Northfield, Minnesota
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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. Paper in preparation. Talk abstract submitted to Joint Mathematics Meetings. Wrote and animated an expository video here.

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. Overseen by Dr. Corey Brooke.

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.