



Wisconsin Space Grant Consortium

28th Annual

WISCONSIN SPACE CONFERENCE

Uncharted Lands: Geology & Space

AUGUST 10, 2018

Hosted by:



A Campus of the University of Wisconsin Oshkosh

WSGC Presentation Schedule

August 10, 2018

7:30-8:15 **Registration & Breakfast**

8:15-8:30 **Welcome & Introductions**

(James W. Perry Hall)

Martin Rudd: Dean; Chemistry; Professor, UW-Oshkosh Fox Valley

Beth Johnson: WSGC Advisory Council and Institutional Representative; Geology; Assistant Professor, UW-Oshkosh Fox Valley

Kevin Crosby: WSGC Director; Physics; Professor, Carthage College

Christine Bolz: WSGC Assistant Director; Carthage College

Session 1: Plenary Speaker

(James W. Perry Hall)

Moderator: Beth Johnson: WSGC Advisory Council and Institutional Representative; Geology; Assistant Professor, UW-Oshkosh Fox Valley

8:30-9:15

Jennifer L. B. Anderson: *Going Ballistic! Making Impact Craters in the Laboratory;* Planetary Geology; Associate Professor, Winona State University

Session 2: NASA Internships

(James W. Perry Hall)

Moderator: Robert Morrow: WSGC Associate Director for Industry Programs; Propulsion and Environmental Systems; Principal Scientist, Sierra Nevada Corporation

9:15-9:30

Khousa Chang: NASA Marshall Space Flight Center: *Development of an Additively Manufactured Capacitive Humidity Sensor for the ISS;* Engineering; Graduate, MSOE

9:30-9:45

Justin McElderry: NASA Marshall Space Flight Center: *Microgravity Solidification Experiments for the ISS;* Engineering; Undergraduate, MSOE

9:45-10:00

Keegan Bergman: NASA Langley Research Center: *Designing and Simulating an Urban Air Mobility Vehicle Concept;* Engineering; Undergraduate, UW-Madison

10:00-10:15

M. David Kankam: University Affairs Officer, NIFS Lead, Glenn Research Center

Session 3A: K-12 General Outreach Programs

(Lecture Hall 1229)

Moderator: Meredith Alt: WSGC Advisory Council and Institutional Representative; Bureau of Aeronautics; Aviation Education Program Manager, WI Department of Transportation

10:15-10:30

Richard Scott Sr.: *The Sky's The Limit;* STEAM Youth Outreach; KoJo Productions, Inc.

10:30-10:45

Basudeb Bhattacharyya: *Summer Camps to Inspire Middle School Students;* STEM Youth Outreach; Chemistry; Biochemistry; Associate Lecturer, UW-La Crosse

10:45-11:00

Richard Stewart: *Ongoing Aeronautical and Space Summer Camps - Lessons Learned;* Career Introduction; Transportation and Logistics, School of Business and Economics; Professor, UW-Superior

Session 3B: Faculty Programs: Physics & Astronomy

(Lecture Hall 1338)

Moderator: William Dirienzo: WSGC Advisory Council and Institutional Representative; Physics & Astronomy; Assistant Professor, UW-Green Bay Sheboygan

10:15-10:30

Katie Rabidoux: *Neutral Hydrogen in Local Luminous Compact Blue Galaxies;* Astronomy; Engineering Physics; Assistant Professor, UW-Platteville

Session 3B: Faculty Programs: Physics & Astronomy (cont.)

