 28 **Undergraduate Research II** Chair: Dr. Paul Hsu *SE*
3:40PM	*DESS16-0091* A Stochastic Kriging Framework for Responses with Mixed Uncertainty *Daniel Clark - WSU* *Ha-Rok Bae - WSU*	*DESS16-0058* The Effect of multitasking in balance and mobility in individuals with Parkinson disease *Sneha Lakshminarayanan - UD* *Dr.Kimberly Bigelow - UD*	*DESS16-0047* Macrodamage Accumulation Model for a Human Femur *Farah Hamandi - WSU* *Dr. Tarun Goswami - WSU*	*DESS16-0120* Experimental and Computational Characterization of Flow Rates in Closely-Coupled Swirling Flows *Timothy Erdmann - ISSI* *Dr. Alejandro Briones - UDRI* *Dr. Scott Stouffer - UDRI* *Dr. Brent Rankin - AFRL* *Dr. Andrew Caswell - AFRL*	*DESS16-0070* Characterization of the Lode = -1 Meridian on the Al-2024 Failure Surface for *MAT_224 in LS-DYNA *Robert Lowe - UD* *Jeremy D. Seidt - OSU* *Amos Gilat - OSU*	*DESS16-0002* Solar Thermal Adsorption Refrigeration *Amnah Altaher - UD* *Matthew Worsham - UD* *Katie Willard - UD* *Claudia Labrador Rached - UD*	*DESS16-0042* Correlating surface profile data measured in-process to as-built component density in AM Ti-6Al-4V components *Megann Robinaugh - WSU* *Gregory Loughnane - WSU* *John Middendorf - UTC* *Joy Gockel - WSU*
4:00PM	*DESS16-0098* Pseudospectral and Metaheuristic Optimization of Spacecraft Proximity Operation Trajectories with Exclusion Zones *Eric Prince - AFIT* *Dr. Richard Cobb - AFIT*	*DESS16-0068* Analyzing the use of visual feedback provided by limb mounted lasers for improving lower extremity movement in individuals with neurological disorders *Kevin Nowacki - UD* *Luke Schepers - UD* *Bridget Dues - UD* *Dr. Kimberly Bigelow - UD*	*DESS16-0030* A Multiscale Simulation of A Cerebral Aneurysm *Hongtao Yu - WSU* *George P. Huang - WSU* *Zifeng Yang - WES* *Bryan R. Ludwig - MVH*	*DESS16-0054* CFD Analysis and Optimization of a Simplified Scramjet Engine Model *Nate McGillivray - WSU* *Dr. Mitch Wolff - WSU* *Dr. Rory Roberts - WSU*	*DESS16-0092* Longitudinal Damage Detection in a Beam Using Lamb Waves: Simulation and Test Study *Chan Yik Park - AFIT* *Anthony N. Palazotto - AFIT* *Chad S. Hale - AFIT* *Gyuhae Park - CNU* *Hwee Kwon Jung - CNU*	*DESS16-0015* Graphical Non-dimensional Analysis of Specific Diameter with Relationship to Specific Speed and the Flow and Energy Coefficients *Richard Fowlkes - WSU* *James Menart - WSU* *Subramania I. Sritharan - CSU*	DESS16-0050 Damping of Hastelloy X Beams Uncoated vs Coated at High Temperatures *Robert Henderson - WSU* *Onome Scott-Emuakpor - AFRL* *Tommy George - AFRL* *Bryan Langley - AFRL*
4:20PM	*DESS16-0023* Satellite Articulation Sensing using Computer Vision *David Curtis - AFIT* *Richard Cobb - AFIT*	*DESS16-0112* Post stroke adaptations in kinematic joint patterns following cross-tilt walking *Megan Reissman - UD*	*DESS16-0106* Finite Element Modeling of the Lower Lumbar Segment *Chelsea Weiss - WSU* *Dr. Tarun Goswami - WSU*	*DESS16-0118* Aerodynamic Analysis for a Distributed Electric Propulsion Aircraft *Jay Vora - WSU* *Rory Roberts - WSU* *Mitch Wolff - WSU*	*DESS16-0085* Study of Chaotic Behavior in the Dynamic Response of an Airfoil with a Nonlinear Trailing Edge Flap *Joshua Lee - AFIT* *Dr. Anthony N. Palazotto - AFIT*	*DESS16-0016* Computer Modeling of a Solar Thermal System without Storage *Dhananjay Deshpande - WSU* *Dr. James Menart - WSU*	*DESS16-0053* Optimizing Laser Powder Bed Process Parameters to Attain Highly Dense Additive Manufactured Inconel 718 Components *Sonya Sokhey - WSU* *Greg Loughnane - WSU* *Joy Gockel - WSU* *John Middendorf - UTC*
4:40PM	*DESS16-0134* Aerodynamic Database Generation for a Hypersonic Vehicle using Variable-Fidelity Kriging in Three Dimensions *Jose Camberos - AFRL* *James A. Tancred - UD* *Markus P. Rumpfkeil - UD*	*DESS16-0024* Influence of Reverse Shoulder Implant Positioning on Patient-Specific Muscle Forces: A Simulation Study *Kayla Pariser - UD* *Dr. Allison Kinney - UD* *Dr. David Walker - RI*	*DESS16-0102* Predictors for Anterior Cruciate Ligament Injury *Bharadwaj Cheruvu - MU* *Tarun Goswami - WSU*	*DESS16-0135* High-Speed X-ray Radiography and Phase-Contrast Imaging of Impinging Jet Spray Breakup *Benjamin R. Halls - NRC* *James R Gord - AFRL* *Christopher D. Radke - NASA* *Benjamin J. Reuter - SE* *Terrence R. Meyer - PU* *Alan L. Kastengren - ANL*		*DESS16-0019* Mathematical Modeling of P-N Junction Solar Cell using Transport Equations *Surjeet Singh - WSU* *James Menart - WSU*	
5:00PM	Adjourn						

