

Kazem Ayat

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Research Interests

I am in love with physics and astrophysics/astronomy. I like to participate in theory or experimental researches. My interests are but not limited to Astronomy, cosmology, biophysics, nuclear physics, atomic physics, AI physics, and plasma physics. I love to use physics and find applications in the real world. I love to add something good to this world with my physics :)

Education

University Of California: Berkeley

Berkeley, Ca

In progress bachelor's degree of Physics

Expected Graduation date: By the End of

Fall 2023

- Quantum Mechanics 1 (137A) —4 units
- Math Methods for Physics students (89) —4 units
- Analytical Mechanics (105)—4 units
- Quantum Mechanics 2 (137B)—4 units
- Instrumentational Laboratory and electronics (111A)—4 units
- Python Decal (Astron 89)—2 units
- Advanced Physics Laboratory (111B)— 3 units
- Statistical Mechanics (112) — 4 units
- Electro-magnetism and Optics (110A) — 4 units in progress
- Special Topics in Physics: Quantum field theory (151) —3 units in progress

West Valley College

San Jose, Ca

Associate degrees in Physics and Mathematics

AUG 2018 - April 2021

Research and Work Experience

University of California: Berkeley (Research at Prof. Imke de Pater Group)

Berkeley, Ca

Analyzing the Uranus' Rings

SEP 2021 - Current

- So far, my work addresses a generic way to input an Image taken from the Keck observatory in Hawaii and output a radial and azimuthal profile. It can also output a close model to the radial profile of the rings.
- Data Analysis
- Aperture Photometry
- Coding
- Fits File Masking
- **Technical Skills:** Python with Photutils, NumPy, Matplotlib, Pandas, Astroquery, astropy
- **Soft Skills:** Teamwork, Time Management, Communication, Presentation skills.

Peer Tutor for the Advanced experimental physics laboratory (Physics 111B) @ UCB

Berkeley, Ca

UC Berkeley Science Learning Center (SLC)/ Donald A. Glaser Physics 111 B Experimentation Laboratory

Sep 2023 - Dec 2021

- Been at-site tutor (UGSI) for the upper-division course of "Advanced physics laboratory (Phys 111B)" for a full semester
- Troubleshoot and aid students with technical difficulties in physics experiments.
- Teaching the students the correct approach toward the physics experiments
- Helping and guiding the students toward the data analysis and modeling procedure for the analysis portion of the labs
- Advising students in regards to lab reports
- Teaching the students the theory behind the experiments.

West Valley College— Instructional Lab Technician (Lab tech assistant)

San Jose, Ca

Physical Science Department of the West Valley College

Jan 2019 - August 2021

- The Physical science department of the West Valley College consists of 3 branches of Physics, Astronomy, and Geology. The board consists of 4 main full-time Professors.
- Designed and constructed new laboratory apparatus for physics labs and classroom demonstrations
- Created exercises for students based around new laboratory apparatus
- Assisted students with troubleshooting technical problems during physics labs
- Organized and maintained a physics stockroom (with astronomy and geology rooms)
- Setting up the labs for students
- Mini in-lab research

Trio student support service center at West Valley College

San Jose, Ca

West Valley College Academic Physics and Math Tutor / Tutors Coordinator

August 2019 - August 2021

- The Trio support center is located at West Valley college, and it supports students with educational barriers (such as low-income students, students with a disability, etc.) in ways, such as scholarships, academic tutoring, counseling, etc.
- Tutoring and teaching college-level Physics and Mathematics to college and high-school students (in-person and online).
- Academic peer counselor for college students.
- Helping and advising the students in college-level English, Chemistry, etc.
- Tutors' coordinator: coordinating, organizing the other tutors at the center with the manager.

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- Helping and advising the students in college-level English, Chemistry, etc.
- Tutors' coordinator: coordinating, organizing the other tutors at the center with the manager.
- Passed the interdisciplinary study course: Tutor training course

West Valley College Physical Science Department

San Jose, Ca

Hiring Committee's Search Member

May and June 2020

- The hiring committee of the West Valley College Physical Science Department was formed, with the goal of finding the best possible applicant for a Full-time position and a part-time position as a physics instructor/professor at West Valley College.
- Joined the hiring committee as a search member alongside 7 different college professors to find the best possible applicant for a Full-time position and a part-time position as a physics instructor/professor at West Valley College.
- Reviewed the applications of 35 applicants for the position of a full-time and part-time physics professor.
- Attended 40 hours of interviews and meetings to evaluate the applicants.
- Contributed approximately 85 hours of time to the hiring process.

