Wisconsin Space Grant Consortium and Experimental Aircraft Association Present:

The Twenty-Fifth Annual
WISCONSIN SPACE CONFERENCE

EAA AirVenture Museum
Oshkosh, Wisconsin

Friday, August 14, 2015
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker(s)</th>
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</thead>
<tbody>
<tr>
<td>7:30-8:15am</td>
<td>Registration &amp; Continental Breakfast</td>
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<tr>
<td>8:15-8:30am</td>
<td>Welcome &amp; Introductions</td>
<td>Christine Thompson: Program Manager, WSGC; Carthage College</td>
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<td></td>
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<td>Kevin Crosby: Director, WSGC; Dean, Division of Natural and Social Sciences,</td>
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<td></td>
<td></td>
<td>Carthage College</td>
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<td>Mike LeDocq: Chair, WSGC Advisory Council; Natural Science</td>
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<td>Department Head and Physics Instructor, Western Technical College</td>
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<tr>
<td>8:30-9:15am</td>
<td>Session 1: Plenary Speaker</td>
<td>Moderator: Bret Steffen, Director of Education, EAA</td>
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<td>John Monnet: President and Founder, Sonex Aircraft LLC</td>
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<td>9:15-9:30am</td>
<td>Session 2: NASA Partnerships</td>
<td>Moderator: William Dirienzo, WSGC Advisory Council; Department of Computer</td>
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<td></td>
<td></td>
<td>Science, Engineering, Physics, and Astronomy, UW-Sheboygan</td>
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<tr>
<td>9:15-9:30am</td>
<td>HUNCH: Matt Heer, NAVi3: Stabilizing and</td>
<td>HUNCH: Matt Heer, NAVi3: Stabilizing and Controlling a GoPro Camera</td>
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<td>Controlling a GoPro Camera with Gyroscopes</td>
<td>in Microgravity; Physics &amp; Engineering; Teacher, Platteville High School</td>
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<td>in Microgravity; Physics &amp; Engineering;</td>
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<tr>
<td>9:30-9:45am</td>
<td>USIP: Tessa Rundle, Kevin LeCaptain, Benjamin</td>
<td>USIP: Tessa Rundle, Kevin LeCaptain, Benjamin Tillema, Microgravity</td>
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<td></td>
<td>Tillema, Microgravity Propellant Gauging</td>
<td>Propellant Gauging Using Experimental Modal Analysis; Physics;</td>
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<td></td>
<td>Using Experimental Modal Analysis; Physics;</td>
<td>Undergraduates, Carthage College</td>
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<tr>
<td>9:45-10:00am</td>
<td>X-HAB: Nicole Przybyla, Design of Carbon-fiber/FDM Spacecraft</td>
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<td></td>
<td>Structural Fabrication System (SSFS);</td>
<td>Structural Fabrication System (SSFS); Engineering &amp; Applied Sciences;</td>
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<tr>
<td></td>
<td>Engineering &amp; Applied Sciences;</td>
<td>Undergraduate, UW-Milwaukee</td>
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<tr>
<td>10:00-10:15am</td>
<td>Senior Design: Justin Collins, Stephen</td>
<td>Senior Design: Justin Collins, Stephen Skibinski, Thermal Energy Management</td>
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<td>Skibinski, Thermal Energy Management on</td>
<td>on Enceladus; Mechanical Engineering; Undergraduates, Milwaukee School of</td>
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<td>Enceladus; Mechanical Engineering;</td>
<td>Engineering</td>
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<tr>
<td>10:15-10:20am</td>
<td>FNL Video: Chris Thompson</td>
<td>FNL Video: Chris Thompson, Carthage College</td>
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### Session 3A: Student Research

**Moderator:** Lindsay McHenry, WSGC Associate Director, Undergraduate Scholarships and Graduate Fellowships; Associate Professor of Geosciences, UW-Milwaukee

