

EDUCATION

University of California, Berkeley
B.A. in Astrophysics
Sacramento City College
Full IGETC Certificate

Berkeley, CA
Awarded on Aug 2023
Sacramento, CA
Awarded on July 2021

RESEARCH INTERESTS

My primary research focus lies in observational astronomy, a field that ignites my passion for exploring the mysteries of the universe. My deepest fascination lies in the study of exoplanets, brown dwarfs, and low-mass stars, as these celestial objects offer intriguing insights into planetary systems and stellar evolution. I have studied supernovae within the Filippenko group.

PUBLICATIONS

- Alvarado et al. 2023, "The Search for Evidence of Tidal Orbital Decay in Hot Jupiters", (In Prep.)
- Alvarado et al. 2024, "Evolutionary and Atmospheric Models of Ultracool Sudwarfs", (In Prep.)

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	AstrolmageJ, SAOImageDS9 FITS Liberator, \LaTeX , Jupyter, GitHub
High Performance Computing	Bridges-2

RESEARCH EXPERIENCE

Undergraduate Researcher **June 2023 — Present**
Researcher under Prof. Adam J. Burgasser and mentored by Dr. Roman Gerasimov *San Diego, CA*

- Developed new atmospheric models using PHOENIX code for studying subsolar metallicity populations in the Milky Way. These models were calculated on Bridges-2, a supercomputer based in Pittsburgh, PA. Created evolutionary models using Modules for Experiments in Stellar Astrophysics (MESA) code.
- 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 and a first-author paper (in preparation).

Undergraduate Researcher **June 2022 — Present**
Student Led Researcher and Nickel Observer under Prof. Alexei V. Filippenko *Berkeley, CA*

- Student Led Research Project:** Led 14 students on a research project on detecting orbital decay of Hot Jupiter systems. Work was fully funded by UC LEADS
 - Reduced and analyzed data that was collected from the 1-meter Nickel Telescope at Lick Observatory. 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, talk (in preparation), and first-author paper (in preparation).
- 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.

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.
- Served over 40 STEM students from diverse backgrounds

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

UC Berkeley

- 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.

POSTERS & RESEARCH TALKS

- **Koret UC LEADS Research and Leadership Symposium:** Poster presentation of my work "The Search for Evidence of Tidal Orbital Decay in Hot Jupiters"
- **Summer Research Conference (SRC) at UC San Diego :** I gave a talk about generating atmospheric models for Ultracool Subdwarfs to a general audience.
- **Filippenko Research Group Talk:** (In Preparation) Presenting my final findings of "The Search for Evidence of Tidal Orbital Decay in Hot Jupiters" before sending to the publisher.

CONFERENCES

- o 2023 Summer Research Conference (SRC) at UC San Diego
- o 241st American Astronomical Society Meeting
- o 2023 Koret UC LEADS Research and Leadership Symposium
- o 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

- o **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.
- o UC LEADS Travel Grant
- o Berkeley Scholarship

ACTIVITIES

- o Undergraduate Astronomy Society member
- o Society of Physics Students member
- o Treasurer for Chess Club at Sacramento City College