# Ellis Buckminster

Pronouns: they/them
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## Education

**University of Pennsylvania** — Philadelphia, PA
Ph.D. Candidate in Mathematics — *expected Spring 2027*
- Thesis advisor: Samuel J. Taylor

**Swarthmore College** — Swarthmore, PA
B.A. in Mathematics, minor in Linguistics — *received May 2022*

## Research Interests

Low-dimensional topology, geometry and dynamics, in particular flows and foliations on 3-manifolds.

## Papers and Publications

Research publications and preprints

- *Foliations forcing closed orbits.* Joint with Audrey Rosevear. 2026. 40 pages. Available here.
- *Cannon–Thurston maps for Anosov foliations.* 2026. 38 pages. Available at arXiv:2604.21201.
- *Universal circles for Anosov foliations.* Joint with Samuel J. Taylor. 2025. 40 pages. Available at arXiv:2512.10107.
- *Periodic points of endperiodic maps.* 2025. 16 pages. Available at arXiv:2409.05963. Published online first in **Groups, Geometry, and Dynamics**.
- Appendix to *Littlewood–Richardson rules from quivers for two-step flag varieties.* Joint with L. Chen and E Kalashnikov. 2025. 4 pages. Available at arXiv:2502.15126.
- *Domains of Convergence for Polyhedral Packings.* Joint with N. Ahmed, W. Ball, E. Rivkin, D. Torrance, J. Viscusi, R. Wang, I. Whitehead, and S. Yang. 2021. 26 pages. Available at arXiv:2109.01289.

## Fellowships and Awards

Academic and research

- Simons Dissertation Fellowship in Mathematics — 2025–2027
  *Simons Foundation*
- Benjamin Franklin Fellowship — 2022–2027
  *University of Pennsylvania*

Teaching and pedagogy

- Master TA — 2024–current
  *University of Pennsylvania, Mathematics Department*
- Good Teaching Award, Math 5020 — Fall 2023
  *University of Pennsylvania, Mathematics Department*

## Extended Research Visits

- **SLMath Semester Program** — January – May 2026
  Topological and Geometric Structures in Low Dimensions — Berkeley, CA

## Invited Talks

### Research Conference Talks

JMM special session: Geometric topology in low-dimensions — Chicago, IL
*TBD* — January 2027

Oberwolfach Workshop: Low-dimensional Topology — Oberwolfach, Germany
*Foliations forcing closed orbits* — July 2026

AMS Fall Central Sectional Meeting: Topology and Group Actions — St. Louis, MO
*Universal circles for Anosov foliations* — October 2025

CMO Workshop: Blooming Beasts — Oaxaca, Mexico
*Periodic points of endperiodic maps* — June 2025

AMS Spring Western Sectional Meeting: Huge Groups from a Geometric Viewpoint — San Luis Obispo, CA
*Periodic points of endperiodic maps* — May 2025

### Seminar Talks

University of Utah Max Dehn Seminar — Salt Lake City, UT
*Foliations forcing closed orbits* — November 2026

University of Wisconsin–Madison Dynamics RTG Seminar — Madison, WI
*Foliations forcing closed orbits* — October 2026

MPI MiS Geometry Seminar — Leipzig, Germany
*Foliations forcing closed orbits* — July 2026

SLMath Topological and Geometric Structures Seminar — Berkeley, CA
*Cannon–Thurston maps for Anosov foliations* — April 2026

University of Chicago No Boundaries/Geometry & Topology Seminar — Chicago, IL
*Cannon–Thurston maps for Anosov foliations* — April 2026

Temple Geometry and Topology Seminar — Philadelphia, PA
*Universal circles for Anosov foliations* — November 2025
*Periodic points of endperiodic maps* — January 2025

Penn Foliations Workshop — Online
*Universal circles for Anosov foliations* — October 2025

### Expository Talks

CSU Chico Math Colloquium — Chico, CA
*Sphere-filling curves via 3-manifolds* — May 2026

Binghamton University Math Graduate Student Seminar — Online
*Flows, foliations, and actions on circles* — March 2026

From Surface Topology to Fermat's Last Theorem — Philadelphia, PA
*The Nielsen–Thurston classification of surface homeomorphisms* — November 2025

Foliations on 3-manifolds log cabin workshop — St George, UT
*Fibered faces of the Thurston norm unit ball* — January 2025

Talks for Undergraduates

Penn Directed Reading Program Mentor Talks — Philadelphia, PA
*A two-sided Möbius band* (short talk) — April 2025

## Workshops

- **Oberwolfach Workshop** — July 2026
  Invited participant in "Low Dimensional Topology" — Oberwolfach, Germany
- **CMO Workshop** at the Casa Matemática Oaxaca — June 2025
  Invited participant in "Blooming Beasts: A Conference on the Geometry, Topology, and Dynamics of Infinite-Type Surfaces" — Oaxaca, Mexico
- **Foliations on 3-manifolds** — January 2025
  Log cabin workshop — St George, UT
- **Topology Students Workshop** — June 2024
  at Vanderbilt University — Nashville, TN

## Teaching Experience

The University of Pennsylvania — Philadelphia, PA

**Lead Teaching Assistant**
*Math 1400: Calculus, Part I* — Fall 2026

**Teaching Assistant**
*Math 1070: Mathematics of Change* — Fall 2024
*Math 2400: Calculus, Part III* — Spring 2024
*Math 5020: Graduate Algebra* — Fall 2023

**Grader**
*Math 6090: Graduate Analysis* — Spring 2025

Swarthmore College — Swarthmore, PA

**Mathematics Clinician** — Fall 2021
*Drop-in help for students in any math course*

**Teaching Assistant** — Fall 2020
*Linguistics 045: Phonetics and Phonology*

## Other Experience and Service

Seminar and conference organization

- **GTA: Philadelphia** at Temple University — Fall 2023–Summer 2025
  GTA: Philadelphia 2024, 9th annual Graduate Student Conference in Algebra, Geometry, and Topology
  *co-organizer with A. Clickard, D. Futer, R. Griebenow, J. Lang, A. Smith, M. Stover, and A. Sudarshan*

  GTA: Philadelphia 2025, 10th annual Graduate Student Conference in Algebra, Geometry, and Topology
  *co-organizer with A. Clickard, D. Futer, C. Kondasinghe, J. Lang, S. Liu, A. Pasles, A. Sarma Phukon, A. Smith, and M. Stover*
- **Graduate Geometry/Topology Seminar** at the University of Pennsylvania, — Fall 2023–Spring 2024
  *co-organizer with F. Espino*
- **Interactive Mathematics Colloquia** at Swarthmore College — Fall 2021–Spring 2022
  *co-founder and co-organizer with N. Ahmed and J. Zhang*

Community building, outreach, and mentorship

- **Directed Reading Program** at the University of Pennsylvania, Fall 2025–current
  *co-organizer with N. Borisov and V. Gonzalez Bosca, and mentor for the following projects:*
  - Sophia Sczcepek, *The Shape of Space* Spring 2024
  - Angela Cai, *A Primer on Mapping Class Groups* Fall 2024
  - Daphne Glatter, *Wallpaper groups* Spring 2025
  - Darren Zheng, *A Primer on Mapping Class Groups* Spring 2025
- **Gender Minorities in Math** at the University of Pennsylvania, Fall 2024–current
  *coordinator with M. Calle and A. Mock*
- **Penn Emerging Scholars Program** *graduate student organizer* Fall 2024–Fall 2025