

Ellis Buckminster

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EDUCATION

University of Pennsylvania

Ph.D. Candidate in Mathematics

— Thesis advisor: Samuel Taylor

Philadelphia, PA

2022–current

Swarthmore College

B.A. in Mathematics, minor in Linguistics

Swarthmore, PA

2018–2022

RESEARCH INTERESTS

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

PAPERS AND PUBLICATIONS

Research publications and preprints

- *Periodic points of endperiodic maps*. 2025. 16 pages. Available at [arXiv:2409.05963](https://arxiv.org/abs/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](https://arxiv.org/abs/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](https://arxiv.org/abs/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
- Penn Emerging Scholars Program graduate student organizer 2024–2025
University of Pennsylvania, Mathematics Department

TEACHING EXPERIENCE

The University of Pennsylvania	Philadelphia, PA
Teaching Assistant	
<i>Math 1070: Mathematics of Change</i>	Fall 2024
<i>Math 2400: Calculus Part III</i>	Spring 2024
<i>Math 5020: Graduate Algebra</i>	Fall 2023
Grader	
<i>Math 6090: Graduate Analysis</i>	Spring 2025
Swarthmore College	Swarthmore, PA
Mathematics Clinician	Fall 2021
<i>Drop-in help for students in any math course</i>	
Teaching Assistant	Fall 2020
<i>Linguistics 045: Phonetics and Phonology</i>	

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 Glatte, *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 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

TALKS AND PRESENTATIONS

Research conference Talks

CMO Workshop: Blooming Beasts	Oaxaca, Mexico
<i>Periodic points of endperiodic maps</i>	June 2025
Recent Development in Geometric Group Theory	Knoxville, TN
<i>Universal circles for Anosov flows</i> (lightning talk)	May 2025
AMS Spring Western Sectional Meeting: Huge Groups from a Geometric Viewpoint	San Luis Obispo, CA
<i>Periodic points of endperiodic maps</i>	May 2025

Invited Seminar Talks

Temple Geometry and Topology Seminar	Philadelphia, PA
<i>Periodic points of endperiodic maps</i>	January 2025

Expository Talks

Temple Junior Groups, Geometry, and Topology Seminar	Philadelphia, PA
<i>Universal circles from pseudo-Anosov flows</i>	February 2025
Foliations on 3-manifolds log cabin workshop	St George, UT
<i>Fibered faces of the Thurston norm unit ball</i>	January 2025
Penn Graduate Geometry/Topology Seminar	Philadelphia, PA
<i>Hyperbolic geometry and homeomorphisms of surfaces</i>	March 2024
<i>The Milnor–Schwarz Lemma</i>	September 2023
Penn Graduate Pizza Seminar	Philadelphia, PA
<i>A trip to the $SL_2(\mathbb{Z})$</i>	November 2024
<i>Mapping class groups</i>	April 2023
Temple Graduate Pizza Seminar	Philadelphia, PA
<i>A trip to the $SL_2(\mathbb{Z})$</i>	December 2024

Talks for Undergraduates

Penn Directed Reading Program Mentor Talks	Philadelphia, PA
<i>A two-sided Möbius band</i> (short talk)	April 2025