160 - Apollo Room 1:40PM - 3:40PM Poster Session			
DESS16-0004 **Deposition of compositional tailored SiO2-TiO2 thin films in supercritical carbon dioxide** *Joanna Wang - AFRL* *Gail Brown - AFRL* *Chien Wai - UI*	*DESS16-0033* **Interaction between Aerothermally Compliant Structures and Boundary-Layer Transition in Hypersonic Flow** *Zachary Riley - OSU*	*DESS16-0074* **3D Printed Parts with Embedded Electronics via Ultrasonic Additive Manufacturing** *Emilie Baker - OSU* *Leon Headings - OSU*	*DESS16-0061* **Using Neural Networks to Diagnose Diabetic Retinopathy** *Hong-Ann Do - AFRL* *Angelina Batty - CWU* *Jim Patrick - AFRL*
DESS16-0078 **Energy Absorption of PLA Spherical Pore Structures** *Jonah Leary - WSU*	*DESS16-0081* **Optical Limiters** *Jacob Baumgarte - LEHS* *Nicholaos Limberopoulos - AFIT*	*DESS16-0082* **Modeling Human-Machine Interaction During a Pointing Task** *Gabriel Hepner - MU* *Dr. Leslie M. Blaha - PNNL* *Dr. Joseph W. Houpt - WSU* *Dr. James R. Chagdes - MU*	*DESS16-0084* **Energy Absorption Capability of 3D Printed Polymer Structures with Octahedral Pores** *Benjamin Lewis - WSU* *Jonah Leary - WSU* *Abbie Morneault - WSU* *Victoria Bellows - WSU* *Diondra Copeland - WSU*
DESS16-0107 **Computational simulations of the cervical spine under biomechanical loading** *Daniel Marshall - WSU* *Chelsea Weiss - WSU* *Tarun Goswami - WSU*	*DESS16-0110* **iPhone Flame Composition Detector** *Carson Stone - BBHS* *Nathanial DeLong - BBHS* *Nathan Tong - BBHS* *Jason Wright - BBHS*	*DESS16-0129* **High-speed imaging of flame stabilization around a close-coupled bluff body** *Nathan Hess - AFRL* *Dr. Joseph Miller - AFRL*	

Abbreviations:

AFA = Air Force Academy
AFIT = Air Force Institute of Technology
AFLCM = Air Force Life Cycle Mgmnt Cntr
AFRL = Air Force Research Laboratory
BAH = Booz Allen Hamilton
BBHS = Bellbrook High School
CDU = Cedarville University
CNU = Chonnam National University
CRHS = Carroll High School
CSU = Central State University
CWU = Case Western University
DAL = Dayton Artificial Limb
ECT = Emerson Climate Technologies
ISSI = Innovative Scientific Solutions Inc.
KHS = Kettering High School
LEHS = Lakota East High School
MU = Miami University
MVH = Miami Valley Hospital
NMSU = New Mexico State University
OSU = The Ohio State University
OWW = Ohio Willow Wood
PA = Pace Academy
PNNL = Pacific Northwest National Lab.
RI = Rehoboth Innovations LLC.
RW = Rocket Works
SCC = Sinclair Community College
SE = Spectral Energies LLC
UC = University of Cincinnati
UD = University of Dayton
UDRI = University of Dayton Research Inst.
UI = University of Idaho
UND = University of Notre Dame
UTC = Universal Technology Corp.
UTK = University of Tennessee at Knoxville
WES = Waibel Energy Systems
WSU = Wright State University