

Aislinn E. Smith

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EDUCATION

B.Sc. Mathematics w/ Honors, Certificate in Data Sciences *Dec. 2022*

University of Texas at Austin – College of Natural Sciences

M.A. Mathematics *Aug 2026*

University of Texas at Austin – College of Natural Sciences

Master's report advised by Maggie Miller (UT Austin) and Piotr Przytycki (McGill)

Visiting Graduate Student *Aug 2025 – Aug 2026*

McGill University - Department of Mathematics and Statistics

PhD in Mathematics *Aug 2026 – Present*

McGill University - Department of Mathematics and Statistics

ACADEMIC AWARDS

NSF Graduate Fellowship (NSF GRFP) *2023 - 2026*

UT Austin Dean's Strategic Fellowship *2023 - 2026*

Nancy Francis and William Arnold McMinn Presidential Scholarship *2021 - 2022*

NSF Undergraduate Research Training Grant Fellowship *2020-2021*

RESEARCH/PROJECTS

Mathematics MA Report *May 2025 - Aug 2026*

- Cumulative write-up and results from research and reading with Piotr Przytycki (McGill) and Maggie Miller (UT Austin). Focused on topics including mapping class groups, surface braid groups, and group automata/bi-automaticity.
- Titled "Positive Genus Braid Groups: evidence of a quadratically bounded Dehn function"

Mathematics BSc Thesis: "Minimal surfaces in hyperbolic manifolds and link complements" *August 2022 - Dec. 2022*

- Building on my REU research, my undergraduate honors thesis was an expository study of the realization of minimal surfaces as covers of incompressible submanifolds in hyperbolic knot complements, emphasizing Kleinian group actions, polyhedral decompositions, and the resulting closed minimal surfaces.

SUMRY REU – Yale U.: "Combinatorial and geometric aspects of hyperbolic manifolds" *May 2022 - July 2022*

- Undergraduate NSF-funded research in low-dimensional topology and combinatorial hyperbolic geometry mentored by Dr. Franco Vargas-Pallete
- Main contribution was to the development of a finite element method that could simulate mean curvature flow such that it was compatible with a hyperbolic metric

Moncrief Internship – The ODEN Institute for Computational Sciences *May 2021 - May 2022*

- Undergraduate research in statistical optimization/robotic path planning using Monte Carlo methods under advisement of Dr. Takashi Tanaka
- Compared the computational complexity and success of two different models of diffusion-based optimal control (reinforcement learning vs numerical solutions to Hamilton-Jacobi-Bellman PDE) [2]

Complex Systems REU – University of Minnesota *May 2020 - July 2020*

- Undergraduate NSF-funded research in nonlinear fluid dynamics led by Dr. Arnd Scheel
- Researched the stability and resonances of non-linear Fischer KPP reaction-diffusion equations [1]

TEACHING/ WORK EXPERIENCE/SKILLS

Volunteer Lecturer - Waterloo CEMC Online Math Circle *March 2026 -April 2026*

- Led the 7th and 8th week of the [CEMC online math circle](#) for ~150 students
- Designed lectures and exercises on Finite State Computing Machines, Decision Problems, Group Theory, and Cayley Graphs w/ goal of teaching the “Fundamental Theorem of Automatic Groups”

Co-Organizer of Math for All in Austin 2025 Conference *Aug 2024 - April 2025*

- Coordinated outreach and communication for the [2025 Math for All](#) conference, expanded undergraduate participation to 7+ Texas colleges and organized a mathematical career-planning and networking forum for attendees

Graduate Teaching Assistant - UT Austin Department of Mathematics *Aug 2024 - Aug 2025*

- Teaching Assistant for M408C (Differential and Integral Calculus), M427J (Differential Equation and Linear Algebra), M341 (Linear Algebra), and M367K (Topology I)

Directed Reading Program Mentor - UT Austin Department of Mathematics *Dec 2024 - Aug 2025*

- Worked as a graduate mentor to a group of three undergraduate students. Together, we worked to understand the basics of abstract algebra, geometric group theory, and braid groups. The main goal of our project was to read recent

PUBLICATIONS

[1] Avery, M., Dedina, C., Smith, A., Scheel, A. (2021). Instability in large bounded domains—branched versus unbranched resonances. *Nonlinearity*, 34(11), 7916–7937. <https://doi.org/10.1088/1361-6544/ac2a15>

[2] Patil, A., Duarte, A., Smith, A., Tanaka, T., & Bisetti, F. (2022). Chance-Constrained Stochastic Optimal Control via Path Integral and Finite Difference Methods. *arXiv*. <https://doi.org/10.48550/arXiv.2205.00628>

Coding Knowledge: C++, Python, SciPy (intermediate); HTML (basic)