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<thead>
<tr>
<th>Time</th>
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<th>Title</th>
<th>Institution</th>
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<tbody>
<tr>
<td>10:30-10:45am</td>
<td>Stephanie Bradshaw</td>
<td>Thunderstorm Electrification; Physics &amp; Astronomy</td>
<td>Undergraduate, Carthage College</td>
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<tr>
<td>10:45-11:00am</td>
<td>Christopher Christopherson</td>
<td>Observing Nebulosities; Physics &amp; Astronomy</td>
<td>Undergraduate, UW-Oshkosh</td>
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<tr>
<td>11:00-11:15am</td>
<td>Jordan Zimmerman</td>
<td>Riveting Hammer Vibration and Nerve Damage; Biomedical Engineering &amp; Cell Biology</td>
<td>Undergraduate, Marquette University/Medical College of Wisconsin</td>
</tr>
<tr>
<td>11:15-11:30am</td>
<td>Sarah Martens</td>
<td>Star Forming Rates and HI Gas Content in Galaxy Groups; Astronomy &amp; Physics</td>
<td>Undergraduate, UW-Madison</td>
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<tr>
<td>11:30-11:45am</td>
<td>Trent Cybela</td>
<td>Developments in Fire Suppression on Orbit; Mechanical Engineering</td>
<td>Undergraduate, UW-Platteville</td>
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<tr>
<td>11:45-12:00am</td>
<td>Aaron Olson</td>
<td>Recent Progress in Lunar Helium-3 Extraction Research; Engineering Physics</td>
<td>Graduate, UW-Madison</td>
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### Session 3B: K-12 General Outreach

**Moderator:** Karen Broitzman, WSGC Associate Director, Aerospace Outreach; Aviation Education Program Manager, Wisconsin Department of Transportation

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<tr>
<td>10:30-10:45am</td>
<td>Barbara Bielec</td>
<td>Wild Weather! &amp; Biotechnology: Basics – BTC Institute Outreach; K-12</td>
<td>Program Director, BTC Institute</td>
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<tr>
<td>10:45-11:00am</td>
<td>Susan Kelly</td>
<td>NASA Astronaut at Middle School 2016 Summer Science Camps at UW-La Crosse</td>
<td>Mathematics; Professor, UW-La Crosse</td>
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<tr>
<td>11:00-11:15am</td>
<td>John Heasley</td>
<td>Driftless Dark Skies: STEM Careers for Rural Students; Environmental Education</td>
<td>Space Science Educator, Kickapoo Valley Reserve</td>
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<tr>
<td>11:15-11:30am</td>
<td>Chris Janssen</td>
<td>Space Simulator Engaging Youth for Leadership and Engineering Skills</td>
<td>Planetarium; Director, Wausau School Planetarium</td>
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</tbody>
</table>
11:30-11:45am  **Thomas Consi**, Learning Spacecraft Engineering with Underwater Vehicles; Freshwater Sciences; Assistant Professor, UW-Milwaukee

**Lunch** *(Founders Wing)*

11:45-12:45pm  Lunch
11:45-12:45pm  Individual Awardee Photos

**Session 4: Academic and Industry Research** *(Founders Wing)*

**Moderator: Gubbi Sudhakaran**, WSGC Associate Director, Research Infrastructure; Chair of Physics Department, UW-La Crosse

12:45-1:00pm  **Seth King**, *Effects of Gamma Irradiation on ZnO*; Physics; Associate Professor, UW-La Crosse

1:00-1:15pm  **Robert Benjamin**, *Variable Stars of the Galactic Disk*; Physics; Professor, UW-Milwaukee

1:15-1:30pm  **Brian Kragh, Rachel Post, Nathaniel Lee, Stephen Janke**, *Exploring Drone Capabilities for Academic Research*; Natural Science Division; Undergraduates, Carthage College

1:30-1:45pm  **Taviare Hawkins**, *Microtubule Mechanics in the Presence of Lattice Defects*; Physics; Assistant Professor, UW-La Crosse

1:45-2:00pm  **Todd Treichel**, *Astronaut Crew LED Lighting & Human Factor Effects*; Senior Systems Engineer, Orbital Technologies Corporation

2:00-2:15pm  **Eric Compas**, *Investigating the Use of Low-Cost UAVs for Low-Altitude, High-Temporal Resolution Aerial Photography for Natural Resource Research and Teaching*; Geography, Geology, and Environmental Science; Assistant Professor, UW-Whitewater

2:15-2:30pm  **Lindsay McHenry**, *Developing Impact Cratering Labs for an Online Introductory Planetary Geology Course*; Geosciences; Associate Professor, UW-Milwaukee

2:30-2:45pm  **Robert Ragan**, *Predicting Equilibria in 1-d Collisionless Gravitational Systems*; Physics; Professor, UW-La Crosse
Session 5: Networking & Poster Session  
(Fergus Plaza)

Poster Session; Refreshments in Hallway  
3:30pm - Group Photo in Eagle  
Moderator: Michael LeDocq

Ryan Manske, *Using Radio Frequencies to Spatially Track ID Tags*; Natural Sciences; Science Teacher, East Troy High School

Evan Dowling, *Can Dark Matter Halos Change Shape?*; Physics; Undergraduate, UW-La Crosse

Zachary Dercks, Matthew Arnoldussen, *Asteroid Attachment*; Mechanical Engineering; Undergraduates, Milwaukee School of Engineering

