# Brianna J. Zawadzki

B-10 Van Vleck Observatory
Wesleyan University
Middletown, CT 06459
Citizenship: US and Canada

512.573.4356
briannazawadzki@gmail.com
https://briannazawadzki.github.io/
ORCID ID: 0000-0001-9319-1296

## Scientific Interests

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

## Education

The Pennsylvania State University, University Park, PA — 2020-2023
*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

Constraining vertical structures of debris disks in ARKS — Wesleyan University
*Advisor: Dr. Meredith Hughes* — *2023-present*

Regularized maximum likelihood imaging for ALMA — The Pennsylvania State University
*Advisor: Dr. Ian Czekala* — *2020-2023*

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]** *An extreme test case for planet formation: a close-in Neptune orbiting an ultracool star*, Guðmundur Stefánsson et al. including **Brianna Zawadzki** 2023, *accepted for publication in Science Journals.*

**[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

| | |
|---|---|
| Jan 12, 2023<br>Talk | VLTI and ALMA Synthesis Imaging Workshop, Garching, Germany<br>*RML Imaging Techniques for ALMA Protoplanetary Disk Observations* |
| Oct 12, 2022<br>Poster | Institute for Computational and Data Sciences Symposium, State College, PA<br>*Regularized Maximum Likelihood Techniques for ALMA* |
| May 31, 2022<br>Talk | APEx Exocoffee, Heidelberg, Germany<br>*Regularized Maximum Likelihood Techniques for ALMA* |
| May 3, 2022<br>Talk | Exoplanets IV Conference, Las Vegas, NV<br>*Migration Traps as the Root Cause of the Kepler Dichotomy* |
| May 2, 2022<br>Poster | Exoplanets IV Conference, Las Vegas, NV<br>*Regularized Maximum Likelihood Techniques for ALMA* |
| Feb 25, 2022<br>Talk, Virtual | Submillimeter Array (SMA) Science Seminar<br>*Regularized Maximum Likelihood Techniques for ALMA* |
| Oct 6, 2021<br>Talk | North American ALMA Science Center<br>*Regularized Maximum Likelihood Techniques for ALMA* |
| May 26, 2021<br>Talk, Virtual | Emerging Researchers in Exoplanet Science Conference<br>*Regularized Maximum Likelihood Techniques for ALMA Spectral Line Imaging* |
| Sep 28, 2020<br>Poster, Virtual | Europlanet Science Congress<br>*Rapid Formation of Super-Earths Around Low-Mass Stars* |
| Jul 29, 2020<br>Poster, Virtual | Exoplanets III Conference<br>*Rapid Formation of Super-Earths Around Low-Mass Stars* |
| Jul 29, 2019<br>Poster | TESS Science Conference, Cambridge, MA<br>*Rapid Formation of Super-Earths Around Low-Mass Stars* |
| Feb 11, 2019<br>Talk | The Pennsylvania State University<br>*Rapid Formation of Super-Earths Around Low-Mass Stars* |
| Dec 11, 2017<br>Poster | American Geophysical Union Fall Meeting, New Orleans, LA<br>*The Connection Between Solar Coronal Cavities and Solar Filaments* |
| Aug 9, 2017<br>Talk | Harvard-Smithsonian Center for Astrophysics<br>*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 - April 2023
*Co-leader* — *State College, PA*

Women and Underrepresented Genders in Astronomy (W+iA) — Fall 2018 - Spring 2023
*Co-leader from Fall 2020 - Spring 2023* — *The Pennsylvania State University*

Towards A More Inclusive Astronomy (TaMIA) — Fall 2018 - Spring 2023
*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

Brinson Prize Postdoctoral Fellowship — 2023-present
*Awarded to early-career astrophysicists to support innovative research.* — *Wesleyan University*

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*

## References


Ian Czekala, *The Pennsylvania State University*, (iczekala@psu.edu)

Eric B. Ford, *The Pennsylvania State University*, (eford@psu.edu)

Daniel Carrera, *Iowa State University*, (carrera@iastate.edu)