

Henry Talbott

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Research Interests

My research lies at the intersection of geometric group theory and probability theory. Specifically, I study groups acting on geometric spaces, using tools from low-dimensional topology, hyperbolic geometry, dynamics, and probability. In my current research, I seek to understand random hierarchically hyperbolic groups, and to use results on these groups to better understand topological symmetry groups of surfaces, known as mapping class groups. I also work on problems related to statistical properties of length spectra of Weil-Petersson random surfaces.

Education

University of Michigan, Ph.D. student (Mathematics), 2021-present

Embedded Masters in Mathematics, May 2024

Expected graduation: May 2027

Advisor: Alex Wright

Brown University, B.S. with Honors, magna cum laude, 2017-2021

Thesis advisor: Richard Schwartz

Awards & Fellowships

National Science Foundation Graduate Research Fellowship, 2023-2026

Publications

Talbott, H. (2026). Critical exponents on hyperbolic surfaces with long boundaries and the asymptotic Weil-Petersson form. *Advances in Math.* 500.

Blum, T., Doyle, J.R., Hyde, T., Kelln, C., & Talbott, H. (2022). Dynamical Moduli Spaces and Polynomial Endomorphisms of Configurations. *Arnold Math J.* (Published electronically).

In-Progress

Choi, I. & Talbott, H. Boundary connectivity of random quotients of hierarchically hyperbolic groups and the Nöbeling Curve.

Preprints

Kurama, R., Li, R., Talbott, H., & Webb, R. (2025). Weyl-invariant subspaces are (usually) not generic. Preprint. <https://arxiv.org/abs/2510.03963>. Submitted.

Talbott, H. (2025). "Dynamical zeta functions and resonance chains for infinite-area hyperbolic surfaces with large funnel widths." Preprint. <https://arxiv.org/abs/2505.09840>. Submitted.

Internships

Quantitative Research Intern, Jane Street, May-August 2026

- Built models applying natural language processing to a large text corpus to predict returns in equities.
- Researched specific rare events in equities microstructure data and built models to predict occurrence and impact of these events.

Quantitative Research Intern, Susquehanna International Group, June–August 2025

- Developed and implemented ML-driven quantitative trading strategies for real-world datasets.
- Learned fundamentals of trading, quantitative decision-making, and the global financial system.

Other Employment

Graduate Student Instructor, University of Michigan, September 2021–May 2023, August 2026–present

- Courses taught: Math 115 (Calculus I), Math 105 (Precalculus)

Residential Peer Leader, Brown University, August 2018–May 2021.

Service

Rwandan Math Bridges, April 2022–present

- Provided counseling and tutoring for Rwandan high schoolers transitioning to college in the US.

University of Michigan Undergraduate Directed Reading Program in Mathematics, September 2022–December 2025

Talks

Symbolic dynamics and graph zeta functions, Dynamics Seminar, University of Toronto, December 2025.

Symbolic dynamics and graph zeta functions, Dynamics Seminar, University of Chicago, November 2025.

Critical exponents, moduli spaces, and comparing the Weil–Petersson and Kontsevich forms, Dynamics Seminar, University of Maryland, April 2025.

Critical exponents, moduli spaces, and comparing the Weil–Petersson and Kontsevich forms, Dynamics Seminar, Cornell University, March 2025.

Additive combinatorics, uniformity, and patterns in primes, Research Training Group in Number Theory, University of Michigan, October 2023.

Workshops Attended

Recent Progress in Topological and Geometric Structures in Low Dimensions, Simons Laufer Mathematical Sciences Institute, March 2026.

Advances in Hierarchical Hyperbolicity, Banff International Research Station, May 2024.

Geometry and Spectra of Random Hyperbolic Surfaces, University of Montreal, June 2023.

Workshop on Dynamics, Discrete Analysis, and Multiplicative Number Theory, Institute for Advanced Study, Princeton, February 2023.

Conferences Attended

Young Geometric Group Theory, University of Bristol, April 2024.

Nilpotent Structures in Topological Dynamics, Ergodic Theory, and Combinatorics, Polish Institute of Mathematics, June 2023.

Modular Forms in Number Theory and Beyond, University of Bielefeld, August 2022.

ANTEATER conference in analytic number theory, University of California, Irvine, August 2022.

Skills

- Python - Scikit-learn, Pandas, PyTorch, LGBM
- C++ (beginner)
- Julia
- LaTeX