# Siyan (Vivian) He

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### **Research Interests**

# Low-Dimensional Topology, Teichmüller Theory, Geometric Group Theory

#### EDUCATION

University of Utah	Jan – Apr 2023
Exchange Visitor (Advisor: Mladen Bestvina)	
University of Toronto	$2022 - { m current}$
Ph.D, Mathematics (Advisor: Kasra Rafi)	
University of Toronto	2021 - 2022
M.Sc, Mathematics (Advisor: Kasra Rafi)	
University of Toronto	2017-2021
B.Sc, Mathematics Specialist (High Distinction)	

# PUBLICATIONS AND PREPRINTS

Sigma-compactness of Morse boundary in Morse local-to-global groups and applications to stationary measures (with Davide Spriano, Stefanie Zbinden) arXiv:2407.18863.

## Random walks on groups and superlinear divergent geodesics

(with Kunal Chawla, Inhyeok Choi, Kasra Rafi) Ergodic Theory and Dynamical Systems. doi:10.1017/etds.2024.75

#### Equivalent topologies on the contracting boundary

Glasnik Matematički. Vol. 58(78)(2023), 75 - 83.

## HONORS AND AWARDS

NSERC Canadian Graduate Scholarships - Doctoral Program (CGS-D) - CAD 120,000 over 36 months	3 2024–2026
City of Toronto Graduate Scholarship for Women in Mathematics - CAD 10,000	2024
Margaret Isobel Elliott Graduate Scholarship - CAD 4,000	2023
NSERC Michael Smith Foreign Study Supplement (MSFSS) - CAD 6,000	2023
Martin Shubik Graduate Award In Mathematics - CAD 8,900	2023
NSERC Canadian Graduate Scholarships - Master's Program (CGS-M) - CAD 17,500	2022
NSERC Undergraduate Student Research Awards (USRA) - CAD 6,000	2021
The Harry Boxen Memorial Scholarships In Mathematics - CAD 936	2019
Dean's List	2018,2019,2020
Later Life Learning Osotf Award - CAD 1500	2018,2019

#### TALKS

# Research Talk: Counting curves intersecting a measured foliation

Riemann Surfaces: Random, Flat, and Hyperbolic Geometry (Lightning Talk), Oberwolfach	Sep, $2024$
Research Talk: (Lack of) Stationary Measure on the Morse boundary CMI-HIMR Summer School (Lightning Talk), Univ. of Bristol	Jul 2024
Expository Talk: CAT(0) Cube Complexes from Sageev's Construction	Jul, 2024
Riverside workshop on geometric group theory, UC Riverside	May, 2024

Riverside workshop on geometric group theory, UC Riverside

Research Talk: Random walks on groups and superlinear divergent quasi-geodesics

Algebra, Geometry, and Topology Seminar, Heriot-Watt University	Jul, 2024
Spring Topology and Dynamical Systems Conference, Univ. of North Carolina	Mar, 2024
Dynamics Seminar, Univ. of Toronto	Jan, 2024
Graduate Student Seminar, Univ. of Toronto	Dec, 2023
Graduate Student Lecture Series, Univ. of Buffalo	Nov, 2023
Hyperbolic Lunch Seminar, Univ. of Toronto	Nov, 2023
Wasatch Topology Conference (Lightning Talk)	Oct, 2023
Research Talk: Generalizing the Gromov boundary	
Xian Jiaotong-Liverpool University	May, 2023
Geometry, Topology, and Dynamics Grad Student Seminar, Univ. of Utah	Mar, 2023
Tech Topology Conference (Lightning Talk)	Dec, 2022
Geometric Topology Grad and Postdoc Seminar (Virtual)	Aug, 2022
Hyperbolic Lunch Seminar, Univ. of Toronto	Jul, 2022
Teaching Experience	
Mentor	2024
Directed Reading Program - University of Toronto	
• Topic: Introduction to geometric group theory	
• Students: Sofia-Maria Bilinska, Summer Sun, Howard Xiao, Jimmy Xu	
Mentor	2023
Reading Course - University of Toronto	
• Topic: Hyperbolic Geomerty (with Kasra Rafi)	
• Students: James Bona-Landry, Diba Heydary, Petar Jovasevic, Summer Su	
Course Instructor	$2024 - \mathrm{Current}$
University of Toronto	
MAT136: Integral Calculus	Summer 2024, Fall 2024
Teaching Assistant	$2019 - \mathrm{Current}$
University of Toronto	2015 Current
MAT199: Aha! Mathematical Discovery and Creative Problem Solving	Winter 2024
MAT157: Analysis I	Fall 2023, Winter 2024
MAT224: Linear Algebra II	Summer 2023
MAT332: Introduction to Graph Theory	Fall 2022
MAT133: Calculus and Linear Algebra for Commerce	Summer 2022
MAT315: Introduction to Number Theory	Fall 2021, Winter 2022
MAT137: Calculus with Proofs	Winter 2021
Math Learning Center	Fall 2021, Winter 2022, Fall 2022
MAT136: Integral Calculus	Winter 2020, Winter 2021
MAT135: Differential Calculus	Fall 2019, Fall 2020
Counselor	Summer 2017, 2018
Ross Mathematics Program	

#### SERVICE

**Co-organizer - GT GAPS** Geometric Topology Grad and Postdoc Seminar

**Co-chair - Bird's Eye Conference** Birds Eye Conference (Topology and Geometry Session)

## Co-organizer - WiM

 $Women\ in\ Math$ 

Academic Committee - MGSA Mathematics Graduate Students Association

Mentor - Math Mentorship Program Association of Women in Math

Vice President Communication - MU Math Union Toronto

Social Officer - MU Math Union Toronto 2023 - present

2024 University of Toronto 2023 - present University of Toronto 2023 - 2024 University of Toronto 2021 University of Toronto 2020 University of Toronto 2019 University of Toronto