

Charlie Ruppe

Education

2022-2026 (*expected*)

Carleton College

Bachelor of Arts, Mathematics: Cumulative GPA: 3.73/4.0 Major GPA: 3.97/4.0

Relevant Coursework: Advanced Linear Algebra, Computational Mathematics, Algebraic Geometry, Programming Languages, Abstract Algebra, Topology, Real Analysis II: Measure Theory, Intro to Computer Graphics.

September 2024-December 2025

Budapest Semesters in Mathematics

Graduated with Honors

Relevant Coursework: Quantum Logic and Quantum Probability, Functional Analysis, Commutative Algebra and Algebraic Geometry, Conjecture and Proof

Research Experience

June 2025-August 2025

International Commutative Algebra REU Research on binomial edge ideals with faculty from University of Nebraska-Lincoln at Centro de Investigación en Matemáticas (CIMAT) in Mexico. Wrote and animated an expository video here. Selected to present at Joint Mathematics Meetings. arxiv preprint (2025).

June 2024-August 2024

Geometric Number Theory Research with Dr. Corey Brooke

Research on organizing integer solutions of quadratic forms as trees parameterized by matrix representations of free groups. Delivered a 25-minute presentation on our results to our summer research peers. Manuscript in preparation.

June 2023-June 2024

Mesoscale Magnetic Research with Dr. Barry Costanzi in the Physics Department at Carleton College Modeled energy landscapes of 250nm permalloy dots in Golang/Python. Implemented system for managing simulations using Github. Assembled and operated our sputtering system, for depositing metal features used in experiments. Processed samples, wrote LabVIEW code for measurement taking. Used a scanning electron microscope to image our samples for computer simulations. Results given in a poster session: "Magnetic Configurations in Mesoscale Magnetic Dots" Student Research and Internship Symposium. Carleton College, Northfield, MN, October 2023.

Teaching Experience

September 2023-June 2024

Math Teaching Assistant/Grader at Carleton College

Lead collaborative study sessions for Calculus II and graded for Computational Mathematics (in Julia).

Activities

September 2023-current

President of Carleton College Problem Solving Club

- Competition Math preparation (eg. for Putnam and regional competitions)
- Compile problems, guide, and organize meetings
- President since September 2023, member since 2022.

Relevant Skills

- Vulkan, OpenGL, Python, Julia, MATLAB, Mathematica, LabVIEW, C, C++, and Java.
- SEM (electron microscope).
- Intermediate German
- Extracurriculars: I swim and dive for my college's varsity team, and am the RA for the Culinary Interest House.

Other Experience

September 2025-June 2026

Resident Assistant at Carleton College

Act as a Peer Leader on campus, exemplifying the standards and expectations of the college as well as being a resource for conflict mediation, first aid, and Title IX compliance.