

Anna Ruth Taylor

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Website: <https://annartaylor.github.io/website/>

EDUCATION

North Carolina State University - Raleigh, NC

AUGUST 2019 - MAY 2023

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

Lunar and Planetary Laboratory, University of Arizona - Tucson, AZ

AUGUST 2023 - EXPECTED 2028

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

- Participation in a senior design project in which we had to create 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
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PRESENTATIONS

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."

Senior Design Presentation - DECEMBER 2022

- Presented Senior Design project to the NCSU Physics department - [Link to Presentation](#)

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](#)

Exoplanets 5 Conference Poster Presentation - JUNE 2024

- "Assessment of He I triplet absorption at 10830 Å in escaping atmospheres of hot gaseous exoplanets" - [Link to Poster](#)

Exoclimes VII Conference Poster Presentation - JULY 2025

- "A Multi-Species Atmospheric Escape Model with Excited Hydrogen and Helium"

AWARDS & ACHIEVEMENTS

- **2025 Zonta International Amelia Earhart Fellow** – International fellowship supporting women in aerospace and space sciences; awarded for research on atmospheric escape in exoplanets and dedication to outreach and mentorship.
- **Galileo Circle Scholarship (2025)** – Awarded by the University of Arizona College of Science to exceptional graduate students demonstrating academic excellence, research achievement, and service.
- **Leif Erland Andersson Graduate Student Award for Service (2025)** - Recognized for contributions to mentoring, outreach, and service within the department.
- **NSF Graduate Research Fellowship Program (GRFP) Honorable Mention (2025)** – Recognized by the National Science Foundation for research potential and broader impacts.
- **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

PUBLICATIONS

- **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](https://doi.org/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](https://doi.org/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)

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

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