

Zengrui Han

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EDUCATION

- Ph.D. Rutgers, the State University of New Jersey, 2020-2025
Advisor: Lev Borisov
Thesis title: GKZ hypergeometric systems and toric mirror symmetry
- B.S. University of Science and Technology of China, 2016-2020

RESEARCH AREAS

Algebraic Geometry, especially mirror symmetry and related areas.

PUBLICATIONS AND PREPRINTS

- 2025 GKZ hypergeometric systems and toric mirror symmetry. Ph.D. Thesis.
- 2024 Stringy Hodge numbers of Pfaffian double mirrors and Homological Projective Duality. arXiv:2409.17449. Submitted.
- 2024 Central charges in local mirror symmetry via hypergeometric duality. arXiv:2404.16258. Submitted.
- 2023 Analytic continuation of better-behaved GKZ systems and Fourier-Mukai transforms, **Épjournal de Géométrie Algébrique**, to appear. arXiv:2305.12241
- 2023 On hypergeometric duality conjecture, with Lev Borisov, **Advances in Mathematics**, Volume 442 (2024): 109582. arXiv:2301.01374
- 2019 On duality of certain GKZ hypergeometric systems, with Lev Borisov and Chengxi Wang, **Asian Journal of Mathematics**, Volume 25 (2021), No.1, 65-88. arXiv:1910.04039

TALKS AND PRESENTATIONS

- 2025 “GKZ hypergeometric systems and toric mirror symmetry”, mini-talk, Georgia Algebraic Geometry Symposium, Mar 2025
- 2025 “GKZ hypergeometric systems and toric mirror symmetry”, Syzygies and Mirror Symmetry Virtual Seminar, Feb 2025.
- 2024 “Stringy Hodge numbers of Pfaffian double mirrors and Homological Projective Duality”, poster, Western Algebraic Geometry Symposium, University of Arizona, Nov 2024.
- 2024 “Stringy Hodge numbers of Pfaffian double mirrors and Homological Projective Duality”, 5-min talk, Algebraic Geometry Northeastern Series, Dartmouth College, Nov 2024.
- 2024 “GKZ systems and their applications to toric mirror symmetry”, poster, Algebraic Geometry Northeastern Series, Dartmouth College, Nov 2024.

- 2024 “Pfaffian double mirrors, stringy Hodge numbers and Homological Projective Duality”, Rutgers Algebra Seminar, Rutgers University, Oct 2024
- 2024 “GKZ systems and their applications to toric mirror symmetry”, Columbia Enumerative Geometry Seminar, Columbia University, Sept 2024
- 2024 “GKZ Hypergeometric Systems and Their Applications to Mirror Symmetry”, poster, Richmond Geometry Meeting, Virginia Commonwealth University, Aug 2024.
- 2024 “Central charges in local mirror symmetry”, Rutgers Algebra Seminar, Rutgers University, April 2024
- 2023 “Better-behaved GKZ systems and toric mirror symmetry”, 5 minutes talk, Algebraic Geometry Northeastern Series, University of Pennsylvania, Oct 2023
- 2023 “Duality of better-behaved GKZ systems”, Rutgers Algebra Seminar, Rutgers University, Feb 2023

TEACHING

Rutgers University

- Math 551: Abstract Algebra I, TA, Fall 2024
- Math III: Precalculus, TA, Spring 2024
- Math 552: Abstract Algebra II, TA, Spring 2024
- Math 551: Abstract Algebra I, TA, Fall 2023
- Math 477: Mathematical Theory of Probability, TA, Fall 2023
- Math 244: Differential Equations for Engineering and Physics, TA, Spring 2023
- Math 354: Linear Optimization, TA, Fall 2022
- Math 251: Multivariable Calculus, TA, Spring 2022
- Math 251H: Multivariable Calculus, TA, Fall 2021

AWARDS AND HONORS

- 2025 Rutgers SAS Fellowship, Rutgers University, 2025
- 2024 Summer PhD student Research Fellowship, Rutgers University, 2024
- 2019 Huang Yu Memorial Scholarship, University of Science and Technology of China, 2019
- 2018 Outstanding Student Scholarship, Silver Award, University of Science and Technology of China
- 2017 Outstanding Student Scholarship, Silver Award, University of Science and Technology of China
- 2015 Chinese Mathematical Olympiad (CMO), Bronze Medal, 2015

Updated March 2025