Robert Sargent

Curriculum Vitae

College Park, MD, USA
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EDUCATION

PhD Program, Mathematics, *University of Maryland, College Park (UMD)* **August 2025 – Present**
Graduate Math Coursework, *UMD* **August 2023 – May 2025**
Bachelor of Science, Mathematics, *UMD* **May 2023**
Minor: Chinese

PUBLICATIONS

Minimum-Distortion Continuous Cartograms by Numerically Optimized Meshes **October 2025**
doi.org/10.1080/23729333.2025.2545175 | arXiv:2411.17129 | 26 pages

- 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

PREPRINTS

A Gasket Construction of the Koch Snowflake and Variations **February 2025**
arXiv:2502.00815 | 15 pages | Submitted, pending approval

- Described a new construction of the Koch snowflake that gives rise to a continuous family of fractals with rectangular symmetry

TALKS

The Banach–Tarski Paradox *Directed Reading Program, UMD* **May 2023**

- Summarized the proof of the Banach–Tarski paradox

Intro to Geometric Algebra *Directed Reading Program, UMD* **December 2022**

- Described the use of geometric algebra to represent n-dimensional rotations

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

TEACHING EXPERIENCE

Graduate Teaching Assistant *Math Department, UMD* **September 2025 – Present**

- Teach two discussion sections of Calculus III, explaining topics based on student questions
- Provide intuition and reasoning behind course concepts to deepen students' understanding
- Write and administer quizzes; grade quizzes and exams

Undergraduate Tutor *Math Department, UMD* **September 2021 – May 2025**

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

Grader *Math Department, UMD* **February 2021 – June 2021**

- Graded proof-based assignments for MATH406: Introduction to Number Theory

SKILLS

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