Ana Wright

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EDUCATION

University of Nebraska–Lincoln, Lincoln, Nebraska, USA

- Ph.D. in Mathematics — May 2023
  - Dissertation Title: Gordian Distance and Complete Alexander Neighbors
  - Advisors: Mark Brittenham and Alex Zupan
- M.S. in Mathematics — May 2019

Willamette University, Salem, Oregon, USA

- B.A. in Mathematics and Spanish with a minor in English — May 2017
  - Cumulative GPA: 3.94, Mathematics Major GPA: 4.0, Spanish Major GPA: 4.0

WORK EXPERIENCE

Davidson College

- Assistant Professor — Begin Jul. 2023

University of Nebraska–Lincoln

- Graduate Teaching Assistant — Aug. 2017 - May 2023
- Associate Convener for Math 103 College Algebra and Trigonometry — Fall 2020 - Spring 2021
  - Organized weekly instructor meetings, created a course schedule, wrote exams
  - Oversaw 11 sections in the fall and 4 sections in the spring taught by 14 instructors
- Graduate Teaching Assistant for Polymath Jr. — Summer 2021 & 2022
  - Served as a graduate teaching assistant for Alex Zupan's projects for the online undergraduate research program Polymath Jr. supported by NSF grant DMS-2005518.
- Graduate Research Assistant — Dec. 2020 - Jan. 2021
  - Coded and summarized interviews for a project in computer science education funded by a Computer Science for All grant from the National Science Foundation called Adapt, Implement, and Research at Nebraska (AIR@NE) DUE-1837476 with Wendy Smith and Sally Ahrens

Willamette University

- Math Tutor and Preceptor for Modeling With Calculus (MATH 140), Linear Algebra (MATH 253), and Multivariable Calculus (MATH 249) — Nov. 2013 - May 2017
- Grader for the proofwriting course Foundations of Advanced Math (MATH 251W) — Nov. 2016 - May 2017
- Undergraduate Researcher for the Willamette University Mathematics Research Experience for Undergraduates (REU) — June 2016 - July 2016
  - Project: Mixing Times of the Generalized Rook's Walk
  - Advisor: Peter Otto

AWARDS

Ben Nolting Award — 2021

Annual award for one or two graduate students in mathematics at UNL recognizing work in diversity and inclusion

Linda Bors Fellowship — 2020

Annual fellowship awarded to 3 graduate students in mathematics at UNL based on excellence of scholarship

Chester F. Luther Mathematics Scholarship — 2016

Annual scholarship awarded to 4-6 undergraduate students at Willamette University for excellence in mathematics

Teaching Experience

INSTRUCTOR OF RECORD

MATH 101 College Algebra
Fall 2018 & Fall 2021

In Fall 2021, I taught this class as part of the federal outreach and student services program TRIO meant to identify and provide services to eligible students from disadvantaged backgrounds. The class meets 5 times per week rather than the typical 3 and has extra office hours and a smaller class size than other sections. I also taught a standard section of this course in Fall 2018.

MATH 103 College Algebra and Trigonometry
Fall 2019 & Fall 2020

In Fall 2020, this class used a flexible hybrid model to accommodate for social distancing regulations due to COVID-19. I also taught a standard, in-person section of this course in Fall 2019.

MATH 104 Applied Calculus
Summer 2019

MATH 106 Calculus I
Summer 2020

This was an online class due to COVID-19.

MATH 107 Calculus II
Spring 2023

MATH 203 Contemporary Mathematics
Spring 2019

MATH 300 Mathematics Matters
Spring 2020

This course is for pre-service elementary school teachers and the last six weeks of this course were administered online due to COVID-19.

MATH 314 Linear Algebra
Spring 2022

TEACHING ASSISTANT EXPERIENCE

MATH 106R Calculus I Recitation
Fall 2017 & Spring 2018

I taught two recitation sections each semester Fall 2017 and Spring 2018.

MATH 107R Calculus II Recitation
Summer 2018

GRADING EXPERIENCE

MATH 104 Applied Calculus
Fall 2019 & Fall 2022

Graded midterms and final exam

MATH 310 Introduction to Modern Algebra
Spring 2023

Graded and gave feedback on student proofs on problem sets

MATH 856 Differential Topology
Spring 2022

Graded and gave feedback on student proofs on problem sets

MATH 871 Topology I
Fall 2022

Graded and gave feedback on student proofs on problem sets

Mentorship Experience

UNDERGRADUATE MENTORSHIP

Mathematical Sciences Research Institute-Undergraduate Program (MSRI-UP)
Summer 2023

Polymath Jr: Symmetric Union Presentations for Ribbon Links
Summer 2022

This undergraduate research project was held online and organized by Alex Zupan. Meetings were conducted via Zoom and other communication was conducted via email and Discord. I curated student proofs for a solution guide to problem sets on the background material. I participated in weekly progress meetings with 24 undergraduate students and held weekly office hours.

| | **Polymath Jr: Knotted Surface Tabulation Via Tri-plane Diagrams** | Summer 2021 |

This undergraduate research project was held online and organized by Alex Zupan. Meetings were conducted via Zoom and other communication was conducted via email and Discord. I participated in weekly progress meetings with 22 undergraduate students. I led weekly research meetings with 7 of the undergraduate researchers. I also held weekly office hours and helped compile results from the project.

