

Thomas Sachen

thomas.sachen@sns.it

tomsachen.github.io

Research Interests

Philosophy of mathematics; mathematical logic; proof identity; category theory.

Education

Scuola Normale Superiore, Pisa, Italy 2024–2027

PhD in Philosophy

- HuME (The Human Mind and its Explanations) PhD program
- Advisors: Mario Piazza, Gabriele Pulcini

Princeton University, Princeton, NJ, USA 2018–2023

A.B. in Mathematics

- Thesis: *p-adic Hodge Theory and derived Hodge-to-de Rham spectral sequences*
- Advisor: Bhargav Bhatt

Publications and Preprints

- Sachen, T. *Robustness and generalizability of proofs of the infinitude of primes*. Preprint, 2026.
- Guyer, D., Sachen, T. *Concordances of sums of alternating torus knots and their mirrors to L-space knots*. Journal of Knot Theory and its Ramifications, 2025.

Talks and Presentations

- *Domain-dependent proof identity*. Chapman–SNS Workshop on Logic and Philosophy of Mathematics, Chapman University, Orange, CA, USA, April 2026.
- *Robustness of proofs of the infinitude of primes*. SNS Logic Seminars, Scuola Normale Superiore, Pisa, Italy, April 2026.
- *Purity and simplicity of informal proofs*. PLEXUS–KCL–SNS Logic Workshop, King’s College London, London, UK, June 2025.
- *Geometric Techniques in Topological Data Analysis: Toward Persistent Hodge Theory*. Princeton Topology Seminars, Princeton University, April 2023.
- *Concordances of linear combinations of torus knots to L-space knots*. Joint Mathematics Meetings (AMS), Boston, MA, USA, April 2022.
- *Classifying finitely presented infinite groups*. Joint Mathematics Meetings (AMS), Boston, MA, USA, April 2022.
- *Geometric aspects of growth of finitely generated groups*. REU Virtual Conference, University of Connecticut, August 2021.

Fellowships and Awards

- Sigma Xi Honors Society, Princeton University (2023)
- Undergraduate Research Grant, Princeton University (2022)
- NSF REU Fellowship, Tufts University (2021)
- NSF REU Fellowship, Georgia Institute of Technology (2020)
- NSF RTG Grant, University of Notre Dame (2019)
- Stone Edge Observatory Grant, University of Chicago (2018)

Additional Training

- European Summer School in Logic, Language and Information (ESLLI), Bochum, Germany (2025)

Languages: English (native); Italian (B2); French (B1)

References available upon request.