

EDUCATION

University of Kentucky, Lexington, KY 2024-Present
Ph.D. in Mathematics

University of Wisconsin-Eau Claire, Eau Claire, WI May 2024
B.S. in Mathematics with Research Emphasis GPA: 3.51/4.0
Minor: Computer Science

RESEARCH PAPERS

Published

- Otto, C., & Schrader, J. (2024). Patterns of α -open Sets in Finite Topological Spaces. *McNair National Research Journal*, 3.
- Otto, C., & Schrader, J. (2024). Analyzing pretzel links through grid diagrams and winding numbers. *ASTRA: The McNair Scholars' Journal*, 2024.
- Mbirika, A., Schrader, J., & Spilker, J. (2023). Pell and Associated Pell Braid Sequences as GCDs of Sums of k Consecutive Pell, Balancing, and Related Numbers. *J. Integer Sequences*, 26(6).

Submitted/In Preparation

- Otto, C., Schrader, J. Exploring the combinatorics of pretzel links through grid diagrams. (Submitted to *Research in the Mathematical Sciences*, Special Edition: Cutting EDGE Mathematics: Celebrating the 25th Anniversary of the EDGE Program)
- Mbirika, A., Schrader, J., & Spilker, J. GCDs of sums of k consecutive squares of Pell, balancing, and related numbers via p -adic valuation and other techniques.
- Schrader, J., Shull, W. Spanning Trees with few Branch Vertices in a Chair-Free Graph. (Submitted to *Graphs and Combinatorics*)

PROFESSIONAL EXPERIENCE

National Institute for Modeling Biological Systems - University of Tennessee, Knoxville June 2024
Enhancing Diversity in Graduate Education (EDGE) Summer Program

An Exploration of Game Theory & Artificial Intelligence Nov 2021
AIMS Research Group - University of Wisconsin-Eau Claire

Python and Machine Learning Programming Workshop Sep 2021
AIMS Research Group - University of Wisconsin-Eau Claire

RESEARCH EXPERIENCE

A Class of Virtual Knots with Crossing Weight Zero Sep 2023-May 2024
University of Wisconsin-Eau Claire
Advisor: Dr. Carolyn Otto

A combinatorial approach to constructing 3-manifolds Jun 2023-Aug 2023
University of Wisconsin-Eau Claire
Advisor: Dr. Carolyn Otto

Spanning trees with few branch vertices Jun 2023-Aug 2023
University of Wisconsin-Eau Claire
Advisor: Dr. Warren Shull

GCD of sums (and sums of squares) of k consecutive Jacobsthal numbers Jun 2023-Aug 2023
University of Wisconsin-Eau Claire
Advisor: Dr. aBa Mbirika

Combinatorics used to determine the topology of manifolds Sep 2022-May 2023
University of Wisconsin-Eau Claire
Advisor: Dr. Carolyn Otto

Number-theoretic explorations of the Pell and Pell-Lucas sequences
University of Wisconsin-Eau Claire
Advisor: Dr. aBa Mbirika

Jun 2022-May 2023

Patterns of α -open sets in finite topological spaces
University of Wisconsin-Eau Claire
Advisor: Dr. Carolyn Otto

Sep 2022-Dec 2022

PRESENTATIONS

<i>Markov Chains and Population Dynamics</i> EDGE Summer Program Colloquium	June 2024
<i>Domain coloring of complex functions</i> with E. Olden and B. Wacker 32 nd Annual Mathematics Retreat, Eau Claire, WI	Apr 2024
<i>A class of virtual knots with crossing weight zero</i> Provost's Honor Symposium, Eau Claire, WI	Apr 2024
<i>Exploring the combinatorics of pretzel links through grid diagrams</i> Nebraska Conference for Undergraduate Women in Mathematics, Lincoln, NE	Jan 2024
<i>Exploring the combinatorics of pretzel links through grid diagrams</i> Joint Mathematics Meetings, San Francisco, CA	Jan 2024
<i>Pretzel links: a grid diagram approach</i> McNair Research Symposium, Eau Claire, WI	Dec 2023
<i>Combinatorics of Grid Diagrams</i> Summer Research Institute Colloquium, Eau Claire, WI	Aug 2023
<i>The McNugget Monoid</i> Abstract Algebra Colloquium, Eau Claire, WI	May 2023
<i>Combinatorics of Grid Diagrams</i> Research Seminar, Eau Claire, WI	Apr 2023
<i>Pell and associated Pell braid sequences as GCDs of sums of k consecutive Pell, balancing, and related numbers</i> National Conference on Undergraduate Research, Eau Claire, WI	Apr 2023
<i>Pell and associated Pell braid sequences as GCDs of sums of k consecutive Pell, balancing, and related numbers</i> Underrepresented Students in Topology and Algebra Research Symposium, Seattle, WA	Mar 2023
<i>GCD of sums of k consecutive Pell, balancing, and related numbers</i> Nebraska Conference for Undergraduate Women in Mathematics, Lincoln, NE	Jan 2023
<i>GCD of sums of k consecutive Pell, balancing, and related numbers</i> Joint Mathematics Meetings, Boston, MA	Jan 2023
<i>Patterns of α-open sets in finite topological spaces</i> Research Colloquium, Eau Claire, WI	Dec 2022

AWARDS AND FELLOWSHIPS

Nominated

Goldwater Nominee, Barry M. Goldwater Scholarship 2023

Awarded

Max Steckler Fellowship, University of Kentucky 2024-2025

Outstanding Achievement in Mathematics, University of Wisconsin-Eau Claire 2024

Ronald E. McNair Scholar, United States Department of Education TRIO Program 2022-2024

American Association of University Women - Eau Claire Branch Scholarship, University of Wisconsin-Eau Claire	2023-2024
Fred F. and Lorain E. Winrich Scholarship, University of Wisconsin-Eau Claire	2023-2024
Karlgard Mathematics Scholarship, University of Wisconsin-Eau Claire	2023-2024
Kell Container Corporation Scholarship, Office of Research and Sponsored Programs	2023-2024
TRIO Day Newcomer Award, Ronald E. McNair Program	2023
STEM Opportunity Fund, University of Wisconsin-Eau Claire	2023
Nan Pickett Memorial Scholarship, University of Wisconsin-Eau Claire	2022-2023
Returning Adult Scholarship, University of Wisconsin-Eau Claire	2022-2023
SQL Writing Competition (Placed), University of Wisconsin-Eau Claire	2021

RELEVANT EXPERIENCE

University of Wisconsin-Eau Claire, Eau Claire, WI

• <i>Dean of Students Intern/Clerical Assistant</i> , Dean of Students Office	Fall 2022-July 2024
• <i>Teaching Assistant</i> , Math 109: Algebra for Calculus	Fall 2023
• <i>Teaching Assistant</i> , Math 324: Linear Algebra	Spring 2023
• <i>Math Tutor</i> , Multicultural Student Services	Spring 2023
• <i>Teaching Assistant</i> , Math 314: Discrete Mathematics	Fall 2022

SERVICE ACTIVITIES

University of Wisconsin-Eau Claire, Eau Claire, WI

• Volunteer: Campus Closet	2024
• Member: Math Club	2022-2024
• Member: Organization for Minorities in Technology	2021-2024
• Volunteer: Sonia Kovalevsky Day	2023
• Volunteer: High School Math Meet	2023
• Volunteer: Math Club Book Sale	2022
• Member: Student Association for Computing Machinery	2021