SPENCER DAUGHERTY

Pronouns: they/them • Raleigh, NC
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Education

North Carolina State University Raleigh, NC . . . . Expected 2024

> PhD Student in Pure Mathematics

> Advised by Laura Colmenarejo (NCSU) and Sarah Mason (WFU)

Mount Holyoke College South Hadley, MA 2019

> Mathematics Major/Computer Science Minor – Cum Laude

Current Projects

A Partially Commutative Generalization of the Dual Immaculate Functions . . . . In Preparation

> Develops partially commutative generalizations for the dual immaculate and row strict dual immaculate bases of QSym, and the immaculate and row-strict immaculate bases of NSym.

A Bijection on Edge Partitions and Stable Vertex Partitions of Trees . . . . In Preparation

> In collaboration with Bryson Kagy. Develops and explores a bijection on edge partitions and stable vertex partitions of trees in the context of the conjectured complete invariance of chromatic symmetric polynomials of trees.

Publications

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

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

OEIS Sequences: A316533, A316629, A316632, A316781 . . . . .Summer 2018

Research Interests: **Enumerative & algebraic combinatorics, graph theory,** quasisymmetric functions, noncommutative symmetric functions, chromatic symmetric functions, Coxeter groups.

Experience

Instructor of Record NCSU, Raleigh, NC . . . . 2020 - Present

> MA114 Intro Finite Math with Applications, MA231 Calculus II for Life & Management Sciences, MA242 Calculus III.

Governors School Mathematics Instructor Raleigh, NC 2022

> Taught a self-designed graph theory summer course to advanced high schoolers.

Research Assistant NCSU, Raleigh, NC 2021

> Supervisor: Laura Colmenarejo. Wrote Sage programs to calculate examples for a quantum monoid on the Grassmanian Bruhat order.

Teaching Assistant NCSU, Raleigh, NC 2019-2020

> MA141 Calculus I, MA241 Calculus II.

Mathematics Researcher at the Muhlenberg College REU Allentown, PA . . . . Summer 2018

> Participant in the 2018 Research Experience for Undergraduates: Research Challenges of Identifying Integer Sequences Using the OEIS at Muhlenberg College.

Mathematics Research Assistant Mount Holyoke College, South Hadley, MA. . . . . Summer 2017

> Supervisor: Alanna Hoyer-Leitzel. Built models in Matlab to understand resilience and tipping points in dynamical systems.

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Research Talks and Posters

A partially commutative generalizations of the dual immaculate functions

Poster: AlGeCom XXIII at Loyola University Chicago . . . . (2023)

Seminar talk: Pure Graduate Student Seminar at North Carolina State University *2022*

Coursework: Abstract Algebra I & II, Combinatorics I & 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 & II.

Awards, Fellowships, Scholarships

Graduate Fellowship $2,000 yearly @ NCSU . . . . $2019 - 2022$

21st Century Leadership Scholarship $25,000 yearly @ Mount Holyoke College . . . . $2015 - 2019$

The Class of 1937 Prize in Mathematics for Outstanding Achievement in Mathematics 2018

Mildred L Sanderson Prize for Mathematics for Excellence in the First Year 2016

Top Quartile Scorer Putnam Exam 2015 2016

Skills: Java, Sage, Python, Algorithm Design, Microsoft Offices, Adobe Creative Suite, MATLAB, Netlogo / Agent-Based Modelling, LaTeX