MADELYN I. BROOME

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University of California Santa Cruz
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EDUCATION

Princeton University September 2015 - 2019
A.B. Astrophysics - Graduated with Honors
Certificate (minor): Planets and Life
Thesis: *The Destruction of Wide Binaries by the Milky Way* - Advised by David N. Spergel

Cambridge University October 2019 - June 2020
Master's of Advanced Studies in Astrophysics - Graduated with highest mark of Distinction on Thesis (coursework ungraded)
Thesis: *Radiative Transfer in Protoplanetary Disks with Gaps* - Advised by Oliver Shorttle

FELLOWSHIPS AND PRIZES

Total: $139,000

Eugene Cota-Robles Graduate Fellowship	October 2020-present
NASA ExoExplorer	2025
ARCS Foundation Fellow	2024
AAS National Osterbrock Leadership Program Fellow	2021-present
UCSC Center for Innov. in Teaching & Learning Graduate Pedegogy Fellow	2023
Excellence in Mentoring, UCSC Astro Dept.	2023
Graduate Student Liaison (formerly "Head Grad")	September 2022-2023
Gregory T. Pope Prize for Science Writing	May 2019
Francis Biddle Prize for Best Sophomore Essay in English Literature	May 2017

PRESENTATIONS

AAS Exoplanets V Conference - Talk	June 2024
AAS Extreme Solar Systems III - poster	March 2024
Early Researchers in Exoplanets - Talk	June 2023
Gordon Conference on Origins of Solar Systems - poster	June 2023
AAS Exoplanets IV Conference - Session talk, poster	June 2022

Invited: ARCS Annual Meeting (speaker, 2024), International Conference on College Counseling (panelist, 2023), CA STEAM (panelist, 2023)

SELECTION OF PUBLICATIONS

1. **Broome, M.I.**, Shorttle, O., Kama, M., Booth, R.A., "Iceline Variations Driven by Protoplanetary Disc Gaps", MNRAS, 2022
2. **Broome, M.I.**, Murray-Clay, R., McCann, J., Owen, J.E., "A Fast, Open-source 1D Photoevaporation Code with Metal and Multifrequency X-ray Capabilities", AA, submitted
3. Lloyd, R.O.P., Schreyer, E.,..., **Broome, M.I.**,..., "Detection of Hydrogen Escape from a Pair of

Super Earths", Nature, Accepted
4. Pai Asnodkar A., Wang J., **Broome M.**, Huang C., Johnson M. C., Ilyin I., Strassmeier K. G., et al., 2024, MNRAS, 535, 1829.
5. Patra, K.I., Winn, J.N.,..., and **Broome, M.I.**,"The Continuing Search for Evidence of Tidal Orbital Decay for Hot Jupiters", ApJ, 2020
6. **Broome, M.I.** & Jue, M., "Astrobiological Media", UC Humanities Research Institute Foundry Journal, 2023

PAST RESEARCH

Hunting for Circumnuclear Water Maser with VLA Observations (ALMA Intern, Advisors: V.Impellizerri & H.Messias) 2018
AGN Feedback in a Quasar-driven Superbubble (Advisors: J.E.Greene & A.D.Gould) 2018
Detectability of WASP-12b Orbital Decay w/ TESS (Advisors: J.N.Winn) 2017
Algorithm for Differential Chromatic Refraction (Princeton REU, Advisors: N.B.Lust) 2017

TEACHING

Head TA October 2023-present

Certifications: Graduate Pedagogy Fellow, Certificate in Inclusive Pedagogy, USA Rugby Level 1 Coach & USA Rugby Strength and Conditioning Coach

Primary Instructor & **Curriculum Designer:** ASTR 1 - Introduction to the Universe (undergraduate course, 2023), ASTR 205 - Introduction to Teaching and Research (graduate course, 2023, 2024), ASTR 206/Equitable Mentoring for Astronomy Research Professional Development Fellowship (2024, 2025)

TA: ASTR 9 - Introduction to Research in Astronomy (2 quarters)

OUTREACH

Lick Observatory Native Star Stories Night - *Program leader & creator* 2023-present

Lamat Undergraduate Summer Research Program - *Research Mentor* May 2022 - August 2022

Pyar (public astronomy Python course) - *Instructor* 2020-present

UCSC Ask an Astronomer - *Writer* 2020-present

Society of Physics Students - *Graduate Mentor* 2020-present

Undergraduate Women in Physics, Princeton - *Co-founder, Co-president, Peer Mentor* 2018-2019

Princeton Innovation Journal of Science and Technology 2015-2019
Editor-in-Chief (2017-19), Editor: Space/Physics Section (2016-17), Writer, Projects Team (2015-19)

RESEARCH INTERESTS

Exoplanet Theory (formation and evolution) – Astrostatistics – Geophysics – Astrobiology

ADDITIONAL COMPETENCIES

Languages *Computer:* Python, C, Fortran, R, MATLAB, IDL, Bash
Software & Tools LaTeX, CASA, GALA, Mathematica, DS9, Github, Rebound, MESA