Songyu Ye

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Education

2021-2025 **B.A. Mathematics and Computer Science**
Cornell University
Coursework: Algebraic Geometry, Algebraic Topology, Differentiable Manifolds, Lie Groups and Lie Algebras, Representation Theory, Algebraic Number Theory, Commutative Algebra, Noncommutative Algebra, Real Analysis
GPA: 3.95 / 4
Awards: Putnam Top 350 (2023), Cornell Mathematics Prize Exam Top 3 (2022), Dean's List (All Semesters)

Interests

Toric varieties, equivariant cohomology, symplectic and algebraic quotients, representation theory, intersection homology, structure constants and positivity.

Mathematics Experience

- **Cornell Undergraduate Research Assistant**: I took a semester off of coursework to work with Professor Tara Holm and Professor Allen Knutson to study moment maps in symplectic and algebraic geometry and equivariant cohomology of GKM spaces. My living costs were supported by DMS-1711317 (Jan 2024 - Aug 2024)
- **Cornell Summer Research**: Intensive reading and research course on Schubert Calculus, Quiver Varieties, and Kazhdan-Lusztig Coefficients with Professor Allen Knutson. Living costs supported by DMS-1953948 (Jun 2022 - Aug 2022)
- **University of Maryland Combinatorics, Algorithms, Artificial Intelligence REU**: Studied and developed dynamic visualization software for Voronoi Diagrams in hyperbolic space with Professor Dave Mount (Jun 2021 - Aug 2021)

Publications

- *Software and Analysis for Dynamic Voronoi Diagrams in the Hilbert Metric* with Bumpus, Dai, Gezalyan, Munoz, Santhoshkumar, Mount. Canadian Conference on Computational Geometry 2023.

Travel (participant)

- Park City Mathematics Institute - Undergraduate Summer School in Motivic Homotopy Theory (Jul 2024)
- Isaac Newton Institute for Mathematical Sciences - Moduli stacks and enumerative geometry (Jun 2024)
- University of Michigan - Singularities in Ann Arbor (May 2024)
- Binghamton University Graduate Conference in Algebra and Topology (Nov 2023)
- Binghamton University Graduate Conference in Algebra and Topology (Nov 2022)
- University of Notre Dame Geometry and Topology RTG Undergrad Workshop - Knot theory (Aug 2022)

Teaching Experience

- **Teaching Assistant** CS 4820 Introduction to Algorithms (FA 23)
- **Teaching Assistant** CS 2802 Honors Discrete Structures (SP 23)
- **Teaching Assistant** CS 2800 Discrete Structures (FA 22)
- **Math Tutor** Cornell Math Support Center (FA 22)