(123) 456-7890
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Efrain Alvarado III

Master's Student

Website: efrain-alvarado-iii.github.io
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Education

San Francisco State University — **San Francisco, CA**
M.S. in Astronomy and Astrophysics — *Expected 2026*
University of California, Berkeley — **Berkeley, CA**
B.A. in Astrophysics — *Awarded on Aug 2023*
Sacramento City College — **Sacramento, CA**
Full IGETC Certificate — *Awarded on July 2021*

Publications

- **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. [3 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) [4 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) [1 Citation]
- **Alvarado III, E.**; Bostow, K.B.; Patra, K.C.; *et al.*, 2024, *Searching for Tidal Orbital Decay in Hot Jupiters*, MNRAS, **534**, 1. (arXiv:2409.04660)[Citations]

Research Experience

Graduate Student Researcher — **Aug 2024 — Present**
Researcher under Prof. Eileen C. Gonzales — *San Francisco, CA*

- I conducted atmospheric retrievals of L sudwarfs from JWST Cycle 3 data. Retrievals were conducted using Brewster code on the American Museum of Natural History (AMNH) Mendel Cluster, NASA Pleiades Supercomputer, and San Francisco State University (SFSU) High-Performance Cluster.

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.
  - This work resulted in a talk at the Summer Research Conference at UC San Diego, a first-author research note, two co-authored papers, and a poster presentation at the American Astronomical Society (AAS) Conference 244.

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.
  - This work resulted in a poster at the 2023 Koret UC LEADS Research and Leadership Symposium, a talk within Prof. Filippenko's group, and a first-author paper.
- **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 10+ nights.

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Professional Experience

Student Librarian Assistant **Aug 2021 — May 2023**
University of California, Berkeley *Berkeley, CA*

- Maintained library collections, including shelving books and conducting inventory and shelf-reading projects
- Demonstrated strong communication skills in working effectively with library staff and patrons from diverse backgrounds and academic disciplines
- Helped locate information and resources for patrons.

Treasurer **Sept 2019 — Aug 2020**
Sacramento City College(SCC) Chess Club *Sacramento, CA*

- Formed the SCC Chess Club
- Drafted seed grant proposals to secure initial funding.
- Advocated the club's interests at the weekly Clubs And Events Board (CAEB) meetings, contributing to significant campus-wide club operational improvements.
- Orchestrated promotional "Chess on the Quad" events, strategically held at the heart of campus to boost club visibility.

Sales Associate **Aug 2018 — June 2021**
The Home Depot *Sacramento, CA*

- Assist customers with knowledge of paint and paint accessories at The Home Depot.
- Performed organizing, cleaning, and stocking duties.
- Coached new associates in the paint department about daily operations and procedures.

Team Member\Barista **Sept 2017 — May 2018**
Peet's Coffee and Tea *San Francisco, CA*

- Prepared and served a variety of handcrafted coffee and tea beverages.
- Engaged with customers, took orders, and cultivated a friendly cafe environment while making customer satisfaction a top priority and addressing their needs promptly.
- Maintained the cleanliness of the cafe, restocked supplies, and ensured that the equipment was in good working order.

Outreach

Python Teaching Assistant **Dec 2022 — May 2023**
Cal New Experiences for Research and Diversity in Science (NERDS) *Berkeley, CA*

- Co-instructed a weekend introductory Python workshops, including community college students, undergraduates, and graduate students with no prior Python experience.
- Designed curriculum and streamlined the software installation process for programs like Anaconda and Jupyter.

Volunteer Assistant **July 2023**
Native Like Water (NLW) – UC San Diego *San Diego, CA*

- NLW curates experiences through an Indigenous lens, focusing on conservation and cultural practice.
- Assisted in a star party at the La Jolla Reservation. Engaged by explaining celestial objects. Set up and organize telescope, and astronomical equipment to enhance the stargazing experience
- Took on the responsibility of curating a series of hands-on science experiments related to optics. Set up experiments and explained how astronomers use light to infer astronomical phenomena.

Transfer Student Representative **May 2023**
Transfer Day *Berkeley, CA*

- Acted as a representative for the transfer community within UC Berkeley's Astrophysics Department on Cal Transfer Day.
- Provided guidance and support to incoming transfer students from diverse community colleges.
- Addressed inquiries and concerns, ranging from course requirements to research opportunities and university life.

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Posters & Research Talks

- **2023 Koret UC LEADS Research and Leadership Symposium:** Poster presentation of my work "Searching for Evidence of Tidal Orbital Decay in Hot Jupiters". [Poster]
- **2023 Summer Research Conference (SRC) at UC San Diego:** I presented "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]
- **Filippenko Research Group Talk:** Presented my final findings of "Searching for Evidence of Tidal Orbital Decay in Hot Jupiters". [Slides]
- **2024 Physical science Opportunities for Women in Education & Research (POWER) Spring Retreat:** Invited to give a five-minute talk about generating new models of Ultracool Subdwarfs for Galactic Archaeology. [Slides]
- **244 AAS Conference:** Poster presentation titled "Probing the Early History of the Milky Way with New Models of Metal-poor Brown Dwarfs". [Poster]
- **Princeton Astro Coffee**: I was an invited Guest Speaker, where I shared about my final findinfs of the 'Search for Evidents of Tidal Orbital Decay in Hot Jupiters.'

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	AstroImageJ, SAOImageDS9 FITS Liberator, LaTeX, Jupyter, GitHub
High Performance Computing	PSC Bridges-2, AMNH Mendel Cluster, NASA Pleiades Supercomputer

Conferences

- 244st American Astronomical Society Meeting
- 2023 Summer Research Conference (SRC) at UC San Diego
- 241st American Astronomical Society Meeting
- 2023 Koret UC LEADS Research and Leadership Symposium
- 2022 CAL NERDS NDISTEM UC Berkeley travel grant recipient for the National Diversity in STEM (NDISTEM) conference. The conference is hosted by the Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS).

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

Courses Taught

- **ASTR 116:** Astronomy Laboratory (2 Sections in Fall 2024)

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)