Alexander Wilson

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Employment

York University, *Postdoctoral Visitor*.   **July 2025–**
Oberlin College, *Visiting Assistant Professor*.   **Sep 2023–Jun 2025**

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

Publications

Kronecker Coefficients, Crystals, and Bitableaux (with Nate Harman), *Preprint*.

The defective parking space and defective Kreweras numbers (with Rebecca E. Garcia, Pamela E. Harris, Alex Moon, Aaron Ortiz, Lauren J. Quesada, Cynthia Marie Rivera Sánchez, Dwight Anderson Williams II), *submitted to Discrete Mathematics & Theoretical Computer Science*.

The support of Kostant's weight multiplicity formula is an order ideal in the weak Bruhat order (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), *Preprint*.

Centralizers in the Plactic Monoid (with Bruce E. Sagan), *Semigroup Forum (2025)*..

Centralizers in the Plactic Monoid (with Bruce E. Sagan), *Proceedings of FPSAC 2025, Sém. Lothar. Combin. 93B (2025)*.

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, *Accepted, Electronic Journal of Combinatorics*.

A Diagram-Like Basis for the Multiset Partition Algebra, *Algebraic Combinatorics, Volume 7 (2024) no. 4, pp. 1225-1259.* .

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*.

Teaching and Mentoring

Oberlin College, *Instructor*.   **Sep 2023–**

- Math 327: Group Theory (Spring 2025)
- Math 133: Calculus I (Spring 2024, Fall 2024)
- Math 220: Discrete Mathematics (Fall 2023, Spring 2025)
- 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.

Presentations

Invited Conference Talks

AMS Special Session on Advances in representation theory, combinatorics, and interactions with machine learning, *AMS 2025 Spring Eastern Sectional Meeting*, Hartford, CT.   **Apr 2025**

AMS Special Session on Algebraic, Geometric, and Topological Combinatorics, *AMS 2025 Spring Central Sectional Meeting*, Lawrence, KS.   **Mar 2025**

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 Wisconsin-Milwaukee, *Colloquium.*   **Feb 2025**

University of Wisconsin-Madison, *Combinatorics Seminar.*   **Jan 2025**

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

Service

Conference Organizing

Co-Organizer, *JMM Special Session on Mathematics Research Community in Algebraic Combinatorics*.	**Jan 2025**

K-12 Outreach

Co-Organizer, *Sonia Kovalevsky Math Day at Dartmouth*.	**Apr 2022**
Camp Leader, *Exploring Mathematics at Dartmouth: Cryptography and Graph Theory (virtual)*.	**Summer 2020**

Graduate Leader, *Sonia Kovalevsky Math Day at Dartmouth.* **Apr 2019**

Other

Co-facilitator, *Dartmouth Math Department Racial Justice Discussion Group.* **Aug 2020–May 2021**

Honors and Awards

Project NExT Green '23 Cohort. **2023-2024**

TA Award for Excellence in Teaching, *MSU Mathematics Department.* **Apr 2017**

Richard E. Phillips Memorial Scholarship, *MSU Mathematics Department.* **Apr 2017**

Leroy G. Augenstein Award, *MSU College of Natural Science.* **Apr 2017**

Languages

Natural

German: Proficient

Aanishinabemowin (Ojibwe): Basic

Programming

Mathematica: Proficient

Python/Sage: Proficient