33rd Annual Wisconsin Space Conference
Wisconsin Space Grant Consortium

Exo Planets and the Origins of Life
August 11, 2023
PLENARY SPEAKER
Exploring Exoplanets, Star Formation, and the Universe with the James Webb Space Telescope

DR. KENNETH SEMBACH

Dr. Kenneth Sembach is a tenured astronomer at the Space Telescope Science Institute (STScI), where he served as director from 2015 to 2022. STScI is the operations center for NASA’s flagship astronomical observatories, including the Hubble and the James Webb Space Telescopes, which play key roles in exoplanet research. Dr. Sembach holds a PhD in astronomy from the University of Wisconsin–Madison and a bachelor’s degree in physics from the University of Chicago.

PLENARY SPEAKER
Stellar Epitaphs: the Final Testimonies of Devoured Worlds

DR. MELINDA SOARES-FURTADO

Dr. Melinda Soares-Furtado is a NASA Hubble Fellow at the University of Wisconsin - Madison, and member of the Wisconsin Center for Origins Research (WiCOR). She will commence her appointment as Professor of Astronomy at UW in September 2024. She studies open cluster variable stars and the formation and evolution of star-planet systems. She is also studying how space-based infrared surveys of young star-forming regions can bring new insights to star-planet systems.
WSC 2023 Presentation Schedule
August 11, 2023

PRE-SESSION
7:30  Registration
     Presenter Check-in
     Breakfast
     Individual Photos

Session 1 Welcome and Special Guests, Kevin Crosby  Auditorium
8:30  Welcome Bill Linton, Kevin Crosby
8:45  Plenary Speaker Kenneth Sembach — Exploring Exoplanets, Star Formation, and the Universe with the James Webb Space Telescope; Space Telescope Science Institute
9:30  WSGC Announcements Christine Bolz; Wisconsin Space Grant Consortium

Session 2 Posters, Networking, & Photos, Christopher Stockdale  Atrium
9:45  Individual Awardee Photos

Poster #1 Collegiate Rocket Launch: Jordan Bopp, Gabriela Carranza, Semaje Farmer Carthage Rocket Launch: Introducing Ingenuity; Carthage College
Poster #2 Collegiate Rocket Launch: Carlos Betancourt, Charles O’Brien Marquette CRL Presentation; Marquette University
Poster #3 Collegiate Rocket Launch: Bella De La Cruz, Alexander Hornung, Samuel McKee, Pioneer Rocketry’s CRL Performance; University of Wisconsin - Platteville
Poster #4 Early Career Investigator: Michael Eberhardt, Risa Hardison, Jax Sanders Prototyping Shape Memory Alloy-Based Actuators for Future Gravitational Wave Detectors; Marquette University
Poster #5 Higher Education Incentives: Dylan Meyer Optimizing Galaxy Cluster Mass Measurements for Improved Dark Energy Constraints; Milwaukee School of Engineering
Poster #6  **NASA Internship Program**: Justin Wheeler *Designing the Imaging and Breadboard System for FBCE-TL Project*; Carthage College

Poster #7  **Undergraduate Research Scholarship**: Zach Kongable *Fiber Optic Sensing System*; Carthage College

Poster #8  **Undergraduate Research Scholarship**: Jordan Cioni *Low-cost and high-volume production of light-weight engineered cellular materials*; University of Wisconsin - River Falls

Poster #9  **Undergraduate Research Scholarship**: Ainsley Salisbury *Enhancing Plant Growth in Space through Mechanical Stimulation*; University of Wisconsin - Madison

Poster #10  **Undergraduate Research Scholarship**: Shelldyn Earnest *Diffusive transport of water in Extraterrestrial Regolith*; Carthage College

Poster #11  **Undergraduate Research Scholarship**: Juliana Alvarez, Jordan Bopp, Skylar Farr *Modal Propellant Gauging - Propellant Refueling and on-Orbit Transfer Operations*; Carthage College

Poster #12  **Undergraduate Research Scholarship**: Daifaizon Aldridge, John Cargille, Sarah Kersten, Logan Dales, Riley Johnson, Carissa Kiehl, Sydney Pelnar, Joey Sachtleben *Carthage Space Sciences: Canopy Near-IR Observing Project*; Carthage College

Poster #13

Poster #14  **Undergraduate Research Scholarship**: Jill Forgac, Sikiel Graves, Teagan Steineke, Jordan Wheeler *Microgravity Ullage Detection (MUD)*; Carthage College

