

# LIKUN XIE

Email: [xie@mpim-bonn.mpg.de](mailto:xie@mpim-bonn.mpg.de)  
Website: <https://likunxie.github.io/>

## RESEARCH INTEREST

---

Number Theory

## EDUCATION

---

<b>Postdoctoral Fellow, Max Planck Institute for Mathematics</b>	<i>July 2025 – present</i>
<b>University of Illinois Urbana-Champaign</b>	<i>2020-2025</i>
Ph.D. in Mathematics	
Advisors: Prof. Alexandru Zaharescu, Prof. Bruce Berndt	
<b>University of Warwick, UK</b>	<i>2018-2019</i>
M.Sc. in Mathematics, Distinction	
Dissertation “Descent, Affine Representability and Classifying Space in $\mathbb{A}_1$ -Homotopy Theory”; Advisor: Prof. Marco Schlichting	
<b>University of Manchester, UK</b>	<i>2016-2018</i>
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*