Anna Ruth Taylor

annartaylor@arizona.edu | Lunar and Planetary Laboratory, University of Arizona
Website: https://annartaylor.github.io/website/

EDUCATION

Lunar and Planetary Laboratory, University of Arizona - *Tucson, AZ*
AUGUST 2023 - EXPECTED SPRING 2028

- Ph.D. in Planetary Sciences, Minor in Astronomy, Thesis Advisor: Dr. Tommi Koskinen - GPA: 4.0

North Carolina State University - *Raleigh, NC*
AUGUST 2019 - MAY 2023

- Honors B.S. in Physics, Minors in Math and Computer Science - GPA: 3.97

PROFESSIONAL EXPERIENCE

Lunar and Planetary Laboratory/Dr. Tommi Koskinen - *Research Assistant*
AUGUST 2023 - PRESENT

- Investigating the He I triplet absorption at 1083 nm in hot escaping exoplanet atmospheres to understand trends in the transit depths and make connections to mass-loss
- Run Fortran/C++ atmosphere modeling codes and analyze output with Python

NASA/GSFC Internship/Dr. Sarah Peacock - *Astrophysics Researcher*
JUNE 2022 - FEBRUARY 2023

- Compute photosphere+chromosphere models and ultraviolet-to-near-infrared synthetic spectra for FGKM type stars using the PHOENIX atmosphere code.
- Use Python and IDL programs to analyze and visualize stars' synthetic spectra.
- First-author publication on results accepted in the Astrophysical Journal.

North Carolina State University/Dr. John Blondin - *Astrophysics Researcher*
APRIL 2020 - AUGUST 2023

- Study shocks and gas flow in astrophysical objects on a stellar scale using the Fortran code VH-1 developed by Dr. John Blondin and collaborators.
- Use Python and Ensight programs to analyze and visualize data from computational binary star models.

Women in Physics Club - *Vice President*
AUGUST 2022 - MAY 2023

- Organized and attended career talks, social gatherings, and panel discussions.
- Provided resources and advice to other women in the undergraduate physics program.

Senior Design - *Critical Lead*
AUGUST 2022 - DECEMBER 2022

- Our team created a precise positioning system for a lead gamma ray collimator in a vertical plane.
- As the critical lead, I kept design plans realistic, managed our time, and recorded notes.

Post Road Foundation - *Researcher*
FEBRUARY 2022 - AUGUST 2023

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

---

AWARDS & ACHIEVEMENTS

- Zonta International Amelia Earhart Fellowship (2025): Global fellowship awarded to women pursuing advanced studies in aerospace and space sciences, and chosen as the Sharon Langenbeck Fellow.
- Galileo Circle Scholarship (2025): Awarded by the University of Arizona College of Science to exceptional graduate students demonstrating academic excellence and research achievement.
- NSF Graduate Research Fellowship Program (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 the Rodney I. McCormick Award in recognition of my research accomplishments as a physics undergraduate student.
- John Mather Nobel Scholar (2022): Awarded the John Mather Nobel Scholar travel award in 2022
- The Office of Undergraduate Research 2021 Envisioning Research contest: won the contest in the undergraduate student video and interactive category for "Wind Driven Accretion onto a Black Hole," a visualization of the M33 binary system using VH-1 hydrocode and Ensight.

PUBLICATIONS

- **Taylor, A**., 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
- **Taylor, A**., 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 HD209458b", doi:10.3847/1538-4357/ade3c9
- **Taylor, A.**, 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

---

MANUSCRIPTS

- Sarah Peacock, Lori Husbey, Malia Barker, Anna Taylor, Audrey Dunn, Travis S. Barman, Dominik Hintz, Evgenya L. Shkolnik, *PEGASUS: PHOENIX EUV Grid And Stellar Ultraviolet Spectra* : (In Prep, to be submitted to ApJ)

PRESENTATIONS

American Astronomical Society Contributed Talk - JANUARY 2026

- Presented a talk entitled "Exploring atmospheric escape from hot-Jupiters and water-rich sub-Neptunes with full-atmosphere models" - Link to Talk

Atmospheric Escape and Replenishment in Planetary Systems Workshop Contributed Talk - NOVEMBER 2025

- Presented a talk entitled "Exploring atmospheric escape from hot-Jupiters and water-rich sub-Neptunes with full-atmosphere models" - Link to Talk

Solar System in Context Conference Poster Presentation - OCTOBER 2025

- Presented a poster entitled "A Multi-Species Atmospheric Escape Model with Excited Hydrogen and Helium"

EPSC-DPS Joint Meeting 2025 Contributed Talk - SEPTEMBER 2025

- Presented a talk entitled "Exploring atmospheric escape from hot-Jupiters and water-rich sub-Neptunes with full-atmosphere models" - Link to Talk

Exoclimes VII Conference Poster Presentation - JULY 2025

- Presented a poster entitled "A Multi-Species Atmospheric Escape Model with Excited Hydrogen and Helium"

Exoplanets 5 Conference Poster Presentation - JUNE 2024

- Presented a poster entitled "Assessment of He I triplet absorption at 10830 Å in escaping atmospheres of hot gaseous exoplanets" - Link to Poster

American Astronomical Society iPoster Presentation - JANUARY 2023

- Presented my research on stellar chromospheres at the AAS Meeting in Seattle, WA - Link to iPoster

NCSU Abstract YouTube Presentation - JANUARY 2023

- Presented my research on X-ray binary Vela X-1 through a video abstract presentation - Link to Video

Senior Design Presentation - DECEMBER 2022

- Presented Senior Design project to the NCSU Physics department - Link to Presentation

NASA Goddard's Code 660 Summer Intern Symposium - AUGUST 2022

- I presented a poster titled "Stellar activity, structure, and the chromosphere" on refining stellar parameters with the PHOENIX atmospheric code to find chromospheric correlations.

North Carolina State Physics Department McCormick Undergraduate Research Symposium - MAY 2022

- Presented a poster on my X-ray binary Vela X-1 research titled “The Effect of Wind Speed and Roche Lobe Geometries on the Wind Dynamics of Vela X-1.”

OUTREACH

Sky School Instructor - FEBRUARY 2025 - PRESENT

- Teaching K-12 students about planetary science through hands-on learning experiences.
- Guiding students in independent research projects and promoting STEM education.

STAR Labs Mentor - AUGUST 2024 - PRESENT

- Advising a high school student’s research as a STAR Labs mentor, including weekly meetings, review of written work, and guidance on research goals.
- Student Tesla Lukow won First Place, the NASA Earth System Science Award, and an ISEF Finalist Trip for her project.

Letters to a Pre-scientist - AUGUST 2025 - PRESENT

- Serve as a pen-pal for middle schoolers with the goal of facilitating connections to humanize STEM professionals, demystifying STEM career pathways, and inspiring students to explore a future in STEM.

Other Worlds Curriculum Developer - AUGUST 2025 - PRESENT

- Part of a team developing an astrobiology curriculum to deliver to incarcerated youth in Tucson, AZ

Arizona Science Center Volunteer and Girls Who STEM Mentor - AUGUST 2023 - PRESENT

- Serve as a mentor to young girls participating in Girls Who STEM events

Miscellaneous Outreach Events

- Engaged in various outreach activities such as serving on panels at CUWiP conferences, participating in STEAM Nights at local elementary schools, giving science talks to high school classrooms, giving career talks to Women in Physics clubs, and facilitating field trips to Kuiper Space Sciences