

Porter Morgan

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Education

2020-Present **University of Massachusetts Amherst**

- Ph.D. student in Mathematics
- Advisor: Inanc Baykur
- Expected graduation May 2026
- GPA: 3.97

2014-18 **Kenyon College**

- B.A. in Mathematics and Classics
- GPA: 3.63

Awards

2025 Graduate Student Leadership award, University of Massachusetts Amherst math department

2024 Richard Elis Memorial Prize, University of Massachusetts Amherst math department

2020 and 2022 Mathematics fellowship, University of Massachusetts Amherst

Papers and preprints

4. **Irreducible 4-manifolds with order two fundamental group and even intersection form**, with Mihail Arabadji. *Preprint* (2025). [[PDF](#)]
3. **On nonorientable 4-manifolds**, with R. İnanç Baykur. *Submitted* (2025). [[PDF](#)]
2. **Geography of irreducible 4-manifolds with order two fundamental group**, with Mihail Arabadji. *Submitted* (2025). [[PDF](#)]
1. **Belted sum decompositions of fully augmented links**, with Brian Random, Dean Spyropoulos, Rolland Trapp, and Cameron Ziegler. *New York J. Math.*, 31 (2025):1-42, 2024. [[PDF](#)]

Talks

September 2025 Princeton Topology Seminar
Constructing 4-manifolds with spin universal covers

June 2025 Trisectors workshop 2025.
Irreducible 4-manifolds with order two fundamental group.

- May 2025 "Women and Gender Minorities in Symplectic and Contact Geometry and Topology," special session of the AWM Research Symposium in Madison, Wisconsin.
Irreducible 4-manifolds with order two fundamental group.
- April 2025 MIT Geometry and Topology Seminar.
Irreducible 4-manifolds with order two fundamental group.
- February 2025 Geometry and Topology Seminar at the University of Massachusetts, Amherst.
Irreducible 4-manifolds with order two fundamental group
- February 2025 Geometry and Topology Seminar at Louisiana State University.
Irreducible 4-manifolds with order two fundamental group (technical talk)
Obtaining exotic 4-manifolds through torus surgery (introductory talk)
- July 2024 Braids reunion workshop, hosted by ICERM.
Nonorientable Broken Lefschetz Fibrations.
- June 2024 Topology Student Workshop at Vanderbilt University.
Nonorientable Broken Lefschetz Fibrations.
- May 2024 Georgia Topology Conference at University of Georgia (lightning talk).
Indefinite folds: a case study.
- March 2024 New England Algebraic Topology and Mathematical Physics Seminar at Amherst College.
Nonorientable Broken Lefschetz Fibrations.
- March 2024 Undergraduate math club at University of Massachusetts Amherst.
What's Calc III got to do with it?
- February 2024 Reading seminar on automorphism groups of manifolds at University of Massachusetts Amherst.
Crash course on hyperbolic geometry in dimension two.
- February 2024 Geometric Topology Grad and Postdoc Seminar, on zoom.
Nonorientable Broken Lefschetz Fibrations.
- November 2023 Reading seminar on automorphism groups of manifolds at University of Massachusetts Amherst.
Extendable diffeomorphisms in the 4-sphere.
- September 2023 Undergraduate math club at University of Massachusetts Amherst.
Getting a handle on manifolds.
- July 2023 Graduate Student Geometry and Topology Conference, hosted by Harvard, on zoom.
Constructing Kirby diagrams of (broken) Lefschetz fibrations in the non-orientable case.
- February 2023 Math department lunch seminar at Smith College.
An overview of the foundations of manifold theory.

- November 2023 Topological quantum field theory learning seminar.
Bicategories and monoidal bicategories.
- October 2023 Topological quantum field theory learning seminar.
Dualizable objects, 1-dimensional TQFTs and cobordism hypothesis.
- March 2022 Floer homotopy theory reading seminar.
Classification of vector bundles.

Teaching

*UMass Amherst Department of Mathematics and Statistics:
teaching assistant*

- Winter and summer terms, 2023-5 Differential Equations
- Spring 2024 Mathematical Computing (Python-based course)
- Summer 2023 Linear Algebra
- Spring & Fall terms, 2020-2023 Calculus II and Calculus II honors

UMass Amherst Jail Education Initiative

- Fall 2025 Lead instructor for online introductory math course at Bristol County Jail in North Dartmouth, Massachusetts
- Winter 2023 Teaching assistant for in-person introductory math course at Hampshire County Jail in Northampton, Massachusetts

*UMass Amherst Department of Mathematics and Statistics:
grader*

- Spring 2025 Abstract Algebra II
- Spring 2025 Complex Variables
- Fall 2024 Graduate level Point Set Topology
- Fall 2024 Graduate level Topological Data Analysis
- Fall 2024 Mathematical Modeling
- Fall 2024 Calculus III
- Fall 2023 Knot Theory

University of Michigan

Summer 2023 Calculus I instructor at summer connections program, hosted by Ross School of Business

White Mountain School, Bethlehem NH

2018-2020 High school AP Calculus teacher

2018-2020 High school Precalculus teacher

Service

2023-4 and 2024-5 school years Co-chair of Graduate Student Action Committee, University of Massachusetts Amherst math department

2023-5 Referee, *Algebraic & Geometric Topology*

2023-4 school year Organizer for reading seminar on automorphism groups of manifolds, University of Massachusetts Amherst

2023-4 school year Organizer of Undergraduate Math Club, University of Massachusetts Amherst

February 2024 Judge for Hack(h)er codeathon competition at University of Massachusetts Amherst

Fall 2023 Mentor for directed reading program in point set topology, University of Massachusetts Amherst

November 2023 Graduate student panelist Q&A session hosted by Society of Industrial and Applied Math

September 2023 Graduate student panelist at WIMIN conference, hosted by Smith College

2021-2 Recruitment committee for Graduate Student Action Committee, University of Massachusetts Amherst math department

Other conferences and workshops attended

August 2025 Knots, Groups, and Manifolds conference hosted at CRM in Montréal, Québec

June 2025 Summer School and Conference on Modern Tools in Low-Dimensional Topology, at ICTP in Trieste, Italy

January 2025 Foliations on 3-manifolds: log cabin workshop in St George, UT

May 2024 Georgia Topology Summer School at the University of Georgia