(Lecture Hall 1338)

- 10:30-10:45 **Seth King:** *Gamma Radiation Aging of Polycrystalline Magnesium Oxide Thin-Films;* Physics; Associate Professor, UW-La Crosse
- 10:45-11:00 **Taviare Hawkins:** *Biomechanics of Microtubules;* Physics; Associate Professor, UW-La Crosse

Session 4: Posters & Networking

(Lucia Baehman Theater)

- 11:00-12:00 **Moderator: Michael LeDocq:** WSGC Advisory Council Chair; Physics; Professor, Western Technical College
- Poster #1 **Jarret Henning:** *A Molecular Investigation into the Genetic Networks that Respond to the Mechanical Characteristics of the Microgravity Environment Experienced by Arabidopsis Thaliana During Spaceflight;* Astro Botanical Engineering; Undergraduate, UW-Madison
- Poster #2 **Simpson Street Free Press:** Astronomy; K-12 Students, Simpson Street Free Press
Represented by Sarah Useche, Deney Li
- Poster #3 **Karsten Hintz:** *Evaluating Information Content in SDSS Quasar Spectra as a Function of Signal-to-Noise;* Astronomy; Undergraduate, UW-Stevens Point
- Poster #4 **Logan Hess:** *Fourier Analysis of the Spiral Arms of Late-Type Spiral Galaxies;* Astronomy; Undergraduate, UW-Stevens Point
- Poster #5 **Claire Pfeffer:** *Space Phage: Expanding an Undergraduate Course-Based Research Experience;* Biological Sciences/Medicine; Undergraduate, Carthage College
- Poster #6 **Higher Education Incentives:** *Experimenting with Flashlapse, a 3D-Printed Device, to Identify Genes that Allow Arabidopsis Thaliana to Respond to Changes in Gravitational Direction;* Biological Sciences/Medicine; Undergraduates, Carthage College
Represented by Ariel Franitza, Margaret Guske, Claire Pfeffer
- Poster #7 **Research Infrastructure Program:** *The Effects of a CO2 Stressor on Salivary Alpha-Amylase and Cortisol Levels in Behaviorally Inhibited and Non Inhibited Individuals;* Biological Sciences/Medicine; Undergraduates, Carthage College
Represented by Robin Peterson, Erin Walz
- Poster #8 **RockSat C: Wallops Flight Facility:** *UW SEDS RockSat C 2018 Project - Effects of Spaceflight on Plasmid DNA;* Biological Sciences/Medicine; Undergraduates, UW-Platteville
Represented by Joshua Janezick
- Poster #9 **Research Infrastructure Program:** *Catching a Glimpse into Ozone Production Near Oil and Natural Gas Wells;* Chemistry; Undergraduates, Lawrence University
Represented by Elizabeth Bridgwater, Fry Intia
- Poster #10 **Research Infrastructure Program:** *Topological Data Analysis of the NASA Atom Data Set;* Chemistry; Undergraduates, Lawrence University
Represented by Cade Francour, Katie Kitzinger
- Poster #11 **NASA HUNCH Program:** *High Schools Uniting with NASA to Create Hardware (HUNCH) Program;* Engineering; High School Students, Platteville High School
Represented by Isabel Bowers, Adelle Holder, Renee Momot, Morgan Mumm, Geoge Schwarzmam, Sarah Sherer

Session 4: Posters & Networking (cont.)

(Lucia Baehman Theater)

