

Ethan Fleming

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EDUCATION

Middlebury College, Middlebury, VT | *Bachelor of Arts: Physics Major* | 3.82/4.00

May 2024

- Senior thesis on ion trap imaging system design and neutral ytterbium spectroscopy
- Physics Coursework:
 - Newtonian Physics; Computational Physics; Electricity and Magnetism; Relativity and Quantum Physics; Thermodynamics, Fluids, Waves, and Optics; Quantum Physics Applications; Applied Math for the Physical Sciences; Intermediate Electromagnetism; Experimental Physics; Quantum Mechanics; Analytical Mechanics; General Relativity; Statistical Mechanics
- Math Coursework:
 - Calculus II, Linear Algebra, Euclidean and Non-Euclidean Geometries
- Graduated *summa cum laude* with physics honors

EXPERIENCES

NIST Ion Storage Group, Boulder, CO | *Professional Research Assistant*

January 2026-Present

- Associate researcher in the National Institute of Standards and Technology (NIST) Ion Storage group through CU Boulder's PREP program, assisting with the group's ongoing research efforts, particularly in the field of quantum information processing
- Current projects include Zemax optical design and imaging system construction, designing and constructing a vibrationally isolated mount for a cryostat, and assisting in the market research and procurement of hardware for new apparatuses
- Attends talks at NIST and the CU Boulder campus for continued education in the broader field of experimental AMO physics

Middlebury College Ion Trapping Lab, Middlebury, VT | *Trapped Ion Research Scientist*

May 2022-September 2025

- Helped build out Middlebury College's ion trap apparatus, completing three major projects including potential simulations in Mathematica, imaging system design, and neutral Yb spectroscopy, leading to several poster presentations and two theses
- Presented a poster on thesis work with advisor at the North American Conference on Trapped Ions (NACTI) in August 2024
- Lab experience includes: vacuum chambers, laser tuning and alignment, fiber optics, optomechanical design, Python and Mathematica data analysis, soldering/electrical testing, oscilloscopes, wavemeters, CAD modeling, and technical drawing
- Following graduation, worked remotely on trap simulations for the continued development of the lab

Newtonian Physics Lab Teaching Assistant, Middlebury, VT | *Student Employee*

Sep 2021-May 2022, February-May 2024

- Helped Middlebury College students enrolled in the Newtonian Physics lab by answering questions and guiding students through concepts during lab sessions
- Graded lab reports for the class on a weekly basis during the semester

University of South Florida 2021 REU Program, Tampa, FL | *Undergraduate Researcher*

May-August 2021

- Worked in USF's Computational Biophysics Lab on a project that involved using Python to model Ca^{2+} -mediated spontaneous ATP release by neurons
- Presented work at the 2022 American Physical Society (APS) March Meeting

HONORS

- Graduated *summa cum laude* with physics honors from Middlebury College, May 2024
- Selected by USF's judges to represent the university at the 2022 APS March Meeting in Chicago and present a poster for the REU project
- Nominated by faculty to participate in Spencer Prize in Oratory, a public speaking competition at Middlebury College, December 2020

SKILLS AND INTERESTS

- Proficient in Python and Mathematica | Autodesk Inventor | Zemax OpticStudio | Data Analysis | Science Communication
- Passionate and excited about creative pursuits such as acting, writing, video game design, and intersections thereof