Ellis Buckminster

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EDUCATION

University of Pennsylvania Philadelphia, PA
Ph.D. Candidate in Mathematics 2022–current
 − Thesis advisor: Samuel Taylor

Swarthmore College Swarthmore, PA
B.A. in Mathematics, minor in Linguistics 2018–2022

RESEARCH INTERESTS

Foliations on 3-manifolds, Anosov and pseudo-Anosov flows, endperiodic maps, mapping class groups, and hyperbolic 3-manifolds.

PAPERS AND PUBLICATIONS

Research publications and preprints

- *Universal circles for Anosov foliations.* Joint with Samuel 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

Teaching Experience

The University of Pennsylvania   Philadelphia, PA

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–current

Workshops

- **CMO Workshop** at the Casa Matemática Oaxaca   June 2025
  Invited participant in "Blooming Beasts: A Conference on the Geometry, Topology, and   Oaxaca, Mexico
  Dynamics of Infinite-Type Surfaces"

- **Foliations on 3-manifolds**   January 2025

Log cabin workshop	St George, UT
• **Topology Students Workshop**	June 2024
at Vanderbilt University	Nashville, TN

TALKS AND PRESENTATIONS

Research Conference Talks

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
Recent Development in Geometric Group Theory	Knoxville, TN
Universal circles for Anosov flows (lightning talk)	May 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

Binghamton University Math Graduate Student Seminar	Online
TBD	March 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
Temple Junior Groups, Geometry, and Topology Seminar	Philadelphia, PA
Universal circles for Anosov foliations	September 2025

Expository Talks

From Surface Topology to Fermat's Last Theorem	Philadelphia, PA
The Nielsen–Thurston classification of surface homeomorphisms	November 2025
Temple Junior Groups, Geometry, and Topology Seminar	Philadelphia, PA
Universal circles from pseudo-Anosov flows	February 2025
Foliations on 3-manifolds log cabin workshop	St George, UT
Fibered faces of the Thurston norm unit ball	January 2025
Penn Graduate Geometry/Topology Seminar	Philadelphia, PA
Hyperbolic geometry and homeomorphisms of surfaces	March 2024
The Milnor–Schwarz Lemma	September 2023
Penn Graduate Pizza Seminar	Philadelphia, PA
Halloween special: Eldritch horrors in dimensions 0 and 2	October 2025
A trip to the $SL_2(\mathbb{Z}oo)$	November 2024
Mapping class groups	April 2023
Temple Graduate Pizza Seminar	Philadelphia, PA
A trip to the $SL_2(\mathbb{Z}oo)$	December 2024

Talks for Undergraduates