# Conner Chu

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## Education

**University of California, Berkeley** August 2023 – May 2027
*Bachelor of Arts in Physics and Applied Mathematics* *GPA: 3.82/4.00*
**Coursework:** Classical Mechanics and Relativity, Electromagnetism and Optics, Quantum Mechanics, Multivariable Calculus, Differential Equations, Discrete Mathematics, Abstract Linear Algebra, Abstract Algebra

## Experience

**Max Planck Institute for Gravitational Physics (AEI)** June 2025 – Present
*Researcher in the Continuous Gravitational Waves Group* *Hannover, Germany*
- Quantified neutron star proper motion effects on LIGO O3 continuous gravitational wave searches, deriving an upper bound on the number of sky grid points traversed as a function of stellar velocity and distance.
- Designed and parallelized a matched filter injection pipeline to quantify template-mismatch and SNR loss under neutron star proper motion using hierarchical stack-slide searches via the Global Correlation Transform (GCT).

**Lawrence Berkeley National Laboratory** September 2024 – May 2025
*Researcher in the Mu2e Group* *Berkeley, CA*
- Developed and applied a per-channel gain calibration to straw-tracker energy deposition values, shifting simulated data closer to Monte Carlo truth by ∼3% and reducing standard deviation by ∼20%.
- Authored and maintained modular diagnostic scripts to automate ROOT file ingestion and orchestrate power spectral density analysis across all detector planes.

**UC Berkeley College of Chemistry** June 2024 – July 2024
*Researcher in the Leone Group* *Berkeley, CA*
- Performed cross-polarized attosecond transient extreme ultraviolet absorption spectroscopy to investigate anisotropic phonon dynamics in tellurium, a semiconductor relevant to next-generation nanodevices.
- Applied singular value decomposition (SVD) and Fourier transform (FFT) analyses on time-resolved absorption data to isolate and characterize coherent phonon modes.
- Machined precision structural support components for laser beam stabilization using a mill, lathe, and drill press, ensuring alignment accuracy and mechanical stability.

**Berkeley Undergraduate Astronomy Society** September 2023 – Present
*Telescope Crew* *Berkeley, CA*
- Set up and operated several Cassegrain and Newtonian telescopes during Sidewalk Astronomy and Star Parties, where students and the public have the opportunity to view celestial objects.
- Engaged visitors with accessible explanations of lunar features, star clusters, and planetary phenomena, enhancing community interest in observational astronomy.

**Neurotech at Berkeley** September 2023 – July 2024
*Wetware Computing Division* *Berkeley, CA*
- Supported the planning phase of neural culturing by identifying and evaluating materials, growth media, and sterilization protocols needed to sustain dissociated rat cortical neurons on a microelectrode array.
- Studied foundational literature on the Free Energy Principle to understand its role as a unifying theory of brain function and its application in guiding the behavior of biological neural networks.

## Technical Skills

**Life Science**: Pipetting, Serial Dilution, Vacuum Filtration, Bacterial Culture, Spectrophotometry, Titration
**Physical Science**: Vertical Bandsaw, Horizontal Bandsaw, Drill Press, Lathe, Mill, Oscilloscope, Function Generator
**Computer Science**: Linux, Python (NumPy, SciPy, Astropy, Matplotlib, Uproot), Java, JavaScript, HTML/CSS

## Honors

Congressional Silver Medal Award, CyberPatriot Platinum and Gold State Qualifier, 2nd Place in California State Personal Finance Challenge (x2), AP Scholar with Distinction (x3)