

# Brandon Radzom

PHD CANDIDATE · ASTRONOMY

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## Education

### Indiana University (IU) - Bloomington

Bloomington, IN 47405-7000

#### PH.D. ASTRONOMY

Aug. 2020 - May 2025

- Distinctions: Goethe Link Prize for Outreach in Astronomy, Frank & Margaret Edmondson Prize for Teaching
- Thesis: *Short-period Gaseous Giants Have a Diverse Range of Dynamical Histories: Constraints from Stellar Obliquity and Companionship Properties*
- Advisor: Prof. Songhu Wang

### IU - Bloomington

Bloomington, IN 47405-7000

#### M.A. ASTRONOMY

Aug. 2020 - May 2023

- Minor: Scientific Computing
- Course highlights: Orbital Dynamics & Exoplanets, Numerical Analysis, Computational Physics

### University of Wisconsin (UW) - Madison

Madison, WI 53706-1507

#### B.S. ASTRONOMY-PHYSICS, B.S. PHYSICS

Sept. 2016 - May 2020

- Minor: Computer Science
- Distinctions: Thesis of Distinction Award, Lowell Doherty Award for Excellence in Astronomy
- Thesis title: *Characterizing AGN Activity in the SSA22 Field*
- Advisor: Prof. Amy Barger

## Awards, Fellowships, & Grants

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|------|--|----------|
| 2024 | Frank and Margaret Edmondson Prize for Teaching, IU-Bloomington                  | \$500    |
| 2023 | Goethe Link Prize for Outreach and Public Education in Astronomy, IU-Bloomington | \$500    |
| 2022 | College of Arts and Sciences Travel Award, IU-Bloomington                        | \$200    |
| 2020 | Thesis of Distinction, UW-Madison College of Letters & Science                   |          |
|      | Lowell Doherty Award for Excellence in Astronomy, Dept. of Astronomy, UW-Madison | \$500    |
|      | Member of the Dean's List, College of Letters & Science, UW-Madison              |          |
| 2019 | Member of the Dean's List, College of Letters & Science, UW-Madison              |          |
|      | Liebenberg Family Undergraduate Research Scholarship, UW-Madison                 | \$ 2,000 |
|      | David H. Durra Scholarship, UW-Madison   | \$ 3,000 |
| 2018 | John Karl Scholz Sophomore General Scholarship, UW-Madison                       | \$ 500   |
| 2017 | Member of the Dean's List, College of Letters & Science, UW-Madison              |          |
| 2016 | Memorial Scholarship, Anoka High School  | \$ 500   |

## Software Skills

- Programming languages: Python, MATLAB, C++, Java, LabView
- Operating systems: Windows, Linux
- Python packages: jupyterlab, spyder, allesfitter, exoplanet, pymc, rebound, lightkurve
- Other: git & GitHub, Linux shell, VS Code, HTML,  $\text{\LaTeX}$ , Maple, Mathematica, Windows Office Suite

## Publications

### REFEREED

**Brandon T. Radzom**, Jiayin Dong, Malena Rice, Xian-Yu Wang, Kyle Hixenbaugh, George Zhou, Chelsea X. Huang, Songhu Wang 2024. *Evidence for Primordial Alignment II: Insights from Stellar Obliquity Measurements for Hot Jupiters in Compact Multi-planet Systems*, accepted to AJ

R. Kent Honeycutt, Jeff Robertson, **Brandon T. Radzom**. *Stunted Outbursts in Nova-like CVs*, accepted to ApJS

Cassandra Seltzer, Rudi Lien, **Brandon T. Radzom**, et al. 2024. *THUNDER: A Titan orbiter mission concept for the New Frontiers program*, accepted to PSJ

**Brandon T. Radzom**, Songhu Wang, Bonan Pu, Malena Rice, Dong-Hong Wu 2024. *Post-disk Evolution of Short-Period Gas Giants in Compact Multi-planet Systems: A Mechanism to Produce the Observed Companionship Dichotomy*, submitted to ApJ

**Brandon T. Radzom**, Jiayin Dong, Malena Rice, Xian-Yu Wang, Samuel W. Yee, Tyler R. Fairnington, Cristobal Petrovich, Songhu Wang 2024. *Evidence for Primordial Alignment: Insights from Stellar Obliquity Measurements for Compact Sub-Saturn Systems*, 2024 AJ, 168 116

