

Katherine Moore

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EDUCATION

- Dartmouth College**, Hanover, NH
Ph.D. in Mathematics June 2018
Patterns in Time Series and Dynamical Systems
Advisor: Sergi Elizalde
A.M. in Mathematics
- Kenyon College**, Gambier, OH
B.A. in Mathematics (with Highest Honors in Mathematics) May 2012

ACADEMIC APPOINTMENTS

- Amherst College**, Amherst, MA
Visiting Assistant Professor Fall 2021 - Present
- Wake Forest University**, Winston-Salem, NC
Teacher-Scholar Postdoctoral Fellow Fall 2018 - Spring 2021

RESEARCH INTERESTS

My work is in discrete applied probability and the mathematical foundations of data science. I am particularly interested in the study and development of methods which can be applied in information-scarce and high dimensional settings. My graduate background is in combinatorics and discrete dynamical systems.

PUBLICATIONS

(** indicates Master's student and * indicates undergraduate student)

1. A social perspective on perceived distances reveals deep community structure (with K. Berenhaut and R. Melvin**), *Proceedings of the National Academy of Sciences*, to appear (2022).
2. Characterizations and enumerations of patterns of signed shifts (with S. Elizalde) *Discrete Applied Mathematics*, (2019).
3. Random Walk Null Models for Time Series Data (with D. DeFord) *Entropy*, 19 (2017), **615**.
4. Patterns of signed shifts and negative shifts (with S. Elizalde and K. Archer) *Sem. Lothar. Combin. proc.*, 78B (2017), Article #49.
5. Patterns of negative shifts and beta-shifts. (with S. Elizalde) December 2015. arXiv:[1512.04479](https://arxiv.org/abs/1512.04479).

AWARDS AND HONORS

- Outstanding Graduate Student Teacher 2017
Awarded by the Dartmouth Center for Advancement of Learning.
- Dartmouth GAANN Fellowship 2012 - 2013
- Reginald B. Allen Award for Excellence in Mathematics at Kenyon College 2012
- Outstanding Pi Mu Epsilon Student Talk at MathFest (advised by Judy Holdener) 2011

RESEARCH PRESENTATIONS

(★ indicates invited talk)

- *Partitioned Local Depths* (virtual)
(★) SIAM Special Session at JMM: Mathematics of Complex Systems 2022
(★) Metron, Inc. December 2021
- *Communities in Data Colloquium*
(★) Smith College, MA October 2021
- *Communities in Data via Partitioned Local Depths* (virtual)
CanaDAM, Canada Mathematical Society. May 2021
- “*Communities in Data*” *Colloquia* (all virtual)
(★) Lenoir-Rhyne University, NC. April 2021
(★) University of Montana, MT. March 2021
(★) Amherst College, MA. March 2021
(★) Kenyon College, OH. February 2021
Wake Forest University, NC. April 2020
- *Communities in Data*
Data Science, Statistics and Visualization, SAMSI, NC. July 2020
Interdisciplinary Applied Math Seminar (Lab of Feng Fu), Dartmouth College, NH. March 2020
Interdisciplinary Network Science Seminar, Wake Forest University, NC. March 2020
- *A New Perspective on Clustering: Partitioned Local Depth*
(★) 34th Clemson Mini-Conference on Discrete Math and Algorithms, Clemson, SC. October 2019
(★) Math Colloquium, High Point University, NC. October 2019
- *Clustering via Partitioned Local Depth*
CanaDAM, Vancouver, BC. May 2019
- *Clustering and Partitioned Local Depth*
Math and Statistics Colloquium, Wake Forest University, NC. February 2019
(★) Math and Computer Science Coffee, Davidson College, NC. February 2019
- *Permutations Realized by Iterated Maps*
(★) AMS Special Session at JMM: Dynamical Algebraic Combinatorics, San Diego, CA. January 2018
- *Permutation-based Techniques for Estimating Entropy of Time Series*
Applied and Computational Mathematics Seminar, Dartmouth College, NH. September 2017
- *Permutations in Time Series and Dynamical Systems*
(★) Combinatorics Seminar, Brandeis University, MA. September 2017
(★) New York Combinatorics Seminar, Brooklyn College, NY. September 2017
- *Patterns and Cyclic Permutations in Dynamical Systems*
Summer Combo in Vermont, Saint Michael’s College, VT. July 2017
Permutation Patterns, Reykjavik University, Iceland. June 2017
(★) Combinatorics Seminar, Brandeis University, MA. January 2017

