

Xinran Yu

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Education

University of Illinois Urbana-Champaign (UIUC) , Champaign, IL Ph.D. in Mathematics (expected May 2026) Advisor: Pierre Albin	2019–Present
University of Liverpool (UoL) , Liverpool, UK BSc in Mathematics with Honors Thesis: <i>Analytic Continuation and Riemann Surfaces</i> . Advisor: Jon Woolf	2015–2017
Xi'an Jiaotong-Liverpool University (XJTLU) , Suzhou, China BSc in Applied Mathematics	2013–2015

Research Interests

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

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

Preprints and Publications

Conformally Compact Metrics and the Lovelock Tensors arXiv:2505.24188	2025
Witten Instanton Complex and Morse-Bott Inequalities on Stratified Pseudomanifolds with Gayana Jayasinghe and Hadrian Quan. arXiv:2412.12003 , submitted	2024

Selected Talks

AMS Fall Central Sectional Meeting , Saint Louis University “Asymptotic Behavior of Conformally Compact Lovelock Metrics”	Oct 2025
Great Lakes Mathematical Physics Meeting (GLaMP) , University of Kentucky “Asymptotic Behavior of Conformally Compact Lovelock Metrics”	Jun 2025
Graduate Student Geometry and Topology Seminar , UIUC “Dirichlet-to-Neumann Map for Conformally Compact Einstein Metrics”	Oct 2024
AWM Graduate Student Colloquium , UIUC “Conformal Geometry in Lovelock Gravity Theories”	Apr 2024
Graduate Geometry and Analysis Seminar , UIUC “The Fractional Laplacian through Dirichlet Problem Formulation”	Feb 2024

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

Midwest PDE Seminar, 86th Meeting , University of Missouri	2022
Global Harmonic Analysis Conference , Online	2022
Analysis on Singular Spaces , Banff International Research Station	2021

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 by Their Students](#)
- MATH 220: Calculus (Fall 2024)
- MATH 231: Calculus II (Spring 2021). [Teachers Ranked as Excellent by Their Students](#)

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 Math Lab](#) Mentor

2024–2025

- *Historical Mathematical Models* (Spring 2025)
- *Documenting Historical Mathematical Models* (Fall 2024). Recipient of the [Nancy D. Anderson Undergraduate Research Award](#)

[Illinois Geometry Lab](#) Mentor

Fall 2019

- *Simulating Multi-Soliton Solutions to NLS and KdV*

Services & Enrichment

At UIUC

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