

# Yeqin Liu

Department of Mathematics, University of Michigan  
530 Church Street Ann Arbor, MI 48109  
Email: [yqn1@umich.edu](mailto:yqn1@umich.edu)  
Website: <https://7-yq.github.io/>

## Introduction

I am a postdoctoral assistant professor at the University of Michigan, working in algebra and algebraic geometry.

Specifically, I am interested in: classical Brill-Noether theory in low dimensional algebraic geometry, stable sheaves and their moduli spaces, (DM) stacks and their derived categories, twisted sheaves and Brauer groups, Bridgeland stability, derived categories of projective varieties and quivers, finite dimensional algebras and DG algebras (and more in future).

## Employment

Postdoctoral Assistant Professor, University of Michigan September 2024-  
Mentor: Alexander Perry

## Education

Ph.D in Mathematics, University of Illinois at Chicago September, 2019- May 5, 2024  
Advisor: Izzet Coskun

B.S. in Mathematics, Nanjing University September, 2015- July, 2019

## Research

1. *Cartan Determinants in algebraic geometry*, preprint available upon request, joint with Yu Shen, Ziyu Zhang
2. *A counterexample to a global-dimension bound for weighted projective lines*, arXiv:2608.23981, joint with Bochao Kong, Yu Shen
3. *A counterexample to Han's conjecture*, arXiv:2608.00177, submitted, joint with Bochao Kong, Yu Shen
4. *A counterexample to DG version of Han's conjecture*, arXiv:2512.12460, submitted, joint with Yu Shen
5. *Picard group action on the category of twisted sheaves*, Journal of Noncommutative Geometry, 2026, published online first, joint with Ting Gong and Yu Shen
6. *A looming of phantoms*, Advances in Mathematics, Volume 499, 2026, Article 111046, joint with Kimoi Kemboi, Daniel Krashen, Tianle Liu, Eoin Mackall, Svetlana Makarova, Alexander Perry, Antonios-Alexandros Robotis, Sridhar Venkatesh
7. *Geometric phantom categories do not admit Noetherian  $t$ -structures*, arXiv:2503.02052, submitted
8. *Stringy Chow rings and weighted blow ups*, International Mathematics Research Notices, Volume 2026, Issue 3, February 2026, joint with Qiangru Kuang, Rachel Webb, Weihong Xu
9. *Morita theory on root gerbes*, arXiv:2409.20317, submitted, joint with Yu Shen
10. *Stability conditions on surface root stacks*, arXiv:2407.19104, submitted, joint with Yu Shen
11. *Cones of effective cycles on blow ups of projective spaces along rational curves*, arXiv:2308.13964v1, submitted, joint with Benjamin Gould
12. *Spherical vector bundles on nodal K3 surfaces*, arXiv:2307.00091v1, submitted
13. *Nonexistence of exceptional bundles on  $\mathbb{P}^3$  with maximal possible ranks*, Journal of Algebra, Volume 695, 2026, Pages 283-310
14. *The cohomology of spherical vector bundles on K3 surfaces*, arXiv:2210.11030v2, preprint is being polished
15. *Higher rank Brill-Noether theory on  $\mathbb{P}^2$* , International Mathematics Research Notices, Volume 2023, Issue 24, December 2023, Pages 22096-22137, joint work with Benjamin Gould and Woohyung Lee

## Awards

UIC Dean's Scholar Fellowship

2023 Fall

## Organized Events

1. *Midwest Algebraic Geometry Graduate Student Conference 2022* 2022 Summer  
co-organized with Sixuan Lou, Shravan Patankar, Benjamin Tighe, Junyan Zhao
2. *Derived Category Student Seminar* 2022 Spring  
co-organized with Benjamin Gould
3. *UIC Graduate Algebraic Geometry Seminar* 2022 Spring  
co-organized with Kuang Yu Wu
4. *Gromov-Witten Theory Student Seminar* 2021 Winter
5. *UIC Graduate Algebraic Geometry Seminar* 2021 Fall  
co-organized with Kuang Yu Wu

## Mentoring

1. *Directed Reading Program on quiver representations* 2026 Spring  
Mentee: Yotam Chopra and Xiangnong Wu
2. *Directed Reading Program on algebraic geometry* 2020 Spring  
Mentee: Neelima Borade

## Teaching Experience

- **University of Illinois Chicago:**  
Mathematical reasoning (Fall 2019), Elementary linear algebra (Spring 2020), Calculus I (Fall 2020), Calculus I (Spring 2021), Calculus I (Fall 2021), Calculus II (Spring 2022), Precalculus (Summer 2022), Mathematical reasoning (Fall 2022), Calculus I (Spring 2023), Calculus II (Summer 2023), Calculus II (Fall 2023)
- **University of Michigan:**  
Calculus II (Fall 2024), Linear algebra (Spring 2025), Calculus I (Fall 2025), Multi-variable calculus (Spring 2026), Calculus II (Fall 2026)