

Spencer Daugherty

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Experience

Burnett Meyer Postdoctoral Fellow Aug 2024 -
University of Colorado Boulder. Mentor: Nat Thiem.

Education

Ph.D. Mathematics May 2024
North Carolina State University. Advisors: Laura Colmenarejo, Sarah Mason.

Thesis: Schur-like Bases and their Colored Generalizations.

Winston-Rose Award for Research. Maltbie Award for Teaching. Graduate Student Association Teaching Award.

B.A. Mathematics 2019
Mount Holyoke College. Minor Computer Science. Cum Laude.

Research Interests

Algebraic and Enumerative Combinatorics. I am interested in problems on the quasisymmetric and noncommutative symmetric functions, specifically those surrounding Schur-like bases and combinatorial Hopf algebras. I also work on chromatic symmetric functions, q, t -Catalan numbers, and parking functions.

Publications and Preprints

Metered Parking Functions 2024
P. Harris, I. Klein, M. McClinton. arXiv:2406.12941

Extended Schur Functions and Bases Related by Involutions 2024
S. Daugherty. arXiv:2401.02502. Extended abstract to appear in the proceedings of FPSAC 2024.

Combinatorics of Generalized Parking Function Polytopes 2024
M. Bayer, S. Borgwardt, T. Chambers, S. Daugherty, A. Dawkins, D. Deligeorgaki, H. Liao, T. McAllister, A. Morrison, G. Nelson, A. Vindas-Meléndez. arXiv:2403.07387.

A Generalization of the Dual Immaculate Functions in Partially Commutative Variables 2024
S. Daugherty. arXiv:2309.08518. Electronic Journal of Combinatorics.

Nimber Sequences of Node-Kayles Games 2020
S. Brown, S. Daugherty, E. Fiorini, B. Maldonado, S. Rainville, R. Waechter, T. Wong. Journal of Integer Sequences.

Current Projects

Combinatorial Statistics and the q, t -Catalan Numbers with J. Lentfer

Stembridge Codes and e -positivity of Chromatic Symmetric Functions with K. Celano, S. Sundaram

Stable Tamari Lattices with S. Grate, J. C. Martínez Mori, A. Pun

Teaching

Instructor of Record NCSU 2020-2024

Applied Differential Equations, Finite Math, Calculus II, Calculus III. 6 semesters total, 60-180 students per class.

Preparing the Professoriate Fellow NCSU 2023-2024

Professional development that gives doctoral students mentoring, teaching, and future faculty preparation experience.

Math Instructor NC Governor's School East 2022

Graph Theory. Four-week long course for gifted high school students.

Teaching Assistant NCSU 2019-2020

Calculus I, Calculus II, Applied Differential Equations. 3 semesters total.

Talks and Posters

Metered Parking Functions

AMS Sectional Riverside: Special Session on Gender Equity in Combinatorics Invited Talk Oct 2024

Extended Schur Functions and Bases Related By Involutions

Formal Power Series and Algebraic Combinatorics Bochum Poster July 2024

Mid-Atlantic Algebra, Geometry, and Combinatorics Workshop Poster Dec 2, 2023

University of Waterloo Seminar Talk Nov 9, 2023

Combinatorics of Generalize Parking Function Polytopes

NCSU Pure Graduate Student Seminar Talk Apr 15, 2024

University of North Carolina Wilmington Seminar Talk Mar 15, 2024

Colored Schur-like bases and generalizations of the symmetric functions

Michigan State University Virtual Seminar Talk April 3, 2024

A Partially Commutative Generalization of the Dual Immaculate Functions

Okinawa Institute of Science and Technology Talk Feb 9, 2024

UAlbany Women in Algebra and Combinatorics Poster Apr 29, 2023

AlGeCom XIII Poster Apr 15, 2023

NCSU Pure Graduate Seminar Talk Nov 21, 2022

Schur-like Bases of NSym and QSym: Properties of the Shin Functions

Wake Forest Colloquium Talk Oct 19, 2023

NCSU Algebra and Combinatorics Seminar Talk Oct 18, 2023

CAGE Seminar Talk Sep 19, 2023

Chromatic Symmetric Functions of Trees

Triangle Area Graduate Math Conference Talk Sep 30, 2023

Combinatorial Statistics and q, t -Catalan Numbers

NCSU Pure Graduate Student Seminar Talk Sep 18, 2023

Service and Organization

JMM Special Session for the MRC in Algebraic Combinatorics Seattle, Washington January 2025

Workshop and Program Participation

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| Summer School in Algebraic Combinatorics | Leipzig, Germany | July 2024 |
| MRC in Algebraic Combinatorics | Java, New York | June 2024 |
| AlCoVR Workshop in Dynamical Algebraic Combinatorics | Virtual Reality | May 2024 |
| Graduate Research Workshop in Combinatorics | Laramie, Wyoming | July 2023 |