

# Matthew Scalamandre

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| CONTACT<br>INFORMATION | Department of Mathematics<br>University of Toronto Scarborough<br>1265 Military Trail, Toronto<br>Ontario, CANADA M1C 1A4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | m.scalamandre@utoronto.ca                                                                             |
| RESEARCH<br>INTERESTS  | Group cohomology, linear groups, arithmetic and S-arithmetic groups, Bieri-Eckmann duality, buildings, geometric group theory, algebraic K-theory, algebraic number theory.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                       |
| EMPLOYMENT             | <b>University of Toronto</b><br>Brauer Postdoctoral Fellow, August 2024 – July 2027.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                       |
| EDUCATION              | <b>University of Notre Dame</b><br>Ph.D. in Mathematics, May 2024.<br>• Advisor: Andrew Putman<br><br><b>University of Chicago</b><br>B.S. in Mathematics, June 2019<br>With general and departmental honors                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                       |
| PAPERS                 | 1. <i>A Solomon-Tits Theorem for Rings</i> . To appear in <i>Mathematische Annalen</i> .<br>2. <i>High-degree cohomology of congruence subgroups of <math>SL_n(\mathcal{O})</math> via cohomology of S-arithmetic groups</i> . Preprint.                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                       |
| HONORS AND<br>AWARDS   | 2024          Richard Sady Dissertation Prize<br>2019–2024    Arthur J. Schmitt Leadership Fellowship<br>University of Notre Dame<br>2015–2019    Dean’s List, University of Chicago<br>2015–2019    National Merit Scholar                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                       |
| TALKS:                 | <i>Koszul Duality for Symplectic Steinberg Modules</i><br>Algebraic Structures in Topology<br><br><i>Koszul Duality for Symplectic Steinberg Modules</i><br>Young Topologists Meeting 2026<br><br><i>Steinberg Modules for Rings</i><br>Perspectives on the Cohomology of General Linear Groups<br><br><i>Double Steinberg Coinvariants</i><br>Scissors Congruence and K-theory<br><br><i>Steinberg Modules for Rings</i><br>University of Oklahoma Algebra and Representation Theory Seminar<br><br><i>Steinberg Modules for Rings</i><br>AMS Special Session on Cohomology of Arithmetic Groups, Mapping Class Groups, and Moduli Spaces, Joint Mathematics Meetings | July 2026<br><br>June 2026<br><br>October 2025<br><br>July 2025<br><br>March 2025<br><br>January 2025 |

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|                      | <i>A Solomon-Tits Theorem for Rings</i><br>University of Rochester Topology Seminar                       | October 2024   |
|                      | <i>A Solomon-Tits Theorem for Rings</i><br>University of Michigan Topology Seminar                        | February 2024  |
|                      | <i>A Solomon-Tits Theorem for Rings</i><br>University of Oklahoma Geometry and Topology Seminar           | September 2023 |
|                      | <i>A Solomon-Tits Theorem for Rings</i><br>Purdue Topology Seminar                                        | September 2023 |
|                      | <i>A Solomon-Tits Theorem for Rings</i><br>Stability in Topology, Arithmetic, and Representation Theory   | July 2023      |
| EXPOSITORY<br>TALKS: | <i>Bad Simplex Arguments</i><br>University of Toronto Locally Trivial Seminar                             | February 2025  |
|                      | <i>Subgroups of Free Groups are Free</i><br>Notre Dame Math Graduate Orientation                          | August 2023    |
|                      | <i>Poincaré Duality for Groups</i><br>Notre Dame Graduate Student Topology Seminar                        | April 2023     |
|                      | <i>Word Problems and Geometry</i><br>Notre Dame Graduate Student Logic Seminar                            | April 2023     |
|                      | <i>Unipotent Representations and Where to Find Them</i><br>Notre Dame Graduate Student Algebra Seminar    | April 2023     |
|                      | <i>Characteristic Classes of Surface Bundles</i><br>Notre Dame Graduate Student Topology Seminar          | October 2022   |
|                      | <i>Amenable Groups</i><br>Notre Dame Graduate Student Logic Seminar                                       | October 2022   |
|                      | <i>Morse Theory</i><br>Notre Dame Graduate Student Seminar                                                | September 2022 |
|                      | Minicourse (4 talks): <i>Groups acting on the Circle</i><br>Notre Dame Graduate Student Topology Seminar  | Fall 2021      |
|                      | <i>Homological Stability for Arithmetic Groups</i><br>Notre Dame Graduate Student Topology Seminar        | April 2021     |
|                      | <i>Group Cohomology and <math>SL_n(\mathbb{Z})</math></i><br>Notre Dame Graduate Student Topology Seminar | November 2020  |
|                      | <i>Wall's Finiteness Obstruction</i><br>Notre Dame Graduate Student Topology Seminar                      | October 2019   |
|                      | <i>An Introduction to Equivariant Cohomology</i><br>University of Chicago Mathematics REU                 | August 2018    |

