

Lena Ji

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- RESEARCH INTERESTS Algebraic geometry & relations to arithmetic geometry.
In particular: Fano varieties, rationality, non-closed fields, characteristic $p > 0$
- EMPLOYMENT **University of Illinois Urbana-Champaign**, Urbana, IL August 2024–present
Assistant Professor
- University of Michigan**, Ann Arbor, MI September 2021–May 2024
NSF Postdoctoral Research Fellow 2022–2024
Postdoctoral Assistant Professor and Research Fellow (Number Theory RTG) 2021–2022
- EDUCATION **Princeton University**, Princeton, NJ September 2016–May 2021
PhD in Mathematics
Advisor: János Kollár
Thesis: Topics on algebraic varieties in characteristic p
- University of California, Berkeley**, Berkeley, CA January–May 2019
Exchange Scholar
- Columbia University**, New York, NY September 2012–May 2016
B.A. in Mathematics with Honors, *summa cum laude*
- PUBLISHED & ACCEPTED RESEARCH PAPERS
1. *Symmetries of Fano varieties*, with L. Esser and J. Moraga. Preprint available at [arXiv:2308.12958](https://arxiv.org/abs/2308.12958). To appear in **Journal für die reine und angewandte Mathematik**.
 2. *Curve classes on conic bundle threefolds and applications to rationality*, with S. Frei, S. Sankar, B. Viray, and I. Vogt. **Algebraic Geometry** 11 (2024), no. 3, 421–459.
 3. *A threefold violating a local-to-global principle for rationality*, with S. Frei. **Research in Number Theory** 10 (2024), no. 2, Paper No. 39.
 4. *The Noether–Lefschetz theorem in arbitrary characteristic*. **Journal of Algebraic Geometry** 33 (2024), no. 3, 567–600.
 5. *Rationality of real conic bundles with quartic discriminant curve*, with M. Ji. **International Mathematics Research Notices** (2024), no. 1, 115–151.
 6. *Structure of geometrically non-reduced varieties*, with J. Waldron. **Transactions of the American Mathematical Society** 374 (2021), no. 12, 8333–8363.
 7. *Completely controlling the dimensions of formal fiber rings at prime ideals of small height*, with S. Fleming, S. Loepp, P. McDonald, N. Pande, and D. Schwein. **Journal of Commutative Algebra** 11 (2019), no. 3, 363–388.
 8. *Controlling the dimensions of formal fibers of a unique factorization domain at the height one prime ideals*, with S. Fleming, S. Loepp, P. McDonald, N. Pande, and D. Schwein. **Journal of Commutative Algebra** 10 (2018), no. 4, 475–498.
- PREPRINTS
9. *Toricity in families of Fano varieties*, with J. Moraga. Preprint available at [arXiv:2409.03564](https://arxiv.org/abs/2409.03564) (2024).
 10. *Conic bundle threefolds differing by a constant Brauer class and connections to rationality*, with S. Frei, S. Sankar, B. Viray, and I. Vogt. Preprint available at [arXiv:2406.13510](https://arxiv.org/abs/2406.13510). Submitted (2024).
 11. *The K -moduli space of a family of conic bundle threefolds*, with K. DeVleming, P. Kennedy-Hunt, and M. Quek. Preprint available at [arXiv:2403.09557](https://arxiv.org/abs/2403.09557). Submitted (2024).

12. *Arithmetic and birational properties of linear spaces on intersections of two quadrics*, with F. Suzuki. Preprint available at [arXiv:2402.18857](https://arxiv.org/abs/2402.18857). Submitted (2024).
13. *The fibering genus of Fano hypersurfaces*, with N. Chen, B. Church, and D. Stapleton. Preprint available at [arXiv:2308.12401](https://arxiv.org/abs/2308.12401). Submitted (2023).
14. *Fano hypersurfaces with no finite order birational automorphisms*, with N. Chen and D. Stapleton. Preprint available at [arXiv:2208.07396](https://arxiv.org/abs/2208.07396). Submitted (2022).

AWARDS

- NSF Mathematical Sciences Postdoctoral Research Fellowship, DMS-2202444 (2022–2024)
- NSF Graduate Research Fellowship Program, DGE-1656466 (2018–2021)
- Princeton University President’s Fellowship (2016)
- Junior Phi Beta Kappa, Columbia College (2016)

