

Samantha Morrison

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RESEARCH INTERESTS

Astrophotonics: nulling interferometry, active photonics; **Exoplanets:** direct detection techniques

EDUCATION

Univ. of California, Los Angeles

2024 – present

Ph.D., Astronomy & Astrophysics

Los Angeles, CA

- Simulation & development of an astrophotonic nulling interferometer for the CHARA Array
- Ph.D. thesis advisor: Dr. Pradip Gatkine

Univ. of California, Los Angeles

Jun 2026

M.S., Astronomy & Astrophysics

Los Angeles, CA

- Thesis title: “CHARM: The CHARA Array Response Model”

Grinnell College

Dec 2023

Bachelor of Arts in Physics with Honors

Grinnell, IA

- Major GPA 3.96/4.00; cumulative GPA 3.91/4.00
- Founder’s Scholarship: four-year, \$96,000 merit award based on academic merit, extracurricular involvement, demonstrated leadership, and/or special talents.
- Dean’s List (2019-2023)

PUBLICATIONS

- **Morrison, S.** et al (2026). “Simulation and development of astrophotonic H-band nulling beam combiner for the CHARA Array.” *Proceedings of SPIE Volume 14148, Optical and Infrared Interferometry and Imaging X*. Article ID 141483U. [Access Paper](#).
- **Morrison, S.** et al (2025). “Development of an on-chip double Bracewell nulling interferometer in the near-infrared for the CHARA Array.” *Proceedings of SPIE Volume 13627, Techniques and Instrumentation for Detection of Exoplanets XII*. Article ID 13627-2G. [Access Paper](#).
- McLean, I. et al (incl. **Morrison, S.**) (2025). “Open-source Python library for customizable AWG design and simulation in astronomy.” *Proceedings of SPIE Volume 13627, Techniques and Instrumentation for Detection of Exoplanets XII*. Article ID 13627-1T. [Access Paper](#).
- **Morrison, S.** et al (2024). “Infrared Colors of Small Serendipitously Found Asteroids in the UKIRT Hemisphere Survey.” *The Astronomical Journal*. [Access Paper](#).
- Cacho-Negrete, C. et al (incl. **Morrison, S.**) (2022). “The Hunt for Hot Jupiters: How We Help NASA Confirm Exoplanets.” *Proceedings of the Annual Keck Northeast Astronomy Consortium Undergraduate Symposium on Research in Astronomy*. 33(1): 9-16. [Access Paper](#).

RESEARCH EXPERIENCE

Masters Project | Dept. of Astronomy, Univ. of California, Los Angeles

Sep 2024-present

- Science cases for a near-infrared photonic nulling interferometer at the CHARA Array
- Development of a Python-based simulation suite for long-baseline stellar interferometry and nulling

- Photonic chip architecture design

NSF-Funded Student Fellow | Dept. of Astronomy, Northern Arizona University

Jun-Aug 2023

- Designed parallelized Python pipeline that recovers and analyzes 26,138 asteroid observations from UKIRT Hemisphere Survey archival data
- Computed J-K colors for 601 asteroids, 569 of which have no previously published colors or spectra

Student Researcher | Grant O. Gale Observatory, Grinnell College

Jan-May 2023

- Conducted observations of variable carbon stars to investigate cause of long-term brightness variations
- Designed IDL code to obtain and analyze spectroscopic and photometric observations

NSF-Funded Student Fellow | Whittin Observatory, Wellesley College

May-Jul 2022

- Observed exoplanet candidate targets on research-level telescope as member of NASA's Transiting Exoplanet Survey Satellite Follow-Up Observing Program, Sub-Group 1
- Reduced and analyzed photometric data using AstroImageJ to produce light curves
- Submitted ten verified exoplanets to NASA's exoFOP database, including two super-Earths

Student Researcher | Glimmer Labs, Grinnell College

Jun-Aug 2021

- Designed JavaScript, HTML, and CSS code to improve accessibility features of Mathematical Image Synthesis Toolkit application

PRESENTATIONS & POSTERS

Oral:

- **Morrison, S.** "An Archival Search for Serendipitous Asteroid Measurements in the Infrared." Northern Arizona University Research Experiences for Undergraduates Research Symposium (2023), Grinnell College Physics Department Seminar Series (2023)
- **Morrison, S.** "The Hunt for Hot Jupiters: How We Help NASA Confirm Exoplanets." Keck Northeast Astronomy Consortium Student Research Symposium (2022), Grinnell College Physics Department Seminar Series (2022)

Posters:

- **Morrison, S.** et al. "Development of an on-chip double Bracewell nulling interferometer in the near-infrared for the CHARA array." SPIE 13627, Techniques and Instrumentation for Detection of Exoplanets XII (2025) [Access Poster](#).
- **Morrison S** et al. "Serendipitous Asteroids Discovered in the UKIRT Hemispheric Survey." American Astronomical Society Division for Planetary Sciences—Europlanet Science Congress Joint Meeting (2023) [Access Abstract](#).
- **Morrison S** et al. "The Hunt for Hot Jupiters: How We Help NASA Confirm Exoplanets." American Astronomical Society Winter Meeting (2023), Conference for Undergraduate Women in Physics at University of Iowa (2023) [Access Poster](#).

TEACHING EXPERIENCE

Teaching Assistant | Dept. of Physics & Astronomy, Univ. of California, Los Angeles

- Discussion Lead, Physics for Life Sciences Majors: Thermodynamics, Fluids, Waves, Light, and Optics (Spring 2025, Winter 2025)
- Lab Instructor, Nature of the Universe (Fall 2024)

- Student in “Teaching College Physics” (Fall 2024)

ACADEMIC SERVICE & LEADERSHIP

- **Vice President**, Exploring Your Universe (EYU) Science Fair, UCLA.
 - EYU is the largest science fair in the greater Los Angeles community. [Website](#).
- **Graduate Student Representative**, Math and Physical Sciences Council, UCLA
- **Student Educational Policy Committee**, Grinnell College Department of Physics
- **Science Community Leader**, Grinnell College Department of Physics
- **Astronomy Tutor**, Grinnell College Department of Physics
- **President**, Grinnell College Latin American Ensemble
- **Leading Member**, Gender Minorities in Physics Group

AWARDS & RECOGNITION

- SPIE Astronomical Telescopes + Instrumentation 2026 - Student Conference Support (\$1000)
- NASA Space Grant Fellowship Awardee (2026)
- AstroTech Summer School at UC Berkeley - Electronics Specialist (2025)
- National Science Foundation Research Experience for Undergraduates Grants (2023, 2022)
- Goldwater Scholarship Campus Nomination (2022)
- Diversity & Inclusion Scholarship for Association for Computing Machinery SIGACCESS Conference on Computers and Accessibility (2021)
- Twitter Scholar & STARS Ignite Cohort Member, Richard Tapia Celebration of Diversity in Computing Conference (2021)
- Grinnell College Founder’s Scholarship: four-year, \$96,000 merit award based on academic merit, extracurricular involvement, demonstrated leadership, and/or special talents (2019–2023)
- Dean’s List (2019–2023)
- National Merit Scholar (2018)

SKILLS

- **Software**: Python, C, Mathematica, IDL, Jupyter Notebook, Java, JavaScript, HTML/CSS
- **Languages**: Spanish (fluent), Brazilian Portuguese (ACTFL-certified advanced)