

# ZHIJIA ZHANG

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## Education

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

## Research interests

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

## Publications (in reverse chronological order)

- to appear     Stable equivariant birationalities of cubic and degree 14 Fano threefolds  
(with Yu. Tschinkel)  
accepted by *Algebraic Geometry and Physics*, 22 pp.
- to appear     Equivariant geometry of singular cubic threefolds, II  
(with I. Cheltsov, L. Marquand and Yu. Tschinkel)  
accepted by *Journal of the London Mathematical Society*, 51 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 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*
- 2025      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

## Conference talks

- 2025      University of Hawaii, Polarized Varieties and Their Applications
- 2025      CIRM, Marseille, Cremona Groups
- 2025      University of Miami, New Developments of Birational Geometry
- 2025      UCSD, Conference on K-stability and Moduli of Varieties (short talk)
- 2024      ICMS, Edinburgh, Birational Geometry and Number Theory
- 2024      Boston College, Algebraic Geometry Northeastern Series (short talk)
- 2023      Princeton University, Monodromy and Its Applications (lightning talk)

## Seminar talks

- 2025      University of Colorado at Boulder, Algebraic Geometry seminar (upcoming)
- 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 attended

2025	Colorado State University, Summer Research Institute in Algebraic Geometry
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	Simons Foundation, Conference on Higher Dimensional Geometry
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
Spring 2024, 2025	Grader, MATH-GA.2140 Algebra II
Winter 2024, Summer 2025	Instructor, Complex Variables Written Exam Workshop
Spring 2023, 2024	Grader, MATH-GA.2210 Introduction to Number Theory
Fall 2022, 2023	Grader, MATH-GA.2130 Algebra I

## Services

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

## Relevant skills

Languages: Chinese, English

Softwares: Magma, GAP