Hannah Fechtner

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Summary

I'm a PhD student in Logic at Carnegie Mellon University, working on formalization of braid groups in Lean.

Areas of Specialization	Formal Mathematics, Computer-Assisted Proofs, Braid Theory, Combinatorial Group Theory
Areas of Teaching Competence	Logic, Algebra, Discrete Mathematics, Calculus

Education

anticipated 2027	**Carnegie Mellon University :** PhD (Logic, Computation, and Methodology)
2024	MS (Logic, Computation, and Methodology)
2020	**Rutgers University :** BA (Mathematics, French, Medieval Studies)

Invited Talks

(upcoming)	*Proof and Pictures : Formalizing the Braid Groups*, JMM 2027
October 2026	*Proof and Pictures : Formalizing Braids*, SLMath Modern Math Workshop @ SACNAS 2026
July 2026	*Braid Groups in Lean*, ICARM Summer School
August 2025	*Formalizing Braid Groups*, SumTopo 2025 (semi-plenary)
June 2025	*Braids from Gauss to Lean*, CMU Summer School in Logic & Formal Epistemology
March 2025	*Untangling the Braid Groups in Lean*, Penn Math Logic Seminar

Contributed Talks

January 2025	*Braids In Lean*, Lean Together 2025

Preprints

(submitted)	Fechtner, H. *Braid Groups in Lean : Formalizing Dehornoy's Subword Reversing Algorithm*, arXiv preprint https://arxiv.org/abs/2611.09787 [math.GR]

Teaching Experience

Spring 2026	Instructor, Undecidability & Incompleteness
Summer 2024, Fall 2025	Instructor, Logic & Proof
Fall 2024	Teaching Assistant, Concepts of Mathematics
Spring 2023, 2024, 2025	Teaching Assistant, Nature of Reason
Fall 2023	Teaching Assistant, Dangerous Ideas in Science & Society
2020-2022	K-12 Substitute Teacher (longer-term in 1st and 3rd grade, and high school Calculus and French; varied short-term and single-day classes)

Workshops

Summer 2026	ICARM "Summer School on Formalization of Mathematics" teaching assistant
Spring 2025	Simons Institute for the Theory of Computing/SLMath "AI for Mathematics and Theoretical Computer Science" tutorial assistant
Summer 2023	MSRI/SLMath "Formalization of Mathematics" workshop participant

Service

2023 - present	Graduate Student Assembly Representative
2024 - 2026	Work-In-Progress Talks Co-Organizer (with Wojciech Nawrocki)
2024 - 2025	Philosophy Department Diversity Committee Member
2023	Graduate Admissions Committee Reader

Outreach

2024 - present	Museum of Mathematics MOST (Mathematics Outreach Seminar Training) Fellow
2025 - present	Yeshiva Girls High School Math-and-Sewing teacher
June 2026	Speaker, *Will the Sun Rise Tomorrow? Justifications for Inductive Reasoning*, Reason & Rationality Summer Program
July 2025	Variety Session Leader, *Mathematical Braids*, Rutgers Young Scholars Program in Discrete Mathematics

Awards

2026	Dietrich College Graduate Student Teaching Assistant Award
2026	Graduate Student Assembly Lifetime Achievement Award
2021 - 2022	Dietrich Scholar Fellowship
2016 - 2020	Rutgers Presidential Scholar (full ride for academic merit)
2020	Henry Rutgers Scholar Award (outstanding undergraduate thesis - French/Medieval Studies)
2019 - 2020	Alan Marc Schreiber Memorial Scholarship and Research Award (outstanding undergraduate honors senior research project - Math)

Languages

Computer	Lean, Python, Java, JavaScript, HTML, MATLAB, C, SML
Human	English (native), French (full professional proficiency), Anglo-Saxon, Zarphatic