Adam Quinn Jaffe

Contact Information

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Website

https://aqjaffe.github.io/

Academic Employment

Columbia University, Department of Statistics

- Postdoctoral Research Scientist — July 2024 - Present
- Mentor: Bodhisattva Sen

Education

UC Berkeley

- Ph.D. in Statistics — May 2024
- Thesis: *Geometry, Analysis, and Optimization in Probability Theory*
- Advisor: Steven Neil Evans.

Stanford University

- B.S. in Mathematics with Honors — June 2019

Research Interests

Generally: interactions between **probability, statistics, and geometry.** Specifically: clustering, variational inference, empirical Bayes, non-Euclidean statistics, Riemannian optimization, stochastic optimization, optimal transport.

Awards

UC Berkeley, Department of Statistics, Department Citation in Probability, 2024.

NSF Graduate Research Fellowship, 2019. Grant No. DGE 1752814

Papers and Preprints

Kantorovich duality for some topologically degenerate zero-one costs with Daniel Raban. (in progress)

Germ couplings of Lévy processes with Yang Chu. (in progress)

Variance-constrained denoising, Gaussian optimal transport, and empirical Bayes with Nikos Ignatiadis and Bodhisatttva Sen. (in progress)

Fréchet means in infinite dimensions. (in progress)

Large deviations principle for Bures-Wasserstein barycenters with Leonardo Santoro. https://arxiv.org/abs/2409.11384 Under review at **Probability Theory and Related Fields**.

Strong consistency for a class of adaptive clustering procedures. https://arxiv.org/abs/2202.13423 Under review at **Annals of Statistics**.

Fréchet mean set estimation in the Hausdorff metric, via relaxation with Moïse Blanchard. https://arxiv.org/abs/2212.12057 To appear in **Bernoulli**.

Constructing maximal germ couplings of Brownian motions with drift with Sebastian Hummel. `https://doi.org/10.1214/24-ECP592` **Electronic Communications in Probability**. 29, 1-11.

Limit theorems for Fréchet mean sets with Steven N. Evans. `https://doi.org/10.3150/23-BEJ1603` **Bernoulli**. 30(1), 419-447.

A strong duality principle for equivalence couplings and total variation. `https://doi.org/10.1214/23-EJP1016` **Electronic Journal of Probability**. 28, 1-33.

Virtual Markov chains with Steven N. Evans. `https://doi.org/10.53733/147`. **New Zealand Journal of Mathematics (Vaughan Jones Memorial Special Issue)**. 52, 511–559.

Teaching

Graduate Student Instructor
UC Berkeley Department of Statistics
- Machine Learning (STAT 154 / STAT 254), Spring 2024.
- Probability theory (MATH 218B / STAT 205B), Spring 2023.
- Stochastic processes (STAT 150), Fall 2022 and Fall 2023
- Game theory (STAT 155), Spring 2021.

Other Work

New York Mets, Baseball Data Science Intern (Summer 2023)
- Created strategic methodology for the MLB Rule 4 Draft
- Developed statistical model to predict future player availability and stochastic optimal control framework to predict optimal budget allocation
- Implenented codebase in `R` and `Python` to make real-time predictions

Invited Seminar Talks

EPFL Statistics Seminar. *Large Deviations Principle for Bures-Wasserstein Barycenters.* (Lausanne, Switzerland; May 2024)

UC Berkeley Probability Seminar. *Large Deviations Principle for Bures-Wasserstein Barycenters.* (Berkeley, CA, USA; May 2024)

McGill Descriptive Dynamics and Combinatorics Seminar. *A Strong Duality Principle for Equivalence Couplings and Total Variation.* (online; February 2024)

International Shape Statistics Seminar. *Fréchet Mean Set Estimation in the Hausdorff Metric, via Relaxation* (online; December 2023)

UC Berkeley Probability Seminar. *A Strong Duality Principle for Equivalence Couplings and Total Variation.* (Berkeley, CA, USA; April 2023)

Colorado State University Topology Seminar. *Limit Theorems for Fréchet Mean Sets.* (Fort Collins, CO, USA; February 2023)

Reviewing Service

- Annals of Applied Probability
- Bernoulli
- Electronic Communications in Probability
- Electronic Journal of Probability
- Journal of the American Statistical Association
- Journal of Theoretical Probability
- Random Structures and Algorithms

- Sankhyā A
- Stochastic Process and their Applications

Organizational Activities

UC Berkeley Student Probability Seminar, leading reading groups in:
- Stein's method (Spring 2023)
- Large deviations for random graphs (Fall 2022)
- Gaussian free field (Spring 2022)
- Markov chain mixing times (Fall 2021)
- Random matrix theory (Spring 2021)

UC Berkeley Statistics Graduate Student Association (SGSA), serving as:
- Lead of the Fellowship Application committee
- Delegate to the Graduate Assembly (GA)
- Member of Diversity, Equity, and Inclusion (DEI) committee

REUs, Workshops, and Short Courses

Geometric Sciences in Action: from Geometric Statistics to Shape Analysis at CIRM (Marseille, France; May 2024)

Online Open Probabiltity School (OOPS) at PIMS-CRM (online; Summer 2020, Summer 2021)

RIPS at IPAM, advised by The Aerospace Corporation (Los Angeles, CA, USA; Summer 2018)

REU at ICERM, advised by Henry Adams (Providence, RI, USA; Summer 2017)

Ross Mathematics Program (Columbus, OH, USA; Summer 2014)

Other Information

Natural Languages: English (native), Spanish (advanced), German (basic)

Computer Languages: Python, R, LaTeX