

YUNHAI XIANG

EDUCATION

University of Western Ontario

Ph.D. in Mathematics (in progress)

Advisor: Chris Hall

Specialization: Number Theory and Arithmetic Geometry

University of Western Ontario

M.Sc. in Mathematics

Advisor: Chris Hall

University of Waterloo

B.Math. in Pure Mathematics, Honors, with Distinction

SKILLS

Languages Mandarin (Native), English (Fluent), French (Beginner)

Programming Python, C++, Lean

Softwares LaTeX, SageMath, Git, Cinema 4D

AWARDS

Mathematics Undergraduate Research Award

May 2022 — Aug 2022

- Undergraduate Research Award at University of Waterloo

CONFERENCES & PRESENTATIONS

Conferences Attendance & Talks

- *Rigid Analytic Geometry*, Summer 2024, Ontario Graduate Mathematics Conference, UWaterloo
- *Schubert Calculus and Cohomology of Grassmannians*, Summer 2022, Canadian Undergraduate Mathematics Conference, Université Laval

Seminar Attendance & Talks

- *Weyl Group and Root Datum*, Summer 2025, Algebraic Groups Seminar, UWO
- *Hecke Operators*, Summer 2025, Algebraic Groups Seminar, UWO
- *Parabolic and Borel Subgroups*, Summer 2025, Algebraic Groups Seminar, UWO
- *Lie Algebras of Algebraic Groups*, Summer 2025, Algebraic Groups Seminar, UWO
- *Non-Archimedean Fields*, Summer 2024, Rigid Analytic Geometry Seminar, UWO
- *Admissible Topology*, Summer 2024, Rigid Analytic Geometry Seminar, UWO
- *Cones and Affine Toric Varieties*, Summer 2024, Toric Varieties Learning Seminar, UWO
- *Galois Cohomology*, Winter 2024, Graduate Student Seminar, UWO
- *Derived Categories*, Fall 2022, Algebraic Geometry Working Seminar, UWaterloo

Final Projects

- *Modular Curves and Modular Forms*, Summer 2025, for *Riemann Surfaces*
- *Adeles and Ideles*, Winter 2024, for *Algebraic Number Theory*
- *Representations of $\mathrm{GL}_2(\mathbb{F}_q)$ and $\mathrm{SL}_2(\mathbb{F}_q)$* , for *Representation Theory of Finite Groups*
- *Fundamental Group of Toric Varieties*, Fall 2022, for *Toric Varieties*

- *Étale Fundamental Group*, Winter 2022, for *Algebraic Stacks*
- *Galois Cohomology and Weak Mordell–Weil Theorem*, Summer 2021, for *Arithmetic Geometry*

TEACHING

Teaching Assistantship

- MATH 2155, Mathematical Structures, Fall 2025
- CALCULUS 1000, Calculus 1, Fall 2025
- MATH 1229, Methods of Matrix Algebra, Summer 2025
- MATH 1228, Methods of Finite Mathematics, Summer 2025
- CALCULUS 1501, Calculus II for Mathematical and Physical Sciences, Winter 2025
- CALCULUS 1000, Calculus 1, Winter 2025
- MATH 3150, Elementary Number Theory I, Fall 2024
- CALCULUS 1000, Calculus 1, Summer 2024
- MATH 1229, Methods of Matrix Algebra, Summer 2024
- MATH 1228, Methods of Finite Mathematics, Summer 2024
- CALCULUS 1000, Calculus 1, Winter 2024

SERVICES

Seminar Organization

- Toric Varieties Learning Seminar, Summer 2024, co-organized with Nicolas Rieke

Mathematical Outreach

- *Surreal Numbers and the Game of Go*, Summer 2025, Western Summer Math Camp
- *Mathematical Magic Tricks: Gilbreath's Principle*, Summer 2024, Western Summer Math Camp
- *Why is There no Quintic Formula*, Summer 2024, Western Summer Math Camp
- *Category Theory Demystified*, Winter 2023, Short Attention Span Math Seminar
- *A Topological Proof of Insolvability of the Quintic*, Summer 2022, Short Attention Span Math Seminar

Directed Reading Program Mentorship

- Coming soon