Jack Lubin, Xian-Yu Wang, Malena Rice, Jiayin Dong, Songhu Wang, **Brandon T. Radzom**, et al. 2023. *TOI-1670 c, a 40 day Orbital Period Warm Jupiter in a Compact System, Is Well Aligned*, ApJL, 959 L5

**Brandon T. Radzom**, Anthony J. Taylor, Amy J. Barger, Lennox L. Cowie 2022. *X-ray Sources in the Chandra Field SSA22*, ApJ, 940 114

Xian-Yu Wang, Malena Rice, Songhu Wang, Bonan Pu, Gudmundur Stefánsson, Suvrath Mahadevan, **Brandon T. Radzom**, et al. 2022. *The Aligned Orbit of WASP-148 b, the Only Known Hot Jupiter with a Nearby Warm Jupiter Companion, from NEID and HIRES*, ApJL, 926 L8

## NON-REFEREED

W. Garrett Levine, **Brandon T. Radzom** et al. 2025. *Emerging Researchers in Exoplanetary Science (ERES) Symposium: Developing Community-Driven Mission & Vision Statements*, to be submitted to BAAS

**Brandon T. Radzom** 2020. *Characterizing AGN Activity in the SSA22 Field*, UW-Madison Dept. of Astronomy Senior Thesis

## CONFERENCE POSTERS

**Brandon T. Radzom**, et al. “Evidence for Primordial Alignment: Insights from Stellar Obliquity Measurements for Compact TESS Systems”, 2024, TESS Science Conference 3, 10.5281/zenodo.13117605

Cassandra Seltzer, Rudi Lein, **Brandon T. Radzom**, et al. “THUNDER: A New Frontiers-class Titan orbiter mission concept from the NASA JPL Planetary Science Summer School”, 2024, Lunar and Planetary Science Conference 2024

**Brandon T. Radzom**, Songhu Wang, and Bonan Pu. “In Situ Origins of Hot Jupiters”, 2022, Emerging Researchers in Exoplanet Science (ERES) VII, 10.5281/zenodo.6944743

**Brandon T. Radzom**, Amy J. Barger, and Anthony J. Taylor. “Characterizing AGN Activity in the SSA22 Field”, 2020, American Astronomical Society Meeting #236, id.137.03

Minho Kwon, Christopher Young, Matthew Ebert, Sebastian Malewicz, **Brandon Radzom**, Thad Walker, and Mark Saffman. “Progress toward entanglement of atomic ensemble qubits via Rydberg blockade”, 2018, International Conference on Atomic Physics

## Presentations

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### INVITED TALKS

*Measuring Stellar Obliquities To Constrain the Origins of Exoplanets*. Fall 2023 WIYN Board Meeting, Virtual Event.

*The X-ray Luminosity Function of Optically Narrow and Broad-line AGNs Out To  $z \sim 4$* . Fall 2020 Astronomy Seminar, IU.

### CONTRIBUTED/SEMINAR TALKS

*NASA PSSS: A Lightning-Fast Lesson in Mission Design and the THUNDER That Follows*. Spring 2024 Astronomy Seminar, IU.

*Evidence for Primordial Alignment: Insights from Stellar Obliquity Measurements for Compact Giant Systems*. ERES IX, Cornell University.

*Post-formation Dynamics: A Mechanism to Explain the Companionship Properties of Hot and Warm Jupiters*. Great Lakes Exoplanet Area Meeting (GLEAM) 2023, IU.

*Post-disk Dynamical Evolution: A Mechanism to Explain the Companionship Dichotomy Between Hot Jupiters and Warm Jupiters.*  
Division on Dynamical Astronomy Meeting #54, Michigan State University.

*In Situ Origins of Hot Jupiter Isolation.* GLEAM 2022, The Ohio State University.

## PUBLIC TALKS

*Exoplanets in the Media: Fact or Fantasy?* Astronomy on Tap, Sep. 2024, Bloomington, IN.

*Astronomy in the News: NASA's DART Mission.* Astronomy on Tap, March 2024, Bloomington, IN.