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| SEMINARS<br>ORGANIZED   | Notre Dame Graduate Student Topology Seminar                                                                          | Fall 2021                                                     |
|                         | University of Chicago Undergraduate Math Club                                                                         | Fall 2018-Spring 2019                                         |
| TEACHING<br>EXPERIENCE  | Fall 2025                                                                                                             | Instructor, Introduction to Analysis                          |
|                         | Fall 2024                                                                                                             | Instructor, Introduction to Number Theory                     |
|                         | Fall 2023                                                                                                             | Teaching Assistant, Honors Calculus 1                         |
|                         | Fall 2022                                                                                                             | Teaching Assistant, Principles of Calculus                    |
|                         | Spring 2022                                                                                                           | Instructor, Calculus B                                        |
|                         | Fall 2021                                                                                                             | Teaching Assistant, Calculus III                              |
|                         | Spring 2021                                                                                                           | Teaching Assistant, Linear Algebra and Differential Equations |
|                         | Fall 2020                                                                                                             | Teaching Assistant, Calculus A                                |
| MENTORSHIP              | Instructor for Reading Course on Topological K-theory                                                                 | Summer 2026                                                   |
|                         | Students:                                                                                                             |                                                               |
|                         | • Aseel Abdelrahman                                                                                                   |                                                               |
|                         | • Danyal Azaz                                                                                                         |                                                               |
|                         | • Avery Nie                                                                                                           |                                                               |
|                         | • Tamis Panagiotakis                                                                                                  |                                                               |
|                         | • Nick Smith                                                                                                          |                                                               |
|                         | • Nick Tzulinis                                                                                                       |                                                               |
|                         | • Hanji Zhang                                                                                                         |                                                               |
|                         | Instructor for Reading Course on Quadratic Forms                                                                      | Summer 2025                                                   |
|                         | Student:                                                                                                              |                                                               |
|                         | • Evan Simanovskis                                                                                                    |                                                               |
|                         | Mentor for Notre Dame Summer Research Opportunities Program                                                           | Summer 2022                                                   |
|                         | Student:                                                                                                              |                                                               |
|                         | • Tomás Aguilar-Fraga: <i>A Computational Investigation into the Representation Theory of the Mapping Class Group</i> |                                                               |
|                         | Mentor for University of Chicago Mathematics REU                                                                      | Summer 2020                                                   |
|                         | Students:                                                                                                             |                                                               |
|                         | • Vivek Sasse: <i>Classification of the 17 Wallpaper Groups</i>                                                       |                                                               |
|                         | • Cathy Wang: <i>The Lovasz Local Lemma, k-Colorings, and Applications in Graph Theory</i>                            |                                                               |
| CONFERENCES<br>ATTENDED | Algebraic Structures in Topology<br>San Juan, Puerto Rico                                                             | July 2026                                                     |
|                         | Young Topologists Meeting<br>University of Copenhagen                                                                 | June 2026                                                     |
|                         | Perspectives on the Cohomology of General Linear Groups<br>University of Münster                                      | October 2025                                                  |
|                         | Scissors Congruence and K-theory<br>University of Pennsylvania                                                        | July 2025                                                     |
|                         | Polylogarithms, Homology of Linear Groups, and Steinberg Modules                                                      | June 2025                                                     |
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|                                         | SwissMAP Research Station (SRS)                                                                                                  |              |
|                                         | Joint Mathematics Meetings<br>Seattle                                                                                            | January 2025 |
|                                         | Collaborative workshop in K-theory and Scissors Congruence<br>Vanderbilt University                                              | July 2024    |
|                                         | Joint Mathematics Meetings<br>San Francisco                                                                                      | January 2024 |
|                                         | Stability in Topology, Arithmetic, and Representation Theory<br>Purdue University                                                | July 2023    |
|                                         | Stability in Topology, Arithmetic, and Representation Theory<br>Purdue University                                                | March 2022   |
|                                         | Cohomology of Arithmetic Groups<br>Banff International Research Center                                                           | October 2021 |
|                                         | Joint Mathematics Meetings<br>Online                                                                                             | January 2021 |
|                                         | Midwest Topology Seminar<br>University of Chicago                                                                                | October 2019 |
| UNDERGRADUATE<br>RESEARCH<br>EXPERIENCE | <b>University of Chicago Mathematics REU</b><br>Expository Paper: Bredon Cohomology and the Conner Conjecture                    | Summer 2018  |
|                                         | <b>Reading and Research course with Prof. Peter May</b><br>Expository Paper: Brown Representability                              | Fall 2017    |
|                                         | <b>University of Chicago Mathematics REU</b><br>Expository Paper: Harmonic Analysis on LCA Groups                                | Summer 2017  |
| EXTRACURRICULAR<br>ACTIVITIES           | University of Chicago Math Club<br>President, 2018-2019                                                                          | 2016-2019    |
| PROFICIENCIES                           | Languages: English (native), Mandarin (conversational), Italian (conversational)<br>Programming Languages: C, Python, Lisp, Sage |              |