Alexander Wilson

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Education

Dartmouth College. **Sep 2018–Present**

- Ph.D., Mathematics (in progress)
- Thesis Advisor: Rosa Orellana

Michigan State University. **Sep 2014–May 2018**

- Bachelor of Science in Advanced Mathematics
- Minor in German

Publications

A Diagram-Like Basis for the Multiset Partition Algebra, *In progress*.

A Charged Graph Algebra (with Rosa Orellana), *In progress*.

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

Conference Talks

A Diagram-Like Basis for the Multiset Partition Algebra, *Young Voices in Combinatorics*, AMS 2022 Fall Eastern Sectional Meeting. **October 2022**

A Diagram-Like Basis for the Multiset Partition Algebra, *Contributed Talk*, Spectra LGBTQ+ in Mathematics Conference. **Aug 2021**

REU Symposium, Arlington, VA. **October 2016**

- Presented a poster detailing our SURIEM findings.

Mathfest, Columbus, OH. **August 2016**

- Prepared and gave a 15-minute presentation with my research group from SURIEM.

Seminar Talks

A Diagram-Like Basis for the Multiset Partition Algebra, *Combinatorics and Graph Theory Seminar*, Michigan State University. **September 2022**

A Diagram-Like Basis for the Multiset Partition Algebra, *Combinatorics Seminar*, University of Vermont. **May 2022**

A Diagram-Like Basis for the Multiset Partition Algebra, *Combinatorics Seminar*, Dartmouth College. **Feb 2022**

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**

Classic 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 Polytope, *Seminar on Toric Varieties*, Michigan State University. **Jun 2017**

Teaching

Instructor, *Dartmouth College*. **Sep 2020–Present**

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

Teaching Assistant, *Dartmouth College*. **Sep 2018–June 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)

Supervisor, *MSU Math Learning Center*. **Sep 2015–May 2018**

- Provided friendly tutoring for students in courses from college algebra to ordinary differential equations.
- Managed a center of around twenty tutors, conducting evaluations and mentoring tutors on effective tutoring techniques.

Undergraduate Learning Assistant, *MSU Mathematics Department*. **Sep 2015–May 2018**

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

Worksheet Author, *Lyman Briggs*. **Summer 2017**

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

Service

K-12 Outreach:

Co-Organizer, *Sonia Kovalevsky Math Day at Dartmouth*. **April 2022**

Camp Leader, *Exploring Mathematics at Dartmouth: Cryptography and Graph Theory (virtual)*. **Summer 2020**

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

Other

Mentor, *Dartmouth Mathematics Directed Reading Program: Integer-Point Enumeration in Polyhedra*. **Spring 2022**

Mentor, *Dartmouth Mathematics Directed Reading Program: Representation Theory of Finite Groups*. **Winter 2020**

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

Honors and Awards

TA Award for Excellence in Teaching, *MSU Mathematics Department*. **April 2017**
Richard E. Phillips Memorial Scholarship, *MSU Mathematics Department*. **April 2017**
Leroy G. Augenstein Award, *MSU College of Natural Science*. **April 2017**

Languages

Natural

German: Proficient

Programming

Mathematica: Proficient
Python/Sage: Proficient