

Lillian (Lilly) Webster

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EDUCATION

University of Minnesota , Minneapolis, MN Department of Mathematics; PhD expected May 2023 Advisor: Pavlo Pylyavskyy	2017 - Present GPA: 4.000
Grinnell College , Grinnell, IA Bachelor of Arts in Mathematics with honors Advisor: Joseph Mileti	2013 - 2017 GPA: 3.95

AREAS OF INTEREST

Algebraic combinatorics, particularly cluster algebras
Group theory and representation theory
Mathematical logic and computability
Mathematics education

TEACHING

<i>Graduate Teaching Assistant, University of Minnesota</i>	2017 - Present
<ul style="list-style-type: none">• Lead classroom discussions on material covered in lecture• Facilitate communication between professor and students• Assist in transition to online learning and assessment due to COVID-19• Courses taught: Calculus I, Multivariable Calculus• Honors courses taught: Linear Algebra and Differential Equations, Honors Mathematics I & II• Courses taught as instructor with full responsibility: Calculus II, Linear Algebra and Differential Equations	
<i>Summer Instructor, Project MEGSSS</i>	2020
<ul style="list-style-type: none">• Design and teach course on low-dimensional topology for gifted 5th grade students• Adapt course material for remote learning format	
<i>Saturday Enrichment Teacher, University of Minnesota MathCEP</i>	2019 - Present
<ul style="list-style-type: none">• Teach enrichment courses for middle school students on topics not typically covered in school curriculum• Courses taught: Fractals and Chaos, Cryptography, Spherical Geometry	
<i>Student Mentor, Grinnell College</i>	2014-2016
<ul style="list-style-type: none">• Run informal sessions to review concepts and assist with homework• Courses taught: Combinatorics, Combinatorics and Number Theory	

PUBLICATIONS

Shifted Hecke insertion and the K-theory of $OG(n, 2n + 1)$

Z. Hamaker, A. Keilthy, R. Patrias, L. Webster, Y. Zhang, S. Zhou
Journal of Combinatorial Theory, Series A 151:207-240, 2017

Involution Subword Complexes in Coxeter Groups

Z. Hamaker, A. Keilthy, B. Pawlowski, L. Webster, Y. Zhang, S. Zhou
In progress

HONORS AND AWARDS

Aaron and Anna Beek Graduate Student Teaching Award, University of Minnesota	2020
Most Mathematical Pie, University of Minnesota AMS Pi(e) Contest	2019
College of Science and Engineering graduate fellowship, University of Minnesota	2017 - 2020
Mark Feshbach fellowship, University of Minnesota	2017 - 2020
Linn Smith Prize for Excellence in Mathematics, Grinnell College	2017
Phi Beta Kappa, Grinnell College	2016
Pamela Ferguson Endowed Prize in Mathematics, Grinnell College	2016
Barry Goldwater Scholarship Honorable Mention	2016

RESEARCH AND EDUCATION EXPERIENCES

Research Experience for Undergraduates, University of Texas at Tyler Summer 2016

- Researched minimal graphs with automorphism group the generalized quaternion groups
- Joint work with Sam Edwards and Kripa Khanal
- Advised by Stephen Graves

Budapest Semesters in Mathematics Fall 2015

- Took intensive semester-long courses in Complex Analysis, Advanced Abstract Algebra, Extremal Combinatorics, and Theory of Computing
- Participated in additional courses on problem solving, classical algebra, and Hungarian language

Research Experience For Undergraduates, University of Minnesota Summer 2015

- Researched involution subword complexes in Coxeter groups, paper in progress
- Researched shifted Hecke insertion and the K-theory of the orthogonal Grassmannian, resulting in a paper published in *Journal of Combinatorial Theory, Series A*
- Joint work with Adam Keilthy, Yinou Zhang, and Shuqi Zhou
- Advised by Zachary Hamaker, Brendan Pawlowski, and Rebecca Patrias

Summer Mathematics Program, Carleton College Summer 2014

- Took introductory courses in Topology and Lie Theory
- Participated in networking and mentoring activities
- Courses taught by Erica Flapan and Pamela Richardson

SERVICE

- Organizer, 2021 Graduate Student Combinatorics Conference (UMN)*** 2019 - 2021
- Prepare proposals to host conference and for multiple grants
 - Transition to virtual conference due to COVID-19
 - Receive \$25,000 grant from NSA for conference expenses, declined due to transition to virtual conference
 - Disseminate information about conference to graduate students nationwide
 - Primary person in charge of budgeting and technology licenses
 - Moderate session of graduate student talks
- Mentor, Directed Reading Program (UMN)*** 2018 - Present
- Select mathematical texts accessible to undergraduates and meet weekly to discuss reading
 - Assist in preparing a short presentation at the end of the semester
 - Fall 2018: Visual methods in group theory
 - Spring 2019: Topology of low-dimensional manifolds
 - Fall 2019: Group representation theory
 - Spring 2020: Applications of topology to chemistry; Nonstandard analysis of divergent series
- Counselor and Pal, Mathematics Project at Minnesota (UMN)*** 2020
- Meet with undergraduate mentee several times per semester
 - Assist students in reading a math paper and preparing a short presentation during week-long program
- Organizer, Student Seminar for Undergraduate Mathematics Education (UMN)*** 2019 - Present
- Lead discussions about teaching issues among graduate students
 - Coordinate with Center for Educational Innovation to organize relevant workshops
 - Disseminate information about upcoming sessions to graduate students
- Organizer, Student Combinatorics and Algebra Seminar (UMN)*** 2019 - 2020
- Recruit speakers for weekly seminar talks
 - Disseminate information about upcoming talks
- Outreach Volunteer, Minnesota Internship Center*** 2019

- Participated in outreach event for local low-income high school
- Presented advanced mathematics to high school students via games and puzzles

Poster Judge, Joint Math Meetings Student Poster Session 2019

- Provide written feedback to students on poster presentations
- Recommend students to be considered for awards

Ignite Teacher Scholar, Grinnell College 2014 - 2017

- Design and teach enrichment courses for local elementary school students
- Courses include topology, rocketry, philosophy, and stop-motion videos.

TALKS

Student Representation Theory Seminar, University of Minnesota

Introduction to the McKay Correspondence July 2018
 Introduction to Quiver Representations July 2019

Joint Mathematics Meeting Student Poster Session

Small Graphs with Generalized Quaternion Automorphism Group January 2017

Mathematics and Statistics Student Seminar, Grinnell College

Involution Subword Complexes in Coxeter Groups April 2016
 Small Graphs with Generalized Quaternion Automorphism Group October 2016

Nebraska Conference for Undergraduate Women in Mathematics

Involution Subword Complexes in Coxeter Groups February 2016
 Small Graphs with Generalized Quaternion Automorphism Group February 2017

LANGUAGES

Some experience: C, Scheme, Python, Magma

Extensive experience: Sage, GAP, L^AT_EX

German (conversational), English (native speaker)