Andrew Eagon, *The Circulation of Ionized Gas on the Milky Way*; Astronomy; Undergraduate, UW-Whitewater

RockSat-C Team: Amelia Gear, Tessa Rundle, Jordan Rice, Justin Barhite:  
*Normal Field Instability of Ferrofluid in Microgravity*; Physics; Undergraduates, Carthage College

Collegiate Rocket Launch: Second Place – Engineering Division – Team Badger Ballistic; Undergraduate Student, University of Wisconsin-Madison
  Represented by Lucas Jewell

2015 Elijah High Altitude Balloon Program Launch Team:  
   Alana Tirimacco; Mechanical Engineering, MSOE  
   Jordan Petrie; Mechanical Engineering, MSOE  
   Danny Ochoa; Mechanical Engineering, MSOE  
   Jadee Kellogg; Physics, Ripon College

Henri LeMieux – *Massive Stellar Content of the Cygnus Superbubble*; Physics and Astronomy; Undergraduate, UW-Oshkosh

Stephen Dornbos – *Early Life on Land: Evaluating the Biogenicity of Mesoproterozoic Fluvial-Lacustrine Stromatolites*; Geosciences; Associate Professor, UW-Milwaukee

Geoffrey Ament – NASA Internship; Engineering Physics; Undergraduate, UW-Platteville
**Session 6: WSGC Team Projects**

*(Founders' Wing)*

**Moderator:** Bill Farrow, WSGC Associate Director, Student Satellite Initiatives; Assistant Professor, Milwaukee School of Engineering

**3:45-4:00pm**

**Collegiate Rocket Launch: First Place – Non-Engineering Division – Team Red Hawk Rocketry;** Undergraduate Students, Ripon College
Jadee Kellogg
Akash Sen
Paul Ninneman
James Ihrcke

**4:00-4:15pm**

**Collegiate Rocket Launch: First Place – Engineering Division – Team Whoosh Generator;** Undergraduate Student, Milwaukee School of Engineering
Represented by Eric Johnson

**4:15-4:30pm**

**Midwest High-Powered Rocket Launch: Third Place – Engineering Division – Team Pioneer Rocketry;** Undergraduate Student, UW-Platteville
Represented by Jake Ellenberger

**4:30-4:45pm**

**Elijah Balloon Payload Team;** Mechanical Engineering
Benjamin Jensen, Milwaukee School of Engineering
Kai Swanson, Milwaukee School of Engineering
Taylor Davitz, Milwaukee School of Engineering
Woodrow Walker, Milwaukee School of Engineering
Nate Klassen, UW-Whitewater
Scott Frazier, UW-Milwaukee

**4:45-5:00pm**

**Tethered Aerostat Program;** NASA STEM Persistence Grant
Amy Jozwiak, College of Menominee Nation
Marilyn Madosh, College of Menominee Nation
Larry Madden, College of Menominee Nation
Jesse Banick, UW-Fox Valley
Kathryn Lentz, UW-Fox Valley
Jeshanah Zolkowski, UW-Fox Valley
Travis Haugstad, Western Technical College
Joel Nielsen, Western Technical College
Awards Ceremony

5:00-5:25pm  Award Presentation
            Chris Thompson – EmCee
            Kevin Crosby – Award Presenter
            Mike LeDocq – Award Presenter

Student Programs – Presenters
            Lindsay McHenry – Undergraduate Scholarship
            Gubbi Sudhakran – Undergraduate Research
            William Farrow – Student Satellite Programs
            Dan Hawk – Tethered Aerostat Program
            Robert Morrow – Aerospace Internships
            Lindsay McHenry – Graduate & Professional Programs

Non-Student Programs – Presenters
            Karen Broitzman – Aerospace Outreach Program
            Nicole Wiessinger/Michael LeDocq – Special Initiatives Program
            Gubbi Sudhakran – Research Infrastructure Program
            Michael LeDocq – Higher Education Incentives
            Robert Morrow – Aerospace Industry Program

5:25pm  Closing Remarks – Kevin Crosby
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>5:30pm</td>
<td>Reception</td>
<td>(The Voyager)</td>
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<tr>
<td>6:30pm</td>
<td>Welcome – Chris Thompson</td>
<td>(Founders Wing)</td>
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<td>7:30pm</td>
<td>Plenary Speaker:</td>
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<td>Introductions: Kevin Crosby</td>
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<td>Dr. R. Aileen Yingst; <em>Innovations in Spaceflight: Three Years with Curiosity on Mars</em>, Senior Scientist, Planetary Science Institute; Participating Scientist, Mars Exploration Rover Mission; Deputy Principal Investigator, Mars Hand lens Imager instrument on Mars rover Curiosity</td>
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<tr>
<td>8:20pm</td>
<td>Closing Remarks – Kevin Crosby</td>
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9:00-9:10am  Welcome and Introductions

