

Andreas Betz

andreasbetz@berkeley.edu – 310.251.6561

Berkeley, CA / Los Angeles, CA

Fueled by a passion for national security, I seek to channel my physics intuition, problem-solving skills, and relentless work ethic into a dynamic, fast-paced environment dedicated to innovation and agility.

EDUCATION

University of California, Berkeley

September 2023 – May 2027

B.A. in Physics, Minor in Aerospace Engineering

GPA: 3.80 — Relevant Coursework: Honors Quantum Mechanics, Honors Electricity and Magnetism, Honors Classical Mechanics, Honors Laboratory, Foundations of Data Science, Linear Algebra

EXPERIENCE

Mu2e Engineering Intern

August 2025 – Present

Lawrence Berkeley National Laboratory

Berkeley, CA

- Designed and machined precision fittings for next-generation mylar straw tracker technology, ensuring tight tolerances for particle detection accuracy in the Mu2e experiment.
- Developed CAD models and manufacturing protocols for straw assembly components, optimizing designs for machinability while meeting structural and alignment requirements.

STAR (Space Technology and Rocketry at Berkeley)

August 2025 – Present

Guidance, Navigation & Control Team

Berkeley, CA

- Used first-principles fluid/thermodynamics to program pressure-regulated feed system, thrust chamber, and regenerative cooling plant functions to generate look-up tables enabling the vehicle controller to execute closed-loop thrust throttling.
- Modeled the thermodynamic, fluid dynamic, and structural properties of a combustion chamber to determine the vehicle's optimal thrust chamber geometry.

Engineering Intern

May 2025 – July 2025

STAX Engineering

Long Beach, CA

- Designed and prototyped fail-safe locking mechanism for SPUDS, extending SPUD wire operational lifespan by approximately 2 years while boosting safety. Scaled fleet-wide for risk mitigation.
- Upgraded FTIR sensors for precise pre/post-emission analysis, achieving 100% CARB compliance since launch.

Filippenko Supernovae Research Group

January 2024 – Present

UC Berkeley Physics Department

Berkeley, CA

- Led recruitment, training, and management of 16 undergraduate researchers to collect all photometry data (approx 32,000 exposures) for the UC Berkeley Astrophysics department.
- Analyzed Nickel telescope data on SN 2023ixf to refine the Hubble constant in a peer-reviewed publication.

Engineering Intern - LTREX Group

April 2023 – September 2023

LIGO Laboratory, Caltech

Pasadena, CA

- Validated a proprietary beam tube baking technique for LIGO beam tubes.
- Engineered power delivery system with integrated sensors for uniform beam tube heating, incorporating Python-based real-time thermal hotspot detection.

PROJECTS

Regenerative Cooling Liquid Rocket Engine

Fall 2025

Programmed a simulation from first principles to derive optimal liquid engine chamber geometry. Then, designed the feed system and thrust chamber to be manufactured soon.

Kalman Filter for Rocket Guidance Systems

Winter 2025

Developed 34-state Kalman filter for real-time Bayesian rocket trajectory estimation (position, velocity, acceleration, heading, attitude); integrated into STAR's autonomous flight control system.

Supersonic Tennis Ball Cannon

Ten Year Passion Project

Designed and manufactured an automated 15-foot-long propane-propelled supersonic tennis ball cannon.

Portfolio: andreasbetz05.github.io/andreas_betz_portfolio

SKILLS

Software: Solidworks/Onshape, Python (SciPy, PyTorch, Matplotlib), Mathematica, LaTeX, KiCad, Git

Hardware/Fabrication: Vacuum systems, machining (lathes, mills, grinders), 3D printing, sensor integration (FTIR, thermal)

Professional: Teaching/mentoring, team leadership (16+ members), collaboration