## Teaching Experience

### Instructor of Record

*IU Astronomy Dept.*

- Astronomy 100: The Solar System (Summer 2023 & 2024)

### Associate Instructor

*IU Astronomy Dept.*

- Astronomy 451: Stellar Astrophysics (Spring 2024)
- Astronomy 305: Modern Observational Techniques (Fall 2023)
- Astronomy 100: The Solar System (Spring 2023)
- Astronomy 107: The Art of Astronomy (Spring 2023, Fall 2020)
- Astronomy 103: Search For Life In The Universe (Fall 2021)
- Astronomy 222: General Astronomy II (Spring 2021)

### Guest Lecturer

*IU Astronomy Dept.*

- Astronomy 100: The Solar System (Spring 2024)
- Astronomy 103: Search for Life in the Universe (Spring 2024)
- Astronomy 515: Exoplanets and Orbital Dynamics (Fall 2023)
- Astronomy 100: The Solar System (Spring 2023)

## Mentoring

### Alice-Palma Undergraduate Research Program

*IU-Bloomington Astronomy*

- Informal Mentor (Summer 2024): Attend weekly research and development meetings, plan and lead cohort seminars, and support undergraduates in their work.
- Formal Mentor (Summer 2023): Design and guide an undergraduate student through a research project working with TESS data. Attend weekly research and development meetings, plan and lead cohort seminars, and support undergraduates in their work.

## Professional Development

### SERVICE

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|-----------|--|------------------------|
| 2023-2025 | <b>IU Astronomy Graduate Leadership</b> , Tea Talk Coordinator               | <i>Bloomington, IN</i> |
| 2022-2025 | <b>IU Astronomy Graduate Leadership</b> , Undergraduate Research Coordinator | <i>Bloomington, IN</i> |
| 2024      | <b>ERES Mission &amp; Vision Committee</b> , Task Lead                       |                        |
| 2023      | <b>GLEAM 2023 Conference</b> , Member of SOC & LOC, and Session Chair        | <i>Bloomington, IN</i> |
| 2019-2020 | <b>UW-Madison Astronomy Club</b> , Vice President                            | <i>Madison, WI</i>     |
| 2018-2019 | <b>UW-Madison Astronomy Club</b> , Volunteer Coordinator                     | <i>Madison, WI</i>     |

### OUTREACH

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|-----------|---|------------------------|
| 2022-2025 | <b>PylU: A Workshop Series on Python Essentials</b> , Founder, Lead Organizer, & Instructor   | <i>Bloomington, IN</i> |
| 2021-2025 | <b>Kirkwood Observatory Open Nights</b> , Telescope operator & tour guide                     | <i>Bloomington, IN</i> |
| 2024      | <b>Boy Scout Astronomy Night</b> , Observatory Tour Guide                                     | <i>Bloomington, IN</i> |
| 2024      | <b>Astronomy on Tap</b> , Public Speaker: <i>NASA's DART Mission, Exoplanets in the Media</i> | <i>Bloomington, IN</i> |
| 2024      | <b>Eclipse IU</b> , Solar eclipse viewing aid and guide                                       | <i>Bloomington, IN</i> |
| 2021-2024 | <b>IU Science Fest</b> , Astronomy demo leader  | <i>Bloomington, IN</i> |

