

# Sacha Goldman

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## Education

**PhD in Mathematics** [University of Toronto](#)

September 2023 -

Supervised by Alexander Kupers.

**MSc in Mathematics** [University of Toronto](#)

September 2023 - September 2024

Program encompassing both course work and research. Supervised by Alexander Kupers.

**BSc in Mathematics and Computer Science** [University of Toronto](#)

September 2019 - June 2023

Focused on mathematics and relations with computer science.

## Research

**Master's Thesis** [Properties of Automorphisms of Spaces with Cyclic-by-Finite Fundamental Group](#)

Showing finiteness results for automorphism groups of some manifolds combining techniques from geometric topology, rational homotopy theory,  $K$ -theory, and surgery theory.

**Undergraduate Summer Research** [The Centre of the Torelli Lie Algebra](#)

Working with Alexander Kupers and Daniel Litt on studying the centre of the Torelli Lie algebra.

## Awards

**Ontario Graduate Scholarship** [Province of Ontario](#)

2025 - 2026

**Canadian Graduate Scholarship - Master's** [National Sciences and Engineering Research Council](#)

2024 - 2025

**Coxeter Scholarship in Mathematics** [University of Toronto](#)

2024

**Undergraduate Summer Research Award** [National Sciences and Engineering Research Council](#)

2023

**Raptors Foundation In-Course Scholarship** [New College](#)

2023

**In-Course Scholarship** [New College](#)

2022

**In-Course Scholarship** [New College](#)

2021

**William and Shirley Reed Scholarship** [VSB](#)

2019

## Teaching

**MAT257 Teaching Assistant** [University of Toronto](#)

September 2024 - April 2025

Running tutorials, office hours, and grading for a course covering calculus on manifolds.

**MAT1300 Teaching Assistant** [University of Toronto](#)

September 2024 - December 2024

Grading for a graduate course on differential topology.

**MAT185 Teaching Assistant** [University of Toronto](#)

January 2024 - April 2024

Running tutorials and grading for a proof based linear algebra course.

**Math Learning Centre Teaching Assistant** [University of Toronto](#)

January 2024 - April 2024

Helping students at the math learning centre.

**MAT186 Teaching Assistant** University of Toronto

September 2023 - December 2023

Running tutorials and grading for a differential and integral calculus course.

**CSC236 Teaching Assistant** University of Toronto

September 2021 - December 2021

Running tutorials and grading for a course introducing mathematics for computer science.

## Speaking

**Synthetic Spectra Learning Seminar** University of Toronto

2025

An expository talk about Patchkoria–Pstrągowski's proof of Franke's algebracity conjecture.

**Locally Trivial Seminar** University of Toronto

2025

A talk about ongoing joint work with Jonathan Sejr Pedersen and Marco Volpe studying signatures of manifold bundles.

**Summer Kan Seminar** University of Toronto

2025

An expository talk about the Sullivan conjecture.

**Simple Homotopy Week** University of Toronto

2025

Two talks, one on Waldhausen's construction of the assembly map and the other on a proof of the topological Dwyer-Weiss-Williams theorem.

**Locally Trivial Seminar** University of Toronto

2025

Speaking about local systems in geometric topology, specifically relating to the Euler characteristic, the Wall finiteness obstruction, and the Whitehead torsion.

**Cohomology of the General Linear Group Learning Seminar** University of Toronto

2024

An expository talk about the K-Theory of finite fields.

**Ontario Graduate Mathematics Conference** University of Waterloo

2024

Speaking about finiteness properties of some automorphism groups of manifolds.

**Birds Eye Conference** University of Toronto

2024

An expository talk about rational homotopy theory and Sullivan's minimal models.

**Graduate Student Seminar** University of Toronto

2024

An expository talk about the calculation of homotopy groups of spheres.

**Canadian Undergraduate Mathematics Conference** University of Toronto

2023

An expository talk about using the Hopf fibration to calculate  $\pi_3(S^2)$ .

## Service

**Locally Trivial Seminar** University of Toronto

January 2025 -

A student seminar I started with Jonathan Pedersen on topics loosely related to algebraic topology.

**Readings in Topological K-Theory** Directed Reading Program

January 2025 - April 2025

Supervising a group of undergraduate students reading about Topological K-Theory and the Hopf invariant one problem.

**Graduate Student Seminar Organizer** Math Graduate Student Association

September 2024 - August 2025

Organizing the University of Toronto's mathematics graduate student seminar.

**Academic Committee** Math Graduate Student Association

September 2023 - August 2024

Helping to organize academic events and the graduate student seminar.

# Employment

## **Software Engineer Intern** Apple

May 2022 - August 2022

Worked on the team architecting Apple Media Apps solving unique technical challenges.

## **Software Developer Intern** SSENSE

May 2021 - August 2021

Worked on the iOS team facilitating a transition to the composable architecture and SwiftUI.

## **Software Developer Intern** Altairix

May 2020 - August 2020

Worked on the web based learning platform for students with disabilities.

# Misc

## **Canadian Citizen**

## **American Citizen**