

# Moriah Elkin

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## Education

**Ph.D. Mathematics, Cornell University** - anticipated May 2029

**M.S. Mathematics, University of Minnesota: Twin Cities** - May 2023

- Thesis: *Double and Triple Dimer Interpretations of the Grassmannian Twist Map*
- Advisor: Dr. Gregg Musiker

**B.S. Mathematics, University of Minnesota: Twin Cities** - May 2021

- Summa Cum Laude, with High Distinction
- GPA 3.928
- Honors thesis: *The Structure of Young Modules and Schur Algebras in Characteristic 2*
- Advisor: Dr. Peter Webb
- Minor in Spanish Studies

## Publications

**Local Statistics of the  $M_n$ -Dimer Model**

N. Anderson, M. Elkin, E. Kelley, N. Ovenhouse, and K. Wright. Submitted, 2025. *arXiv:2508.19224*.

**Twists of  $\text{Gr}(3,n)$  Cluster Variables as Double and Triple Dimer Partition Functions**

M. Elkin, G. Musiker, and K. Wright. *Algebraic Combinatorics*, 2024. *arXiv:2305.15531*.

**The structure of Young modules and Schur algebras in characteristic 2**

M. Elkin and P. Webb. Submitted, 2020. *arXiv:2011.12357*.

## Invited Talks

**Route 81 Conference** (Kingston, Ontario) - September 2025

**Working ALgebra Knowledge Seminar** (Syracuse, NY) - November 2024

## Other Presentations

**Cornell Math Club** (Ithaca, NY) - talk, September 2025

**Olivetti Club** (Ithaca, NY) - talk, September 2025

**Olivetti Club** (Ithaca, NY) - talk, March 2024

**Olivetti Club** (Ithaca, NY) - talk, September 2023

**UMN Student Combinatorics and Algebra Seminar** - talk, February 2023

**Combinatorial Algebra meets Algebraic Combinatorics** (Waterloo, Ontario) - talk, January 2023

**Algebra, Geometry, and Combinatorics Day** (Champaign, IL) - poster, October 2022

**Student Symposium in Combinatorics** (virtual, based in Sydney, Australia) - talk, May 2022

**Grad. Meeting on Combinatorics and Commutative Alg.** (Minneapolis, MN) - poster, May 2022

**UMN Math Club** - talk, February 2022

**UMN Math Department Senior Honors Presentations** - talk, May 2021

**UMN Undergraduate Research Symposium** - talk, April 2021

**UMN Student Combinatorics and Algebra Seminar** - talk, January 2021

## Teaching

### *Cornell University*

**Graduate Teaching Assistant, Theoretical Linear Algebra and Calculus** - Fall 2025

**Graduate Teaching Assistant, Differential Equations for Engineers** - Spring 2025

**Graduate Teaching Assistant, Linear Algebra for Engineers** - Fall 2024

### *University of Minnesota*

**Graduate Teaching Assistant, Sequences, Series, and Foundations** - Spring 2023

**Graduate Teaching Assistant, Calculus I for Scientists and Engineers** - Fall 2022

**Graduate Teaching Assistant, Short Calculus** - Spring 2022

**Graduate Teaching Assistant, Calculus I** - Fall 2021

**Undergraduate Teaching Assistant, Precalculus II** - Spring 2021

**Undergraduate Teaching Assistant, Precalculus I** - Fall 2020

**Undergraduate Teaching Assistant, College Algebra and Probability** - Fall 2019

### *Other*

**Snare Technician, River City Rhythm Drum and Bugle Corps** - Summer 2025

**Snare Technician, Rosemount High School Marching Band** - Spring and Fall 2022

## Fellowships and Scholarships

**Cornell Fellowship** - 2023-2024

**Bentson Family Scholarship** - 2017-2023

**Tau Beta Sigma Scholarship** - Spring 2021

**Undergraduate Research Opportunities Program Scholarship** - Spring 2021

**Technical Leadership Challenge Scholarship**, UMNTC College of Science and Engineering - 2020-2021

**Ella Thorp Undergraduate Scholarship**, UMNTC Mathematics Department - 2020-2021

**Undergraduate Research Scholarship** - Fall 2020

**Ebert Marching Band Scholarship** - Fall 2020

**Kappa Kappa Psi Scholarship** - Fall 2020

**Christofferson Undergraduate Scholarship**, UMNTC Mathematics Department - 2019-2020

**National Merit Scholarship** - 2017-2021

**University of Minnesota Gold Scholar Award** - 2017-2021

## Other Honors

**Speaker at the UMN Mathematics Department Graduation Ceremony** - 2021

**Recipient of two Certificates for Dedication to Student Learning** - 2021

**United States Presidential Scholar** - 2017

## Service and Leadership

**Organizer, Graduate Combinatorics Seminar, Cornell** - Fall 2025

**Mentor, Directed Reading Program, Cornell** - Fall 2024, Spring 2025, Fall 2025

- Met weekly with undergraduate mentees to discuss Fulton's *Young Tableaux* and Humphreys' *An Introduction to Lie Algebras and Representation Theory*

