SHUAI WEI

School of Mathematical and Statistical Sciences, Clemson University, SC 29632
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EDUCATION

Clemson University *2019-2022*
Ph.D. in Mathematical Science

- Dissertation advisor: Keri Ann Sather-Wagstaff

Clemson University *2016-2019*
M.S. in Mathematical Science

- Thesis advisor: Keri Ann Sather-Wagstaff

Clemson University *2014-2015*
M.S. in Computer Science
University of Science and Technology of China *2012-2015*
M.E. in Software Engineering
Beijing Institute of Technology *2008-2012*
B.S. in Electrical Engineering and Automation
Minor in economics

RESEARCH INTERESTS

My interests lie in and around commutative algebra, with emphasis on its connections to other fields. I currently investigate applications of combinatorics to problems in commutative algebra.

TECHING EXPERIENCE

University of New Mexico Fall 2022 - Fall 2024
Instructional Post-Doctoral Fellow
- Advisor: Janet Vassilev

· Instructed a diverse range of courses:

- Introduction to Statistics (MATH 1350): Instructed probability, distributions, hypothesis testing, and regression analysis.
- Linear Algebra (Math 321): Taught linear transformations, matrices, eigenvalues and eigenvectors, and inner product spaces.
- Modern Algebra I (Math 322): Instructed groups, rings, homomorphisms, permutation groups, quotient structure, ideal theory, fields.
- Discrete Structure (Math 327): Covered logic, sets and relations, functions, integers, induction and recursion, counting, permutations and combinations and algorithms.
- Modern Algebra II (Math 421): Explored theory of fields, algebraic field extensions, and Galois theory.

For above courses, I did the following to deliver engaging lectures.

- Developed real-world examples to demonstrate the practical applications of statistical methods.
- Utilized technology tools such as Jupyter Notebooks for visualizing complex mathematical concepts.
- Provided after-school tutoring, resulting in improved student confidence and grades.

Clemson University Spring 2016 - Spring 2022
Teaching Assistant

- Grader for Convex Optimization and Real Analysis I for 3 semesters.
- Lab instructor for STAT 2300 for 2 semesters.
  Guide students to finish an assignment each class using the statistic software JMP.
- Instructor for STAT 3090 for 4 semesters.
  Teach business students descriptive statistics, basic probability, probability distributions, one sample estimation and testing, and regression.

PUBLICATIONS

1. Differential operators on monomial rings (In preparation)
2. Generalized $\mathbb{N}$-weighted simplicial complexes and its Alexander dual. (In Preparation)
3. Cohen-Macaulay weighted chordal graphs. (Submitted)
4. The type of weighted r-path ideals of weighted graphs. (Submit soon)

INVITED PRESENTATIONS

1. Generalized $\mathbb{N}$-weighted simplicial complex and its Alexander dual. Joint Mathematics Meetings, Special Session on Combinatorial and Homological Methods in Commutative Algebra, Seattle, WA, January 2022
2. Cohen-Macaulay type of weighted edge ideals and r-path ideals. Commutative and Homological Algebra Market Presentations: A virtual seminar series in commutative algebra, November 2021
3. Cohen-Macaulay type of weighted edges ideals and path ideals of weighted trees. AMS Spring Central Virtual Sectional Meeting, Special Session on Commutative Algebra, I, April 2021.
4. Cohen-Macaulay Type of f -weighted r-Path Ideals. Algebra and Geometry seminar, University of New Mexico, September 2022.

CONFERENCES ATTENDED

1. Joint UGA Clemson Colloquium: Gradient-Free Construction of Active Subspaces for Dimension Reduction, Clemson University, Clemson, SC (April 2017).
2. Palmetto Number Theory Series (PANTS) XXIX, Clemson University, Clemson, SC (December 2017).
3. Southeastern Regional Meeting on Numbers XXXI, East Tennessee State University in Johnson City, TN (March 2018).
4. UNCG Summer School in Computational Number Theory: Algorithms for Extensions of Large Degree, University of North Carolina in Greensboro (May 2018).
5. Meeting on Applied Algebraic Geometry, Georgia Tech, Atlanta, GA (April 2019).
6. MSRI Summer Graduate School: Random and arithmetic structures in topology, Berkeley, CA (June 2019).
7. Commutative and Homological Algebra Market Presentations: A virtual seminar series in commutative algebra (September 2020-March 2021).