

ANNA RUTH TAYLOR

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EDUCATION

Lunar and Planetary Laboratory, University of Arizona *Aug 2023 – Expected Spring 2028*
Ph.D. in Planetary Sciences · Minor in Astronomy · Advisor: Dr. Tommi Koskinen · GPA: 4.0

North Carolina State University *Aug 2019 – May 2023*
Honors B.S. in Physics · Minors in Mathematics and Computer Science · GPA: 3.97

PROFESSIONAL EXPERIENCE

Lunar and Planetary Laboratory — Research Assistant *Aug 2023 – Present*
University of Arizona · Advisor: Dr. Tommi Koskinen

- Investigating He I triplet absorption at 1083 nm in hot escaping exoplanet atmospheres to understand transit depth trends and connections to mass loss.
- Running Fortran/C++ atmospheric modeling codes; analyzing output with Python.

Post Road Foundation — Researcher *Feb 2022 – Aug 2023*

- Ran and analyzed energy modeling simulations using NREL's ResStock housing stock code.

North Carolina State University — Astrophysics Researcher *Apr 2020 – Aug 2023*
Advisor: Dr. John Blondin

- Studied shocks and gas flow in astrophysical objects on a stellar scale using the Fortran code VH-1.
- Analyzed and visualized data from computational binary star models with Python and Ensign.

NASA/GSFC Internship — Astrophysics Researcher *Jun 2022 – Feb 2023*
Advisor: Dr. Sarah Peacock

- Computed photosphere+chromosphere models and UV-to-NIR synthetic spectra for FGKM-type stars using the PHOENIX atmosphere code.
- Analyzed and visualized synthetic spectra with Python and IDL; first-author publication accepted in ApJ.

Women in Physics Club — Vice President *Aug 2022 – May 2023*

- Organized career talks, social gatherings, and panel discussions; provided resources to undergraduate women in physics.

Senior Design — Critical Lead *Aug 2022 – Dec 2022*

- Created a precise positioning system for a lead gamma-ray collimator in a vertical plane; managed timeline and recorded design notes.

AWARDS & ACHIEVEMENTS

- **GPSC Travel Grant (2026)** Awarded by the University of Arizona Graduate and Professional Student Council to support international conference travel.
- **Zonta International Amelia Earhart Fellowship (2025)** Global fellowship for women in aerospace and space sciences; chosen as the Sharon Langenbeck Fellow.
- **Galileo Circle Scholarship (2024, 2025)** Awarded by the UA College of Science to exceptional graduate students demonstrating academic excellence and research achievement.
- **NSF GRFP Honorable Mention (2025)** Recognized by the National Science Foundation for research potential and broader impacts.

- **Leif Erland Andersson Graduate Student Award for Service (2025)** Recognized for contributions to mentoring, outreach, and service within the department.
- **Rodney I. McCormick Award (2023)** Awarded in recognition of research accomplishments as a physics undergraduate.
- **John Mather Nobel Scholar (2022)** Travel award recognizing outstanding undergraduate researchers.
- **NCSU Envisioning Research Contest Winner (2021)** Won the undergraduate video/interactive category for “Wind Driven Accretion onto a Black Hole.”

PUBLICATIONS

- **Taylor, A.R.**, Koskinen, T., Huang, C., Arfaux, A., & Lavvas, P. 2026, ApJ — “Helium escape in context: Comparative signatures of four close-in exoplanets.” doi: [10.3847/1538-4357/ae41b5](https://doi.org/10.3847/1538-4357/ae41b5)
- **Taylor, A.R.**, Koskinen, T., Argenti, L., Lewis, N., Huang, C., Arfaux, A., & Lavvas, P. 2025, ApJ — “A Multi-Species Atmospheric Escape Model with Excited Hydrogen and Helium: Application to HD 209458b.” doi: [10.3847/1538-4357/ade3c9](https://doi.org/10.3847/1538-4357/ade3c9)
- **Taylor, A.R.**, Dunn, A., Peacock, S., Youngblood, A., & Redfield, S. 2024, ApJ, 964, 80 — “Correlating Intrinsic Stellar Parameters with Mg II Self-reversal Depths.” doi: [10.3847/1538-4357/ad22da](https://doi.org/10.3847/1538-4357/ad22da)

MANUSCRIPTS IN PREPARATION

- **Taylor, A.R.**, Koskinen, T., Huang, C., & Lavvas, P. — “Atmospheric Escape from Metal-rich Sub-Neptunes.” In prep.
- Peacock, S., Husbey, L., Barker, M., **Taylor, A.R.**, Dunn, A., Barman, T. S., Hintz, D., & Shkolnik, E. L. — “PEGASUS: PHOENIX EUV Grid And Stellar Ultraviolet Spectra.” In prep, to be submitted to ApJ.

