

ZHIJIA ZHANG

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Education

2021–	New York University Ph.D. candidate in Mathematics	New York, NY
2017–2021	New York University Shanghai B.S. in Honors Mathematics	Shanghai, China

Research interests

Algebraic geometry, (equivariant) birational geometry and rationality problems.

Publications

- to appear Birational invariants of volume preserving maps
(with K. Loginov)
accepted to *Algebra & Number Theory*, 34 pp.
- to appear Rationality of singular cubic threefolds over \mathbb{R}
(with I. Cheltsov and Yu. Tschinkel)
accepted to *Advances in Mathematics*, 27 pp.
- to appear Equivariant geometry of cubic threefolds with non-isolated singularities
(with I. Cheltsov, L. Marquand and Yu. Tschinkel)
accepted to *Pure and Applied Mathematics Quarterly*, 18 pp.
- to appear Stable equivariant birationalities of cubic and degree 14 Fano threefolds
(with Yu. Tschinkel)
accepted to *Algebraic Geometry and Physics*, 22 pp.
- 2025 Equivariant geometry of singular cubic threefolds, II
(with I. Cheltsov, L. Marquand and Yu. Tschinkel)
Journal of the London Mathematical Society **112**(1):e70224, 46 pp.
- 2025 Computing the equivariant Brauer group
(with A. Pirutka)
International Journal of Mathematics **36**(8), 37 pp.
- 2025 Modular symbols and equivariant birational invariants
Journal of Number Theory **271**, 308–327.
- 2025 Rationality of forms of $\overline{\mathcal{M}}_{0,n}$
(with B. Hassett and Yu. Tschinkel)
Journal of the London Mathematical Society **111**(2):e70097, 35 pp.
- 2025 Equivariant geometry of singular cubic threefolds
(with I. Cheltsov and Yu. Tschinkel)
Forum of Mathematics. Sigma **13**:e9, 52 pp.

- 2025 Equivariant geometry of the Segre cubic and the Burkhardt quartic
 (with I. Cheltsov and Yu. Tschinkel)
Selecta Mathematica. New Series **31**(1):7, 36 pp.
- 2024 Equivariant birational geometry of linear actions
 (with Yu. Tschinkel and K. Yang)
EMS Surveys in Mathematical Sciences **11**(2), 235–276.
- 2022 Combinatorial Burnside groups
 (with Yu. Tschinkel and K. Yang)
Research in Number Theory **8**(2):33, 17 pp.

Preprints

- 2025 Equivariant unirationality of tori in small dimensions
 (with Yu. Tschinkel), 28 pp., *submitted*
- 2025 Finite abelian groups acting on rationally connected threefolds II: groups of K3 type
 (with K. Loginov and A. Pinardin), 35 pp.
- 2025 \mathfrak{A}_5 -equivariant geometry of quadric threefolds
 (with A. Pinardin), 54 pp., *submitted*
- 2025 Conjugacy classes of linear actions in the plane Cremona group
 (with I. Cheltsov and Yu. Tschinkel), 32 pp., *submitted*
- 2025 Cohomological obstructions to equivariant unirationality
 (with Yu. Tschinkel), 16 pp., *submitted*
- 2025 Equivariant unirationality of Fano threefolds
 (with I. Cheltsov and Yu. Tschinkel), 30 pp., *submitted*

Other writing

- 2024 Equivariant geometry of singular cubic threefolds, *ZAG report*, 5 pp.

Awards

- 2025 Charles Newman Fellowship, NYU Courant
awarded each year to one or two outstanding Mathematics PhD students.
- 2024 Wilhelm T. Magnus Memorial Prize, NYU Courant
awarded for significant contributions to the Mathematical Sciences.
- 2021–2026 MacCracken Doctoral Fellowship, NYU

Invited talks

Seminars

- 2025 University of Colorado Boulder, Algebraic Geometry seminar
- 2025 University of Illinois Chicago, Algebraic Geometry seminar
- 2025 Columbia University, Algebraic Geometry seminar
- 2025 University of Illinois Urbana-Champaign, Algebraic Geometry Seminar
- 2025 CUNY Graduate Center, Commutative Algebra and Algebraic Geometry Seminar
- 2025 Princeton University, Algebraic Geometry Seminar
- 2024 University of Nottingham, Pure Mathematics Seminar
- 2024 Imperial College London, Algebraic Geometry Seminar
- 2024 NYU, Algebraic Geometry Seminar

Conferences

- 2025 University of Hawaii, Polarized Varieties and Their Applications
- 2025 CIRM, Marseille, Cremona Groups
- 2025 University of Miami, New Developments of Birational Geometry
- 2024 ICMS, Edinburgh, Birational Geometry and Number Theory

Contributed presentations

- 2025 UMass Amherst, Algebraic Geometry Northeastern Series (poster)
- 2025 CSU, Summer Research Institute in Algebraic Geometry (poster)
- 2025 UCSD, Conference on K-stability and Moduli of Varieties (short talk)
- 2024 Boston College, Algebraic Geometry Northeastern Series (short talk)
- 2023 Princeton University, Monodromy and Its Applications (short talk)
- 2022 Simons Foundation, Conference on Higher Dimensional Geometry (poster)

Conferences attended

- 2025 Duke University, The Fifth Duke Mathematical Journal Conference
- 2024 Simons Foundation, Conference on Arithmetic Geometry, Group Actions and Rationality Problems
- 2024 Stony Brook University, Conference on Higher Dimensional Geometry
- 2023 University of Miami, Higher Invariants in Equivariant and Geometric Topology
- 2023 Stony Brook University, Algebraic Geometry Northeastern Series
- 2022 PCMI Graduate Summer School: Number Theory Informed by Computation

Teaching

New York University

- Spring 2025 Teaching assistant, MATH-UA.0343 Algebra I
- Fall 2024, 2025 Teaching assistant, MATH-UA.0348 Honors Algebra I
- Winter 2024, Instructor, Complex Variables Written Exam Workshop
- Summer 2025
- Summer 2025
- Spring 2024, 2025 Grader, MATH-GA.2140 Algebra II
- Spring 2023, 2024 Grader, MATH-GA.2210 Introduction to Number Theory
- Fall 2022, 2023 Grader, MATH-GA.2130 Algebra I

Service

- 2025 Speaker, cSplash, NYU Courant
one-day outreach event of short lectures to local high school students
- 2024–2025 Member, PhD student survey committee, NYU Courant
- 2021–2023 Co-organizer, Graduate Student and Postdoc Seminar, NYU Courant

Refereeing: *Journal of the London Mathematical Society*, *Taiwanese Journal of Mathematics*, *Algebraic Geometry and Physics*

Relevant skills

Languages: Chinese, English

Softwares: **Magma**, **GAP**