INVITED CONFERENCE TALKS

- 40 Years of Higher Dimensional Geometry, Princeton University, June 2026.
- Mathematical Congress of the Americas 2025, Special Session on Birational Geometry and Singularities. IMSA, University of Miami, July 2025.
- Summer Research Institute in Algebraic Geometry, Session on Moduli of Higher Dimensional Varieties. Colorado State University, July 2025.
- Structures and Symmetries in Algebraic Geometry. University of the National Education Commission, Kraków, June 2025.
- Real Algebraic Geometry and Birational Geometry. CIRM, Marseille, June 2025.
- Cremona Groups. CIRM, Marseille, May 2025.
- Birational Geometry and Number Theory. ICMS, Edinburgh, October 2024.
- Boston Algebraic Geometry Day. Harvard University, October 2024.
- Fano varieties in Cetraro. Grand Hotel San Michele, Cetraro, September 2024.
- Oberwolfach Workshop: Algebraic Geometry: Wall Crossing and Moduli Spaces, Varieties and Derived Categories. Oberwolfach, June 2024.
- Birational Geometry and Dynamics. SwissMAP Research Station, Les Diablerets, June 2024.
- MPS Conference on Higher Dimensional Geometry. Simons Center, May 2024.
- AGNES (Algebraic Geometry Northeastern Series). Boston College, March 2024.
- Fields Medal Symposium in Honor of Caucher Birkar. The Fields Institute, October 2023.
- International Workshop on Birational Geometry. Nagoya University, October 2023.
- AWM Research Symposium. Special Session on Recent Advances in Curves and Abelian Varieties. Clark Atlanta University, September 2023.
- Clay Research Workshop: K-stability and Birational Geometry. University of Oxford, September 2023.
- Conference on Rationality and Hyperbolicity. University of Notre Dame, June 2023.
- MPS Conference on Higher Dimensional Geometry. Simons Center, May 2023.
- Michigan Algebraic Geometry Symposium. University of Michigan, March 2023.
- Explicit Moduli Problems in Higher Dimensions. BIRS, February 2023.
- Birational Complexity of Algebraic Varieties. Simons Center, December 2022.
- AMS Fall Western Sectional Meeting, Special Session on Recent Advances in Algebraic Geometry and Commutative Algebra in or Near Characteristic p (associated with the Invited Address by Bhargav Bhatt). University of Utah, October 2022.
- Conference on Algebraic Geometry and Singularities. Univ. of Washington, June 2022.
- AWM Research Symposium. Special Session on WiAG: Women in Algebraic Geometry. University of Minnesota, June 2022.
- JAMI 2022: Higher Dimensional Algebraic Geometry. Johns Hopkins Univ., May 2022.
- MPS Conference on Higher Dimensional Geometry. Simons Foundation, February 2022.
- AGNES Showcase (Online). October 2021.
- Western Algebraic Geometry Symposium (Online). April 2021.
- AMS Fall Eastern Sectional Meeting, Special Session on Algebraic Singularities in Arbitrary Characteristic (Online). October 2020

INVITED
SEMINAR
TALKS

- Purdue University, Algebraic Geometry Seminar. October 2024.
- University of Washington, Algebra and Algebraic Geometry Seminar. October 2024.
- Stony Brook University, Algebraic Geometry Seminar. September 2024.
- University of Illinois Urbana-Champaign, Algebraic Geometry Seminar. September 2024.
- Leibniz Universität Hannover, Oberseminar Algebraische Geometrie. July 2024.
- École Polytechnique Fédérale de Lausanne; Groups, Arithmetic and Algebraic Geometry Seminar. June 2024.
- Institut de Mathématiques de Bordeaux, Séminaire de Théorie des Nombres. June 2024.
- Tsinghua University, Algebraic Geometry Seminar. May 2024.
- Brown University, Algebraic Geometry Seminar. April 2024.
- NYU Courant, Joint Columbia-CUNY-NYU Number Theory Seminar. April 2024.
- Washington University in St. Louis, Algebraic & Arithmetic Geom Seminar. March 2024.
- University of Illinois Chicago, Algebraic Geometry Seminar. February 2024.
- University of Nottingham, Online Algebraic Geometry Seminar. November 2023.
- Tufts University; Algebra, Geometry, and Number Theory Seminar. October 2023.
- University of Michigan, Commutative Algebra Seminar. October 2023.
- The University of Tokyo, Algebraic Geometry Seminar. October 2023.
- UT Austin, Geometry Seminar. September 2023.
- UW Madison, Algebra and Algebraic Geometry Seminar. April 2023.
- Johns Hopkins University, Algebraic Geometry Seminar. April 2023.
- UCLA, Algebra Seminar. April 2023.
- Columbia University, Algebraic Geometry Seminar. March 2023.
- [Birational Geometry Seminar](#) (Online). January 2023.
- University of Notre Dame, Algebraic Geometry/Commutative Alg. Seminar. Dec. 2022.
- University of Illinois Urbana-Champaign, Algebraic Geometry Seminar. November 2022.
- Michigan State University, Algebra Seminar. November 2022.
- University of Utah, Algebraic Geometry Seminar. October 2022.
- Simon Fraser University, Number Theory and Algebraic Geometry Seminar (Online). September 2022.
- Northwestern University, Algebraic Geometry Seminar (Online). November 2021.
- Ohio State University, Algebraic Geometry Seminar (Online). November 2021.
- University of Michigan, Algebraic Geometry Seminar. September 2021.
- Stanford University, Algebraic Geometry Seminar (Online). June 2021.
- University of Utah, Algebraic Geometry Seminar (Online). February 2021.
- Yale University, Algebra and Number Theory Seminar (Online). February 2021.
- University of Michigan, Algebraic Geometry Seminar (Online). November 2020.
- Princeton University, Algebraic Geometry Seminar (Online). November 2020.

