

Talia Maeve O'Shea

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Education

University of Wisconsin-Madison, Ph.D. candidate in Astronomy, in progress	Aug 2023 – Present
• NSF Graduate Research Fellow	
University of Wisconsin-Madison, M.S. in Astronomy	Aug 2023 – May 2025
Wellesley College, B.A. in Astrophysics (Honors) and History, <i>Summa Cum Laude</i>	Sept 2019 – May 2023

Publications

O'Shea T.M., Heinz S., Soares-Furtado M., Igo Z., Merloni A., *Shooting for the stars: Jet-mode feedback and AGN jet deceleration from stellar mass loading*. ApJ, **995** 106. [arXiv:2510.26881](https://arxiv.org/abs/2510.26881).

O'Shea T.M., Borrow J., O'Neil S., Vogelsberger M., *Dynamical friction and measurements of the splashback radius in galaxy clusters*. OJAp, 8. [arXiv:2405.18468](https://arxiv.org/abs/2405.18468).

Research Experience

Mass-loading in AGN jet simulations, Dr. Sebastian Heinz; UW-Madison	Aug 2023 - Present
Developing simulations of mass-loading in AGN jets using moving-mesh code Arepo.	
Dynamical friction in galaxy clusters, Dr. Mark Vogelsberger; MIT	May 2022 - Aug 2023
Worked with Dr. Josh Borrow, simulating galaxy cluster dynamics using initial data from IllustrisTNG, to quantify the impact of dynamical friction on measurements of galaxy cluster splashback radii.	
Low-energy electron production, Dr. James Battat, Dr. Chris Arumainayagam;	Jan 2021 - Oct 2022
Wellesley College	
Developed, ran, and analyzed simulations using Geant4-DNA to understand production of low-energy electrons in water radiolysis processes, as well as by cosmic rays in ice grains with dense molecular clouds.	

Presentations

Invited Talks

- University of Massachusetts-Amherst, “Decelerating AGN jets with stellar winds,” August 2025.
- University of Maryland, “Dynamical friction and measurements of galaxy cluster size,” November 2024.
- University of Pennsylvania, “Dynamical friction and measurements of galaxy cluster size,” October 2023.
- Wellesley College Tanner Conference, Co-Presenter, “On Becoming a Scientist: Finding Our Passion Through Wellesley’s Summer Research Program,” Fall 2021.

Contributed Talks

- Texas Symposium on Relativistic Astrophysics, “Shooting for the stars: Jet-mode feedback and AGN jet deceleration from stellar mass-loading,” December 2025.
- Midwest Magnetic Fields Workshop, “Shooting for the stars: Jet-mode feedback and AGN jet deceleration from stellar mass-loading,” July 2025.
- Wellesley College Ruhlman Conference, “Dynamical friction in galaxy clusters,” April 2023.
- American Astronomical Society 240th Conference, “Low-energy (<20 eV) electrons in Geant4 Monte Carlo Simulations,” Summer 2022.
- American Astronomical Society 238th Conference, “Investigating the relative importance of low-energy (<20 eV) electrons in astrochemistry via Monte Carlo simulations,” Summer 2021 (virtual).

Posters

American Astronomical Society 244th Conference, “The impact of main sequence stellar mass loading on AGN jet feedback,” June 2024.

Beckman Symposium, “Dynamical friction has limited impact on galaxy cluster splashback radii,” August 2023.

Wellesley College Science Center Summer Research Program, “Dynamical friction has limited impact on measurements of galaxy cluster size,” Summer 2022.

Keck Northeast Astronomy Consortium, “Assessing the influence of dynamical friction on galaxy cluster splashback radius,” Fall 2022.

Wellesley College Science Center Summer Research Program, “The role of low-energy (<20 eV) electrons in radiation chemistry,” Summer 2021, *Co-Presenter*.

Teaching Experience

Teaching Assistant , ASTRON 103 (Introductory Astronomy); UW-Madison	Sep 2023 – Dec 2023
Learning Assistant , PHYS 106 (Introductory Electromagnetism); Wellesley College	Sept 2021 – May 2023
Grader , Wellesley College Math and Physics Department	Jan 2020 – May 2023

Mentoring Experience

Direct mentor to:

- Rachel G., UW-Madison undergraduate, Livingston Scholar (Jan 2025 - Present)

Workshops

Leader

In progress: **Research Mentorship Program**; Madison, WI Spring 2026
Designing and leading a pilot research mentorship program for early career researchers in Astronomy and Physics.

Participant

Code/Astro Workshop ; Evanston, IL	Aug 2025
Delta Program Research Mentor Training ; Madison, WI	May 2024

Grants and Awards

Funding

National Science Foundation Graduate Research Fellow	Jun 2025 - Present
Wisconsin Space Grant Consortium Graduate Research Fellowship (\$6,000)	Sep 2025 - May 2026
Beckman Scholar , Arnold and Mabel Beckman Foundation (\$21,000)	2021 - 2023
Massachusetts Space Grant (\$5,000)	2022
National Merit Scholarship , Textron Corporation (\$5,000)	2019 - 2023

Computing Time

National Science Foundation ACCESS “EXPLORE” Allocation PHY250213	Jul 2025 - Jul 2026
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Awards

Phyllis J. Fleming Prize , Wellesley College Physics Department	May 2023
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Service

Committees

Curriculum Committee; UW-Madison Astronomy Department	Sep 2025 - Present
Undergraduate Symposium Planning Committee; UW-Madison Astronomy Department	Apr 2025 - May 2025
Inclusive Excellence Committee Planning Task Force; UW-Madison Astronomy Department	Feb 2024 – June 2024
Pinanski Prize Committee Student Representative; Wellesley College	Apr 2023

Student Organizations

Peer Mentor Chair; UW-Madison Astronomy Department Running peer mentorship program for first-year graduate students.	Aug 2024 – Present
Society of Physics Students; Wellesley College Served variously as Co-President, Secretary, Department Liaison, and first-year representative, to organize department events and build community. Represented student voices at department meetings.	Dec 2019 - May 2023

Outreach

Astronomy on Tap; Madison, WI	Nov 2025
Universe in the Park; Sheboygan, WI	Aug 2025
Universe in the Park; St. Croix Falls & Chippewa Falls, WI	Jul 2025
Universe in the Park; Superior, WI	Aug 2024
Traveling to WI state parks and giving a science talk as well as operating telescopes, aimed at local residents and campers.	

Other

Reviewer, Student Spaceflight Experiments Program	Nov 2025
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Professional memberships

American Astronomical Society	Oct 2021 - Present
Phi Beta Kappa	May 2023 - Present
Sigma Xi Nominee	May 2023

Skills

Technical: Python, C, Unix, LaTeX, Arepo, Geant4
Languages: English (native), Mandarin (fluent; Massachusetts Seal of Biliteracy)
Citizenship: USA, Ireland