

LIKUN XIE

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RESEARCH INTEREST

Number Theory

EDUCATION

Postdoctoral Fellow, Max Planck Institute for Mathematics

July 2025 – present

University of Illinois Urbana-Champaign

2020-2025

Ph.D. in Mathematics

Advisors: Prof. Alexandru Zaharescu, Prof. Bruce Berndt

University of Warwick, UK

2018-2019

M.Sc. in Mathematics, Distinction

Dissertation “Descent, Affine Representability and Classifying Space in \mathbb{A}_1 -Homotopy Theory”; Advisor: Prof. Marco Schlichting

University of Manchester, UK

2016-2018

B.Sc.(Hons) in Mathematics and Physics, First Class

Dissertation “Topos Foundation for Set Theory”; Advisor: Prof. Michael Prest

PAPERS AND PREPRINTS

1. Xie, L. (2025). On a Conjecture of Erdős over Function Fields (submitted). [arXiv:2510.17612](https://arxiv.org/abs/2510.17612)
2. Xie, L. (2025). Almost Prime Orders of Elliptic Curves modulo Prime Powers (submitted). [arXiv:2504.18732](https://arxiv.org/abs/2504.18732)
3. Nath, K., Xie, L. (2024). Almost primes and primes of the form $p = 1 + m^2 + n^2$ (To appear in *Acta Arithmetica*). [arXiv:2501.16723](https://arxiv.org/abs/2501.16723)
4. Berndt, B. C., Xie, L. (2024). Identities for the product of Two Dirichlet Series Satisfying Hecke’s Functional Equation. *Journal of Mathematical Analysis and Applications*, 550(1), 129514.
5. Xie, L. (2024). On Primes p Such That $p - b$ Has Large Prime Power Factor and Few Other Divisors. [arXiv:2410.14133](https://arxiv.org/abs/2410.14133) (submitted).
6. Xie, L. (2024). Negative Real Moments of Restricted Factors in Arithmetic Progression. *The Ramanujan Journal*, 67(41).
7. Xie, L. (2024). On an Instance of the Small Cohen-Macaulay Conjecture. *Journal of Pure and Applied Algebra*, 228(3), 107491.
8. Berndt, B. C., Xie, L., & Zaharescu, A. (2023). Proofs of McIntosh’s Conjecture on Franel Integrals and Two Generalizations. *Advances in Mathematics*, 423, 109041.

TALKS AND PRESENTATIONS

1. Almost Prime Orders of Elliptic Curves Modulo Prime Powers, ÖMG-DMV Annual Meeting 2025, Linz, Austria, September 2025 (Number Theory Section).
2. (upcoming) Almost Prime Orders of Elliptic Curves Modulo Prime Powers, Number Theory Seminar, University of Cologne, December 2025.

GRANTS AND AWARDS

Dr. Lois M. Lackner Mathematics Fellowship, University of Illinois at Urbana-Champaign, Academic Year 2023-2025

TEACHING EXPERIENCES

- **Mentor for MPIM Internship Program**

September 2025

Guided talented high school and undergraduate interns at the Max Planck Institute for Mathematics in number theory projects related to sieve theory.

- **MATH 542: Complex Variables I, MATH 540: Real Analysis, MATH 518: Differentiable Manifolds I (Grader)**

Fall 2024

Graded weekly homework assignments.

- **MATH 112: Algebra (TA)**

Fall 2023

Taught weekly discussion sessions.

- **MATH 241: Calculus III (TA)**

Spring 2023

Taught weekly discussion sessions; graded weekly homework assignments.

- **MATH 502: Commutative Algebra, MATH 427: Honors Abstract Algebra (Grader)**

Fall 2022

Held office hours, answered students' questions; graded homework assignments.

- **MATH 417: Abstract Algebra I & II (Grader)**

Spring 2022

- **MATH 417: Abstract Algebra (Grader)**

Fall 2021

- **MATH 285: Intro to Differential Equations (Grader), MATH 220: Calculus (TA, online)**

Spring 2021

- **MATH 231: Calculus II (Grader)**

Fall 2020