Subaru Auto Repair Shop

San Jose, CA

Automotive Car Technician (Intern)

May 2018 - July 2018

- Worked as an paid intern at one of the two branches of the Subaru auto repair shop in San Jose.
- Responsibilities included fixing and maintaining cars, as well as studying the cars to learn more about the physics behind them.
- Gained hands-on experience and interacted with a variety of people.
- **Technical Skills:** Auto Repair and Maintenance
- **Soft Skills:** Attention to Detail, Time Management, Adaptability

Projects

Morse transmitter and receiver

UC Berkeley, CA

UC Berkeley

Nov 2022 - DEC 2022

- Created a circuit with many subvi's to transmit morse code using an LED.

Josephson Junction Effect Experiment

UC Berkeley, CA

UC Berkeley

Feb 2023

- Performed a full analysis of Josephson Junction Effect and performed the Analysis of the cooper pairs and quantum Jumps, and relevent discreet spacing. Reports are available per requests.

Atomic Force Microscopy and Measuring the Boltzmann constant

UC Berkeley, CA

UC Berkeley

March 2023

- Used a commercial AFM unit to perform a variety of analysis and experiments.Experiments includes F-D curve, measuring Boltzmann constant and etc. Reports are available per requests.

Rubidium Optical Pumping

UC Berkeley, CA

UC Berkeley

March 2023

- Performed the famous Nobel prize winner experiment, optical pumping, to calculate the nuclear spin values for two isotopes of Rubidium. Reports are available per requests.

Quantum Entanglement and Interference Experiment

UC Berkeley, CA

UC Berkeley

April 2023

- Observing the Quantum Entanglement and Interference Experiment. qualitatively and quantitatively.

- Developing a team-based project to simulate a foreign planetary system containing one star and five planets
- Leading and managing the team (consists of 5 members).

Skills

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|---|--|
| Python Programming | Well experienced in Python (Pandas, NumPy, matplotlib, scipy, astropy, etc) |
| LabView Programming | Well experienced in LabView programming |
| Circuit Analysis | Well-experienced in design and analysing circuits. |
| Mathematica programming language | Well-experienced in Mathematica programming language. |
| Latex | LaTeX proficiency |
| Advanced Laboratory skills | Able to use a wide range of scientific laboratory tools. Including using cryogenic equipment, and working with Oscilloscopes, Spectroscopes, function generators, amplifiers, microscopes, |
| AFM Handling | Able to use a fully functional Atomic Force Microscope and use that for various tasks and exper |
| Gwyddion AFM data processing Software | Well experienced in this image Processing and data visualization application |
| C Programming | Experienced in C programming. |
| Linux, Kali Linux | Experienced in Linux and Kali Linux |
| Java Programming | Well experienced in Java programming |
| CSS/HTML/JavaScript | Some Experiences in CSS/HTML/JavaScript. |
| SAOImage DS9 Astro image processing software | Well experienced in this image Processing and data visualization application |
| Soft Skills | Time Management, Teamwork, Problem-solving, Documentation, Engaging Presentation. |

Awards and Talks

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| UC Berkeley- Math and Physical Sciences (MPS) Scholars Research Funding Award | May 2023 |
| UC Berkeley- MPS Poster Research presentation | Agust 2023 |
| UC Berkeley- Alumni Leadership Award | Agust 2021 |
| UC Berkeley- Experimental Ac/DC Josephson junction effect Presentation | February 2023 |
| UC Berkeley- BPURS Research Award | April 2023 |
| UC Berkeley- BPURS Poster Research presentation | April 2023 |
| WVC- Carolyn B. King Scholarship | Agust 2020 |

Languages

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|-----------------|------------------------|
| English | Fluent |
| Persian | Fluent |
| Japanese | Elementary Proficiency |

References available upon request.