COURTNEY CARREIRA

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EDUCATION

Ph.D. Student September 2023 - Present
Department of Astronomy & Astrophysics, The University of California, Santa Cruz *Santa Cruz, CA*
Advisor: Professor Brant Robertson

B.S. Physics Graduated with General Honors, May 2023
Department of Physics and Astronomy, Johns Hopkins University *Baltimore, MD*
Minor in Applied Mathematics and Statistics
Relevant Coursework: Astrophysical Plasmas, Radiative Astrophysics, Introduction to Stellar Physics

RESEARCH EXPERIENCE

NSF REU Intern and NRAO SOS Researcher June 2022 - September 2023
Smithsonian Astrophysical Observatory *Cambridge, MA*

- Using observations of atomic and molecular gas emissions in M33 to analyze the effect of proximity from the southeastern spiral arm in the formation of molecular clouds; advised by Dr. Eric Koch and Dr. Sarah Jeffreson, within Professor Alyssa Goodman's research group.
- Ongoing work resulted in a successful NRAO Student Observing Support award to obtain observations that resolve the filamentary morphology of molecular clouds across M33. Co-PI: Eric Koch, Title: *Linking the Resolved Filamentary Molecular ISM to Massive Star Formation across M33.*

Undergraduate Researcher May 2021 - May 2022
Department of Physics and Astronomy, Johns Hopkins University *Baltimore, MD*

- Collected photometric and spectroscopic data for a large set of low-metallicity stellar objects, believed to host transiting exoplanets; advised by Professor Kevin Schlaufman.
- Utilized Python coding and packages to numerically analyze the stellar objects of interest.

Research Intern April 2020 - January 2022
The Johns Hopkins University Applied Physics Laboratory *Laurel, MD*

- Performed correlation analysis of simulated gamma-ray and UVOIR emissions from Type Ia supernovae, and assisted with scientific validation for mission proposal; advised by Dr. Richard S. Miller.
- Analyzed Monte Carlo simulations of volatile transport across the lunar surface, specifically looking at water and carbon dioxide; advised by Dr. Parvathy Prem.

PUBLICATIONS

1. Robertson, B., et al. (2023). Earliest Galaxies in the JADES Origins Field: Luminosity Function and Cosmic Star-Formation Rate Density 300 Myr after the Big Bang. *arXiv e-prints*, arXiv:2312.10033.

- Carreira, C., et al. (2024). How do spiral arms influence molecular cloud and star formation? Comparing multiple ISM tracers across M33's spiral arm to simulations. *Manuscript in preparation.*

PRESENTATIONS

4. Carreira, C., Koch, E., & Jeffreson, S. (2023). The Effect of Spiral Arms on Molecular Cloud Formation in M33. In *American Astronomical Society Meeting Abstracts* (pp. 211.01).

3. Carr, K., Azubuike, O., Tran, A., Carreira, C., Alfaro, C., Greenhagen, G., Patterson, G., Stickle, A., Prem, P., Cahill, J., & Tai Udovicic, C. (2021). Lunar Crater Maturity Analysis in Python: Developing a Toolkit for Ejecta Analysis. In *5th Planetary Data Workshop & Planetary Science Informatics & Analytics* (pp. 7087).

2. Carr, K., Azubuike, O., Tran, A., Carreira, C., Alfaro, C., Greenhagen, B., Patterson, G., & Stickle, A. (2021). Lunar Crater Maturity Analysis in Python: Developing a Toolkit for Ejecta Analysis. In *52nd Lunar and Planetary Science Conference* (pp. 2387).

1. Alfaro, C., Tran, A., Carr, K., Azubuike, O., Carreira, C., Prem, P., Dominguez, G., Greenhagen, B., Hurley, D., Stickle, A., Patterson, G., & Cahill, J. (2021). The Effect of Isotopic Composition and Surface Residence Times on Lunar Volatile Transport. In *52nd Lunar and Planetary Science Conference* (pp. 2258).

TEACHING

Teaching Assistant for ASTR 2 January 2024 - March 2024
Department of Astronomy & Astrophysics, The University of California, Santa Cruz *Santa Cruz, CA*

- Leads one recitation section per week, which includes a short lecture, group activities, and live demonstrations.
- Hosts office hours on a weekly basis, in collaboration with other TAs.

Teaching Assistant for General Physics I August 2022 - December 2022
Department of Physics and Astronomy, Johns Hopkins University *Baltimore, MD*

- During Active Learning sections of this course, worked closely with students as they completed a series of problems and hands-on demonstrations during their lectures.
- Hosted office hours on a weekly basis.

SKILLS

Programming	Python (advanced, including machine learning), MATLAB, Unix, SQL/ADQL
Software	glueviz, ds9, ENVI, JMARS

MEMBERSHIPS

American Astronomical Society
American Physical Society

Updated as of May 3, 2024.