Yidi Wang

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Research Interests Algebra, algebraic geometry, arithmetic geometry, algebraic number theory. In particular, local-global principles, the arithmetic of stacky curves, algebraic groups and differential Galois theory.

Appointment

University of Western Ontario, London, ON, Canada — Expected August 2024

- Postdoctoral Associate in Mathematics

Education

University of Pennsylvania, Philadelphia, PA, USA — August 2018–May 2024

- Ph.D. in Mathematics
- Advisor: Julia Hartmann
- Thesis: Patching over Hensel semi-global fields and local-global principles for algebraic and differential objects

University of California, Berkeley, Berkeley, CA, USA — August 2014–May 2018

- B.A. in Mathematics with Honors

Publications and preprints

- Arithmetic invariant theory of reductive groups. 21 pages. Submitted. 2023 preprint available at arXiv:2212.12863.
- Cohomology for Picard-Vessiot theory. Joint work with Man Cheung Tsui. *Journal of Algebra*, vol 658 (2024) 49–72. Also available at arXiv:2308.03025.
- Patching for étale algebras and the period-index problem for higher degree Galois cohomology groups over Hensel semi-global fields. 25 pages. Submitted. 2023 Preprint available at arXiv:2310.20119.

Ongoing Projects

- A local-global principle for differential torsors. In progress.
- Local-global principles for integral points on stacky curves. Joint with Juanita Duque Rosero, Christopher Keyes, Andrew Kobin, Manami Roy and Soumya Sankar. In progress.
- Brauer-Manin obstructions for zero-cycles on stacky curves. Joint with Caleb Ji. In progress.

Research talks

- Local-global principles on stacky curves and the application to solving generalized Fermat equations. *AMS Sectional Meeting: Ramification in Algebraic and Arithmetic Geometry, University of Wisconsin-Milwaukee, April 2024*
- Local-global principles on stacky curves. *AGNES at BC, Boston College, March 2024*
- Local-global principles for integral points on Stacky curves. *Special session: Explicit computations with Stacks, Joint Mathematics Meeting, January 2024*
- The period-index problem for higher degree Galois cohomology groups over Hensel semi-global fields. *AGNES at UPenn, University of Pennsylvania, October 2023*

- Local-global principles over Hensel semi-global fields and the applications to the generalized period-index problem, *Arithmetic Geometry and Algebraic Groups Conference, University of Virginia, May 2023*
- Patching, local-global principles, and their application to the generalized period-index problem, *Algebra seminar, University of Pennsylvania, February 2023*
- Local-global principles over hensel semi-global fields and their applications to the generalized period-index problem, *Algebra seminar, Florida State University, November 2022*
- Linearly reductive group schemes over rings, *Algebra seminar, University of Pennsylvania, February 2022*

Expository Talks

- Group theory in Rubik's cubes, *Penn Undergraduate Math Society talk series, April 2023.*

Teaching Experience

Penn Art and Science High School Program

- Director of Penn Summer Math Academy, *University of Pennsylvania, July 2024*

Princeton Prison Teaching Initiative

- Volunteer Instructor, MATH020, *South Woods State Prison, New Jersey, Spring 2024*
- Volunteer Instructor, MATH015, *South Woods State Prison, New Jersey, Fall 2023*

Math Circles

- Volunteer, *West Philadelphia High School, Fall 2023*

University of Pennsylvania

- Teaching Assistant, Math 3140, Advanced Linear Algebra, *Spring 2023*
- Teaching Assistant, Math 312, Linear Algebra, *Spring 2020*
- Teaching Assistant, Math 104, Calculus II, *Fall 2020*
- Teaching Assistant, Math 313, Computational Linear Algebra, *Spring 2020*
- Teaching Assistant, Math 240, Calculus III: Linear Algebra and Differential Equations, *Fall 2019*

University of California, Berkeley

- Adjunct Instructor, Math 16B, Calculus II for Social Science and Environmental Science, *Student Learning Center, Spring 2017*

Mentorship

Directed Reading Program for Undergraduates, *University of Pennsylvania*

- Mentor, topic: Stacks and moduli, *Spring 2024*
- Mentor, topic: Algebraic geometry, *Fall 2023*
- Mentor, topic: Étale cohomology, *Spring 2023*
- Mentor, topic: Elliptic curves, *Spring 2022*

Honors and Awards

- Good Teaching Award for Math 3140, *University of Pennsylvania, Spring 2023*
- CTL Teaching Certificate, *Center for Teaching and Learning, University of Pennsylvania, 2023*
- Benjamin Franklin Fellowship, *Graduate School of Arts and Science, University of Pennsylvania, 2018*
- Honors in Mathematics, *University of California, Berkeley, 2018*

Grants

- AMS Spring Section Travel Grant, *Spring 2024*

Conferences and Workshops

- GTA Philadelphia 2024: Graduate student conference at Temple University in algebra, geometry and topology, *Philadelphia, May 2024*
- AMS Sectional Meeting: Ramification in Algebraic and Arithmetic Geometry, *University of Wisconsin-Milwaukee, April 2024*
- AGNES: Algebraic Geometry Northeastern Section at Boston College, *Boston College, March 2024*
- Joint Mathematics Meeting, *San Francisco, January 2024*
- FRG workshop on Brauer groups and derived categories, *Northwestern University, October 2023*
- AGNES: Algebraic Geometry Northeastern Section at UPenn, *University of Pennsylvania, October 2023*
- Mathematical Research Community: Explicit Computations with Stacks, *American Mathematical Society, Java center, June 2023*
- Arithmetic Geometry and Algebraic Groups Conference, *University of Virginia, May 2023*
- Arizona Winter School: Unlikely Intersections, *Tucson, March 2023*
- Joint Mathematics Meeting, *Boston, January 2023*
- GTA Philadelphia 2022: Graduate student conference at Temple University in algebra, geometry and topology, *Philadelphia, May 2022*
- ALGAR 2020: Valuations, quadratic forms and definability, *University of Antwerp, online, July 2020*
- Chicago Number Theory Day, *online, June 2020*

Relevant Skills

- Languages: English, Mandarin Chinese, Japanese
- Skills: Latex, Mathematica, MatLab, Python, Java