Yidi Wang

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Research Interests
: Algebra, algebraic geometry, arithmetic geometry, algebraic number theory.
In particular, local-global principles and their obstructions, the arithmetic of algebraic stacks, Brauer groups, algebraic groups, period-index problem and differential Galois theory.

Appointment
: **University of Western Ontario**, London, ON, Canada

- Postdoctoral Associate in Mathematics   September 2024 – Present
- Fields Institute Postdoc   September 2024 – August 2025

Education
: **University of Pennsylvania**, Philadelphia, PA, USA

- Ph.D. in Mathematics   August 2018 – May 2024
- 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

- B.A. in Mathematics with Honors   August 2014 – May 2018

Publications and preprints
:
- Arithmetic invariant theory of reductive groups. *Communications in Algebra*, vol 53(11) (2025) 4749–4765. Also available at arXiv:2212.12863.
- Cohomology for Picard-Vessiot theory. Joint 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. 27 pages. Submitted. Preprint available at arXiv:2310.20119.
- The integral Hasse principle for stacky curves associated to a family of generalized Fermat equations. 41 pages. Joint work with Juanita Duque-Rosero, Christopher Keyes, Andrew Kobin, Manami Roy and Soumya Sankar. Preprint available at arXiv:2509.13248.

Ongoing Projects
:
- The étale Brauer-Manin obstructions for classifying stacks. Joint with Ajneet Dhillon, Nicole Lemire and Mac Martin. Manuscript in preparation.
- Local statistics for generalized Fermat equations $Ax^m + By^m = Cz^n$. Joint with Juanita Duque-Rosero, Christopher Keyes, Andrew Kobin, Manami Roy and Soumya Sankar. Manuscript in preparation.
- The integral Hasse principle for generalized Fermat equations $Ax^2 + By^3 = Cz^3$. Joint with Juanita Duque Rosero, Christopher Keyes, Andrew Kobin, Manami Roy and Soumya Sankar. In progress.
- The genus problem for division algebras over semi-global fields. Joint with Deependra Singh. In progress.

RESEARCH TALKS	• Local-global principles on stacky curves. *Geometry and Topology seminar, University of Waterloo, April 2025.*
	• Local-global principles on stacky curves and solving generalized Fermat equations. *Algebra and number theory seminar, Emory University, February 2025.*
	• A geometric approach of solving generalized Fermat equations. *Geometry and topology seminar, University of Western Ontario, February 2025.*
	• The period-index problem for higher degree Galois cohomology groups over Hensel semi-global fields. *Number Theory Seminar, Fields Institute, October 2024.*
	• 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	• Symmetries as how mathematicians see them. *Western β-camp for 8th graders, Univeristy of Western Ontario, July 2025*
	• A local-global principle for differential torsors, *UP GRADe Workshop, University of Pennsylvania, May 2024.*
	• Group theory in Rubik's cubes, *Penn Undergraduate Math Society talk series, April 2023.*
JOURNALS REFEREED	• International Mathematics Research Notices
	• Simons Symposia Proceedings series (quick opinion)
TEACHING EXPERIENCE	**University of Western Ontario**
	• Instructor of record, MATH1600, Linear Algebra, *University of Western Ontario, Fall 2025*
	• Instructor of record, UpMath, Preparatory course for incoming first year students, *University of Western Ontario, Summer 2025*
	• Instructor of record, MATH2156, Mathematical Structures II, *University of Western Ontario, Winter 2025*
	• Instructor of record, MATH1600, Linear Algebra, *University of Western Ontario, Fall 2024*

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 Western Ontario*

- Mentor, topic: Invariant theory of linear algebraic groups, *Winter 2025*

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

- Existence and enumeration of integral points on spherical stacky curves, *BIRS Focused Research Group, October 26 – November 2, 2025.*
- Existence and enumeration of integral points on spherical stacky curves, *ICMS Research–in Groups program, June 23 – July 4, 2025.*
- 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

REFERENCES

- Julia Hartmann: `hartmann@sas.upenn.edu`
- Nicole Lemire: `nlemire@uwo.ca`
- David Harbater: `harbater@sas.upenn.edu`
- Daniel Krashen: `dkrashen@sas.upenn.edu`
- Raman Parimala: `parimala.raman@emory.edu`
- Asghar Ghorbanpour (teaching): `aghorba@uwo.ca`