KEQIN YAN

Phone: (424) 324-4521
kyan233@g.ucla.com

Los Angeles
CA 90024

EDUCATION

BS **University of California, Los Angeles**, 09/*2018-06/2022*
Astrophysics Major, Philosophy Minor

RESEARCH EXPERIENCE

Endres Lab, Caltech, Pasadena, 06/2021 - 08/2021
Research Assistant, PI: Manuel Endres mendres@caltech.edu

- Implemented a Digital Micromirror Device and coded in MATLAB to establish a feedback process in order to modify a spatially Gaussian shaped laser beam to a flat-top one, with experimentally applicable final results.
- Investigating whether a universal relationship exists between point spread functions and the Digital Micromirror Device setup.

Hudson Lab, UCLA, Los Angeles, 09/2019 - Now
Research Assistant, PI: Eric Hudson eric.hudson@ucla.edu

- Designed optical cavities to stabilize lasers for trapped-ion experiments, mainly for the experiment that investigates Barium-133 qubits.
- Designed and built a laser box for encapsulating laser paths and protecting them from the environmental impacts using Autodesk Fusion 360 and Autodesk Inventor.
- Built laser light paths and wrote software and interfaces in Python to achieve a convenient access for corresponding devices.

Jayich Lab, UCSB, 06/2019 - 09/2019
Research Assistant, PI: Ania Jayich ania@physics.ucsb.edu

- Planned and built a small Ultra-high Vacuum Chamber with Solidworks to test compatibility of experiment setups.
- Used Atomic Force Microscopes to explore the etching temperature and surface termination techniques for diamonds.
- Used Rabi Oscillations and Hahn echo pulse sequence to investigate the decoherence time of Nitrogen-Vacancy center qubits.
- Designed and built a temperature detector that automatically uploads the data using Raspberry Pi.

Upsilon Lab, UCLA, 03/2019 - 06/2021
Manager and Participant

- Lead weekly workshops for a group of peers to design software with Python and CAD, aiming at facilitating optics designs.
- Used Monte Carlo algorithm in Python to analyze 3D Compton Scattering Simulations.

Teaching and Outreaching

Los Angeles Math Circle, 10/2019 - 06/2021
Student Tutor
Lead weekly problem solving meetings for elementary and middle school students who are eager to learn mathematics and develop a related academic career.

Bruin Necessities, 12/2020 - 04/2021
Participant
Participate in weekly meetings to advocate for free menstrual hygiene products initiatives.

FUTURE of Physics workshop at Caltech, 2020
Participant
Participated in discussions with Caltech faculty, panels on research areas as well as on graduate student life.

Conference for Undergraduate Women in Physics, 2021
Participant
Participated in panels, networking, and discussions that helped undergraduate women continue in physics.

Honors and Awards

Caltech Summer Undergraduate Research Fellowship, 2021
A selective Caltech summer program that selects undergraduate researchers once a year to support them with research opportunities and scholarships during the summer.

Undergraduate Research Scholar, 2020-2021
A selective UCLA program that selects undergraduate researchers once a year to support them through offering research courses and scholarships. It is also a more selective continuation of the Undergraduate Research Fellow Program.

Undergraduate Research Fellow, 2020
A selective UCLA program that supports students to conduct research with a faculty mentor through research courses and scholarships.

California Institute for Quantum Emulation (CAIQuE) Grant for Undergraduate Research, 2019
It supports undergraduates from University of California (UC) to work at another UC campus to conduct research with a group that participates in CAIQuE during the summer.

UCLA College Honors, 2018
The highest academic recognition the College of Letters and Science confers on its undergraduate students.

Relevant Coursework by 2021 Spring

Undergraduate: Quantum Physics (Physics 115A-115C), **Analytical Mechanics** (Physics 105A, 105B), **Electricity and Magnetism** (Physics 110A, 110B), **Linear Algebra** (Math 33A, 115A), **Elementary Particle Physics** (Physics 126), **Atomic Physics** (Physics 123), **Radiation and Fluids in Astrophysics** (Astronomy 117), **Stellar Systems and Cosmology** (Astronomy 140), **Statistical Mechanics and Its Application to Astrophysics** (Astronomy 115), **Modern Physics Laboratory** (Physics 18L)
Graduate: Quantum Programming Languages (Computer Science 239)

Presentations

Undergraduate Research Poster Day at UCLA, 2020
Presentation: Investigation of Ba-133 as a Qubit: Building a Laserbox and Beyond

Undergraduate Research Poster Day at UCLA, 2021
Presentation: Investigation of Ba-133 as a Qubit: Cavity Project

Skills

Programming: Python, MATLAB, JAVA

Lab Skills: Optics Alignment, Repair and Polish FC/APC Optical Fibers, Ultra-High Vacuum Chamber, Raspberry Pi

Applications: Autodesk Inventor, Autodesk Fusion 360