

John Pike

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Education

Ph.D. in Applied Mathematics, University of Southern California, 2013
Advisor: Jason Fulman

B.S. in Pure Mathematics, University of Texas at Austin, 2007

B.A. in Sociology, University of Texas at Austin, 2007

Employment

Associate Professor, Bridgewater State University, 2020 - present

Visiting Associate Professor, Boğaziçi University, Summer 2022

Assistant Professor, Bridgewater State University, 2016 - 2020

Visiting Assistant Professor, Cornell University, 2013 - 2016

Teaching Assistant, University of Southern California, 2008 - 2013

Teaching Experience

Bridgewater State University

MATH 110 (Elementary Statistics) Fall 2016, Spring 2017, Fall 2017, Spring 2018, Spring 2019, Spring 2022

MATH 162 (Single Variable Calculus II) Fall 2019, Spring 2020, Fall 2021, Fall 2022

MATH 200 (Statistical Methods I) Fall 2017

MATH 202 (Linear Algebra) Fall 2018, Spring 2019, Fall 2019, Spring 2020, Fall 2020

MATH 261 (Multivariable Calculus) Spring 2018, Fall 2018, Spring 2019, Spring 2021

MATH 316 (Differential Equations) Spring 2017, Spring 2018

MATH 398 (Topics in Statistics: Stochastic Processes) Fall 2016

MATH 401 (Introduction to Analysis I) Spring 2021, Fall 2021, Spring 2022, Fall 2022

MATH 403 (Probability Theory) Spring 2017, Fall 2017, Fall 2018, Fall 2019, Fall 2020, Fall 2021, Fall 2022

MATH 412 (Mathematical Statistics) Spring 2022

MATH 499 (Directed Study: Game Theory) Spring 2018

MATH 518 (Topics in Analysis) Spring 2018, Fall 2019, Spring 2021, Fall 2021

Boğaziçi University

MATH 484 (Random Walks and Representations) Summer 2022

Cornell University

MATH 4710 (Basic Probability) Fall 2014

MATH 6710 (Probability Theory I) Fall 2013, Fall 2015

MATH 6720 (Probability Theory II) Spring 2014, Spring 2015, Spring 2016

University of Southern California

MATH 117 (Introduction to Mathematics for Business and Economics) Fall 2008

MATH 118 (Fundamental Principles of the Calculus) Spring 2011

MATH 125 (Calculus I) Fall 2009

MATH 126 (Calculus II) Fall 2010

MATH 218 (Probability for Business) Spring 2009

MATH 225 (Linear Algebra and Linear Differential Equations) Fall 2011

MATH 226 (Calculus III) Spring 2010

MATH 407 (Probability Theory) Spring 2013

MATH 408 (Mathematical Statistics) Spring 2012

MATH 425A (Fundamental Concepts of Analysis) Fall 2012

Research Interests

My research is primarily concerned with probability theory and its applications. I am especially interested in Markov chains defined on combinatorial and algebraic structures and in distributional approximation using Stein's method techniques.

Publications and Preprints

L. Levine, H. Lyu, and J. Pike. Double jump phase transition in a soliton cellular automaton. *Int. Math. Res. Not. IMRN* **2022**, no. 1, 665–727. [arXiv:1706.05621](#)

J. Anderson, B. Camara, and J. Pike. Positional voting and doubly stochastic matrices. *Amer. Math. Monthly* **128** (2021), no. 4, 337–351. [arXiv:1908.06506](#)

D.C. Jerison, L. Levine, and J. Pike. Mixing time and eigenvalues of the abelian sandpile Markov chain. *Trans. Amer. Math. Soc.* **372** (2019), no. 12, 8307–8345. [arXiv:1511.00666](#)

A. Bendikov, A. Braverman, and J. Pike. Poisson statistics of eigenvalues in the hierarchical Dyson model. *Theory Probab. Appl.* **63** (2018), no. 1, 94–116. [arXiv:1510.05312](#)
Russian translation: *Teor. Veroyatnost. i Primenen.* **63** (2018), no. 1, 117–144.

