

EDUCATION

San Francisco State University
M.S. in Astronomy and Astrophysics
University of California, Berkeley
B.A. in Astrophysics
Sacramento City College
Full IGETC Certificate

San Francisco, CA
Expected 2026
Berkeley, CA
Awarded on Aug 2023
Sacramento, CA
Awarded on July 2021

PUBLICATIONS

- Brooks, H.; Burgasser, A.J.; Gerasimov, R.; **Alvarado III, E.**; et al., 2026, *The BONES Project: Empirical and Predicted Photometric Tools For Identifying Low-Metallicity Ultracool Dwarfs*, (In Prep.).
- Gendreau-Distler, E.G.; Bostow, K.B.; Patra, K.C.; **Alvarado III, E.**; et al., 2025; Transit Timing of the White Dwarf-Cold Jupiter System WD 1856+534, Submitted to ApJ. ([arXiv:2511.21611](https://arxiv.org/abs/2511.21611)) [[Citations](#)]
- Zheng, W.; Dessart, L.; Filippenko, A.V.; et al. (39 other co-authors including **Alvarado III, E.**), 2025, *SN 2023ixf in the Pinwheel Galaxy M101: From Shock Breakout to the Nebular Phase*, ApJ, **998**, 61. ([arXiv:2503.13974](https://arxiv.org/abs/2503.13974)) [[15 Citations](#)]
- Alvarado III, E.**; Bostow, K.B.; Patra, K.C.; et al., 2024, *Searching for Tidal Orbital Decay in Hot Jupiters*, MNRAS, **534**, 1, 800-813. ([arXiv:2409.04660](https://arxiv.org/abs/2409.04660)) [[7 Citations](#)]
- Burgasser, A.J.; Gerasimov, R.; Kremer, K.; Brooks, H.; **Alvarado III, E.**; et al., 2024, *Discovery of a Hypervelocity L Subdwarf at the Star/Brown Dwarf Mass Limit*, ApJL **971**, L25. ([arXiv:2407.08578](https://arxiv.org/abs/2407.08578)) [[6 Citations](#)]
- Gerasimov, R.; Bedin, L.R.; Burgasser, A.J.; Apai, D.; Nardiello, D.; **Alvarado III, E.**; & Anderson, J., 2024, *JWST Imaging of the Closest Globular Clusters – II. Discovery of Brown Dwarfs in NGC 6397 and Measurement of Age from the Brown Dwarf Cooling Sequence, using SANDee – a New Grid of Model Isochrones across the Hydrogen-Burning Limit*, ApJ, **971**, 65. ([arXiv:2405.01634](https://arxiv.org/abs/2405.01634)) [[13 citations](#)]
- Alvarado III, E.**; Gerasimov, R.; Burgasser, A.J.; Brooks, H.; Aganze, C.; & Theissen, C.A., 2024, *The Spectral ANalog of Dwarfs (SAND) Grid: New Model Atmospheres with Varying Chemistry for Galactic Archaeology with Ultracool Dwarfs*, Res. Notes AAS, **8**, 134. [[12 citations](#)]

RESEARCH EXPERIENCE

Graduate Research Assistant

Researcher under Prof. Eileen C. Gonzales

Aug 2024 — Present

San Francisco, CA

- I am investigating how metallicity impacts the structure and atmospheres of brown dwarfs. To do this, I have performed atmospheric retrievals using the code Brewster. I have utilized the NASA Ames supercomputer- Pleiades- as well as the San Francisco State University (SFSU) cluster, Polaris, to compute these models.
- I have utilized data from the state-of-the-art James Webb Space Telescope, specifically from the Arcana of the Ancients program.

Undergraduate Researcher

Researcher under Prof. Adam J. Burgasser and mentored by Dr. Roman Gerasimov

June 2023 — June 2024

San Diego, CA

- I computed a grid of atmospheric models of low-temperature, metal-poor Ultracool Subdwarfs (UCDs) by using proprietary PHOENIX code of these objects at various low-metallicities, surface gravities, and effective temperatures, utilizing Bridges-2, a supercomputer located in Pittsburgh, PA.
- Used the Modules for Experiments in Stellar Astrophysics (MESA) code to investigate the impact of low metallicities on the evolution of UCDs populations in the Milky Way.
- Selected as a two-year leadership scholar to do two years of fully funded STEM research under the University of California Leadership Excellence through Advanced Degrees (UC LEADS) program.

Undergraduate Researcher

Student Led Researcher mentored by Dr. Kishore C. Patra and Nickel Observer under Prof. Alexei V. Filippenko

June 2022 — Aug 2024

Berkeley, CA

- Student Led Research Project:** I led 14 students on a research project on detecting orbital decay of Hot Jupiter systems. Work was fully funded by UC LEADS.
 - Co-authored two successful telescope-time proposals for 1-m Nickel Telescope at Lick Observatory
 - Reduced and analyzed data that was collected from the 1-meter Nickel Telescope. I conducted the statistical analysis and modeled the data to investigate whether the orbits of the exoplanets were undergoing tidal decay.
- Nickel 1-Meter Observer:** Monthly overnight observer on the Nickel at Lick Observatory.
 - Successfully completed training and certification as a Nickel observer, conducting observations for 15+ nights.

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Efrain Alvarado III

Master's Student

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SKILLS & ASSISTS

Operating System	Windows OS, Mac OS, and Linux
Programming Languages	Python , MATLAB, HTML, CSS, Fortran
Libraries	NumPy, SciPy, Astropy, Astroquery, Matplotlib, emcee, Pandas, BaiscATLAS, MESA, PHEONIX
Software and Tools	AstrolImageJ, SAOImageDS9 FITS Liberator, \LaTeX , Jupyter, GitHub
High Performance Computing	PSC Bridges-2, NASA Pleiades Supercomputer, SFSU Cluster (POLARIS)

CONFERENCES

- 2025 National Society of Black Physicists and National Society of Hispanic Physicists Joint Annual Conference. Gave a 15-minute talk about my Master's research project titled "A Tale of Two Dwarfs: Unveiling J1416 A and B with James Webb Space Telescope"
- 244st American Astronomical Society Meeting. Poster presentation titled "Probing the Early History of the Milky Way with New Models of Metal-poor Brown Dwarfs". [[Poster](#)]
- 2023 Summer Research Conference (SRC) at UC San Diego. Presented a talk called "11 Probing the Early History of the Milky Way through PHOENIX/ATLAS/MESA Models of Ultracool Dwarfs," discussing atmospheric and evolutionary models for Ultracool Subdwarfs to a general audience. [[Slides](#)]
- 241st American Astronomical Society Meeting
- 2023 Koret UC LEADS Research and Leadership Symposium. Poster presentation of my work "Searching for Evidence of Tidal Orbital Decay in Hot Jupiters". [[Poster](#)]

AWARDS

- **University of California Leadership Excellence Through Advanced Degrees (UC LEADS):** A two year program nurturing future STEM leaders by identifying and empowering promising undergraduates, overcoming challenges in their academic journey to graduate school.
- UC LEADS Travel Grant
- Berkeley Scholarship
- Kazuko Walson Scholarship

COURSES TAUGHT AT SAN FRANCISCO STATE UNIVERSITY

- **ASTR 116:** Astronomy Laboratory (2 Sections in Fall 2024, 2 Sections in Spring 2025, 1 Section in Fall 2025)

NEWS

- "Lone Star State: Tracking a Low-Mass Star as it Speeds Across the Milky Way," Michelle Franklin, June 10, 2024 [[Article](#)] (This work was also seen on [CNN](#) and the [New York Times](#))