

Curriculum Vitae

Yifeng Huang

Positions

2022-present **Postdoctoral Fellow**, *University of British Columbia (UBC)*, Mentors: Jim Bryan, Kalle Karu, Zinovy Reichstein

Education

Apr 2022 **Ph.D. in Mathematics**, *University of Michigan, Ann Arbor (U of M)*, Advisor: Michael Zieve, Co-advisor: Jeffery Lagarias

Thesis: Topics on Polynomial Equations in Noncommutative Rings and Motivic Aspects of Moduli Spaces

2015 **B.Sc. in Mathematics, First Honor**, *Hong Kong University of Science and Technology (HKUST)*

Research Interest

I am interested in the interface of algebraic geometry, number theory and combinatorics. I am currently working on matrix Diophantine equations, the Hilbert scheme of points and related moduli spaces, and discrete random matrix theory.

Publications

- [11] Yifeng Huang. “Mutually annihilating matrices, and a Cohen–Lenstra series for the nodal singularity”. In: *J. Algebra* 619 (2023), pp. 26–50.
- [8] Yifeng Huang, Ken Ono, and Hasan Saad. “Counting matrix points on certain varieties over finite fields”. In: *Contemp. Math., Amer. Math. Soc.* accepted for publication (2023). <https://arxiv.org/abs/2302.04830>.
- [7] Gilyoung Cheong and Yifeng Huang. “Betti and Hodge numbers of configuration spaces of a punctured elliptic curve from its zeta functions”. In: *Trans. Amer. Math. Soc.* 375.9 (2022), pp. 6363–6383.
- [6] Yifeng Huang. “Counting on the variety of modules over the quantum plane”. In: *Algebr. Comb.* 5.3 (2022), pp. 583–592.
- [4] Gilyoung Cheong and Yifeng Huang. “Cohen–Lenstra distributions via random matrices over complete discrete valuation rings with finite residue fields”. In: *Illinois Journal of Mathematics* 65.2 (2021), pp. 385–415.
- [1] Yifeng Huang. “Unit equations on quaternions”. In: *Q. J. Math.* 71.4 (2020), pp. 1521–1534.

Preprints

- [12] Gilyoung Cheong and Yifeng Huang. “Universality of the cokernel of a random integral matrix with concentrated residue”. In preparation. 2023++.
- [10] Yifeng Huang and Ruofan Jiang. “Generating series for torsion-free bundles over singular curves: rationality, duality and modularity”. In preparation. 2023++.
- [9] Yifeng Huang and Ruofan Jiang. “Punctual Quot schemes and Cohen–Lenstra series of the cusp singularity”. Preprint <https://arxiv.org/abs/2305.06411>. 2023+.
- [5] Yifeng Huang and Ruofan Jiang. “Spiral shifting operators from the enumeration of finite-index submodules of $\mathbb{F}_q[[T]]^d$ ”. Preprint <https://arxiv.org/abs/2210.10215>. 2022+.
- [3] Tianyu Wang, Yifeng Huang, and Didong Li. “From the Greene–Wu Convolution to Gradient Estimation over Riemannian Manifolds”. Preprint <https://arxiv.org/abs/2108.07406>. 2021+.
- [2] Yifeng Huang. “Cohomology of configuration spaces on punctured varieties”. Preprint <https://arxiv.org/abs/2011.07153>. 2020+.

Selected Honors and Awards

- 2022 AMS-Simons Travel Grant
- 2019 Indu and Gopal Prasad Family Fund, awarded based on a summer research proposal

Mentoring

- 2023 *University of Virginia*, REU Program in Number Theory, research mentor

Organizations

- 2022-present *UBC*, Algebraic Geometry Seminar

Outreach

- 2023 *Virginia Tech*, Blacksburg Math Circle, 1-hour lecture on Pólya enumeration theorem to grades 4–8 students

Invited Talks

- 2023 *USCD*, Combinatorics Seminar
- 2023 *USCD*, Algebraic Geometry Seminar
- 2023 *Simon Fraser University*, Number Theory and Algebraic Geometry Seminar
- 2022,2023 *Virginia Tech*, Algebra Seminar
- 2020,2023 *UBC*, Discrete Mathematics Seminar
- 2020,2023 *UBC*, Algebraic Geometry Seminar
- 2023 Joint Mathematics Meeting, Special Session “Quaternions”
- 2023 Joint Mathematics Meeting, Special Session “Combinatorics and Geometry of Jordan Type and Lefschetz Properties”
- 2022,2023 *UBC*, Number Theory Seminar
- 2022 *University of Virginia*, Algebra Seminar

- 2022 *University of Massachusetts, Amherst*, AMS Eastern Sectional, Special Session "Young Voices in Combinatorics"
- 2022 *University of California, Irvine*, Number Theory Seminar
- 2022 *University of Southern California*, Combinatorics Seminar
- 2022 *Rutgers University*, Graduate Algebra and Representation Theory Seminar
- 2021 *St Johns University, New York City*, NYC Noncommutative Geometry Seminar
- 2021 *U of M*, RTG Seminar on Number Theory
- 2020 *University of Waterloo*, Algebra Seminar
- 2020 *Rutgers University*, Algebra Seminar
- 2020 *University of Minnesota*, Combinatorics and Commutative Algebra Seminar

Teaching

- 2023 *UBC*, MATH 221 (Matrix Algebra), Lecturer
- 2023 *UBC*, MATH 101 (Integral Calculus)
- 2022 *UBC*, MATH 100 (Differential Calculus), Instructor of four interactive classes of size 60
- 2020 *U of M*, EECS 203 (Discrete Mathematics for computer science students), Lecturer of a class of size 200
- 2017-2019 *U of M*, MATH 116 (Calculus II), Instructor of an interactive class of size 20
- 2018 *U of M*, MATH 676 (Algebraic Number Theory) taught by M. Zieve, Grader
- 2016,2021 *U of M*, MATH 115 (Calculus I), Instructor of an interactive class of size 20
- 2015 *U of M*, MATH 105 (Precalculus), Instructor of an interactive class of size 20