

Brianna J. Zawadzki

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Scientific Interests

Protoplanetary/debris disks, machine learning, evolution/formation of planetary systems, radio interferometry

Education

The Pennsylvania State University, University Park, PA <i>Ph.D., Astronomy & Astrophysics</i>	2020-2023
The Pennsylvania State University, University Park, PA <i>M.S., Astronomy & Astrophysics</i>	2018-2020 GPA: 3.83
Lycoming College, Williamsport, PA <i>B.S., Physics (Minors: Astronomy, Mathematics)</i>	2014-2018 GPA: 4.0

Research Appointments

Constraining vertical structures of debris disks in ARKS <i>Advisor: Dr. Meredith Hughes</i>	Wesleyan University 2023-present
Regularized maximum likelihood imaging for ALMA <i>Advisor: Dr. Ian Czekala</i>	The Pennsylvania State University 2020-2023
Migration traps as the root cause of the Kepler dichotomy <i>Advisors: Dr. Eric Ford, Dr. Daniel Carrera</i>	The Pennsylvania State University 2021-2022
Rapid formation of super-Earths around low-mass stars <i>Advisors: Dr. Eric Ford, Dr. Daniel Carrera</i>	The Pennsylvania State University 2018-2021
Detecting nonlinearity in binary star data <i>Advisor: Dr. Christopher Kulp</i>	Lycoming College 2018
Using missing ordinal patterns to detect nonlinearity in time series data <i>Advisor: Dr. Christopher Kulp</i>	Lycoming College 2017-2018
The connection between solar coronal cavities and solar filaments <i>Advisors: Dr. Kathy Reeves, Dr. Nishu Karna, and Jakub Prchlik</i>	Harvard-Smithsonian CfA 2017

Publications

- [1] *An extreme test case for planet formation: a close-in Neptune orbiting an ultracool star*, Guðmundur Stefánsson et al. including **Brianna Zawadzki** 2023, *Science*, 382, 6674, pp. 1031-1035.
- [2] *Regularized Maximum Likelihood Image Synthesis and Validation for ALMA Continuum Observations of Protoplanetary Disks*, **Brianna Zawadzki**, Ian Czekala, Ryan A. Loomis, Tyler Quinn, Hannah Grzybowski, Robert Frazier, Jeff Jennings, Kadri M. Nizam, and Yina Jian 2023, *PASP*, 135 064503.
- [3] *Migration traps as the root cause of the Kepler dichotomy*, **Brianna Zawadzki**, Daniel Carrera, and Eric Ford 2022, *ApJ*, 937, 53.
- [4] *Rapid Formation of Super-Earths Around Low-Mass Stars*, **Brianna Zawadzki**, Daniel Carrera, and Eric Ford 2021, *MNRAS*, 503, 1.
- [5] *Using missing ordinal patterns to detect nonlinearity in time series data*, Christopher W. Kulp, Luciano Zunino, Thomas Osborne, and **Brianna Zawadzki** 2017, *Physical Review E* 96, 022218.

Presentations

Mar 25, 2024 Talk	Dust Devils: Debris Disks in the Sonoran Desert <i>Resolving Vertical Structures in Millimeter Debris Disk Observations with ARKS</i>
Mar 18, 2024 Poster	Extreme Solar Systems V <i>A High-Resolution View of Planet Formation Signatures in exoALMA Protoplanetary Disks</i>
Mar 5, 2024 Talk	Monash Stars and Planets Seminar <i>A High-Resolution View of Planet Formation Signatures in exoALMA Protoplanetary Disks</i>
Feb 6, 2024 Talk	Yale Astronomy Exoplanets & Stars Seminar <i>A High-Resolution View of Planet Formation Signatures in exoALMA Protoplanetary Disks</i>
Jan 12, 2023 Talk	VLTI and ALMA Synthesis Imaging Workshop, Garching, Germany <i>RML Imaging Techniques for ALMA Protoplanetary Disk Observations</i>
Oct 12, 2022 Poster	Institute for Computational and Data Sciences Symposium, State College, PA <i>Regularized Maximum Likelihood Techniques for ALMA</i>
May 31, 2022 Talk	APEX Exocoffee, Heidelberg, Germany <i>Regularized Maximum Likelihood Techniques for ALMA</i>
May 3, 2022 Talk	Exoplanets IV Conference, Las Vegas, NV <i>Migration Traps as the Root Cause of the Kepler Dichotomy</i>
May 2, 2022 Poster	Exoplanets IV Conference, Las Vegas, NV <i>Regularized Maximum Likelihood Techniques for ALMA</i>
Feb 25, 2022 Talk, Virtual	Submillimeter Array (SMA) Science Seminar <i>Regularized Maximum Likelihood Techniques for ALMA</i>
Oct 6, 2021 Talk	North American ALMA Science Center <i>Regularized Maximum Likelihood Techniques for ALMA</i>
May 26, 2021 Talk, Virtual	Emerging Researchers in Exoplanet Science Conference <i>Regularized Maximum Likelihood Techniques for ALMA Spectral Line Imaging</i>
Sep 28, 2020 Poster, Virtual	Europlanet Science Congress <i>Rapid Formation of Super-Earths Around Low-Mass Stars</i>
Jul 29, 2020 Poster, Virtual	Exoplanets III Conference <i>Rapid Formation of Super-Earths Around Low-Mass Stars</i>
Jul 29, 2019 Poster	TESS Science Conference, Cambridge, MA <i>Rapid Formation of Super-Earths Around Low-Mass Stars</i>
Feb 11, 2019 Talk	The Pennsylvania State University <i>Rapid Formation of Super-Earths Around Low-Mass Stars</i>
Dec 11, 2017 Poster	American Geophysical Union Fall Meeting, New Orleans, LA <i>The Connection Between Solar Coronal Cavities and Solar Filaments</i>
Aug 9, 2017 Talk	Harvard-Smithsonian Center for Astrophysics <i>The Connection Between Solar Coronal Cavities and Solar Filaments</i>