Poster #15  **Unmanned Aerial Vehicle Research**: Ava Beyers, Trent Edger, Kat McClain, Haley Siculan, Jeff Clark *Using suAS multispectral imagery to determine the effect of prescribed burns on C3/C4 plant communities in a reclaimed wisconsin prairie*; Carthage College, Lawrence University

Poster #16  **NASA Internship Program**: Laura Jones *Migration Adventures: Laying the Groundwork for Inter-Institutional Access and Preservation*; University of Wisconsin - Milwaukee

Poster #17  **Dr. Laurel Salton Clark Memorial Research Fellowship**: Becca Hall *The Connection Between Mesoscale Convective Systems and Thermodynamic and Dynamic Conditions*; University of Wisconsin - Madison
Poster #18  WSGC Graduate & Professional Research Fellowship: Dylan Childs Investigation of Weathering Conditions Within Lava Tubes: Analogue for Venus; University of Wisconsin - Milwaukee

Poster #19  WSGC Graduate & Professional Research Fellowship: MJ Romfoe UW-Madison TESS Follow-Up Observing Program (TFOP); University of Wisconsin - Madison

Session 3A  Student Scholarship, Fellowship, and Internships Programs, Jeff Clark

10:15  Undergraduate Research Scholarship: Daifaizon Aldridge, John Cargille, Logan Dales, Riley Johnson, Sarah Kersten, Carissa Kiehl, Sydney Pelnar, Joey Sachtleben Carthage Space Sciences: The Path to a COTS CubeSat Payload; Engineering; Carthage College

10:30  Undergraduate Research Scholarship: Joseph Carpenter, Grace Weber Open Source Microscopy for Undergraduate Students; Engineering; Lawrence University

10:45  WSGC Graduate & Professional Research Fellowship: Gabriella Agazie Integration of CHIME into the NANOGrav Pulsar Timing Array; Physics; University of Wisconsin-Milwaukee

11:00  WSGC Graduate & Professional Research Fellowship: Bob Aloisi Searching for Exoplanets in Unusual Places; Astronomy; University of Wisconsin - Madison

11:15  NASA Internship Program: Joe Wopat Active Thermal Control - Coolant Trade Study and Radiator Development; Engineering; Sierra Space

11:30  WSGC Graduate & Professional Research Fellowship: Wilbert Cruz Investigating the Influence of Particle Shape on Dust Dispersion: A Comprehensive Study on Drag Effects for a Multi-particle System; Engineering; Marquette University

11:45  WSGC Graduate & Professional Research Fellowship: Sinead Humphrey Realistic Simulations of White Dwarf Tidal Disruption Events; Physics; University of Wisconsin-Milwaukee
Session 3B  Student Scholarship, Fellowship, and Internships Programs, Lindsay McHenry

10:15  WSGC Graduate & Professional Research Fellowship: Rayne Wolf Direct Ink Write Printing of RRAM Devices; Engineering; University of Wisconsin - Madison

10:30  WSGC Graduate & Professional Research Fellowship: Chase Glenister, Madeline Woller Investigating Glaciovolcanic Glass and Habitability at North Sister Volcano Complex in Oregon, US; Geoscience; University of Wisconsin - Madison

10:45  NASA Internship Program: Seth Hazen My Experience at Sierra Space: Seth Hazen; Engineering; Sierra Space

11:00  STEM Bridge Scholarship: Jose Trujillo Parra High Voltage Converter Controller (HVCC) Output Regulator Controls Modeling; Engineering; University of Wisconsin-Milwaukee

11:15  WSGC Graduate & Professional Research Fellowship: Gabriel Freedman Accelerated Bayesian Searches for Gravitational Waves from Eccentric Binary Systems; Physics; University of Wisconsin-Milwaukee

11:30  WSGC Graduate & Professional Research Fellowship: Rachel McClure Galactic Bar Resonances and the Vertical BPX Stellar Trajectories in an N-Body Simulation; Astronomy; UW-Madison

11:45  

Session 3C  Outreach Programs, Brian Ewenson

10:15  Special Initiatives Program: Amy Prevost Launching a Career in Biotechnology; Biological Sciences/Medicine; BTC Institute

10:30  Aerospace Outreach Program: Matt Heer High Schools Uniting with NASA to Create Hardware (HUNCH); Engineering; Platteville High School

10:45  Special Initiatives Program/Aerospace Outreach Program: Kelly Suha, Lisa Swaney, Wayne Vohnoutka Horwitz-DeRemer Planetarium: Beginnings, Basics, & Beyond; Astronomy; School District of Waukesha
11:00  **Aerospace Outreach Program:** Coggin Heeringa *Making Astronomy Accessible;* Astronomy; Crossroads at Big Creek, Inc.

