ANTHONY DENDER

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Citizenship: United States and Croatia

Research Interests:
Geometric group theory and its connections to low-dimensional topology and metric geometry, with particular interests in rigidity phenomena and homological methods in group theory.

Education

University of Cambridge, Girton College *2025-2026*

- MASt in Mathematics (Part III of the Mathematical Tripos)
- Essay Topic: Poincaré Duality Groups (supervisor: Monika Kudlinska)
- Courses attended:
    - Michaelmas: *Algebraic Topology, Algebraic Geometry, Category Theory, Commutative Algebra*
    - Lent (anticipated, some subset of these): *Geometric Group Theory, Coxeter Groups, Knots and Knot Concordances, Elliptic Curves, Homological Algebra (non-examinable), Topics in Infinite Groups (non-examinable)*

New York University, New York, NY *2021-2025*

- Honors Major in Mathematics, Major in French, Minor in Computer Science
- GPA: 3.89/4.00
- Presidential Honors Scholar at the College of Arts and Sciences
- Studied at NYU Paris and Paris Cité University for the Spring 2024 semester

Magna cum laude

The Park School of Baltimore, Baltimore, MD *Graduated 2021*

Research Experience

Research Project in Metric Geometry *Fall 2024 - Spring 2025*

Independent study course with Professor Efe Ok on the topic of metric geometry. Mainly following the texts of Bridson & Haefliger and Petrunin, investigated a particular way in which one could extend concepts in metric geometry (e.g. CAT(k) spaces) into settings in which geodesics in a given metric space are sparse or nonexistent.

Research Project in Topological Order Theory *Summer 2024 - Fall 2024*

Received a grant to participate in NYU's summer research program for undergraduates (SURE), with a project entitled "Order-Embeddability of Topological Posets into Hyperspaces using Non-Canonical Embeddings". Work involved extending the results of a paper by Gerald Beer and Efe Ok on the topic of the existence of topological order-embeddings of topological posets into their hyperspaces.

Talks

"Undergeodesics", Part III Student Seminar *December 2025*

University of Cambridge

Presented as part of the Part III student seminar series on the topic of extending concepts in metric geometry to settings in which geodesics are sparse or nonexistent.

"Order-Embeddability of Topological Posets into Hyperspaces using Non-Canonical Embeddings", SURE Research Presentation *October 2024*

New York University

Presented the results of a Summer 2024 research project investigating the conditions under which there exists a topological-order embedding of a given topological poset into its hyperspace.

Reading Groups

Algebraic Geometry Seminar (Hodge Theory) *Fall 2024*

Participated in a small student seminar covering Hodge theory, following the text *Hodge Theory and Complex Algebraic Geometry I* by Claire Voisin.

Algebraic Geometry Seminar (Varieties) *Fall 2023*

Participated in a small student seminar on classical algebraic geometry, following the text *Basic Algebraic Geometry 1: Varieties in Projective Space* by Igor Shafarevich.

Optimal Transport Seminar *Spring 2023*

Worked with a small group of mathematics graduate students and advanced undergraduates in an independent reading group/seminar on the topic of Optimal Transport. The goal of the seminar was to read, discuss, and present about Cédric Villani's text "Topics in Optimal Transportation".

Employment History

Grader, Differential Geometry and Topology *January-May 2025*

New York University

- Course grader for the Differential Geometry (MATH-UA 377) and Topology (MATH-UA 375) undergraduate courses at New York University.

Transformational Computing Intern, Device Theory Team

Northrop Grumman Corporation *June-August 2023*

- Used representation and operator theory to increase the capabilities of simulations of quantum circuit elements. Worked in particular with operator representations of various matrix Lie algebras.

Transformational Computing Intern

Northrop Grumman Corporation *June-August 2022*

- Worked on developing meshing algorithms for 3D modeling of superconducting electronics.

- Implemented a system for streamlining the process of displaying 3D models of chip data.

Teaching Assistant
Johns Hopkins Engineering Innovation *June-August 2021*
- Worked with the instructor and assistant instructor to plan classes, help students, and grade assignments.
- Topics taught included physics, programming, statics, basic statistics, and chemistry, among others, with a general focus on applications to engineering.

Honors / Awards

- Dean's List, New York University (2021-2025)
- Dean's Undergraduate Research Fund (DURF) grant recipient (2023)
- Summer Undergraduate Research Experience (SURE) grant recipient (2024)
- Department of French Literature, Thought and Culture French Award (2023-2024)

Additional Skills

- Proficiency in LaTeX
- Intermediate knowledge of Python and Java
- Basic knowledge of MATLAB, Lean, and R
- Professional working proficiency in French