Sylvester W. Zhang
张文泽

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Personal Info

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Address: Vincent Hall 426, 206 Church Street SE, Minneapolis, MN 55455

Education

University of Minnesota, Twin Cities Minneapolis, MN
Ph.D. in Mathematics Sep 2020 - in progress
B.S. in Mathematics Sep 2016 — May 2020
B.A. in Quantitative Economics Sep 2016 — May 2020

Research

I work on algebraic combinatorics, and my research interest often lies in the intersection of algebra, combinatorics, geometry, and mathematical physics.

Publications

1. **An Expansion Formula for Decorated Super-Teichmüler Spaces.**
   with G. Musiker & N. Ovenhouse.
   SIGMA 17 (2021) 080. arXiv 2102.09143
2. **Arborescence of Covering Graphs.**
   with S. Chepuri, C. Dowd, A. Hardt, G. Michel, & V. Zhang.
   Algebr. Comb. Vol. 5 (2022) arXiv 1912.01060
3. **Double Dimer Covers on Snake Graphs from Super Cluster Expansions.**
   with G. Musiker & N. Ovenhouse.
   J. Algebra Vol 608 (2022) pp. 325-381. arXiv 2107.14785
4. **Rowmotion Orbits of Trapezoid Posets.**
   with J. Wellman, Q. Dao, & C. Yost-Wolff.
   Electron. J. Comb. 29-2 (2022) arXiv 2002.04810
5. **Rooted Clusters for Graph LP Algebras.**
   with E. Banaian, S. Chepuri, & E. Kelley.
   SIGMA 18 (2022), 089. arXiv 2107.14785.
6. **Matrix Formulae for Decorated Super Teichmüler Spaces.**
   with G. Musiker & N. Ovenhouse.
   J. Geom. Phys. (2023) arXiv 2208.13664.
7. **A Lattice Model for Super LLT Polynomials.**
   with M. Curran, C. Frechette, C. Yost-Wolff, & V. Zhang
   Comb. Theory (2023) arXiv 2110.07597.

Preprints

8. **Higher Dimer Covers on Snake Graphs.**
   with G. Musiker, N. Ovenhouse, & R. Schiffler.
   arXiv 2306.14389

9. Snake Graphs for Graph LP Algebras.
with E. Banaian, S. Chepuri, & E. Kelley.
arXiv:2312.12313.

Proceedings

10. Rooted Clusters for Graph LP Algebras
with E. Banaian, S. Chepuri & E. Kelley
proceeding of FPSAC 2022

11. Double Dimers and Super Ptolemy Relations
with G. Musiker & N. Ovenhouse
proceeding of FPSAC 2023

Invited Talks

Schubert Calculus and Boson-Fermion Correspondence
Combinatorics Seminar, UMN. Feburary 2024
Combinatorics Seminar, UIUC. Feburary 2024

The Greene-Kleitman Correspondence November 2022
Student Algebra and Representation Seminar, SUNY Rutgers.

Super Cluster Algebras from Surfaces. September 2022
Combinatorics Seminar, University of Minnesota.

Combinatorial Formulas for Graph LP algebras. April 2022
Student Combinatorics and Algebras Seminar, University of Minnesota

Cluster Structures from Decorated Super-Teichmüller Spaces. April 2022
Workshop on supergeometry and bracket structures, Fields instutute.

Super Cluster Algebras from Surfaces. September 2022
Combinatorics Seminar, University of Minnesota.

Schur and LLT Polynomials from Lattice Models. March 2021
Graduate Online Combinatorics Colloquium (GOCC)

T-paths Formula for Decorated Super-Teichmüller Spaces. Feb 2021
Combinatorics Seminar, University of Minnesota

Teaching

Teaching assistant, University of Minnesota
Math 2263 (multivariable calculus): Spring 2021 Fall 2022
Math 1372 (calculus 2): Fall 2021
Math 1271 (calculus 1): Fall 2020 Spring 2021
Math 1051 (pre-calculus): Fall 2019 Spring 2020

Mentoring

PKU Algebraic Combinatorics Experience.
- Combinatorics of SL_3 cluster variables. (Mentor) Summer 2023
- Promotion orbit on trapezoid posets. (Mentor) Summer 2023

Algebra and Combinatorics REU at the University of Minnesota
- Classification for Divides of Finite Mutation Type. (TA) Summer 2022
- Minimal Matching for dP_3 cluster algebras. (TA) Summer 2022
- Kazhdan-Lusztig immanants and %-immanants. (TA) Summer 2021