

Kenneth McCabe

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

Topological data analysis, (multiparameter) persistent homology, computational topology.

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

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

Preprints

K. McCabe. *Lower Bounds for Approximating the Vietoris–Rips Filtration.* arXiv:2607.06524.

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

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

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

Wasserstein Stability of the Nerve Map (Poster) May 2026
ICERM, Brown University, Providence, RI

The Shape of Data: An Introduction to Persistent Homology Apr. 2026
NEU Graduate Student Seminar, Boston, MA

Sparse Approximation of the Subdivision-Rips Bifiltration for Doubling Metrics Nov. 2024
Applied Topology in Albany (ATiA) Seminar, Albany, NY

Interleavings and Stability of Persistent Homology June 2024
Summer School on TDA & Geometric Invariant Theory, Montréal, QC

Nerve Models of Subdivision Bifiltrations Apr. 2024
UAlbany Graduate Student Seminar, Albany, NY

Shellability: Connection Between Topology and Combinatorics (Poster) Apr. 2024
UAlbany Showcase Day, Albany, NY

Computability of the Subdivision-Rips Bifiltration
UAlbany Showcase Day, Albany, NY

Apr. 2023

Teaching

Northeastern University (Teaching Assistant)

MATH7234 Optimization & Complexity

Spring 2026

MATH7241 Probability 1

Fall 2025, Fall 2026

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

Service

Organizer, Northeastern Graduate Student Seminar

Fall 2026

External Reviewer, *SODA 2027*, *ICALP 2026*

Referee, *Homology*, *Homotopy*, and *Applications*

2025

Conference and Workshop Participation

Computational Persistence 2025

Oct. 2025

University at Albany, SUNY, Albany, NY

Graduate School on Configuration Spaces

July 2025

Fields Institute, Toronto, ON (online)

Computational Persistence 2023

Sep. 2023

Purdue University, West Lafayette, IN (online)

Randomness in Topology and its Applications

Mar. 2023

Institute for Mathematical and Statistical Innovation, Chicago, IL

Joint Mathematics Meetings (JMM)

Jan. 2023

Boston, MA

Computational Persistence 2022

Oct. 2022

Purdue University, West Lafayette, IN (online)

Last updated: September 29, 2026