HALEY COLGATE KOTTLER

haley.kottler@wisc.edu

EDUCATION

University of Wisconsin-Madison
Doctoral Program in Mathematics *August 2020 - present*
Masters of Arts in Mathematics *August 2022*

Enhancing Diversity in Graduate Education *Summer 2020*

Colorado College *May 2020*
Bachelor of Arts with Distinction in Mathematics, cum laude *GPA: 3.9*
Pi Mu Epsilon, Phi Beta Kappa

RESEARCH FOCUS

Current work focuses on addressing societal problems using applied probability, causal inference, modeling, and machine learning.

RESEARCH EXPERIENCE

Data Analyst Project Assistant *University of Wisconsin - Madison*
Gilmore-Bykovskyi Lab, Department of Emergency Medicine *Spring 2024*

Research Assistant *University of Wisconsin - Madison*
Institute for Foundations of Data Science *Spring 2023*
Advisors: Amy Cochran and Jose Israel Rodriguez

Research Assistant *University of Wisconsin - Madison*
Advisor: Jose Israel Rodriguez *Summer 2022*

Research Assistant *University of Wisconsin - Madison*
Advisor: Amy Cochran *Spring 2021*

Student Collaborative Research *Colorado College*
Advisor: Beth Malmskog *Summer 2019*

REU in Coding, Cryptography, and Number Theory *Clemson University*
Advisor: Felice Manganiello *Summer 2018*

PUBLICATIONS

Quantifying aberrant approach-avoidance conflict in psychopathology: A review of computational approaches. by Allison M. Letkiewicz, **Haley C. Kottler**, Stewart A. Shankman, and Amy L. Cochran. Neuroscience & Biobehavioral Reviews. 147 (2023). https://doi.org/10.1016/j.neubiorev.2023.105103

Colorado in context: Congressional redistricting and competing fairness criteria in Colorado. by Jeanne Clelland, **Haley Colgate**, Daryl DeFord, Beth Malmskog, and Flavia Sancier-Barbosa. (Authors alphabetical by last name.) Journal of Computational Social Science. 1-38 (2021). https://doi.org/10.1007/s42001-021-00119-7

Batch Codes from Affine Cartesian Codes and Quotient Spaces, by Travis Baumbaugh, **Haley Colgate**, Timothy Jackman, and Felice Manganiello. (Authors alphabetical by last name.) Cryptography and Coding - 18th IMA International Conference, IMACC 2021, Virtual Event, December 14-15, 2021, Proceedings, 13129(3–15), https://doi.org/10.1007/978-3-030-92641-0_1,

PREPRINTS

Integrating Local Learning into the Two-Stage Markov Task to Separate Model-Based from Model-Free Learning by Peizhe Li, Jimmy Vineyard, Seungyeon Oh, Jack Maloney, Amy Cochran, and **Haley Colgate Kottler**, May 12, 2024. https://doi.org/10.31234/osf.io/hmt2a

WORKS IN PROGRESS

Confounding by Indication with Proxy Variables, by **Haley Kottler** and Amy Cochran.

Implementation of Estimating Gaussian Mixtures Using Sparse Polynomial Moment Systems, by **Haley Kottler**, Julia Lindberg, and Jose Israel Rodriguez.

TEACHING EXPERIENCE

Math 96: Preparatory Algebra	University of Wisconsin - Madison
Lecturer Student Assistant	*Fall 2023*
Math 319: Techniques in Ordinary Differential Equations	University of Wisconsin - Madison
Lecturer Student Assistant	*Summer 2023*
Math 211: Calculus	University of Wisconsin - Madison
Head Teaching Assistant	*Spring 2022, Fall 2022, Spring 2023*
Math 211: Calculus	University of Wisconsin - Madison
Teaching Assistant	*Fall 2021*
Math 221: Calculus and Analytic Geometry 1	University of Wisconsin - Madison
Teaching Assistant	*Fall 2020*
Quantitative Reasoning Center	Colorado College, CO
Mathematics Tutor	*Fall 2018 - Spring 2020*
Mathematics Department	Colorado College
Grader	*Fall 2017 - Spring 2018*