TEACHING
EXPERIENCE

- Calculus I (Math 115), University of Michigan Fall 2023
- Calculus I (Math 115), University of Michigan Fall 2021
- Numbers, Equations, and Proofs (MAT214) (co-taught), Princeton University Fall 2018

EXPOSITORY
ARTICLES

- Theorem of the base, with R. Cheng, M. Larson, and N. Olander. In *Stacks Project Expository Collection (SPEC)*, 163–193, London Math. Soc. Lecture Note Ser., 480, Cambridge Univ. Press, Cambridge, 2022.
- Weil restriction for schemes and beyond, with S. Li, P. McFaddin, D. Moore, and M. Stevenson. In *Stacks Project Expository Collection (SPEC)*, 194–221, London Math. Soc. Lecture Note Ser., 480, Cambridge Univ. Press, Cambridge, 2022.

MENTORSHIP

- Bootcamp mentor for Summer Research Institute in Algebraic Geometry, Colorado State University (2025)
- Undergraduate reading courses supervised at the University of Illinois – Saibo Xu (Fall 2024), Topic: Rational points on varieties
- Mentor for AWM vertical mentoring program, University of Michigan (2023–2024)

- REU (Research Experience for Undergraduates) mentor, University of Michigan (2022)
 - Student: Mattie Ji¹ from Brown University (2024 AWM Schafer prize runner-up)
 - Project: *Examples of real conic bundles with quartic discriminant curve*
- Working session advisor for AGNES (Algebraic Geometry Northeastern Series) Summer School on Higher Dimensional Moduli, Brown University (August 2022): Led exercise and research problem sessions for the graduate summer school.
- Project group leader for AGNES Summer School on Higher Dimensional Moduli (with K. DeVleming): Led a group continuing the research started at the graduate summer school.
- Group leader for Mentoring Möbius, Princeton University (2016–2021): Mentored math undergraduate students at Princeton.
- MathReach volunteer: Taught enrichment math at STEMCivics Purplefect Palace High School in Ewing Township, NJ (2017–2018)
- Maintain REU application information and help website for undergraduates <http://www-personal.umich.edu/~lenaji/reus/> (2017–present)

SEMINARS AND
WORKSHOPS
ORGANIZED

- Stacks Project Workshop, August 2023 (local organizer)
- K-stability learning seminar, University of Michigan, Winter 2023 (co-organizer)
- Brauer–Manin obstruction learning seminar, University of Michigan, Fall 2022 (organizer)
- **American Graduate Student Algebraic Geometry Seminar**, 2020–2021 (co-organizer): Online research seminar for graduate students in algebraic geometry during the pandemic.
- Noetherian Ring lecture series, Princeton University, 2019–2021 (co-organizer): Lecture series highlighting the work of early career women and non-binary mathematicians.

SERVICE

- Committees at the University of Illinois Department of Mathematics (2024–present)
 - Graduate recruitment and application screening (2024–2025)
- Service at the University of Michigan Department of Mathematics (2022–2024)
 - Executive Board of AWM (Association for Women in Mathematics) (2022–2024)
 - Organizer of “Cake Time” department social (2022–2024): Bimonthly social for math grad students, postdocs, faculty, and staff. On average 120+ attendees per event.
 - Workshop leader for Jobs in Academia for Mathematicians Sessions for graduate students (2022, 2023): Led workshops to help math grad students with job applications.
 - U(M) Undergraduate Math Club expository talks: *Solutions of polynomials mod q* (2022), *What is a moduli space?* (2023)
- Service at Princeton University (2016–2021)
 - Co-organizer of Noetherian Ring (women in math), Princeton University (2019–2021)
 - Co-organizer of Princeton Mathematics Department Friday Social (2018–2020)
 - Co-organizer of Princeton Mathematics Graduate Student Seminar (2017–2018)
 - Women in Stem Leadership Council, Princeton University (2016–2018)
- Contributor to the Stacks Project, <http://stacks.math.columbia.edu>

LANGUAGES

English (native), Mandarin Chinese (intermediate)

Last updated: September 2024.

¹We have the same last name but are not related.