# 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

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| **Languages** | Mandarin (Native), English (Fluent), French (Beginner) |
| **Programming** | Python, Lean |
| **Softwares** | LaTeX, SageMath |

## 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

· *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

### 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

### 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 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

### Directed Reading Program Mentorship

- Coming soon

## SERVICES

### Seminar Organization

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