|            |   |                         |
|------------|---|-------------------------|
| 2023       | <b>Kirkwood Observatory High School Class Tour</b> , Telescope operator & tour guide          | <i>Bloomington, IN</i>  |
| 2023       | <b>STEAM Night at McCormick's Creek Elementary</b> , Astronomy demo leader                    | <i>Bloomington, IN</i>  |
| 2023       | <b>International Day of Women and Girls in Science</b> , Astronomy demo leader                | <i>Bloomington, IN</i>  |
| 2022, 2023 | <b>Indianapolis Children's Museum STEM Exploration Day</b> , Astronomy demo leader            | <i>Indianapolis, IN</i> |
| 2022       | <b>Boys and Girls Club: Streets Paved With Gold (Alpha Phi Alpha)</b> , Astronomy demo leader | <i>Bloomington, IN</i>  |
| 2021       | <b>Indiana Master Naturalist Event</b> , Guest speaker, telescope operator                    | <i>Bloomington, IN</i>  |
| 2020       | <b>Girl Scout Astronomy Night</b> , UW-Madison Astronomy Club volunteer                       | <i>Madison, WI</i>      |
| 2019       | <b>Moon Over Monona Terrace</b> , UW-Madison Astronomy Club volunteer                         | <i>Madison, WI</i>      |
| 2019       | <b>My UW Days</b> , UW-Madison Astronomy & Physics Dept. representative                       | <i>Madison, WI</i>      |
| 2019       | <b>UW Space Place OAO-2 Anniversary Event</b> , Orbital Astronomical Observatory (OAO) guide  | <i>Madison, WI</i>      |
| 2018       | <b>UW STEM Immersion Day</b> , UW Astronomy/ Astronomy Club representative                    | <i>Madison, WI</i>      |
| 2017       | <b>UW Space Place Family Science Night</b> , Physics and Astronomy demo leader                | <i>Madison, WI</i>      |

## DEVELOPMENT

**Fall 2024: Cultivating Inclusive Teaching and Learning Environments**, *IU Astronomy Dept.* Participant in a 60-minute in-person workshop exploring foundational concepts and proven strategies for creating inclusive classroom environments. Developed a plan to implement inclusive strategies in a future course.

**Fall 2022-Present: PyIU: A Workshop Series on Python Essentials**, *IU Astronomy Dept.* Founder and lead organizer of the PyIU crash course and workshop series hosted by IU graduate students covering various topics related to Python and intended for IU STEM undergraduates. Topics include fundamentals such as installation, variables, logic, functions, loops, and plotting, as well as more advanced aspects such as classes, environments, handling and analysis of large datasets, subplots, scientific packages, and much more. PyIU GitHub: [github.com/BrandonRadzom/pyiu](https://github.com/BrandonRadzom/pyiu)

**Summer 2023: NASA Planetary Science Summer School**, *Jet Propulsion Laboratory (JPL)*. Was selected to join a cohort of 18 graduate students and post-docs across various disciplines to engage in an 11-week planetary mission design program. For the first 10 weeks, I remotely received training on mission formulation from NASA mentors and worked with my cohort as Deputy PI and Science Objective Lead to design a New Frontiers-class orbiter to Titan (in response to the NF5 AO). I assumed the role of Science Subsystem Chair during the culminating week and worked with NASA's Team-X in person at JPL to finalize the mission design before presenting it to a review panel of NASA engineers, scientists, and executives as a mock Portfolio Gate Review. The concept study has been accepted to the Planetary Science Journal. Program link: [jpl.nasa.gov/edu/intern/apply/nasa-science-mission-design-schools/](https://jpl.nasa.gov/edu/intern/apply/nasa-science-mission-design-schools/). Media interview: [news.iu.edu/college/live/news/35938-graduate-students-summer-experience-at-nasas-jet](https://news.iu.edu/college/live/news/35938-graduate-students-summer-experience-at-nasas-jet)

**Summer 2023: Code/Astro Software Engineering Workshop**, *Northwestern University*. Was selected to participate in the 2023 Code/Astro Workshop which covered best practices for producing and publishing open-source astronomy software. Topics included managing Python environments, git and GitHub, de-bugging tools, releasing code to PyPI and GitHub, documentation of code (using docstrings & Sphinx), software testing, and employing anti-discriminatory practices. In parallel, I worked with a small group to develop and publish a pip-installable package for planning observations with IU's Kirkwood Observatory called `kirkwoodnight` (GitHub: [github.com/ag161920/kirkwoodnight](https://github.com/ag161920/kirkwoodnight), PyPI: [pypi.org/project/kirkwoodnight](https://pypi.org/project/kirkwoodnight)). Program link: [semaphore.github.io/codeastro](https://semaphore.github.io/codeastro).

**Spring 2021: Bring an Inclusive Mindset to Your Teaching**, *IU*. Participant in a 90-minute virtual workshop discussing data-driven techniques to make classrooms more inclusive to all, especially members of minoritized groups.

## PROFESSIONAL MEMBERSHIPS

American Astronomical Society (2020-2025)