

# Kenneth McCabe

Northeastern University, Department of Mathematics, Boston, MA  
mccabe.ke@northeastern.edu kenmccabe.net

## Research Interests

---

Topological data analysis, multiparameter persistence, persistent (co)homology, computational geometry and 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

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*. Preprint, 2024. arXiv:2408.16716.
1. M. Lesnick and **K. McCabe**. *Nerve Models of Subdivision Bifiltrations*. Preprint, 2024. arXiv:2406.07679.

## Teaching

---

### Northeastern University (Teaching Assistant)

MATH7241 Probability 1	Fall 2025
MATH1341 Calculus for Science & Engineering	Summer 2025
MATH4571 Advanced Linear Algebra	Spring 2025
MATH1231 Calculus for Business & Economics	Fall 2024

### University at Albany, SUNY

TA & Tutor, Precalculus, Calculus I & II, Elementary Statistics	Fall 2023 – Spring 2024
Grader, AMAT 584: Topological Data Analysis II	Spring 2023

## Presentations

---

### Invited Talks

<i>Nerve Models of the Subdivision-Rips Bifiltration</i>	Mar. 2025
AMS Spring Southeastern Sectional Meeting, Clemson, SC	
<i>Nerve Models of the Subdivision-Rips Bifiltration</i>	Oct. 2024
AMS Fall Eastern Sectional Meeting, Albany, NY	

## Seminar Talks

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

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

## Contributed Talks & Posters

*Interleavings and Stability of Persistent Homology* June 2024  
Summer School on Topological Data Analysis & Geometric Invariant Theory, Montréal, QC

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

*Computability of the Subdivision-Rips Bifiltration* Apr. 2023  
UAlbany Showcase Day, Albany, NY

## Workshops and Conferences

---

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)

## Service

---

Referee, *Homology, Homotopy, and Applications* (1 report) 2025

Member, American Mathematical Society 2023–Present