- Poster #12 **Collegiate Rocket Launch: First Place: Rocketeers:** *Obtaining a Horizontal Panoramic Image in a High Power Rocket After Landing*; Engineering; Undergraduates, UW-Oshkosh Fox Valley
Represented by Jens Carter, Kathryn Lenz, Eric McDaniel, Shawn Schumacher
- Poster #13 **Collegiate Rocket Launch: Second Place: Wildcat Rocketry**
Engineering; Undergraduates, UW-Milwaukee Washington County
Represented by Shane Flynn, Joseph Gawrys, Kota Grauden, Max Read
- Poster #14 **Collegiate Rocket Launch: Third Place: Pioneer Rocketry**
Engineering; Undergraduates, UW-Platteville
Represented by Elizabeth Bohlman, David Kendhammer, Nathaniel Michek, Jacqueline Muller, Chandler Tollison, Nathaniel Zabel
- Poster #15 **Elijah High Altitude Balloon Project:** *2018 High Altitude Balloon Payload Project*;
Engineering; Undergraduate; Lawrence University
Represented by Quinlan Bock
- Poster #16 **Taylor Waddell: NASA Marshall Space Flight Center:** *An Observation of VLF EM Waves Emitted from Lightning*; Engineering; Undergraduate, UW-Madison
- Poster #17 **Senior Design: MSOE Team HERBS;** Engineering; Undergraduates, MSOE
Represented by Ethan Brew, Andrew Ramirez
- Poster #18 **Senior Design: In Situ Resource Utilization of Asteroid 16 Psyche;** Engineering; Undergraduates, MSOE
Represented by Mike Hinaus, Ben Jensen
- Poster #19 **John Compas: Spherical Gyroscope for Spacecraft Attitude Control;** Engineering; Undergraduate, UW-Madison
- Poster #20 **John Thayer: Improvement of a Forward Dynamic Predictive Human Gait Model;** Engineering; Undergraduate, Marquette University
- Poster #21 **Justin McElderry: The Space Grant Scholarship That is Out of This World;** Engineering; Undergraduate, MSOE
- Display #22 **Jeff Clark: Neutral Hydrogen in Local Luminous Compact Blue Galaxies;** Geology; Associate Professor, Lawrence University
- Poster #23 **Jordan Ludyan: Assessment of Secondary Chemical and Mineralogical Trends at Lassen Volcano: Relevance to Early Mars Hydrothermalism;** GeoScience; Undergraduate, UW-Milwaukee
- Poster #24 **Elizabeth Borucki: Depositionally-Induced Magnetic Frequency Variations of a Sandstone Facies from the Copper Harbor Conglomerate of the North American, Mid-Continent Rift at Union Bay, Michigan;** GeoScience; Graduate, UW-Milwaukee
- Poster #25 **USIP: Canopy Near-Infrared Observing Project;** Geoscience; Undergraduates, MSOE, Carthage College
Represented by Jared Maraccini, Austin Weber
- Poster #26 **Research Infrastructure Program: Using Enhanced CO₂ (7%) Exposure to Examine Avoidance Learning Reveals Differences Based on Sex and Behavioral Inhibition;** Neuroscience; Undergraduates, Carthage College
Represented by Kyle Mueller, Hannah Skendziel
- Poster #27 **Midwest Rocket Launch: Rocketeers**
Physics; Undergraduate, UW-River Falls
Represented by Andrew Larson

Session 4: Posters & Networking (cont.)

(Lucia Baehman Theater)

- Poster #28 **Harold Hart:** *Contrast Study of Segmented Microtubule Flaws and Mechanics*; Physics; Undergraduate, UW-La Crosse
- Poster #29 **Jacob Pfund:** *Better Solar Panels for a Brighter Future: ZnO/Graphene Nanocomposites*; Physics; Undergraduate, UW-La Crosse
- Display #30 **Andrew Cegielski:** *Geodesic Dome Designed for Space Education*; Education (Field House)

Lunch & Networking

- 11:00-12:45 **Individual Awardee Photos** (Community First Lobby)
- 12:00-12:45 **Lunch** (Cafe & Union)

Please join one of our table talk sessions for lunch. Some of today's topics may include: Aviation Careers (Wisconsin Department of Transportation-Bureau of Aeronautics), Aerospace Supply Chain Management (Wisconsin Center for Manufacturing & Productivity), Aerospace Manufacturing (Plexus Corporation), Becoming a Private Pilot, Science Journalism, Propulsion Systems (Sierra Nevada Corporation), Environmental Systems (Sierra Nevada Corporation), Entrepreneurship, NASA Internships, Unmanned Aerial Systems, AIAA, Aerospace Transportation and Logistics Careers, Industry Internships, Space Biology, Videogames & Astronomy, Planetarium Programs, etc.

