EMILY R. BURSK

Contact Information

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Education

University of Colorado - Boulder, Boulder, CO
Visiting Student, Fall 2025
Relevant Coursework: Quantum Mechanics I

University of Cincinnati, Cincinnati, OH
B.Sc. Astrophysics, May 2025
GPA: 3.5
Relevant Coursework: Intermediate Mechanics, Electricity & Magnetism, Intro to Astrophysics I, Advanced Topics in Astronomy, Advanced Lab, Thermodynamics & Statistical Physics, Intro to Applied AI & Machine Learning Tools

Cincinnati State Technical and Community College, Cincinnati, OH
Associate of Science, May 2023
GPA: 3.4

Research Experience

Thomas More University Crestview Hills, KY, 2024 – 2025
Undergraduate Researcher

- Developed and implemented analyses using the Illustris-TNG50 simulation to study how the relationship between stellar structure and dark matter distribution influences galactic warping
- Presented research findings at the 245th American Astronomical Society Conference

University of Cincinnati Cincinnati, OH, 2023 – 2024
Undergraduate Researcher

- Developed Python scripts for the JWST NIRSpec IFU science calibration pipeline to enhance spectral data reduction efficiency and processed strongly lensed galaxy observations into calibrated data cubes
- Led undergraduate researchers on JWST data-reduction methods for additional lensed targets

Cincinnati State Technical and Community College Cincinnati, OH, 2022 – 2023
Undergraduate Researcher

- Composed a review paper on strong gravitational lensing and its applications in astrophysical research
- Presented findings at the Ohio Aerospace Institute student research symposium

Employment and Experience

University of Colorado - Boulder
Student Grader, ASTR 1200: Stars and Galaxies 2025

- Evaluated homework assignments and exams for an introductory astronomy course with 105 students
- Provided feedback to support students' understanding of key astronomy concepts

NASA Here to Observe Program
Student Observer 2023-2025

- Attended science mission meetings for the Europa Clipper mission

- Attended the 55th Lunar and Planetary Science Conference
- Collaborated with mentor on a project comparing atmospheric models of Europa, contributing to the understanding of the moon's environment

Cincinnati Observatory Center

Program Educator 2023-2025

- Delivered 25+ astronomy presentations annually, adapting content from introductory to advanced levels for audiences ranging from children to adult learners
- Operated the oldest public telescope in North America for public viewings
- Led STEM outreach programs at schools and community events, expanding access to science education

Education Intern 2022-2023

- Supported outreach programs for underserved schools, providing hands-on STEM learning experiences
- Educated the public on astronomy topics and the history of the Cincinnati Observatory

Refereed Publications

1. Rigby, J. R., Vieira, J. D., Phadke, K. A., Hutchison, T. A., Welch, B., Cathey, J., Spilker, J. S., Gonzalez, A. H., Adhikari, P., Aravena, M., Bayliss, M. B., Birkin, J. E., **Bursk, E.**, et al. (2024). *JWST Early Release Science Program TEMPLATES: Targeting Extremely Magnified Panchromatic Lensed Arcs and Their Extended Star Formation.* arXiv:2312.10465

Scientific Communication

4. **Bursk, E.** (2025). "Let's Chat!: Emmy Bursk". *Girls in STEM Magazine.*

3. **Bursk, E.**, Hinkel, A. (2025). ''Linking Dark and Stellar Substructure in the Illustris TNG50 Simulation", Senior Capstone Report, University of Cincinnati

2. **Bursk, E.** (2024). "Failure to Launch: Emily Bursk" [Podcast episode]. *Future-Proof Podcast.*

1. Hewald, R., Younker, N., Adhikari, P., Elicker, L., & **Bursk, E.** (2023). ''A Getting Started Guide for JWST NIRSpec IFU Data Reduction"

Conference Proceedings

3. **Bursk, E.**, Hinkel, A. (5 April 2025). *Linking Dark and Stellar Substructure in the Illustris TNG50 Simulation* [Poster presentation]. Kentucky Area Astronomical Society Meeting, Berea, KY, USA.

2. **Bursk, E.**, Hinkel, A. (15 January 2025). *Linking Dark and Stellar Substructure in the Illustris TNG50 Simulation* [Poster presentation]. American Astronomical Society Meeting 245, National Harbor, MD, USA.

1. **Bursk, E.**, Huber, J. (31 March 2023). *Discovering the Distant Universe Using Strong Gravitational Lensing* [Poster presentation]. 2023 Student Research Symposium, Cleveland, OH, USA.

Public Talks

5. Bursk, E. (2025). "Nature's Telescopes: Gravitational Lensing". In: Cincinnati Observatory Astronomy Class

4. Bursk, E. (2025). "The Moon: Origins and Exploration". In: Cincinnati Observatory Nearest Neighbors Night

3. Bursk, E. (2024). "Europa Clipper: NASA's Mission to Jupiter's Ocean Moon". In: Cincinnati Observatory Jupiter Night

2. Bursk, E. (2023). "Icy Moons: The Search for Life". In: Cincinnati Observatory Astronomy Evenings

1. Bursk, E. (2023). "Tour of the Universe". In: Cincinnati Observatory Astronomy Evenings

Volunteer Experience

Cincinnati Astronomical Society
Member 2022-2025

- Certified on operating a 14-inch telescope, using it to locate and observe deep sky objects, stars, and planets
- Contributed to a radio astronomy project through Stanford University's Space Weather Monitor program
- Attended members meetings to stay informed and actively collaborate on astronomical projects

Denver Astronomical Society
Member/Volunteer 2026-Present

- Assist with public astronomy nights and open house events, guiding guests in telescope observations and explaining observed celestial objects
- Develop and deliver educational talks at community astronomy events on astronomical concepts and current research topics

Technical Skills

Languages: Python 3.x (Astropy, NumPy, Pandas, SciPy)

Software: Jupyter, LaTeX, Mathematica, SAOImageDS9

Honors and Awards

UC Cincinnati Pathways Scholarship 2023-2025
University of Cincinnati Dean's List 2023-2025
Ohio Space Grant Consortium Community College Scholarship 2022
Cincinnati State Dean's List 2021-2023

References

Dr. Austin Hinkel, Assistant Professor of Physics, Thomas More University,
(859) 344-3364, hinkela@thomasmore.edu

Dr. Jeremy Huber, Professor of Physics, Cincinnati State Technical and Community College,
(513) 569-1705, jeremy.huber@cincinnatistate.edu

Samantha Pepper, Education Manager, Cincinnati Observatory,
(513) 321-5186, ext. 2, samantha@cincinnatiobservatory.org