

Kenneth McCabe

Northeastern University, Department of Mathematics, Boston, MA
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Research Interests

Topological data analysis, computational geometry and topology, persistent homology.

Education

PhD in Mathematics, Northeastern University, Boston, MA 2024–2029 (expected)

Advisor: José A. Perea

MA in Mathematics, University at Albany, SUNY, Albany, NY 2022–2024

Advisor: Michael Lesnick

GPA: 3.94

BA in Mathematics, University at Albany, SUNY, Albany, NY 2020–2022

Minor: Music

Dean's List (3 semesters)

Preprints

2. M. Lesnick and **K. McCabe**. *Sparse Approximation of the Subdivision-Rips Bifiltration for Doubling Metrics*. arXiv:2408.16716.

1. M. Lesnick and **K. McCabe**. *Nerve Models of Subdivision Bifiltrations*. arXiv:2406.07679.

Teaching

Northeastern University (Teaching Assistant)

MATH7234 Optimization & Complexity Spring 2026

MATH7241 Probability 1 Fall 2025

MATH1341 Calculus for Science & Engineering Summer 2025, Summer 2026

MATH4571 Advanced Linear Algebra Spring 2025

MATH1231 Calculus for Business & Economics Fall 2024

University at Albany, SUNY (Teaching Assistant)

Precalculus, Calculus I & II, Elementary Statistics Fall 2023 – Spring 2024

University at Albany, SUNY (Student Grader)

AMAT584 Topological Data Analysis II Spring 2023

Presentations

Invited Talks

Nerve Models of the Subdivision-Rips Bifiltration Mar. 2025

AMS Spring Southeastern Sectional Meeting, Clemson, SC

Nerve Models of the Subdivision-Rips Bifiltration Oct. 2024

AMS Fall Eastern Sectional Meeting, Albany, NY

Contributed Talks & Posters

<i>Wasserstein Stability of the Nerve Map (Poster)</i> ICERM, Brown University, Providence, RI	May 2026
<i>The Shape of Data: An Introduction to Persistent Homology</i> NEU Graduate Student Seminar, Boston, MA	Apr. 2026
<i>Sparse Approximation of the Subdivision-Rips Bifiltration for Doubling Metrics</i> Applied Topology in Albany (ATiA) Seminar, Albany, NY	Nov. 2024
<i>Interleavings and Stability of Persistent Homology</i> Summer School on TDA & Geometric Invariant Theory, Montréal, QC	June 2024
<i>Nerve Models of Subdivision Bifiltrations</i> UAlbany Graduate Student Seminar, Albany, NY	Apr. 2024
<i>Shellability: Connection Between Topology and Combinatorics (poster)</i> UAlbany Showcase Day, Albany, NY	Apr. 2024
<i>Computability of the Subdivision-Rips Bifiltration</i> UAlbany Showcase Day, Albany, NY	Apr. 2023

Service

External Reviewer, <i>ICALP 2026</i>	2026
Referee, <i>Homology, Homotopy, and Applications</i>	2025

Conference and Workshop Participation

Computational Persistence 2025 University at Albany, SUNY, Albany, NY	Oct. 2025
Graduate School on Configuration Spaces Fields Institute, Toronto, ON (online)	July 2025
Computational Persistence 2023 Purdue University, West Lafayette, IN (online)	Sep. 2023
Randomness in Topology and its Applications Institute for Mathematical and Statistical Innovation, Chicago, IL	Mar. 2023
Joint Mathematics Meetings (JMM) Boston, MA	Jan. 2023
Computational Persistence 2022 Purdue University, West Lafayette, IN (online)	Oct. 2022

Memberships

American Mathematical Society	2023–Present
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