

Spencer Daugherty

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Education.

Ph.D. Mathematics Expected May 2024

North Carolina State University. Advisors: Laura Colmenarejo, Sarah Mason.

B.A. Mathematics 2019

Mount Holyoke College. Major Mathematics, Minor Computer Science.

Research Interests

Algebraic and Enumerative Combinatorics. I am primarily interested in problems involving the quasisymmetric and noncommutative symmetric functions, specifically those surrounding Schur-like bases. I also work on projects involving chromatic symmetric functions, q, t -Catalan numbers, and generalized parking functions, with connections to representation theory and geometric combinatorics.

Publications

A Generalization of the Dual Immaculate functions in Partially Commutative Variables 2023

S. Daugherty. Preprint. arXiv:2309.08518.

The Nimbers of Node-Kayles on Certain Families of Graphs 2020

S. Brown, S. Daugherty, E. Fiorini, B. Maldonao, S. Rainville, R. Waechter, T. Wong.

Current Projects

Properties of Shin and Extended Schur Functions and Bases Related by Involutions on QSym 2023

S. Daugherty. Preprint.

Stembridge Codes and e -positivity of Chromatic Symmetric Functions In Preparation

K. Celano, S. Daugherty, S. Sundaram.

On the Generalized Parking Function Polytope In Preparation

Bayer, Borgwardt, Chambers, Daugherty, Dawkins, Deligeorgaki, Liao, McAllister, Morrison, Nelson, Vindas-Meléndez.

Combinatorial Statistics and the q, t -Catalan numbers In Progress

S. Daugherty, J. Lentfer.

A Bijective Approach to Chromatic Symmetric Functions of Trees In Progress

S. Daugherty, B. Kagy, I. Klein.

Experience

Instructor NCSU, NC Governor's School East 2020-2024

NCSU: Applied Differential Equations (2024), Finite Math, Calculus II, Calculus III. GSE: Graph Theory.

Preparing the Professoriate Fellow NCSU 2023-2024

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

Teaching Assistant NCSU 2019-2020

Calculus I, Calculus II, Applied Differential Equations.

Researcher at the Muhlenberg College REU	2018
Research Challenges Identifying Integer Sequences Using the OEIS	
Undergraduate Research Assistant Mount Holyoke College.....	2017
Tipping Points in Dynamical Systems. Alanna Hoyer-Leitzel.	

Talks and Posters

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

University of Waterloo Seminar Talk	Nov 9, 2023
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
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Combinatorial Statistics and q, t -Catalan Numbers

NCSU Pure Graduate Seminar	Sept 18, 2023
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A Partially Commutative Generalization of the Dual Immaculate Functions

UAlbany Women in Algebra and Combinatorics Poster.....	Apr 29, 2023
AlGeCom XIII Poster	Apr 15, 2023
NCSU Pure Graduate Seminar	Nov 21, 2022

Coursework

Abstract Algebra I and II, Combinatorics I and II, Combinatorics of Coxeter Groups, Cluster Algebras, Graph Theory, Analysis I, Linear Algebra, Intro to Topology, C/C++/Python for Mathematics, Teaching in the Math Department, Computer Algebra I and II.