Xinran Yu

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Education

University of Illinois Urbana–Champaign — Expected May 2026
Ph.D. in Mathematics
Advisor: Prof. Pierre Albin
M.S. in Mathematics — May 2019

University of Liverpool & Xi'an Jiaotong–Liverpool University — June 2017
B.Sc. in Mathematics with Honors & B.Sc. in Applied Mathematics (dual degree, 2+2 program)
Thesis: *Analytic Continuation and Riemann Surfaces*
Advisor: Dr. Jon Woolf

Research Interests

Geometric Analysis, Conformal Geometry, Mathematical Relativity, Singular and Non-Compact Spaces.

Preprints and Publications

Conformally Compact Metrics and the Lovelock Tensors arXiv:2505.24188 — 2025

Witten Instanton Complex and Morse-Bott Inequalities on Stratified Pseudomanifolds — 2024
with Gayana Jayasinghe and Hadrian Quan. arXiv:2412.12003, submitted

Talks

AMS Fall Central Sectional Meeting, Saint Louis University — Oct 2025
  "Asymptotic Behavior of Conformally Compact Lovelock Metrics"

Great Lakes Mathematical Physics Meeting (GLaMP), University of Kentucky — Jun 2025
  "Asymptotic Behavior of Conformally Compact Lovelock Metrics"

Graduate Student Geometry and Topology Seminar, UIUC — Oct 2024
  "Dirichlet-to-Neumann Map for Conformally Compact Einstein Metrics"

AWM Graduate Student Colloquium, UIUC — Apr 2024
  "Conformal Geometry in Lovelock Gravity Theories"

Graduate Geometry and Analysis Seminar, UIUC — Feb 2024
  "The Fractional Laplacian through Dirichlet Problem Formulation"

Honors & Awards

Susan C. Morisato IML Scholarship, UIUC — Summer 2025

Ruth V. Shaff & Genevie I. Andrews Fellowship, UIUC — Spring 2024

Teachers Ranked as Excellent by their Students, UIUC — Spring & Fall 2021

Wills Prize in Mathematics, UoL — 2017

IMA Prize, UoL — 2017

University Academic Achievement Award, XJTLU — 2014–2015

Conferences & Workshops Attended

30th Southern California Geometry Analysis Seminar (SCGAS), University of California, Irvine — 2025

From Global to Microlocal Analysis, MIT — 2025

GLaMP, Michigan State University — 2024

Microlocal Analysis and Quantum Dynamics (MAQD), Northwestern University — 2024

May Midwestern Microlocal Meeting (MMMM), Northwestern University — 2023

Teaching Experience

AT UIUC

Instructor
- MATH 231: Calculus II (Spring 2022, Spring 2025)

Teaching Assistant
- MATH 241: Calculus III (Fall 2021). [Teachers Ranked as Excellent]()
- MATH 220: Calculus (Fall 2024)
- MATH 231: Calculus II (Spring 2021). [Teachers Ranked as Excellent]()

Grader

Graduate Courses
- MATH 518–519: Differentiable Manifolds I–II (Fall 2023, Spring 2023)
- MATH 553: Introduction to Partial Differential Equations (Spring 2023)
- MATH 541: Functional Analysis (Spring 2023)
- MATH 512–514: Algebraic/Complex Algebraic Geometry (Fall 2022)
- MATH 525: Algebraic Topology I (Spring 2021)

Undergraduate Courses
- MATH 416: Abstract Linear Algebra (Fall 2025, Fall 2022)
- MATH 402–403: Non-/Euclidean Geometry (Fall 2023)
- MATH 423: Differential Geometry (Fall 2023)
- MATH 286: Introduction to Differential Equations Plus (Fall 2020)
- MATH 489: Dynamics and Differential Equations (Fall 2019)
- MATH 417–418: Introduction to Abstract Algebra I–II (Spring 2019, Fall 2019)

Mentorship

AT UIUC

[Illinois Mathematics Lab]() **Mentor** — 2024–2025
- *Historical Mathematical Models* (Spring 2025) — Supervised 5 undergraduates in collaboration with the University's Mathematics Library.
- *Documenting Historical Mathematical Models* (Fall 2024) — Supervised 4 undergraduates in collaboration with the University's Mathematics Library; project received the [Nancy D. Anderson Undergraduate Research Award]().

[Illinois Geometry Lab]() **Mentor** — Fall 2019
- *Simulating Multi-Soliton Solutions to NLS and KdV* — Supervised 4 undergraduates.

Services & Enrichment

AT UIUC

German Translation Project, Mathematics Library — 2024–2025
Internship Network in the Mathematical Sciences (INMAS) — 2024–2025
International TA Panelist — Aug 2022
PI4 Computational Bootcamp — Jun 2020

AT UOL

Staff-Student Liaison Committee — 2016–2017