

Urshita Pal

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Department of Mathematics
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Education

University of Michigan, USA

Ph.D., Mathematics, 2021-Present.

Advisor: Jenny Wilson

University of Michigan, USA

M.S., Mathematics, 2021-23.

Chennai Mathematical Institute, India

B.Sc., Mathematics & Computer Science, 2018-21.

Research Interests

(Co)homology of Arithmetic Groups, (Co)homological stability phenomena

Awards and Fellowships

Rackham Predoctoral Fellowship

Fall 2025 - Summer 2026

Rackham One-Term Dissertation Fellowship

January 2025 - April 2025

Gold Medal of Excellence, BSc Math & Computer Science

Chennai Mathematical Institute, 2021

Highest GPA at time of graduation

Tuition Fee Waiver

Chennai Mathematical Institute, Aug 2018 - April 2021

Bronze Medal, European Girls Math Olympiad

Held in Florence, Italy, 2018

International Math Olympiad Training Camp, Mumbai, India

Selected for Participation, 2017 & 2018

Research Papers

Representation Stability in the (Co)homology of Vertical Configuration Spaces

with D Baron, C Wang, J Wilson, and C Yang

ArXiv preprint ArXiv:2412.01128

Teaching

University of Michigan

Instructor, Math 105 (Data, Graphs & Functions), Fall 2024
Instructor, Math 115 (Calculus 1), Fall 2023
Instructor, Math 115 (Calculus 1), Winter 2023
Instructor, Math 115 (Calculus 1), Fall 2022
Instructor, Math 115 (Calculus 1), Winter 2022
Instructor, Math 115 (Calculus 1), Fall 2021

Chennai Mathematical Institute

Teaching Assistant, NPTEL Rings & Fields, Jan-March 2021
Teaching Assistant, Topology, Spring 2021
Teaching Assistant, Complex Analysis, Spring 2021
Teaching Assistant, Analysis 3, Fall 2020
Teaching Assistant, Probability Theory, Spring 2020

Talks

Invited Talks

- *A Resolution of the Symplectic Steinberg Module*
Purdue University, October 2025

- *Steinberg Modules and Hopf Algebras* (expository)
University of Pennsylvania, March 2025

- *Steinberg Modules and $H^*(SL_n\mathbb{Z}; \mathbb{Q})$* (expository)
Scissors Congruences, Algebraic K-Theory and Steinberg Modules, July 2024
(Held at the American Institute of Mathematics, Pasadena)

Workshops and Conferences

- *High Connectivity of Arc Complexes* (expository)
Talbot Workshop on Homological Stability, May 2025

- *Connectivity and Cohomology* (5 min lightning talk)
Young Geometric Group Theory, Bristol, April 2024

Michigan Student Seminars

- *The Steinberg Module of the Mapping Class Group*, Fall 2025
- *High Connectivity Techniques and the Steinberg Module*, Fall 2025
- *(Co)homology of Configuration Spaces*, Summer 2025
(5 day Minicourse)
- *Discrete Morse Theory*, Winter 2025
- *Hopf Algebras, Steinberg Modules, and $H^k(GL_n\mathbb{Z}; \mathbb{Q})$* , Winter 2025
- *The Nerve Lemma and Spectral Sequences*, Winter 2024
- *Configurations, Graphs and Trees*, Winter 2024
- *Rational Duality Groups and $H^*(SL_n\mathbb{Z}; \mathbb{Q})$* , Fall 2023
- *Introduction to Group (Co)homology*, Fall 2023
- *Configurations, Graphs and Trees*, Fall 2023
- *High Dimensional Cohomology of $SL_n\mathbb{Z}$* , Winter 2023
- *Grassmannian Cohomology and Symmetric Polynomials*, Winter 2023
- *A Gentle Introduction to Representation Stability*, Fall 2022
- *The Combinatorial Nullstellensatz and its Applications*, Winter 2022
- *Braid Groups*, Fall 2021

Service and Mentorship

University of Michigan REU, Summer 2024

-Graduate Student Mentor for the REU hosted by Jenny Wilson

Lab of Geometry at Michigan

-Served on the Admissions Committee in Fall '23 & Winter '24

Student Dynamics/Geometry/Topology Seminar

-Co-organiser 2022-23, Organiser 2023-24

AWM Mentoring Programs

-Mentor in the Mentor-Mentee program for the Academic Year 2022-23

-Participated in the 'Vertical Mentoring Program' in Winter 2024

Michigan Directed Reading Program

-Mentor, Winter 2023, Winter 2025, and Fall 2025

Michigan Math Club

-Fagnano's Problem and Reflecting Triangles, Jan 2023

Michigan Math Circle

-Tiling With Dominoes, Feb 2022

Conferences and Workshops Attended

- Perspectives on the Cohomology of $GL_n\mathbb{Z}$, Muenster, Germany, October 2025

- Scissors Congruences and Algebraic K-Theory, UPenn, July 2025

- Discrete Groups in Topology & Algebraic Geometry, Notre Dame, June 2025

- Polylogarithms, Homology of linear groups, & Steinberg Modules, June 2025
Held at the SwissMAP Research Station, Les Diablerets, Switzerland

- Talbot Workshop on Homological Stability, Cassapolis MI, May 2025

- Scissors Congruences, Algebraic K-Theory and Steinberg Modules, July 2024
Organised through the American Institute of Mathematics, Pasadena

- Young Geometric Group Theory XII, Bristol, April 2024

- Stability in Topology, Arithmetic and Representation Theory, Purdue, 2023
(Attended Virtually)

- Nearly Carbon Neutral Geometric Topology Conference, June 2023
(Attended Topic Group: Profinite and Residual Methods in Geometric Group Theory)

- Nearly Carbon Neutral Geometric Topology Conference, September 2022
(Attended Topic Group: Group Actions on Hyperbolic Spaces)

Languages and Skills

Hindi, English, Bengali (native); German (basic)

L^AT_EX, C++, Haskell, Python, Java