

Ellis Buckminster

Pronouns: they/them
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EDUCATION

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

PAPERS AND PUBLICATIONS

Research publications and preprints

- *Cannon–Thurston maps for Anosov foliations*. 2026. 38 pages. Available at arXiv:2604.21201.
- *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

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| • Simons Dissertation Fellowship in Mathematics
<i>Simons Foundation</i> | 2025–2027 |
| • Benjamin Franklin Fellowship
<i>University of Pennsylvania</i> | 2022–2027 |

Teaching and pedagogy

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| • Master TA
<i>University of Pennsylvania, Mathematics Department</i> | 2024–current |
| • Good Teaching Award, Math 5020
<i>University of Pennsylvania, Mathematics Department</i> | Fall 2023 |

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

- **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 Log cabin workshop	January 2025 St George, UT
• Topology Students Workshop at Vanderbilt University	June 2024 Nashville, TN

TALKS AND PRESENTATIONS

Research Conference Talks

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

Seminar Talks

SLMath Topological and Geometric Structures Seminar <i>Cannon–Thurston maps for Anosov foliations</i>	Berkeley, CA April 2026
University of Chicago No Boundaries/Geometry & Topology Seminar <i>Cannon–Thurston maps for Anosov foliations</i>	Chicago, IL April 2026
Temple Geometry and Topology Seminar <i>Universal circles for Anosov foliations</i> <i>Periodic points of endperiodic maps</i>	Philadelphia, PA November 2025 January 2025
Penn Foliations Workshop <i>Universal circles for Anosov foliations</i>	Online October 2025
Temple Junior Groups, Geometry, and Topology Seminar <i>Universal circles for Anosov foliations</i>	Philadelphia, PA September 2025

Expository Talks

CSU Chico Math Colloquium <i>Sphere-filling curves via 3-manifolds</i>	Chico, CA May 2026
Binghamton University Math Graduate Student Seminar <i>Flows, foliations, and actions on circles</i>	Online March 2026
From Surface Topology to Fermat’s Last Theorem <i>The Nielsen–Thurston classification of surface homeomorphisms</i>	Philadelphia, PA November 2025
Temple Junior Groups, Geometry, and Topology Seminar <i>Universal circles from pseudo-Anosov flows</i>	Philadelphia, PA February 2025
Foliations on 3-manifolds log cabin workshop <i>Fibered faces of the Thurston norm unit ball</i>	St George, UT January 2025
Penn Graduate Geometry/Topology Seminar	Philadelphia, PA

Hyperbolic geometry and homeomorphisms of surfaces
The Milnor–Schwarz Lemma

March 2024
September 2023

Penn Graduate Pizza Seminar
Halloween special: Eldritch horrors in dimensions 0 and 2
A trip to the $SL_2(\mathbb{Z})$
Mapping class groups

Philadelphia, PA
October 2025
November 2024
April 2023

Temple Graduate Pizza Seminar
A trip to the $SL_2(\mathbb{Z})$

Philadelphia, PA
December 2024

Talks for Undergraduates

Penn Directed Reading Program Mentor Talks
A two-sided Möbius band (short talk)

Philadelphia, PA
April 2025