- 12:45-1:00 **Group Photo** (TBA)

Session 5: WSGC Industry Internship

(James W. Perry Hall)

Moderator: Todd Treichel: WSGC Advisory Council and Institutional Representative; Propulsion and Environmental Systems; Senior Systems Engineer, Sierra Nevada Corporation

- 1:00-1:15 **Philip Fischer:** *Bucks Aerospace Jam*; Milwaukee Bucks
- 1:15-1:30 **Mary Claire Mancl:** *Sierra Nevada Corporation: ECLSS Atmospheric Monitoring System and Fire Detection System*; Engineering; Undergraduate, UW-Madison

Session 6: Student Research

(James W. Perry Hall)

Moderator: Gubbi Sudhakaran: WSGC Associate Director for Research Infrastructure; College of Science and Health; Interim Associate Dean; Physics; Professor, UW-La Crosse

- 1:30-1:45 **Casey McGrath:** *The Hunt for Gravitational Waves with Pulsar Timing*; Physics; Graduate, UW-Milwaukee
- 1:45-2:00 **Alecio Madrid:** *Using Structure Function Analysis to Study the Alfvénic Environments of 10 Giant Molecular Clouds*; Astronomy; Undergraduate, UW-Madison
- 2:00-2:15 **Kaisa Crawford-Taylor:** *Investigating Optimizing Mirror Orbits for Darkside Illumination*; Astronomy; Undergraduate, UW-La Crosse
- 2:15-2:30 **Alessandro Tocci:** *Ground-Based Electric Field Measurements for Sprite Studies*; Physics; Undergraduate, Carthage College
- 2:30-2:45 **Ryan LeFebvre:** *Kinetic Inductance Detectors for Future Missions to Observe the Cosmic Microwave Background*; Physics; Undergraduate, UW-Madison
- 2:45-3:00 **Avery McLain:** *Photocatalytic Properties of ZnO/Graphene Nanocomposites*; Physics; Undergraduate, UW-Madison
- 3:00-3:15 **Break**

Session 7A: K-12 General Outreach Programs

(James W. Perry Hall)

Moderator: Brian Ewenson: WSGC Advisory Council and Institutional Representative; Executive Director, Spaceport Sheboygan

- 3:15-3:30 **James Senft:** *STEM Aviation Program at a High School Level*; Aviation; Director, Central High School Aviation Club
- 3:30-3:45 **Matt Heer:** *High Schools Uniting with NASA to Create Hardware (HUNCH) Program*; Engineering; K12 Teacher, Platteville High School
- 3:45-4:00 **Mike Beall:** *Games & Astrobotany Workshop*; Astrobotany; Director, Gear Learning
- 4:00-4:15 **Break**

Session 7B: Faculty Programs: Biological Sciences/Medicine & Chemistry

(Lecture Hall 1229)

Moderator: Kerry Kuehn: WSGC Advisory Council and Institutional Representative; Physics; Professor, Wisconsin Lutheran College

- 3:15-3:30 **Paul Martino:** *Physiologic Phenotypes of College Age Behaviorally Inhibited Individuals When Exposed to Elevated CO₂*; Biology; Associate Professor, Carthage College
- 3:30-3:45 **Andrea Henle:** *Development of an Upper-Level Biology Course on Human Health and Disease in Space*; Biology; Assistant Professor, Carthage College
- 3:45-4:00 **Steven Girard:** *Next-Generation Radioisotope Thermoelectric Generators Based on Low-Cost and Non-Toxic Nanostructured Silicides*; Chemistry; Assistant Professor, UW-Whitewater
- 4:00-4:15 **Break**

Session 7C: Faculty Programs: Geoscience

(Lecture Hall 1338)

Moderator: Jeff Clark: WSGC Advisory Council and Institutional Representative; Geology; Professor, Lawrence University

