

# Robert Sargent

## Curriculum Vitae

College Park, MD, USA | [rsargent@umd.edu](mailto:rsargent@umd.edu) | [rsargentmath.github.io](https://rsargentmath.github.io)

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### OBJECTIVE

Seeking a Ph.D. in mathematics

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### EDUCATION

University of Maryland, College Park, MD

**Bachelor of Science, Mathematics**

**May 2023**

Minor: Chinese

#### Relevant Coursework

- Grad courses: Abstract Algebra I and II, Real Analysis I, Lie Groups I, Mathematical Logic I
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### SKILLS

- Python (NumPy), JavaScript, Godot Engine
  - LaTeX typesetting, Image editing (Paint.net, Inkscape), Video editing (Sony Vegas)
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### PREPRINTS

**Minimum-Distortion Continuous Cartograms by Numerically Optimized Meshes** **November 2024**

*arXiv:2411.17129*

- Developed a new optimization method for creating cartograms (maps with smooth distortion to highlight population and other data)
- Used JSON data and Python to create and render cartograms

**A Gasket Construction of the Koch Snowflake and Variations**

**April 2024**

- Submitted, pending approval
  - Described a new construction of the Koch snowflake that gives rise to a continuous family of fractals
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### TALKS

**The Banach–Tarski Paradox** *Directed Reading Program, University of Maryland*

**May 2023**

- Summarized the proof of the Banach–Tarski paradox

**Intro to Geometric Algebra** *Directed Reading Program, University of Maryland*

**December 2022**

- Described the use of geometric algebra to represent  $n$ -dimensional rotations
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### OTHER RESEARCH

**4D Geometry Project**

**July 2022 – August 2023**

- Used Godot Engine to test implementation of four-dimensional geometry in code
  - Learned geometric algebra for representing and manipulating 4D rotations
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### TEACHING EXPERIENCE

**Undergraduate Tutor** *Math Dept, University of Maryland*

**September 2021 – Present**

- Tutor 2–4 students per day on 100- and 200-level math courses
- Explain difficult fundamental concepts, enabling them to find the answers themselves
- Build some students' understanding over multiple sessions

**Grader** *Math Dept, University of Maryland*

**February 2021 – June 2021**

- Graded assignments for MATH406: Introduction to Number Theory, a class of 30+ students
- Evaluated students' proofs and explained where exactly their logic failed or succeeded
- Employed my knowledge of the course material and proof techniques to pinpoint issues in students' logical arguments