

# COURTNEY CARREIRA

(she/her)

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## EDUCATION

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### 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

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### Graduate Student Researcher

April 2024 - Present

Department of Astronomy & Astrophysics, The University of California, Santa Cruz

*Santa Cruz, CA*

- As a member of the *JWST* Advanced Deep Extragalactic Survey (JADES) collaboration, I am analyzing the star formation histories of observed galaxies via the study of their morphologies.
- Using Bayesian techniques to perform robust model-fitting of Sérsic profiles to galaxies in GOODS-S.

### NSF REU Intern and NRAO SOS Researcher

June 2022 - Present

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

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1. Robertson, B., et al. incl. Carreira, C. (2024). Earliest Galaxies in the JADES Origins Field: Luminosity Function and Cosmic Star Formation Rate Density 300 Myr after the Big Bang. *ApJ*, 970(1), 31. DOI: [10.3847/1538-4357/ad463d](https://doi.org/10.3847/1538-4357/ad463d)
- 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

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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., Azubuiké, 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., Azubuiké, 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., Azubuiké, 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

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### Teaching Assistant for ASTR 2

January 2024 - March 2024

Department of Astronomy & Astrophysics, The University of California, Santa Cruz

*Santa Cruz, CA*

- Led one recitation section per week, which included a short lecture, group activities, and live demonstrations.
- Hosted 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

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

## MEMBERSHIPS

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American Astronomical Society

American Physical Society

*Updated as of October 14, 2024.*