Dan Choffnes, Carthage College, Workshop Leader
William Farrow, Milwaukee School of Engineering
Aaron Olson, UW-Madison
Madeline Klothe, UW-Madison

9:10-9:20am  Dan Choffnes: Overview of Workshop Themes

9:20-9:30am  Dan Choffnes: Intentionality and Serendipity in the Careers of Scientists and Engineers

9:30-9:45am  Bill Farrow: Developing and Articulating Career Goals

9:45-9:55am  Aaron Olson: Career Path and Advice

9:55-10:05am  Morning Break

10:05-10:15am  Making Connections
- Networking with Academic Faculty & Staff
- Reaching out to WSGC Institutional Representatives
- Courting Potential Internship Sponsors & Graduate Supervisors

10:15-10:45am  The Statement of Purpose
- Role of Personal Statement/Declaration of Goals in Career (Scholarships, Graduate School)
- Common Myths about the Personal Statement
- Mock Review of Sample Personal Statements

10:45-10:55am  Maddie Kothe: Career Path & Advice

10:55-11:00am  Wrap Up and Conclude
We are honored to have John Monnett, Founder and President of Sonex Aircraft LLC, as our Event Keynote Speaker. John, a multi-thousand hour private pilot with both glider and float plane ratings and an A&P Mechanic, has many designs to his credit including the Sonerai sport aircraft series, Monerai sailplane, Moni motorglider, Monex racer, along with numerous other homebuilt aircraft. John has over 40 years of homebuilt aircraft and restoration experience along with extensive engine development and testing experience. John was inducted into the EAA Homebuilder’s Hall of Fame in 2001 and his designs are on display in the Udvar-Hazy National Air & Space Museum and the EAA AirVenture Museum.
Dr. R. Aileen Yingst is a Senior Scientist at the Planetary Science Institute, a research institution headquartered in Tucson, AZ. She is a Participating Scientist on the Mars Exploration Rover Mission and Deputy Principal Investigator for the Mars Handlens Imager instrument on the Mars Science Laboratory rover Curiosity. Other missions that Dr. Yingst has worked on include Dawn at Vesta, Mars Pathfinder, Mars Polar Lander, and Galileo. Dr. Yingst also served as Director of the Wisconsin Space Grant Consortium for 14 years.

Dr. Yingst received her AB from Dartmouth College in Physics and Astronomy, and her M.Sc. and Ph.D. in Geological Sciences from Brown University.
STUDENT PROGRAMS

**Undergraduate Research (UGR)**  
**Dr. Laurel Salton Clark Memorial Graduate & Professional Fellowship (LSC)**  
**WSGC Graduate & Professional Research Fellowship (GPP)**  
Application Deadline: February 1, 2016  
Award Announcement: April 1, 2016

**Undergraduate Scholarship**  
**Two-year Academic Institutions**  
Application Deadline: September 30, 2015  
Award Announcement: December 1, 2015

**Industry Internship Program (IIP)**  
Application Opportunity: February 1 – 26, 2016  
Award Announcements: Determined by Industry Partners

TEAM PROGRAMS

**Collegiate Rocket Launch (CRL)**  
*Notice of Intent (NOI) to compete due:*  
Application Deadline: September 30, 2015  
Selection Announcement: October 9, 2015  
Launch Competition: April 23, 2016 (TBC)

**High-Altitude Balloon Program - Elijah**  
**Launch Internship (EBL)**  
Work period April 1, 2016 – May 15, 2017  
**Payload Internship (EBP)**  
Work period May 15, 2016 – August 15, 2016  
Application Deadline: February 26, 2016  
Award Announcements: April 15, 2016

**Tethered Aerostat Program**  
Western Technical College, UW-Fox Valley, College of Menominee Nation  
**Lead Student Internship, Affiliate Student Internship**  
Work Period  
September 19, 2015 – September 18, 2016  
Application Deadline: September 30, 2015  
Award Announcements: October 30, 2015

ACADEMIC & INDUSTRY PROGRAMS

**Aerospace Outreach Program (AOP)**  
**Special Initiatives Program (SIP)**  
Application Deadline: October 16, 2015  
Award Announcements: December 7, 2015

**Higher Education Incentives (HEI)**  
**Research Infrastructure Program (RIP)**  
Application Deadline: December 10, 2015  
Award Announcements: March 1, 2016

**Industry Internship Program (IIP)**  
Application Deadline: November 16, 2015  
Award Announcements: February 1, 2016

For more information on upcoming events, please visit our website: spacegrant.carthage.edu