- Answered questions, assigned exercises, and suggested external resources to deepen understanding of the material

**Referee, American Journal of Computational Mathematics** - Spring 2025

**Referee, Journal of the Korean Math Society** - Fall 2024

**Organizer, Olivetti Club, Cornell** - Fall 2023, Fall 2024

- Co-organized a mathematics graduate student colloquium seminar
- Advertised talks through flyers and emails

**Volunteer, Little Circle, Cornell** - Fall 2023

- Taught mathematical concepts to a group of K-2 students

**Mentor, Directed Reading Program, UMN** - Spring 2022, Spring 2023

- Met weekly with undergraduate mentees to discuss *Galois Theory for Beginners* and *Category Theory for the Sciences*
- Answered questions, assigned exercises, and suggested external resources to deepen understanding of the material
- Guided mentees' preparation and delivery of a ten-minute talk

**Mentor, Mathematics Project at Minnesota, UMN** - January 2022, January 2023

- Co-organized an intensive week-long mathematics workshop for underrepresented UMN undergraduates
- Mentored two participants in the preparation and delivery of their first mathematical talks

**Counselor, Mathematics Project at Minnesota, UMN** - January 2021 and January 2020

- Helped run an intensive week-long mathematics workshop for underrepresented UMN undergraduates
- Led discussions aimed at promoting equity and fostering mathematical confidence
- Mentored three participants in the preparation and delivery of their first mathematical talks

**Veteran member, Troopers Drum and Bugle Corps** - Summer 2022

- Took on leadership and mentoring responsibilities in the snareline
- Received the "Jon Coppinger Troopers Spirit Award" for facilitating a supportive atmosphere

**Snare section leader, University of Minnesota Marching Band** - Summer and Fall 2020

- Created and ran a virtual summer program for prospective snare auditionees
- Led snare sectionals and full drumline rehearsals
- Participated in leadership meetings to plan and troubleshoot full-drumline logistics, including safety concerns related to the COVID-19 pandemic

## Professional Development

**Course participant, ALS 6015: The Practice of Teaching** - Spring 2024

**Attendee, Binghamton U. Grad. Combinatorics, Algebra, and Topology Conference** - October 2024

**Attendee, Joint Mathematics Meetings** - January 2023

**Attendee, Open Problems in Algebraic Combinatorics** - May 2022

**Attendee, MSRI Celebration for Women in Mathematics** - May 2022

**Attendee, CA+ Conference** - October 2021

**Participant, IAS Program for Women and Mathematics** - May 2021

- Topic of program: Representation Theory: Categories & Combinatorics

**Participant, UC Riverside Diversity Workshop** - May 2021

- Topic of workshop: Women in Combinatorics and Representation Theory

**Member, University of Minnesota Women in Math Club** - Spring 2020-Spring 2021

**Member, American Mathematical Society** - January 2021-present

**Member, Mathematical Association of America** - 2019-present

**Member, Association for Women in Mathematics** - 2019-present

**Member, Women in Science and Engineering Book Club** - January 2021 and Summer 2020

- Read books about underrepresented groups in science and engineering
- Participated in weekly discussions; led two of these

**Participant, Mathematics Project at Minnesota** - January 2018

## **Technical Skills**

LaTeX, Python, SAGE, GAP