- *Patterns Realized by Negative Shifts and Beta-Shifts*
Summer Combo in Vermont, Saint Michael's College, VT. July 2016
- *Patterns in Chaos*
Graduate Student Combinatorics Conference, Clemson University, SC. April 2016
(★) Math Colloquium, Kenyon College, OH. September 2015

POSTERS

- 19th Annual Graduate Student & Postdoc Research Day, Wake Forest University, NC. March 2019
 Formal Power Series and Algebraic Combinatorics (FPSAC), Queen Mary, London, UK. July 2017
 Discrete Math Days of the Northeast, Dartmouth College, NH. May 2017
 Graduate Poster Session, Dartmouth College, NH. April 2017
 Women's Intellectual Network Research Symposium, Brown, RI. March 2017

TEACHING

Amherst College

- Math 272 - Linear Algebra with Applications Fall 2021, Spring 2022
 Math 220 - Mathematical Reasoning and Proof Spring 2022
 Math 111i - Calculus 1 (intensive section) Fall 2021

Wake Forest University

- Stats 310/610, Math 357 - Probability Fall 2020, Spring 2021
 Stats 111 - Introduction to Statistics Fall 2020, Spring 2020, Spring 2021
 Math 117 - Discrete Mathematics (introduction to proofs) Fall 2019, Spring 2019
 Math 111 - Calculus with Analytic Geometry Fall 2018
 Math 311 - Introductory Real Analysis Fall 2018

Dartmouth College

- Math 53 - Chaos! Fall 2017
 Math 20 - Probability Summer 2016
 Math 2 - Differential Calculus Winter 2016

Teaching Assistant

- Math 8 - Integral Calculus Fall 2013, Winter 2015
 Math 12 - Honors Multivariable Calculus for First Years Fall 2012

OTHER TEACHING ACTIVITIES

- Project NExT** (Fellow) 2019 - 2020
Peer Learning Workshop on Online Learning (Statistics, Wake Forest) 2020
"Small Teaching Online" Group (Center for the Advancement of Teaching at Wake Forest) 2020
Dartmouth Mathematics Teaching Seminar 2015
 An intensive 120-contact hour course including discussion, implementation and supervision.
Dartmouth Center for the Advancement of Learning 2015 - 2017
 Frequent workshop participant (e.g., *Improv for Researchers Series*).

SUPERVISED RESEARCH PROJECTS

URECA Fellowship for Undergraduate Summer Research

- Kevin Woytowich Summer 2019, 2020
Price Differences in Revisiting Non-Revisiting Random Walks

Master's Thesis Committee Member

- Orlando Ferrer May 2020
Price Dynamic Random Walks on General Graphs
 Yichen Han May 2020
Degree-wise Effects and the Friendship Paradox Under Configuration Models

COMMUNITY

Dartmouth Center for the Advancement of Learning	2015 - 2017
Led sessions for graduate teaching assistants on diversity and inclusivity in the classroom.	
AWM Mentor Program at Wake Forest (Mentor)	2019 - 2021
Sonia Kovalevesky Day	2012 - 2018
Organized the annual math day (May 2016), participated on the panel and led sessions each year.	
Exploring Mathematics at Dartmouth	2015
Collaboratively developed two week-long workshops for high school students.	

SERVICE

Graduate Admissions Committee (Mathematics and Statistics, Wake Forest)	2019 - 2020
Curriculum Committee Member (Mathematics, Wake Forest)	2018 - 2019
Advisory Board Member (Dartmouth Center for the Advancement of Learning)	2017 - 2018