Brianna J. Zawadzki

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Scientific Interests

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

Education

The Pennsylvania State University, University Park, PA — Anticipated Spring 2023
Ph.D., Astronomy & Astrophysics

The Pennsylvania State University, University Park, PA — 2018-2020
M.S., Astronomy & Astrophysics — *GPA: 3.83*

Lycoming College, Williamsport, PA — 2014-2018
B.S., Physics (Minors: Astronomy, Mathematics) — *GPA: 4.0*

Research Appointments

A high resolution analysis of circumbinary protoplanetary disk AK Sco — The Pennsylvania State University
Advisor: Dr. Ian Czekala — *2022-present*

Regularized maximum likelihood imaging for ALMA — The Pennsylvania State University
Advisor: Dr. Ian Czekala — *2020-present*

Migration traps as the root cause of the Kepler dichotomy — The Pennsylvania State University
Advisors: Dr. Eric Ford, Dr. Daniel Carrera — *2021-2022*

Rapid formation of super-Earths around low-mass stars — The Pennsylvania State University
Advisors: Dr. Eric Ford, Dr. Daniel Carrera — *2018-2021*

Detecting nonlinearity in binary star data — Lycoming College
Advisor: Dr. Christopher Kulp — *2018*

Using missing ordinal patterns to detect nonlinearity in time series data — Lycoming College
Advisor: Dr. Christopher Kulp — *2017-2018*

The connection between solar coronal cavities and solar filaments — Harvard-Smithsonian CfA
Advisors: Dr. Kathy Reeves, Dr. Nishu Karna, and Jakub Prchlik — *2017*

Publications

[1] *Regularized Maximum Likelihood Techniques for ALMA Observations*, **Brianna Zawadzki**, Ian Czekala, Ryan A. Loomis, Tyler Quinn, Hannah Grzybowski, Robert Frazier, and Yina Jian 2022, *submitted to AAS Journals.*

[2] *An extreme test case for planet formation: a close-in Neptune orbiting an ultracool star*, Guðmundur Stefánsson et al. including **Brianna Zawadzki** 2022, *submitted to Science Journals.*

[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

Oct 12, 2022 Poster	Institute for Computational and Data Sciences Symposium, State College, PA *Regularized Maximum Likelihood Techniques for ALMA*
May 31, 2022 Talk	APEx Exocoffee, Heidelberg, Germany *Regularized Maximum Likelihood Techniques for ALMA*
May 3, 2022 Talk	Exoplanets IV Conference, Las Vegas, NV *Migration Traps as the Root Cause of the Kepler Dichotomy*
May 2, 2022 Poster	Exoplanets IV Conference, Las Vegas, NV *Regularized Maximum Likelihood Techniques for ALMA*
Feb 25, 2022 Talk, Virtual	Submillimeter Array (SMA) Science Seminar *Regularized Maximum Likelihood Techniques for ALMA*
Oct 6, 2021 Talk	North American ALMA Science Center *Regularized Maximum Likelihood Techniques for ALMA*
May 26, 2021 Talk, Virtual	Emerging Researchers in Exoplanet Science Conference *Regularized Maximum Likelihood Techniques for ALMA Spectral Line Imaging*
Sep 28, 2020 Poster, Virtual	Europlanet Science Congress *Rapid Formation of Super-Earths Around Low-Mass Stars*
Jul 29, 2020 Poster, Virtual	Exoplanets III Conference *Rapid Formation of Super-Earths Around Low-Mass Stars*
Jul 29, 2019 Poster	TESS Science Conference, Cambridge, MA *Rapid Formation of Super-Earths Around Low-Mass Stars*
Feb 11, 2019 Talk	The Pennsylvania State University *Rapid Formation of Super-Earths Around Low-Mass Stars*
Dec 11, 2017 Poster	American Geophysical Union Fall Meeting, New Orleans, LA *The Connection Between Solar Coronal Cavities and Solar Filaments*
Aug 9, 2017 Talk	Harvard-Smithsonian Center for Astrophysics *The Connection Between Solar Coronal Cavities and Solar Filaments*

Teaching and Work Experience

ASTRO 420W: Planets and Planetary System Formation — The Pennsylvania State University
Taught the online component of the course, graded writing assignments — *Fall 2020*

