

## 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

**Aug 2024 — Present**

*Researcher under Prof. Eileen C. Gonzales*

*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

**June 2023 — June 2024**

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

*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

**June 2022 — Aug 2024**

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

*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

Website: [efrain-alvarado-iii.github.io](https://efrain-alvarado-iii.github.io)  
[github.com/efrain-alvarado-iii](https://github.com/efrain-alvarado-iii)  
[linkedin.com/in/efrainalvaradoiii](https://linkedin.com/in/efrainalvaradoiii)

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### SKILLS & ASSISTS

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

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### CONFERENCES

- 2025 National Society of Black Physicists and Nation Society of Hispanic Physicists Joint Annual Conference. Gave a 15-minute talk about my Master's reacher project titled "A Tale of Two Dwarfs: Unveiling J1416 A and B with James Webb Space Telescope" [[Slides](#)]
- 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 throughPHOENIX/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](#)]

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### 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

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### 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)

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### 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](#))