

HALEY COLGATE KOTTLER

haley.kottler@wisc.edu

EDUCATION

University of Wisconsin-Madison

Doctoral Program in Mathematics

Masters of Arts in Mathematics

August 2020 - present

August 2022

Enhancing Diversity in Graduate Education

Summer 2020

Colorado College

Bachelor of Arts with Distinction in Mathematics, cum laude

Pi Mu Epsilon, Phi Beta Kappa

May 2020

GPA: 3.9

RESEARCH FOCUS

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

RESEARCH EXPERIENCE

Research Assistant

Institute for Foundations of Data Science

Advisors: Amy Cochran and Jose Israel Rodriguez

University of Wisconsin - Madison

Spring 2023

Research Assistant

Advisor: Jose Israel Rodriguez

University of Wisconsin - Madison

Summer 2022

Research Assistant

Advisor: Amy Cochran

University of Wisconsin - Madison

Spring 2021

Student Collaborative Research

Advisor: Beth Malmskog

Colorado College

Summer 2019

REU in Coding, Cryptography, and Number Theory

Advisor: Felice Manganiello

Clemson University

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,

WORKS IN PROGRESS

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

TEACHING EXPERIENCE

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

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 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 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

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 2023
Problem writer and grader for the Mega Math Meet University of Wisconsin - Madison	2022, 2023