

ZHIJIA ZHANG

Address: 251 Mercer str., New York, NY 10012
Emails: zhijia.zhang@cims.nyu.edu, zhijia.zhang@gmail.com
Webpage: <https://zhijiazhangz.github.io>

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Education

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|-----------|---|------------------------|
| 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 Rationality of singular cubic threefolds over \mathbb{R}
(with I. Cheltsov and Yu. Tschinkel)
accepted by *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 by *Pure and Applied Mathematics Quarterly*, 18 pp.
- 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 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 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
- 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, 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*, *Algebraic Geometry and Physics*

Relevant skills

Languages: Chinese, English

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