Zengrui Han

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Department of Mathematics
Rutgers, the State University of New Jersey
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APPOINTMENTS

2025–2028 University of Maryland, College Park
Brin Postdoctoral Fellow

2020–2021 University of Science and Technology of China
Research Assistant

EDUCATION

Ph.D. Rutgers, the State University of New Jersey, 2020-2025
Advisor: Lev Borisov
Dissertation: 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.

2024 Central charges in local mirror symmetry via hypergeometric duality. arXiv:2404.16258. Under revision.

2023 Analytic continuation of better-behaved GKZ systems and Fourier-Mukai transforms, **Épijournal de Géométrie Algébrique**, Volume 9 (2025), Article no. 11. 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 111: 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 Olympaid (CMO), Bronze Medal, 2015

Updated June 2025