- 3:15-3:30 **Marcia Bjomerud:** *A Geologic Mystery at Brussels Hill, Wisconsin*; Biology; Professor, Lawrence University
- 3:30-3:45 **Deanna Donohue:** *Hunting Ozone: Impacts of Natural Gas Emissions in Western Pennsylvania*; Chemistry; Assistant Professor, Lawrence University
- 3:45-4:00 **Lindsay McHenry:** *Google Mars in the Online "Classroom"*; Geoscience; Professor, UW-Milwaukee
- 4:00-4:15 **Break**

Session 8: NASA Partnerships: Team Programs

(James W. Perry Hall)

Moderator: William Farrow: WSGC Associate Director for Student Satellite Initiatives Member; WSGC Advisory Council and Institutional Representative; Mechanical Engineering; Professor, MSOE

- 4:15-4:30 **Elijah High Altitude Balloon Project:** Engineering; Undergraduates, Lawrence University, MSOE
Represented by Quinlan Bock, Tim Buchmann, Soren Chapman-Aldridge, Jake Dregne, Nicole Jackson, Cody Nettesheim

Session 8: NASA Partnerships: Team Programs (cont.)

(James W. Perry Hall)

- 4:30-4:45 **Robotic Mining: NASA Kennedy Space Center: MSOE NASA Robotic Mining Competition;** Engineering; Undergraduates, MSOE
Represented by Timothy Buchmann, Austin Fritsch, Justin McElderry, Cody Nettesheim, Cheyenne Phakousonh
- 4:45-5:00 **RockSat C: NASA Wallops Flight Facility: UW SEDS RocksatC 2018 Project - Effects of Spaceflight on Plasmid DNA;** Physics; Undergraduates, UW-Milwaukee, UW-Green Bay Sheboygan
Represented by Bob Aloisi, Joshua Janezick, Kaitlin Krause
- 5:00-5:15 **Micro-Gravity: NASA Kennedy Space Center: Modal Propellant Gauging - Blue Origin Payload;** Engineering, Undergraduates, Carthage College
Represented by Celestine Ananda, Nick Bartel, Sheila Franklin, Megan Janiak, Taylor Peterson

Awardee Recognition

(James W. Perry Hall)

- 5:15 **Awardee Recognition - Christine Bolz**
- Undergraduate Scholarship/STEM Bridge Scholarship - Lindsay McHenry
Undergraduate Research Fellowship - Gubbi Sudhakaran
Graduate & Professional Research Fellowship - Lindsay McHenry
Student Satellite Program - William Farrow
NASA Competitions - Kevin Crosby
NASA & Industry Internships - Bob Morrow
Aerospace Outreach Program - Mike LeDocq
Special Initiatives Program - Mike LeDocq
Higher Education Incentives - Mike LeDocq
Research Infrastructure Programs - Gubbi Sudhakaran
- Poster Competition Award - Mike LeDocq**
- Closing Remarks - Kevin Crosby**

Evening Plenary Session

(James W. Perry Hall)

- 6:00-7:00 **Networking: Heavy Appetizers Served** (Thrivent Lobby)
- 7:00-7:10 **Elijah Project: Journey to the Unknown**
Represented by Quinlan Bock, Tim Buchmann, Soren Chapman-Aldridge, Jake Dregne, Nicole Jackson, Cody Nettesheim
- 7:10-7:20 **Moderator: Chancellor Andrew Leavitt:** UW-Oshkosh
- 7:20-8:20 **Plenary Speaker: Chris Henry:** *Apollo: For All ManKind*; EAA Museum, Experimental Aircraft Association
- 8:20-8:30 **Thank you and Farewell - Kevin Crosby**

PLENARY SPEAKER

Going Ballistic! Making Impact Craters in the Laboratory



JENNIFER L. B. ANDERSON, Ph.D.