J. Pike and H. Ren. Stein's method and the Laplace distribution. *ALEA Lat. Am. J. Probab. Math. Stat.* **11** (2014), no. 1, 571–587. [arXiv:1210.5775](#)

- J. Pike. Eigenfunctions for Random Walks on Hyperplane Arrangements. Thesis (Ph.D.) - University of Southern California. *ProQuest LLC, Ann Arbor, MI*, (2013), 183 p. [MR3193075](#)
- J. Pike. A note on the Poincaré and Cheeger bounds for simple random walk on a connected graph (2012), 8 p. [arXiv:1210.5777](#)
- J. Pike. Convergence rates for generalized descents. *Electron. J. Combin.* **18** (2011), no. 1, [Paper 236](#), 14 p.

Selected Talks

- 2021 *Virtual Colloquium*, Boğaziçi University
- 2019 *Probability Seminar*, Cornell University
- 2019 *Probability Seminar*, Brown University
- 2018 *Department Seminar*, Bridgewater State University
- 2016 *Stochastics Seminar*, Georgia Institute of Technology
- 2016 *Penn-Temple Probability Seminar*, University of Pennsylvania
- 2016 *Mathematical Colloquium*, University of Southern California
- 2016 *Probability Seminar*, University of Illinois at Urbana-Champaign
- 2016 *Probability Seminar*, Indiana University, Bloomington
- 2015 *New Directions in Stein's Method*, National University of Singapore
- 2013 *Discrete Geometry and Combinatorics Seminar*, Cornell University
- 2013 *Probability Seminar*, University of Rochester

Awards and Grants

- CARS Travel Grant (Bridgewater State University), 2017
- NSF Grant [DMS-1601016](#) (supporting Finger Lakes Probability Seminar), 2016 - 2017
- Travel grants to attend conferences such as the Workshop on New Directions in Stein's Method, Northeast Probability Seminar, and Seminar on Stochastic Processes
- Theodore Edward Harris Graduate Research Prize (University of Southern California), 2012
- Math Department Merit Scholarship (University of Southern California), 2008 - 2009
- Rapoport/King Scholarship (University of Texas), 2006 - 2007
- National Merit Scholarship, 2002 - 2007

Service

Bridgewater State University

Mathematics Assessment Committee (2020 -)
Mathematics DGCE Chair (2018 - 2022)
Mathematics Graduate Committee (2017 -)
Honors and Awards Committee (2017 - 2022)
Pi Mu Epsilon Advisor (2017 - 2018)
Community Events Committee (2017 - 2021)
Math Chats Organizer (2017 - 2021)
DataFest Consultant (2017 - 2021)
Mathematics Undergraduate Curriculum Committee (2016 - 2017, 2022)
Peer Evaluation Committee (2022)
Hiring Committee for Statistics Search (2016 - 2017)
MATH 141/142 Coordinator (2018)
MATH 110 Coordinator (2017 - 2018)
Quantity Across the Curriculum (2018 -)
Honors Advisory Board (2017 -)

Cornell University

Co-organizer of Cornell Probability Seminar (2013 - 2016)
Mathematical Modeling Committee (2013 - 2016)
Team Advisor for Mathematical Contest in Modeling (2015, 2016)
Faculty Advisor for Cornell Math Explorers Club (2014 - 2016)
Conference Secretary for 10th Cornell Probability Summer School (2014)

Professional

Conference Organizer for Finger Lakes Probability Seminar (2016)
Referee/Reviewer for *Annals of Applied Probability*, *Bernoulli*, *Brazilian Journal of Probability and Statistics*, *ESAIM: Probability and Statistics*, *Journal of the Korean Mathematical Society*, *Journal of Theoretical Probability*, *Math Reviews*, *Random Structures and Algorithms*, *Statistics and Probability Letters*

Student Research

Adrian Tinsley Program Advisor for Brian Camara (Summer 2017)

Honors Thesis Advisor for Simon Sullivan (Spring 2017); Brian Camara (Fall 2017); James Palmer (Spring 2019)

Honors Contract Advisor for Simon Sullivan (Fall 2016); Vincent Vascimini (Fall 2016); Sarah Days-Merrill (Fall 2017); Karissa Massud (Spring 2021)

Master's Capstone Co-Advisor for Laura Travers (Spring 2019)