Exoplanets and the Search for Life Beyond Earth — PSU Upward Bound Virtual Summer Academy
Instructor — *Summer 2020*

ASTRO 414: Stellar Structure and Evolution — The Pennsylvania State University
Graded homework assignments — *Spring 2020*

ASTRO 402W: Astronomical Telescopes, Techniques, and Data Analysis — The Pennsylvania State University
Facilitated and evaluated student telescope use — *Spring 2020*

ASTRO 475W: Stars and Galaxies — The Pennsylvania State University
Facilitated in-class discussion, graded writing assignments — *Fall 2019*

ASTR 112: Fundamentals of Geology — Lycoming College
Laboratory Assistant — *Spring 2018*

ASTR 111: Fundamentals of Astronomy — Lycoming College
Laboratory Assistant — *Fall 2017*

Planetarium Operator — Lycoming College Detwiler Planetarium
Gave occasional public planetarium shows — *Spring 2017 - Spring 2018*

Academic Resource Center Tutor — Lycoming College
Provided walk-in tutoring services for most mathematics courses, with special hours for multivariable calculus and differential equations — *Fall 2016 - Spring 2018*

Outgassing Services International — Mountain View, CA
Intern, QCM thermogravimetric analysis testing and analysis of GC/MS data — *Summer 2016*

PHYS 226: Fundamentals of Physics II — Lycoming College
Laboratory Assistant — *Spring 2016, Spring 2017*

PHYS 225: Fundamentals of Physics I — Lycoming College
Laboratory Assistant — *Fall 2015, Fall 2016*

Leadership and Involvement

Astronomy on Tap: State College — January 2021 - present
Co-leader — *State College, PA*

Women and Underrepresented Genders in Astronomy (W+iA) — Fall 2018 - present
Co-leader from Fall 2020 - present — *The Pennsylvania State University*

Towards A More Inclusive Astronomy (TaMIA) — Fall 2018 - present
General member — *The Pennsylvania State University*

Society of Physics Students — Fall 2014 - May 2018
President in 2017, Vice-President in 2016 — *Lycoming College*

STEM Affinity Community — April 2017 - May 2018
President — *Lycoming College*

Association of Mathematically Interested Students (AMIS) — Fall 2014 - May 2018
General member, teacher at Math Awareness Day 2017 — *Lycoming College*

Honors, Awards, and Fellowships

Science Achievement Graduate Fellowship Nominee — 2022
For contributions to the advancement of women in sciences. — *The Pennsylvania State University*

Center For Exoplanets and Habitable Worlds Grant — 2022
Awarded to fund travel and participation at Exoplanets IV Conference. — *The Pennsylvania State University*

AAS International Travel Grant — 2020
Awarded to students presenting at international science meetings. — *The American Astronomical Society*

Center For Exoplanets and Habitable Worlds Grant — 2019
Awarded to fund travel and participation at TESS Science Conference. — *The Pennsylvania State University*

University Graduate Fellowship — 2018-2019
Awarded by the Eberly College of Science before the first year of graduate study. — *The Pennsylvania State University*

The Charles J. Kocian Award — May 2018
Awarded to the graduating senior with the highest GPA in the class. — *Lycoming College*

The Edward J. Gray Prize — May 2018
Awarded to the individuals with the highest or second highest GPA in the senior class. — *Lycoming College*

Φυσίκα Award in Astronomy & Physics — May 2018
Given to the graduating senior with the highest departmental GPA. — *Lycoming College*

Dean's List — Fall 2014-2017; Spring 2015-2018
Awarded for maintaining a GPA of at least 3.5. — *Lycoming College*

Kappa Mu Epsilon — Inducted March 2017
National math honor society — *Lycoming College*

Sigma Pi Sigma — Inducted March 2016
National physics honor society — *Lycoming College*

M.B. Rich Endowed Prize — April 2015
Awarded to freshmen who complete their first year with a 4.0 GPA. — *Lycoming College*

Fundamentals of Physics Award — April 2015
Awarded to the student who earns the highest grades in the introductory physics sequence. — *Lycoming College*

Principles of Astronomy Award — April 2015
Awarded to the student who earns the highest grade in introductory astronomy. — *Lycoming College*