Professor of Geoscience
Winona State University, Winona, MN
Rhode Island Space Grant Consortium Alumna

Dr. Anderson grew up in eastern Wisconsin and was an amateur astronomer from approximately age six. She received B.S. degrees in Astrophysics, Geophysics, and Physics from the University of Minnesota, Twin Cities. In 1998, Anderson went on to attend Brown University in Providence, RI, for her Master's (2001) and Ph.D. (2004) in Geological Sciences, emphasis on Planetary Geology. Anderson's Ph.D. focused on impact experiments at the NASA Ames Vertical Gun Range in Moffett Field, CA. Since 2007, she has collaborated with colleagues at the Experimental Impact Laboratory at NASA's Johnson Space Center in Houston, TX. She joined the Winona State University faculty in 2005 and is currently a Professor of Geoscience. Classes taught include Astronomy, Planetary Geology, Geophysics, and Earth Science Education. Anderson runs the WSU Observatory on campus and also does a number of astronomical outreach events each year.

PLENARY SPEAKER

Apollo: For All Mankind



CHRIS HENRY

EAA Aviation Museum
Experimental Aircraft Association, Oshkosh, WI

Chris Henry is a staff member at the Experimental Aircraft Association in Oshkosh, WI. He has been interested in aviation since he was a young boy. At the age of twelve he began volunteering at the local air museum in his hometown of Pittsburgh, PA. There he worked on several World War II aircraft such as the B-17 Flying Fortress, B-25 Mitchell, and P-47 Thunderbolt. He worked through college fueling airplanes at the local airport and graduated as an Air Traffic Controller. He worked ramp control for the airlines and then went on to become a manager of flight operations for a medical helicopter company. After serving as an air traffic controller for several years, he came to the EAA. In his role there, he works to create special moments for people from all walks of life. He has worked very closely with the B-17 "Aluminum Overcast" Program and has helped give many veterans the chance to become reunited with "their" airplane once again. Also, in this role he is able to show younger generations what those before them experienced. He has played a part in many special events at the EAA Museum in Oshkosh such as the Apollo 13 reunion, Freedom Flight, The Apollo Astronaut Reunion, Space Day, and many others.

2018-2019 Calendar of Opportunities

spacegrant.carthage.edu

STUDENT PROGRAMS

Undergraduate Scholarship (UGS)
Undergraduate Research (UGR)
Dr. Laurel Salton Clark Memorial
Graduate & Professional Research
Fellowship (LSC)
WSGC Graduate & Professional
Research Fellowship (GPP)
Application Deadline: February 5, 2019

Undergraduate Scholarship (UGS)
Two-year Academic Institutions
STEM Bridge Scholarship (SBS)
Application Deadline: October 2, 2018

Industry Internship Program (IIP)
Application Opportunity:
February 1 – 28, 2019

TEAM PROGRAMS

Collegiate Rocket Launch (CRL)
First Nations Launch (FNL)
Midwest Rocket Launch (MRL)
WSGC Notice of Intent (NOI) to compete
Application Deadline: October 16, 2018
CRL/FNL Competition: April 27, 2019 (TBC)
MRL Competition in North Branch, MN (TBD)

Elijah High-Altitude Balloon Program
(EBP)
Work period: May 15, 2019 – August 15, 2019
Application Deadline: February 12, 2019

Unmanned Aerial Vehicle Program
(TBA)

FACULTY, INDUSTRY & OUTREACH PROGRAMS

Higher Education Incentives (HEI)
Research Infrastructure Program
(RIP)
Application Deadline: December 4, 2018

Industry Internship Program (IIP)
Application Deadline: November 6, 2018

NASA Sponsored Competitions
Fall Application Deadline: November 13, 2018
Spring Application Deadline: February 5, 2019