PRESENTATIONS

Society for Industrial and Applied Mathematics - Life Sciences, Portland OR   June 2024
*Undergraduate Research in Computational Psychiatry through
the Madison Experimental Mathematics Lab*

Graduate Applied Mathematics Seminar, Madison WI   February 2024
Reinforcement Learning as a Model for Dog Training

Graduate Applied Mathematics Seminar, Madison WI   October 2023
Causal Inference with Proxy Variables

Institute for Foundations of Data Science Annual Meeting, Madison WI   August 2023
Method of Moments for Gaussian Mixtures: Algebra to Implementation

UW Madison Institute for Foundations of Data Science Seminar, Madison WI March 2023
Confounding by Indication with Proxy Variables

UW Madison SIAM Seminar, Madison WI   November 2022
Gaussian Mixture Model Parameter Recovery

Algebraic Statistics Afternoon Impromptu, Madison, WI   July 2022
Method of Moments

Connecting Colorado for Fair Redistricting: A Public Symposium and Call to Action, Zoom   September 2020
Counting and Connecting: The US Census, Mapping, and Why Data Matters

Invited Speaker

Joint Mathematics Meeting, Denver, CO   January 2020
Measuring Gerrymandering

Student Collaborative Research Symposium, Colorado College, CO   September 2019
Measuring Gerrymandering

Invited Speaker

Mathfest, Cincinnati, OH   August 2019
Measuring Gerrymandering

Received a student speaker award from Pi Mu Epsilon.

Student Collaborative Research Summer Presentations, Colorado College, CO   July 2019
Techniques for Measuring Gerrymandering

MAA Rocky Mountain Sectional Meeting, Durango, CO   April 2019
Emmy Noether and Differential Invariant Theory

Joint poster with Sam Kottler, won Honorable Mention

Math Club Speaker Series, Colorado College, CO   October 2018
Gödel's Incompleteness Theorem

AWARDS AND HONORS

UW - Madison Mathematics Exceptional Service Award	Spring 2024
UW - Madison Early Excellence Teaching Assistant Award	Spring 2022
Colorado College Phi Beta Kappa	2020
Colorado College Barbara Whitten Prize for Women in the Natural Sciences	2020
Colorado College Florian Cajori Award	2020
Colorado College Cajori-Hills-Schneider Scholarship	Fall 2018 - Spring 2020
Colorado College Winona Jewett Finch Scholarship	Fall 2017 - Spring 2020
National Merit Scholarship	Fall 2016 - Spring 2020
Colorado College Dean's List	Fall 2016 - Spring 2019
Colorado College Euclid Scholarship	2018
Pi Mu Epsilon Honor Society Member	2018

LEADERSHIP

Undergraduate Gender Minorities in Math at Wisconsin Organizing committee member	Summer 2023-present
Graduate peer mentor	Summer 2023-present
UW-Madison Undergraduate Mentoring Program Founder and Mentor	Summer 2022-Summer 2023
Colorado College Association for Women in Mathematics Chapter Co-President	Spring 2019-Spring 2020
Colorado College Pi Mu Epsilon Honor Society Chapter President	Spring 2019-Spring 2020
Colorado College Math Club Secretary	Fall 2017-Spring 2018

SERVICE

Panelist and mentor for Graduate Teaching Assistant training University of Wisconsin - Madison	Fall 2023
Invited guest speaker for Badger Precollege on uses of mathematics in social justice University of Wisconsin - Madison	Summer 2023
Career session co-presenter for Expanding Your Horizons Madison University of Wisconsin - Madison	Spring 2023
Student representative for the Graduate Program Committee University of Wisconsin - Madison	Fall 2022 - Spring 2024
Problem writer and grader for the Mega Math Meet University of Wisconsin - Madison	2022, 2023, 2024