Omar Melikechi

omar.melikechi@gmail.com • https://github.com/omelikechi

EMPLOYMENT

Assistant Professor, Duke University — July 2025 – Present
Department of Statistical Science
Department of Mathematics (secondary)

Postdoctoral Fellow, Harvard T.H. Chan School of Public Health — September 2023 – June 2025
Department of Biostatistics
Supervisor: Jeffrey W. Miller

Associate in Research, Duke University — January 2023 – August 2023
Department of Statistical Science
Supervisor: David B. Dunson

EDUCATION

Ph.D. in Mathematics, Duke University — August 2017 – December 2022
Thesis: "Random splitting of fluid models: Ergodicity, convergence, and chaos"
Advisor: Jonathan C. Mattingly

Postgraduate studies, University of Arizona — May 2015 – May 2017
Department of Mathematics

B.A. in Government, Dartmouth College — September 2009 – June 2013

AWARDS

Rudin Prize nominee (did not win) — 2023
Awarded annually for most outstanding Ph.D. dissertation in the Duke Math Department

L.P. Smith Award for Teaching Excellence — 2020
Presented annually to one or two graduate students in the Duke Math Department who have demonstrated a long-term commitment to teaching and reached a consistent level of excellence

PUBLICATIONS

Integrated path stability selection — 2025
O. Melikechi and J.W. Miller
Journal of the American Statistical Association

Nonparametric IPSS: Fast, flexible feature selection with false discovery control — 2025
O. Melikechi, D.B. Dunson, and J.W. Miller
Bioinformatics

Identification of blood plasma protein ratios for distinguishing Alzheimer's disease from healthy controls using machine learning — 2025
A.Safi, E. Giunti, O. Melikechi, W. Xia, N. Melikechi
Heliyon

Ellipsoid fitting with the Cayley transform — 2023
O. Melikechi and D.B. Dunson
IEEE Transactions on Signal Processing

Random splitting of fluid models: Ergodicity and convergence 2022
A. Agazzi, J.C. Mattingly, and O. Melikechi
Communications in Mathematical Physics

Limits of epidemic prediction using SIR models 2022
O. Melikechi, A.L. Young, T. Tang, T. Bowman, D.B. Dunson, and J. Johndrow
Journal of Mathematical Biology

Hitting time of Brownian motion subject to shear flow 2022
D. Chouliara, Y. Gong, S. He, A. Kiselev, J. Lim, O. Melikechi, and K. Powers
Involve: A Journal of Mathematics

PREPRINTS

Local graph estimation: Interpretable network discovery for complex data 2025
O. Melikechi, D.B. Dunson, N. Melikechi, and J.W. Miller
https://arxiv.org/abs/2507.17172

Sequential Gibbs posteriors with applications to principal component analysis 2023
S. Winter, O. Melikechi, and D.B. Dunson
https://arxiv.org/abs/2310.12882

Random splitting of fluid models: Positive Lyapunov exponents 2022
A. Agazzi, J.C. Mattingly, and O. Melikechi
https://arxiv.org/abs/2210.02958

TEACHING

Teaching assistant, Duke University Spring 2021
Stochastic calculus (Math 545)

Instructor, Duke University Fall 2020
Probability (Math/Stat 230)

Teaching assistant, Duke University Spring 2020
Multivariable calculus and linear algebra (Math 202)

Instructor, Duke University Fall 2019
Calculus I (Math 106L)

Instructor, Duke University Fall 2018
Calculus I (Math 105L)

Teaching assistant, Duke University Fall 2017
Calculus I (Math 105L)

Teaching assistant, University of Arizona Spring 2017
Ordinary differential equations (Math 254)

Teaching assistant, University of Arizona Fall 2016
Calculus I seminar (Math 196M)

Teaching assistant, University of Arizona Spring 2016
Introduction to number theory and modern algebra (Math 315)

UNDERGRADUATE MENTORING

REU project manager, Duke University Spring 2022
Fluid mixing and conservative flows
Participants: Sara Azimi, Daniel Block, Rachel Odonkor, Keenan Powers, and Marie-Helene Tome

DOmath project manager, Duke University — Summer 2021
Parameter inference in epidemiological models
Participants: Trevor Bowman, Jenny Huang, Greg Orme, and Pranay Pherwani

DOmath project manager, Duke University — Summer 2020
PDE modeling of collective motion
Participants: Despina Chouliara, James Lim, and Keenan Powers

INVITED TALKS

Invited speaker, Dominici Lab group meeting — Boston, MA, August 2025
Harvard T.H. Chan School of Public Health

Invited speaker, Statistics and data science seminar — Amherst, MA, September 2024
University of Massachusetts Amherst

Invited speaker, Cancer working group seminar — Boston, MA, September 2024
Harvard School of Public Health and the Dana-Farber Cancer Institute

Invited speaker, Mathematics of machine learning — Cortona, Italy, September 2024
The National Institute for Advanced Mathematics (INdAM)

Accepted talk (unable to attend), ISBA World Meeting — Venice, Italy, July 2024
International Society for Bayesian Analysis

Session organizer, New England Statistics Symposium — Storrs, CT, May 2024
Session title: New methods for robust inference and selection

PROFESSIONAL SERVICE

Reviewer — 2025
Journal of Computational and Graphical Statistics, *Briefings in Functional Genomics*

Student research awards judge — May 2024
New England Statistics Symposium

Math Department Teaching Committee, Duke University — August 2020 – December 2022

First year Ph.D. bootcamp, Duke University — August 2022
Linear algebra instructor and research panelist

New Connections in Math, Duke University — October 2021
Panelist for undergraduate students interested in applied math

OTHER RESEARCH ACTIVITIES

Short term visitor, Institute for Advanced Study — December 2021

MSRI summer school, Cortona, Italy — Summer 2019
Homotopy principle

Undergraduate summer school, Park City Math Institute — Summer 2016
The mathematics of data

Independent study, University of Arizona — Spring 2016
Finite reflection groups with an emphasis on Coxeter groups
Supervisor: Klaus Lux

Independent study, University of Arizona — Fall 2015
Structure of the space of Laurent polynomials over arbitrary fields
Supervisor: Bryden Cais

Research intern, Delaware State University — Summers 2008 and 2010
Department of Physics

OTHER WORK EXPERIENCE

The Advisory Board Company, Washington D.C. — October 2014 – March 2015
Revenue associate, Member Services Strategy and Operations

International Rescue Committee, Phoenix, AZ — February 2014 – September 2014
AmeriCorps VISTA, employment retention specialist

Omar's Rickshaw, Dewey Beach, DE — Summers 2012, 2013, and 2017
Owner and operator

Cape Henlopen State Park, Lewes, DE — Summer 2012
Tour guide and museum manager