INVITED TALKS

Evaporating Worlds Workshop, Sexten, Italy June 2026
“Exploring atmospheric escape from water-rich sub-Neptunes with full-atmosphere models”

Stars & Planet Formation Group Meeting, University of Michigan February 2025
“Exploring atmospheric escape from hot-Jupiters with full-atmosphere models”

PRESENTATIONS

Exoplanets 6 Conference — Contributed Talk June–July 2026
“Exploring atmospheric escape from water-rich sub-Neptunes with full-atmosphere models”

Exoplanet Atmospheres 2026 — Contributed Talk March 2026
“Exploring atmospheric escape from hot-Jupiters and water-rich sub-Neptunes with full-atmosphere models”
[Link to Abstract](#)

American Astronomical Society — Contributed Talk January 2026
“Exploring atmospheric escape from hot-Jupiters and water-rich sub-Neptunes with full-atmosphere models”
[Link to Abstract](#)

Atmospheric Escape in Planetary Systems Workshop — Contributed Talk November 2025
“Exploring atmospheric escape from hot-Jupiters and water-rich sub-Neptunes with full-atmosphere models”
[Link to Talk](#)

Solar System in Context Conference — Poster October 2025
“A Multi-Species Atmospheric Escape Model with Excited Hydrogen and Helium”

EPSC-DPS Joint Meeting — Contributed Talk September 2025
“Exploring atmospheric escape from hot-Jupiters and water-rich sub-Neptunes with full-atmosphere models”
[Link to Talk](#)

Exoclimes VII Conference — Poster “A Multi-Species Atmospheric Escape Model with Excited Hydrogen and Helium”	July 2025
Exoplanets 5 Conference — Poster “Assessment of He I triplet absorption at 10830 Å in escaping atmospheres of hot gaseous exoplanets” Link to Poster	June 2024
American Astronomical Society — iPoster “Stellar chromospheres and intrinsic stellar parameters” Link to iPoster	January 2023
NCSU Abstract YouTube Presentation “X-ray binary Vela X-1” Link to Video	January 2023
Senior Design Presentation, NCSU Physics Department “Precise positioning system for a lead gamma-ray collimator” Link to Presentation	December 2022
NASA Goddard Code 660 Summer Intern Symposium — Poster “Stellar activity, structure, and the chromosphere”	August 2022
NCSU Physics Department McCormick Undergraduate Research Symposium — Poster “The Effect of Wind Speed and Roche Lobe Geometries on the Wind Dynamics of Vela X-1”	May 2022

PROFESSIONAL SERVICE

NASA Review Panel — Executive Secretary – Served as Executive Secretary for a NASA review panel.	June 9–12, 2026
NASA Review Panel — Executive Secretary – Served as Executive Secretary for a grant review panel.	April 21–25, 2025
Peer Reviewer — The Astrophysical Journal – Completed peer review of two manuscripts.	2025–Present

OUTREACH & SERVICE

Letters to a Pre-Scientist — Pen Pal – Serving as a pen pal for middle schoolers to humanize STEM professionals and demystify career pathways.	Aug 2025 – Present
Other Worlds — Curriculum Developer – Developing an astrobiology curriculum to deliver to incarcerated youth in Tucson, AZ.	Aug 2025 – Present
Arizona Sky School — Instructor – Teaching K–12 students about planetary science through hands-on, outdoor learning experiences at Mt. Lemmon. – Developed a full astrobiology day curriculum, including a JWST planets slide deck and student one-pagers.	Feb 2025 – Present
STAR Labs — Research Mentor – Advising a high school student’s independent research project through weekly meetings and written work review. – Mentee Tesla Lukow won First Place, the NASA Earth System Science Award, and an ISEF Finalist Trip.	Aug 2024 – Present
Arizona Science Center — Volunteer & Girls Who STEM Mentor – Mentoring young girls at Girls Who STEM events and participating in STEAM Nights at local elementary schools.	Aug 2023 – Present
Miscellaneous Outreach – Panel participant at CUWiP conferences; science talks to high school classrooms; career talks to Women in Physics clubs; field trip facilitation to Kuiper Space Sciences.	