11:15  **Special Initiatives Program/Aerospace Outreach Program:** Aidan Holmes *Space Explorers: A Program For Middle School Students / Biotechnology and Space: Courses For Teachers;* BTC Institute

11:30  **Aerospace Outreach Program:** Todd Treichel *Rocket Science for Future Engineers;* Engineering; AIAA-Wisconsin

11:45  **Special Initiatives Program:** Embedded Teacher Program *The Embedded Teacher Program Short Film, “My Teacher in Space,” (Working Title);* Lorinsuz Films, LLC; Glen Hills Middle School

**Lunch**

12:00-1:00  Cafeteria/Outdoor Patio

**Group Photo**

1:00  Main Lawn

**Session 4**

1:15  **Plenary Speaker** Melinda Soares-Furtado — *Stellar Epitaphs: The Final Testimonies of Devoured Worlds;* WICOR

**Session 5**  Posters, Networking, & Photos

2:00  Individual Awardee Photos

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Session 6A Student Scholarship, Fellowship, and Internships Programs, Robert Morrow

Auditorium

3:15 Undergraduate Research Scholarship: Jakob Mills Probing the Kinematic Association Between Cold Neutral Hydrogen and Molecular Gas; Astronomy; Univeristy of Wisconsin-Madison

3:30 Undergraduate Research Scholarship: Benjamin Callies Flex-PAAS: Development of Flexible and Wearable Phased Array Antenna System (PAAS for NASA's Space Suits); Engineering; University of Wisconsin-La Crosse

3:45 WSGC Graduate & Professional Research Fellowship: Pratyusava Baral Localization of Binary Neutron Stars using One Cosmic Explorer; Physics; University of Wisconsin Milwaukee

4:00 WSGC Graduate & Professional Research Fellowship: John Podczerwinski Removal of Foregrounds from 21cm Intensity Mapping Data; Physics; UW-Madison

4:15 WSGC Graduate & Professional Research Fellowship: Amanda Baylor Early-Warning Detection of Gravitational Waves from Compact Binary Mergers; Physics; University of Wisconsin-Milwaukee
4:30  NASA Internship Program: Maddie Shipshock 3D Printing Rocket Engines; Engineering; Sierra Space

Session 6B  Faculty Research, William Farrow  Room 122B

3:15  Higher Education Incentives: Steven Girard, Nicholas Barmore, Foster Boom, Spencer Cooper Nanostructured Zinc Oxide Gas Sensors for Space Travel; Chemistry; UW-Whitewater

3:30  Research Infrastructure Program: Md Tanzil Shahria Developing Vision-based Object Detection and Localization System for Robot Object Manipulation; Engineering; University of Wisconsin Milwaukee

3:45  Higher Education Incentives: Luis Rodriguez Simulation and Control of Reconfigurable Mechanisms; Engineering; Milwaukee School of Engineering

4:00  Research Infrastructure Program: Angela Dassow Integrating ground-level acoustic monitoring with orbital multispectral imaging to monitor an endangered primate species; Biological Sciences/Medicine; Carthage College

4:15  Faculty Forum: Kevin Crosby, Christopher Stockdale Faculty Engagement in WSGC Programs

4:30  Faculty Forum: Kevin Crosby, Christopher Stockdale Faculty Engagement in WSGC Programs

Session 7  Closing Remarks, Poster Award Announcement, Kevin Crosby, Christopher Stockdale  Auditorium

4:45  Poster Session Award Winner Christopher Stockdale

4:50  Closing Remark Kevin Crosby

Reception/Afterparty

5:00  Reception: Atrium

7:00  Observatory Tour/Stargazing, Bell Burnell Observatory
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<td>APPLY to WSGC programs of interest prior to application deadline spacegrant.carthage.edu/apps/account/login/</td>
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WSGC 33rd Wisconsin Space Conference Map

Promega Campus Map
1. Agora, Promega Headquarters, 6500 East Cheryl Parkway, Suite 110
2. Feynman Center, Manufacturing, 2730 Woods Hollow Road
3. BioPharmaceutical Technology Center (BTC), Manufacturing, 5445 East Cheryl Parkway
4. Kernberg Center, Research and Development, 5430 East Cheryl Parkway
5. Future Manufacturing Center, 2800 Woods Hollow Road

BioPharmaceutical Technology Center (BTC)
5445 East Cheryl Parkway
Madison, WI 53711

Free parking is available in the BTC front lot and along adjacent streets