

Education

Ph.D. Mathematics - University of South Carolina

May 2020

Thesis: Algebraic Geometry and Derived Categories

Advisor: Dr. Matthew Ballard

M. SC. Mathematics - College of Charleston

May 2014

Thesis: Bounded Operators with finite \mathbb{Z} -grading

Advisor: Dr. Oleg Smirnov

M. SC. Mathematics - College of Charleston

May 2012

Majored in Pure Mathematics

Graduated Cum Laude

Publications/Pre-Prints

Quantum Information Theory - Quantum Error Correction

2022

Vandermolen, R. R., & Wright, D. (2022). Graph-theoretic approach to quantum error correction. *Physical Review A*, 105(3), 032450.

Algebraic Geometry - Derived Category Theory

2021

Ballard, M. R., Chidambaram, N. K., Favero, D., McFaddin, P. K., & Vandermolen, R. R. (2021). Kernels for Grassmann flops. *Journal de Mathématiques Pures et Appliquées*, 147, 29-59

Lie Algebras - Hom-Lie triple system

2017

Vandermolen, Robert. Universal imbedding of a Hom-Lie triple system. arXiv preprint arXiv:1709.08714 (2017).

Student Projects

Bacteria Identification - SMWC

2023-2024

Project with Kelly Herrera (student) and John Davis PhD, with neural networks identifying bacteria at the cellular level. Presented at IAS 2024

Tornado Prediction - SMWC

2023-2024

Project with Hannah Harvey (student) using data from the NOAA to predict tornadoes in Indiana

Air Quality Prediction - SMWC

2024-2025

Project with Emily Fitzwater (student) using data from the NOAA to predict tornadoes in Indiana

Service

Faculty Assembly President - SMWC

2023-current

Serve as president of Faculty Assembly duties include administering monthly meetings with all school faculty, monthly meetings with Provost and College President, bi-yearly meetings with Board of Trustees

Mathematics Program Assessment Committee Chair - SMWC

2020-current

Serve as chair on the committee to asses the mathematics program on a 5-year cycle. Duties include (but not limited to) creating the program goals, and student assessments.

Curriculum Committee Chair - SMWC

2021-2022

Serve as chair on the Curriculum Committee, duties involve running meetings, creating agenda, approval and revisions of all curriculum changes at SMWC

Volunteering

Cleanup and Collection - Terre Haute, IN

2024

Organized and volunteered with the Girl Scouts of America to collect recycling

Chaperon - Terre Haute, IN

2023

Chaperon for Girl Scouts of America to Disney on Ice in Indianapolis.

Pink Walk - Terre Haute, IN

2022-2023

Helped on board participants, and organize and set up tents for different events

Girl Scouts of America - Terre Haute, IN

2022

Create and administer curriculum for the coding badges at three levels for local scouts Ambassador, Cadet, and Senior

Awards

Outstanding Assessment Award - SMWC

2024

Assessment Program Coordination

Department Assessment Award - SMWC

2023

Department Assessment coordination and execution

The Sister Mary Joseph Pomeroy Award For Faculty Excellence - SMWC

2022

Awarded for excellence and inovation in teaching

Education Foundation Outstanding Graduate Teaching Award - UofSC

2019

Awarded for excellence in graduate student teaching school wide for the STEM fields

The Excellence in Teaching Award - UofSC

2017

awarded on the department level for excellence in graduate student teaching

Awards Continued...

Peer Excellence Award - UofSC

2016

Awarded by the graduate students to recognize a peer

Outstanding First Year Graduate Student Award - UofSC

2016

Awarded by the department as an outstanding first year graduate student

The Ewa Wojcicka Award - CofC

2014

Awarded at the department level for excellence as an undergraduate student

eSports Coaching

Overwatch 2 - SMWC

2023

coached and managed the college's Overwatch 2 team.

Call of Duty - SMWC

2022

coached and managed the college's Call of Duty team. Included bi-weekly practices and weekly games during the spring season.

Teaching

Assistant Professor - SMWC

2020-CURRENT

Calculus I
Calculus II
Calculus III
Discrete Mathematics
Linear Algebra
Introduction to Advanced Mathematics
Elementary Statistics
Abstract Algebra I
Abstract Algebra II
Real Analysis
Introduction to Mathematical Computing
Seminar (senior capstone)
Statistical and Data Analysis
Machine Learning
Sports Ranking
Linear Modeling

Graduate Assistant Instructor - UofSC

2016-2020

Calculus Workshop III
Pre-Calculus
Business Calculus
Vector Calculus
College Algebra
Finite Mathematics

Adjunct Instructor - CofC

2014-2016

Elementary Statistics
Pre-Calculus
College Algebra

Student Trip to Equator to Learn Sustainability, paid for by a Lillie Endowment Grant

Programming Languages -

Latex, HTML, Maple, Python, MATLAB, JAVA, Swift, JAVAScript

Memberships/Certifications -

American Mathematical Society (member)
Indiana Academy of Science (member)
CRLA Certified (Mathematics Tutoring)