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, especially (equivariant) birational geometry and rationality problems.

Publications

to appear	Stable equivariant birationalities of cubic and degree 14 Fano threefolds (with Yu. Tschinkel) accepted by *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   Equivariant geometry of cubic threefolds with non-isolated singularities
       (with I. Cheltsov, L. Marquand and Yu. Tschinkel), 18 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*

2024   Rationality of singular cubic threefolds over $\mathbb{R}$
       (with I. Cheltsov and Yu. Tschinkel), 27 pp., *submitted*

2024   Birational invariants of volume preserving maps
       (with K. Loginov), 34 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 (upcoming)

2025   University of Illinois Chicago, Algebraic Geometry seminar

2025   Columbia Univeristy, Algebraic Geometry seminar

2025   UIUC, 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	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, Summer 2025	Instructor, Complex Variables Written Exam Workshop
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*

Relevant skills

Languages: Chinese, English

Softwares: `Magma`, `GAP`