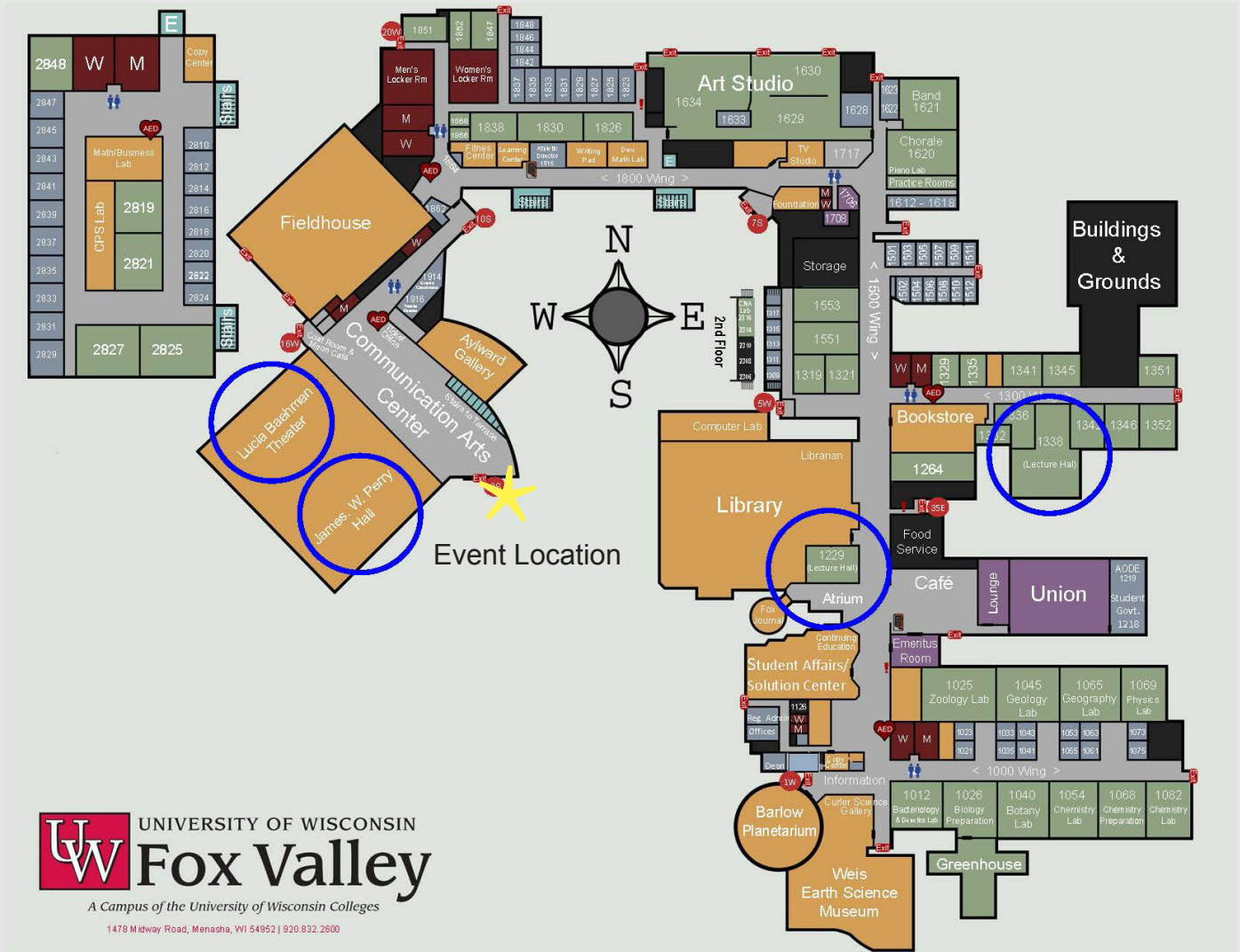
Aerospace Outreach Program (AOP)
Special Initiatives Program (SIP)
Application Deadline: October 9, 2018

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Guests are invited to tour
the Weis Earth Science Museum
and Barlow Planetarium

(Display your conference name badge for free admission)

NOTES