Learning Assistant Math 103 College Algebra and Trigonometry Pedagogy Leader — Fall 2020 - Spring 2021

I ran biweekly meetings with the undergraduate learning assistants in Math 103 to go over the course content and related pedagogical issues.

Directed Reading Program — Spring 2020

I met weekly with an undergraduate student as she worked through An Interactive Introduction to Knot Theory by Inga Johnson and Allison Henrich.

GRADUATE MENTORSHIP

Landscapes Seminar — Spring 2021

Landscapes seminar is a weekly seminar of talks and a panel to help 11 first year grad students prepare to ask a professor to be their advisor and begin research. I organized the seminar in Spring 2021.

Topology Qualifying Exam Workshop — Jan. 2021

I organized previous topology qualifying exam problems into a database, which can be sorted by topic and helped 3 graduate students prepare for the exam.

Peer Mentorship Program — Aug. 2019 - May 2020

I served as a peer mentor to a first year graduate student.

Publications, Presentations, and Travel

PAPERS

Gordian Distance and Complete Alexander Neighbors arXiv:2210.07728 [math.GT] (Preprint)

(with Wolfgang Allred, Manuel Aragón, Zack Dooley, Alexander Goldman, Yucong Lei, Isaiah Martinez, Nick Meyer, Devon Peters, Scott Warrander, and Alex Zupan) *Tri-plane diagrams for simple surfaces in S^4* arXiv:2302.08431 [math.GT] (Submitted)

(with Chris Anderson, Kenneth L. Baker, Xinghua Gao, Marc Kegel, Khanh Le, Kyle Miller, Sinem Onaran, Geoffrey Sangston, Samuel Tripp, and Adam Wood) *L-space knots with tunnel number >1 by experiment* Experimental Mathematics (2021) 1-15

(with Ben Clingenpeel, Zongzheng (Jason) Dai, Gabriel Diraviam, Kareem Jaber, Ziyun Liu, Teo Miklethun, Haritha N, Michael Perry, Moses Samuelson-Lynn, Eli Seamans, Krishnendu Kar, Nicole Xie, Ruiqi Zou, and Alex Zupan) *Symmetric Union Presentations of Ribbon Knots* (In Preparation)

PRESENTATIONS

"Properties of Knots from Polynomials" (Invited Speaker)
- Jim Albaugh Mathematics Colloquium at Willamette University, online — Apr. 2023

"A Topological Journey Through Spaces and Knots" (Invited Speaker)
- Math RaMP at Spelman College, online, as part of the Great Plains Alliance — Mar. 2021

Non-Euclidean Geometry Presentation
- I visited an undergraduate geometry class at Nebraska Wesleyan University and gave a talk about non-euclidean geometry, introducing hyperbolic and elliptic geometry. — Oct. 2021

"A Journey Through Hyperbolic Space" (Invited Speaker)
- Jim Albaugh Mathematics Colloquium at Willamette University, online — Apr. 2020

"Senior Thesis: Mountain Graphs in Origami Crease Patterns"

- Jim Albaugh Mathematics Colloquium at Willamette University — Apr. 2017

"Mixing Times for the Generalized Rook's Walk"

- Nebraska Conference for Undergraduate Women in Math — Feb. 2017
- Joint Mathematics Meetings: Contributed Papers in Probability and Statistics I and Student Poster Session — Jan. 2017
- Jim Albaugh Mathematics Colloquium at Willamette University — Dec. 2016

CONFERENCES AND TRAVEL		
Max Planck Institute of Mathematics (2 month visit) Bonn, Germany		Sept.-Oct. 2022
Séminaire de Mathématiques Supérieures (Mathematical Sciences Research Institute Summer School) Vancouver, Canada		Jul. 2022
Winter Trisectors Workshop Online workshop		Dec. 2020
Kirby Calculus and 4-manifolds UT Austin Minicourse Online minicourse		Jul. 2020
Heegaard Splittings and Dehn Surgery UT Austin Minicourse Online minicourse		Jul. 2020
Topology Student's Workshop Online workshop		Jul. 2020
Joint Mathematics Meetings Denver, Colorado		Jan. 2020
Midwest Geometry Conference Ames, Iowa		Sep. 2019
Perspectives on Dehn Surgery Providence, Rhode Island		Jul. 2019
Georgia Topology Conference Athens, Georgia		May 2019

