

# Curriculum Vitae

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Yifeng Huang

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## Positions

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

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## 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, with First Class Honors**, *Hong Kong University of Science and Technology (HKUST)*

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## 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.

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## Publications

- [7] 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>.
- [6] Alexander Clifton, Bishal Deb, Yifeng Huang, Sam Spiro, and Semin Yoo. “Continuously Increasing Subsequences of Random Multiset Permutations”. In: *European J. Combin.* 110 (2023), p. 103708.
- [5] Yifeng Huang. “Mutually annihilating matrices, and a Cohen–Lenstra series for the nodal singularity”. In: *J. Algebra* 619 (2023), pp. 26–50.
- [4] Yifeng Huang. “Counting on the variety of modules over the quantum plane”. In: *Algebr. Comb.* 5.3 (2022), pp. 583–592.
- [3] 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.
- [2] 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.

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## Preprints

- [4] Yifeng Huang and Ruofan Jiang. "Punctual Quot schemes and Cohen–Lenstra series of the cusp singularity". Preprint <https://arxiv.org/abs/2305.06411>. 2023.
- [3] 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.
- [2] 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.
- [1] Yifeng Huang. "Cohomology of configuration spaces on punctured varieties". Preprint <https://arxiv.org/abs/2011.07153>. 2020.

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## Work in Progress

- [2] Yifeng Huang and Ruofan Jiang. "Generating series for torsion-free bundles over singular curves: rationality, duality and modularity". In preparation. 2023.
- [1] Gilyoung Cheong and Yifeng Huang. "Universality of the cokernel of a random integral matrix with concentrated residue". In preparation. 2023.

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## Selected Honors and Awards

- 2022 AMS-Simons Travel Grant
- 2019 Math Department Summer Research Grant, funded by Indu and Gopal Prasad Family Fund, awarded to U of M graduate students based on a summer research proposal

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## Mentoring

- 2023 *University of Virginia*, Research mentor of REU in Number Theory led by Ken Ono

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## Invited Talks

- 2023 *USCD*, Combinatorics Seminar
- 2023 *USCD*, Algebraic Geometry Seminar
- 2023 *Simon Fraser University*, Number Theory and 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 *Virginia Tech*, Algebra 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 *UBC, Discrete Mathematics Seminar*
- 2020 *UBC, Algebraic Geometry Seminar*
- 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 of class of 90*
- 2023 *UBC, MATH 101 (Integral Calculus), Instructor of 3 interactive classes of 60*
- 2022 *UBC, MATH 100 (Differential Calculus), Instructor of 4 interactive classes of 60*
- 2020 *U of M, EECS 203 (Discrete Mathematics for computer science students), Lecturer of a class of 200*
- 2017–2019 *U of M, MATH 116 (Calculus II), Instructor of an interactive class of 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 20*
- 2015 *U of M, MATH 105 (Precalculus), Instructor of an interactive class of 20*

## Services

- 2023–present *Reviewer for MathSciNet*
- 2022–present *Reviewer for Forum. Math., AiM and LAA*
- 2022–present *UBC, Organizer of Algebraic Geometry Seminar*

## Outreach

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