

SHIYUN WANG

Curriculum Vitae

wang8406@umn.edu · <https://www.sywangmath.com>

EMPLOYMENT

2023–present Dunham Jackson Postdoctoral Associate, University of Minnesota (UMN), USA
Advisor: Pavlo Pylyavskyy

EDUCATION

2018–2023 Ph.D. in Mathematics, University of Southern California (USC), USA
Advisor: Greta Panova
2015–2018 M.S. in Mathematics, California State University Long Beach (CSULB), USA
Advisor: Joshua Sack
2012–2014 Master of Public Administration, USC, USA
2008–2012 B.A. in Management, Central South University (CSU), China

RESEARCH INTERESTS

Algebraic and enumerative combinatorics. Tableaux combinatorics. Symmetric functions and quasisymmetric functions with relation to representation theory. Hopf algebra. 0-Hecke algebra. Dual equivalence graph. Crystal graphs. Kostant partition function. Quiver representations.

PAPERS

1. *Varieties of chain complexes and mixed dimer covers* (with P. Anderson, E. Banaian, M. Ferreri, N. Mayers, A. Wilson). arXiv: 2609.00202, 2026.
2. *e-positivity of chromatic quasisymmetric functions of bounce number three via the inverse Kostka matrix*. arXiv: 2210.07567, 2026. (submitted)
3. *Kirillov–Reshetikhin dual equivalence graphs* (with J. McDonough, P. Pylyavskyy). arXiv: 2510.24490, 2025. (submitted)
4. *The support of Kostant’s weight multiplicity formula is an order ideal in the weak Bruhat order* (with P. Anderson, E. Banaian, M. Ferreri, O. Goff, K. Hadaway, P. Harris, K. Harry, N. Mayers, A. Wilson). To appear in the Journal of Combinatorics, 2026.
5. *The Stanley–Stembridge Conjecture for $2+1+1$ -avoiding unit interval orders: a diagrammatic proof* (with J. McDonough, P. Pylyavskyy). arXiv: 2404.07280, 2024.
6. *0-Hecke modules for row-strict dual immaculate functions* (with E. Niese, S. Sundaram, S. van Willigenburg, J. Vega). Transactions of the American Mathematical Society 377: 2525–2582, 2024.
7. *Pieri rules for skew dual immaculate functions* (with E. Niese, S. Sundaram, S. van Willigenburg). Canadian Mathematical Bulletin 67(4): 902–914, 2024.
8. *Row-strict dual immaculate functions* (with E. Niese, S. Sundaram, S. van Willigenburg, J. Vega). Advances in Applied Mathematics 149: 102540, 2023.
9. *Row-strict dual immaculate functions and 0-Hecke modules* (with E. Niese, S. Sundaram, S. van Willigenburg, J. Vega). Poster presentation at FPSAC 2022. Extended abstract published in Séminaire Lotharingien de Combinatoire 86B: Art. #6, 12 pp., 2022.
10. *Connection between graphical potential games and Markov random fields with an extension to Bayesian networks*. Master’s thesis, CSULB, 2018.

CONFERENCE AND SEMINAR TALKS

2025 May CanaDAM in Ottawa: Invited Minisymposium on Recent Advances in Enumerative and Geometric Combinatorics on Graphs

2025 May	CanadAM in Ottawa: Invited Minisymposium on Algebraic Combinatorics
2024 Apr	SoCalDM at UCLA
2024 Mar	UMN Combinatorics Seminar
2023 Jun	CanadAM in Winnipeg: Special Session on Generalizations of the Chromatic Polynomial
2023 May	UMN Combinatorics Seminar
2023 Apr	CSULB Mathematics Colloquium
2023 Jan	University of British Columbia Discrete Math Seminar
2023 Jan	JMM in Boston: AMS Special Session on Research Community in Algebraic Combinatorics
2022 Nov	USC Combinatorics Seminar
2022 Nov	USC Graduate Colloquium
2018 Jan	JMM in San Diego: AMS Special Session on Research in Mathematics by Early Career Graduate Students
2017 Nov	CSULB Graduate Research Conference

TEACHING EXPERIENCE

Instructor:

UMN

MATH 2263: Multivariable Calculus

2026 Fall

MATH 4707: Introduction to Combinatorics and Graph Theory

2026 Spring, 2025 Fall,
2025 Spring, 2023 Fall

MATH 5251: Error-Correcting Codes, Finite Fields, Algebraic Curves

2026 Spring, 2024 Spring,
2023 Fall

MATH 4281: Modern Algebra

2024 Fall

UCLA

S1stem2: Introduction to Mathematics for Business and Economics

2022 Summer

USC

MATH 040: Basic Mathematical Skills

2022 Spring

Mentor:

UMN

REU Program in Combinatorics and Algebra

2024 Summer

Mentees: Serena An, Katherine Tung, Yuchong Zhang

Papers:

1. *Newton polytopes of dual Schubert polynomials*. Algebraic Combinatorics 8(6): 1459–1472, 2025.
2. *Postnikov–Stanley polynomials are Lorentzian*. arXiv: 2412.02051, 2024.

Teaching Assistant:

USC

MATH 225: Linear Algebra and Linear Differential Equations

2022 Fall, 2021 Fall

MATH 126: Calculus 2

2022 Summer

MATH 125: Calculus 1

2021 Spring, 2020 Fall

MATH 118: Fundamental Principles of Calculus

2020 Spring

MATH 108: Contemporary Precalculus

2019 Spring

MATH 117: Introduction to Mathematics for Business and Economics

2018 Fall

FELLOWSHIPS AND AWARDS

2023–2025 UMN Math Postdoc Professional Travel Funds

2023 AMS Graduate Student Travel Grants

2022	Workshop Fellowship at the Institute for Computational and Experimental Research in Mathematics, Brown University
2022	Graduate School Summer Research and Writing Grants, USC
2018–2023	Dornsife College Graduate Merit Fellowship, USC
2018	Graduate Dean’s List of University Scholars and Artists, CSULB
2014	Academic Celebration Student Exhibition Award, USC
2009–2012	Second-Class Scholarship and Outstanding Student, CSU
2008	First Prize in the National Piano Competition, Tsinghua University

PROFESSIONAL ACTIVITIES

Refereeing:	Advances in Applied Mathematics Annals of Combinatorics Australasian Journal of Combinatorics Combinatorial Theory Electronic Journal of Combinatorics
Panel:	UMN Gender Minorities in Mathematics (GeMM) Professional Development
Other:	
2015	Chartered Financial Analyst (CFA) Level III Candidate
2014–2015	Finance Associate, 54 Reckless LLC, Los Angeles, CA

OTHER INFORMATION

Programming Skills: Stata, MATLAB, Mathematica, Sage