

Alexander Wilson

awilson6@oberlin.edu

Employment

Oberlin College, Visiting Assistant Professor. Sep 2023–

Education

Dartmouth College. Sep 2018–Jun 2023

- Ph.D., Mathematics
- Thesis Advisor: Rosa Orellana

Michigan State University. Sep 2014–May 2018

- Bachelor of Science in Advanced Mathematics
- Minor in German

Teaching and Mentoring

Oberlin College, Instructor. Sep 2023–

- Math 133: Calculus I (Spring 2024, Fall 2024)
- Math 220: Discrete Mathematics (Fall 2023)
- Math 234: Differential Equations (Fall 2023)

Dartmouth Mathematics Directed Reading Program, Mentor. Sep 2021–Jun 2023

- Magical Mathematics by Diaconis and Graham (Winter 2023)
- Integer-Point Enumeration in Polyhedra by Beck and Robins (Spring 2022)
- Representation Theory of Finite Groups by James and Liebeck (Winter 2020)

Dartmouth College, Instructor. Sep 2020–Jun 2023

- Math 22: Linear Algebra with Applications (Fall 2022)
- Math 3: Calculus (Fall 2021)
- Math 1: Introduction to Calculus (virtual, Fall 2020)

Dartmouth College, Teaching Assistant. Sep 2018–Jun 2020

- Math 10: Introductory Statistics (Spring 2020, online over Zoom)
- Math 11: Accelerated Multivariable Calculus (Fall 2019)
- Math 8: Calculus of Functions of one and Several Variables (Winter 2019)
- Math 1: Introduction to Calculus (Fall 2018)

Michigan State University, Math Learning Center Supervisor. Sep 2015–May 2018

- Managed a center of around twenty tutors, conducting evaluations and mentoring tutors on effective tutoring techniques.

Michigan State University, Undergraduate Learning Assistant. Sep 2015–May 2018

- Taught a recitation of around twenty students in business calculus, calculus II, honors calculus III, and honors linear algebra.

Lyman Briggs College, Worksheet Author. Summer 2017

- Composed worksheets for a biology-based calculus course which connected calculus concepts to biology through mathematical modelling.

Publications

Complete Characterization of the Weyl Alternating Set for Negative Roots of Type A Lie Algebras (with Portia X. Anderson, Esther Banaian, Melanie J. Ferreri, Owen C. Goff, Kimberly P. Harris, Pamela E. Harris, Kimberly J. Harry, Nicholas Mayers, and Shiyun Wang), *In Preparation.*

Kronecker Products and Crystal Structures on Bitableaux (with Nate Harman), *In Preparation.*

Coloring Groups (with Ben Adenbaum), *Discrete Mathematics & Theoretical Computer Science, vol. 26:2 (2024).*

A Super Multiset Insertion Algorithm and a Mixed Multiset Partition Algebra, *Submitted.*

A Diagram-Like Basis for the Multiset Partition Algebra, *Algebraic Combinatorics (to appear).*

Closed Forms of Recursive Polynomials and Applications (with Michelle Haver, Kathleen Lee, William McDermott, Wei-Hsuan Yu and Aklilu Zeleke), *Ars Combinatoria, 142 (2019), 175-195.*

Presentations

Invited Conference Talks

Special Session on Research Community in Combinatorics, *Joint Math Meetings, Boston, MA.* Jan 2023

Session on Algebraic Combinatorics and Representation Theory, *Winter Meeting of the CMS, Toronto, ON.* Dec 2022

Young Voices in Combinatorics, *AMS 2022 Fall Eastern Sectional Meeting, Amherst, MA.* Oct 2022

Invited Seminar Talks

University of Minnesota, *Summer Representation Theory Seminar.* Aug 2024

University of Georgia at Athens, *Algebra Seminar.* Jan 2024

The Ohio State University, *Quantum Symmetries Seminar.* Jan 2024

Cleveland State University, *Colloquium.* Oct 2023

UW Milwaukee, *Algebra Seminar.* Apr 2023

Washington University in St. Louis, *Combinatorics Seminar.* Mar 2023

UMass Amherst, *Discrete Math Seminar.* Mar 2023

Michigan State University, *Combinatorics and Graph Theory Seminar.* Sep 2022

University of Vermont, *Combinatorics Seminar.* May 2022

Dartmouth College, *Combinatorics Seminar.* Feb 2022

Other

Crystal Structures on Bitableaux, *Contributed Talk, Spectra Survey of Mathematics Conference.* July 2024

Super Multiset RSK and a Mixed Multiset Partition Algebra , <i>Contributed Talk</i> , Spectra Special Session on Research by LGBTQ+ Mathematicians at the JMM.	Jan 2024
A Diagram-Like Basis for the Multiset Partition Algebra , <i>Contributed Talk</i> , Spectra LGBTQ+ in Mathematics Conference.	Aug 2021
Schur-Weyl Duality and Centralizer Algebras , <i>Graduate Student Seminar (virtual)</i> , Dartmouth College.	Oct 2020
Building Character(s): Representation Theory of Finite Groups , <i>Graduate Student Seminar</i> , Dartmouth College.	Feb 2020
Classical Bases of Symmetric Functions and Transition Matrices , <i>Combinatorics Seminar</i> , Dartmouth College.	Nov 2019
Some Bases of Symmetric Functions , <i>Graduate Student Seminar</i> , Dartmouth College.	Oct 2019
Manifolds with Boundary , <i>Geometry and Topology Student Seminar</i> , Michigan State University.	Sep 2017
Obtaining a Projective Toric Variety from a Polytope , <i>Seminar on Toric Varieties</i> , Michigan State University.	Jun 2017
REU Symposium , <i>Poster Session</i> , Arlington, VA.	Oct 2016
Mathfest , Columbus, OH.	Aug 2016

Service

Conference Organizing

Co-Organizer , <i>JMM Special Session on Mathematics Research Community in Algebraic Combinatorics</i> .	Jan 2025
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K-12 Outreach

Co-Organizer , <i>Sonia Kovalevsky Math Day at Dartmouth</i> .	Apr 2022
Camp Leader , <i>Exploring Mathematics at Dartmouth: Cryptography and Graph Theory (virtual)</i> .	Summer 2020
Graduate Leader , <i>Sonia Kovalevsky Math Day at Dartmouth</i> .	Apr 2019

Other

Co-facilitator , <i>Dartmouth Math Department Racial Justice Discussion Group</i> .	Aug 2020–May 2021
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Honors and Awards

Project NExT Green '23 Cohort .	2023-2024
TA Award for Excellence in Teaching , <i>MSU Mathematics Department</i> .	Apr 2017
Richard E. Phillips Memorial Scholarship , <i>MSU Mathematics Department</i> .	Apr 2017
Leroy G. Augenstein Award , <i>MSU College of Natural Science</i> .	Apr 2017

Languages

Natural

German: Proficient

Programming

Mathematica: Proficient

Python/Sage: Proficient