

Sophia Gaal

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EDUCATION

Colorado College

Bachelor of Arts, Comprehensive Physics

Expected Graduation of May 2025, GPA: 3.77

Relevant Courses: Classical Mechanics, Advanced Electromagnetic Theory, Thermal Physics, Quantum Mechanics I & II

RELEVANT WORK EXPERIENCE

Quantitative Reasoning Center Tutor

Peer Tutor, Colorado College

February 2023 – Present

- Tutor an average of 6 peers weekly in calculus and introductory physics, providing personalized support during 2-hour drop-in sessions across 2–3 shifts each week.

RESEARCH EXPERIENCE

Research Experience for Undergraduates (REU).

June 2024 – August 2024

Student Researcher, Stanford University

- Selected for a highly competitive 8-week research program, earning 1 of 19 positions over 300 applicants.
- Investigated three meteorites as possible paleomagnetic recorders of dynamo activity from their parent bodies.
- Conducted laboratory experiments including paleomagnetic analysis, stepwise demagnetization, magnetic hysteresis measurements, and low-temperature magnetic studies.
- Presented findings in 2 posters at the American Geophysical Union (AGU).

Course-based Research Experience for Undergraduates (REU)

May 2023 - June 2023

Student Researcher, Colorado College and The University of Arizona

- Studied the Amundsen Sea drill cores from Antarctica to reveal West Antarctic Ice Sheet retreat patterns by studying diatom and IRD records across glacial cycles.
- Trained in mounting, imaging, and spot picking of zircon for geochronology at the Arizona Laser Chron Center

SKILLS

Programming: familiarity with Python, LaTeX, Mathematica

Laboratory Proficiencies: Scanning Electron Microscopy (SEM), energy dispersive spectroscopy (EDS), backscattered electron (BSE) and cathodoluminescence, laser ablation inductively coupled plasma mass spectroscopy (LA-ICP-MS), 2G Magnetometer, MFK2 Kappabridges

Software: Microsoft Suite (Word, Excel, PowerPoint)

PROJECTS

Senior Capstone, Colorado College

August 2024 – May 2025

- Researched and self-taught electromagnetic wave propagation through ice, laying the foundation for ice-penetrating radar applications in glaciology and climate research. Authored an upper-undergraduate-level paper on the physics of ice-penetrating radar.
- Delivered a 30-minute senior capstone presentation to the physics department, presenting to undergraduate students, peers, and professors.

Electronics Course, Colorado College

November 2023 – December 2023

- Built a 3-bit bidirectional synchronous counter system capable of converting Binary-Coded Decimal (BCD) to decimal output, displayed via a seven-segment display.
- Gained expertise in circuit design principles for counters, demonstrating a comprehensive understanding by delivering a presentation on bidirectional counter circuit behaviors.

ACTIVITIES

Member, Asian Student Union

- Participate in cultural events and meetings, an affinity group for Asian American identifying students.

Member, GEM in STEM

- Engage in monthly hard skills STEM workshops and activities, a space and community for gender minorities in STEM.