Teaching and Work Experience

ASTRO 420W: Planets and Planetary System Formation <i>Taught the online component of the course, graded writing assignments</i>	The Pennsylvania State University <i>Fall 2020</i>
Exoplanets and the Search for Life Beyond Earth <i>Instructor</i>	PSU Upward Bound Virtual Summer Academy <i>Summer 2020</i>
ASTRO 414: Stellar Structure and Evolution <i>Graded homework assignments</i>	The Pennsylvania State University <i>Spring 2020</i>

ASTRO 402W: Astronomical Telescopes, Techniques, and Data Analysis <i>Facilitated and evaluated student telescope use</i>	The Pennsylvania State University <i>Spring 2020</i>
ASTRO 475W: Stars and Galaxies <i>Facilitated in-class discussion, graded writing assignments</i>	The Pennsylvania State University <i>Fall 2019</i>
ASTR 112: Fundamentals of Geology <i>Laboratory Assistant</i>	Lycoming College <i>Spring 2018</i>
ASTR 111: Fundamentals of Astronomy <i>Laboratory Assistant</i>	Lycoming College <i>Fall 2017</i>
Planetarium Operator <i>Gave occasional public planetarium shows</i>	Lycoming College Detwiler Planetarium <i>Spring 2017 - Spring 2018</i>
Academic Resource Center Tutor <i>Provided walk-in tutoring services for most mathematics courses, with special hours for multivariable calculus and differential equations</i>	Lycoming College <i>Fall 2016 - Spring 2018</i>
Outgassing Services International <i>Intern, QCM thermogravimetric analysis testing and analysis of GC/MS data</i>	Mountain View, CA <i>Summer 2016</i>
PHYS 226: Fundamentals of Physics II <i>Laboratory Assistant</i>	Lycoming College <i>Spring 2016, Spring 2017</i>
PHYS 225: Fundamentals of Physics I <i>Laboratory Assistant</i>	Lycoming College <i>Fall 2015, Fall 2016</i>

Leadership and Involvement

Astronomy on Tap: State College <i>Co-leader</i>	January 2021 - April 2023 <i>State College, PA</i>
Women and Underrepresented Genders in Astronomy (W+IA) <i>Co-leader from Fall 2020 - Spring 2023</i>	Fall 2018 - Spring 2023 <i>The Pennsylvania State University</i>
Towards A More Inclusive Astronomy (TaMIA) <i>General member</i>	Fall 2018 - Spring 2023 <i>The Pennsylvania State University</i>
Society of Physics Students <i>President in 2017, Vice-President in 2016</i>	Fall 2014 - May 2018 <i>Lycoming College</i>
STEM Affinity Community <i>President</i>	April 2017 - May 2018 <i>Lycoming College</i>
Association of Mathematically Interested Students (AMIS) <i>General member, teacher at Math Awareness Day 2017</i>	Fall 2014 - May 2018 <i>Lycoming College</i>

Honors, Awards, and Fellowships

Brinson Prize Postdoctoral Fellowship <i>Awarded to early-career astrophysicists to support innovative research.</i>	2023-present <i>Wesleyan University</i>
Science Achievement Graduate Fellowship Nominee <i>For contributions to the advancement of women in sciences.</i>	2022 <i>The Pennsylvania State University</i>
Center For Exoplanets and Habitable Worlds Grant <i>Awarded to fund travel and participation at Exoplanets IV Conference.</i>	2022 <i>The Pennsylvania State University</i>
AAS International Travel Grant <i>Awarded to students presenting at international science meetings.</i>	2020 <i>The American Astronomical Society</i>
Center For Exoplanets and Habitable Worlds Grant <i>Awarded to fund travel and participation at TESS Science Conference.</i>	2019 <i>The Pennsylvania State University</i>
University Graduate Fellowship <i>Awarded by the Eberly College of Science before the first year of graduate study.</i>	2018-2019 <i>The Pennsylvania State University</i>

The Charles J. Kocian Award <i>Awarded to the graduating senior with the highest GPA in the class.</i>	May 2018 <i>Lycoming College</i>
The Edward J. Gray Prize <i>Awarded to the individuals with the highest or second highest GPA in the senior class.</i>	May 2018 <i>Lycoming College</i>
Φυσικά Award in Astronomy & Physics <i>Given to the graduating senior with the highest departmental GPA.</i>	May 2018 <i>Lycoming College</i>
Dean's List <i>Awarded for maintaining a GPA of at least 3.5.</i>	Fall 2014-2017; Spring 2015-2018 <i>Lycoming College</i>
Kappa Mu Epsilon <i>National math honor society</i>	Inducted March 2017 <i>Lycoming College</i>
Sigma Pi Sigma <i>National physics honor society</i>	Inducted March 2016 <i>Lycoming College</i>
M.B. Rich Endowed Prize <i>Awarded to freshmen who complete their first year with a 4.0 GPA.</i>	April 2015 <i>Lycoming College</i>
Fundamentals of Physics Award <i>Awarded to the student who earns the highest grades in the introductory physics sequence.</i>	April 2015 <i>Lycoming College</i>
Principles of Astronomy Award <i>Awarded to the student who earns the highest grade in introductory astronomy.</i>	April 2015 <i>Lycoming College</i>