LOCAL TALKS (UNL)

Groups, Semigroups, and Topology (GST) Seminar

- "End Spaces and Compact Closures" (online) — Apr. 2022
- "Maps From 3-Manifolds to 4-Manifolds That Induce Isomorphism on π_1 by Hongbin Sun and Zhongzi Wang (Part 1)" (online and in person) — Oct. 2021
- "Knot Groups and Colorability" (online) — Mar. 2021
- "Alexander Polynomials and Gordian Distance" (online) — Oct. 2020
- "Efficient Computation of the Kauffman Bracket" — Feb. 2020
- "Introduction to Folliations" — Nov. 2019

Graduate Students Talking in Groups, Semigroups, and Topology (GST)[2] Seminar

- "Diagrams of Knotted Surfaces" — Oct. 2021
- "Alexander Polynomials and Gordian Distance" (online) — Sept. 2020
- "To Knot or Not to Knot" — Feb. 2020
- "Conveniences of Alternating Diagrams" — Oct. 2019
- "Algorithms Transforming Links into Closed Braid Form" — Mar. 2019

Matemáticas en español Seminar

- "Nudos de cinta" (Ribbon Knots) (online) — Sept. 2022
- "Pruebas sin palabras" (Proofs Without Words) (online) — Feb. 2022
- "Introducción a superficies anudadas" (Introduction to Knotted Surfaces) — Oct. 2021
- "Geometría elíptica" (Eliptic Geometry) — Sept. 2021
- "Introducción a la característica de Euler" (Introduction to the Euler Characteristic) (online) — Feb. 2021
- "Grafos montes en patrones de pliegues origami" (Mountain Graphs in Origami Crease Patterns) (online) — Sept. 2020
- "Introdución a la geometría hiperbólica" (Introduction to Hyperbolic — Apr. 2020

Geometry) (online)

- "Cruces múltiples en diagramas de nudos" (Multi-crossings in Knot Diagrams)   Oct. 2019
- "La magia de flexágonos" (The Magic of Flexagons)   Sept. 2019
- "Introducción a la teoría de nudos" (Introduction to Knot Theory)   Mar. 2019

Graduate Student Seminar

- "Using Graphs to Think About the Jones Polynomial" (online)   Apr. 2021
- "Hyperbolic Geometry and Topology"   Sept. 2019
- "Heegaard Splitting Stability"   Dec. 2018

4-Manifolds Reading Seminar

- "Trisections of 4-Manifolds"   Sept. 2019

Mathematics Literature

- "Thin Position of Knot Diagrams and Essential Planar Surfaces in Knot Complements"   June 2018

Involvement

OUTREACH

Matemáticas en español   Feb. 2019 - Present

I co-founded a Spanish math seminar with Amadeus Martin and organized it from the beginning. It is meant for undergraduate level talks for students and faculty of all Spanish skill levels to practice communicating math in Spanish.

Math Club   Nov. 2021

I gave a talk and led an activity about flexagons with the undergraduate math club at UNL.

Great Plains Alliance   Mar. 2019

I served in a support role for the speaker in a Great Plains Alliance Talk at Wayne State College. The Great Plains Alliance allows UNL graduate students to give talks to undergraduates interested in math at local universities and colleges. The speaker and supporting graduate student hold a Q&A after the talk about graduate school.

Nebraska Conference for Undergraduate Women in Math   2018 - 2022

Each year I volunteer for NCUWM, which encourages undergraduate women to pursue math. In 2020 I was the invited graduate student representative from UNL to speak on a panel about choosing a graduate program.

University of Nebraska–Lincoln Math Day   2017 - 2022

Each year I volunteer for UNL Math Day, where over a thousand high school students from across Nebraska visit UNL's campus to participate in math competitions.

SERVICE

Graduate Student Advisory Board   May 2020 - May 2022

I served on this board, which plans community events and acts as a liaison between the graduate students and faculty in the department.

Graduate Students Talking in Groups, Semigroups, and Topology (GST)^2 Fall 2021

(GST)^2 is a graduate student seminar for students in geometric group theory and topology. I organized the seminar in Fall 2021.

Field of Dreams   Nov. 2021

I respresented the UNL math graduate students at a virtual recruitment booth at the conference Field of Dreams. I talked to several interested undergraduate students about the program.

Equity in Teaching Orientation Session   Aug. 2021

I ran a session during the UNL math graduate student orientation with two other
graduate students about equitable teaching practices.

Math Department Recognition Ceremony and Graduation Receptions   Apr. & Sept. 2021

I helped host and organize these events online.