AUSTIN J. STROMME

RESEARCH INTERESTS

Optimal transport, Riemannian optimization, and high-dimensional statistics. Specifically, geometry of optimal transport, barycenters, manifold geometries on positive-definite matrices, entropic regularization, statistical un-regularized and regularized optimal transport, Schrödinger bridge.

EMPLOYMENT

Institut polytechnique de Paris   **2023-Present**
Statistics Department of ENSAE/CREST
Assistant Professor (tenure track)

VISITING POSITIONS

Brown University   **2024-Present**
Applied Math Deparment
IBM Visiting Professor

Simons Institute for the Theory of Computing   **Fall 2021**
Program on Geometric Methods in Optimization and Sampling
Visiting Graduate Student

EDUCATION

Massachusetts Institute of Technology   **2023**
Ph.D. in Electrical Engineering and Computer Science
Thesis: *Statistical Aspects of Optimal Transport*
Advisor: Philippe Rigollet

Massachusetts Institute of Technology   **2020**
M.S. in Electrical Engineering and Computer Science
Thesis: *Wasserstein Barycenters: Statistics and Optimization*

University of Washington   **2018**
B.S. in Math, B.S. in Computer Science, GPA: 3.86/4.0

TEACHING EXPERIENCE

ENSAE, Department of Statistics
Lecturer, Advanced Machine Learning   Fall 2023, Fall 2024
Lecturer, Statistical Optimal Transport   Spring 2024, Spring 2025

MIT, Department of EECS
Teaching assistant, Non-asymptotic Statistics   Spring 2023

University of Washington, Math Circle
Volunteer Instructor, math enrichment for middle schoolers   2014-2018

University of Washington, Math Department
Teaching assistant, Honors Accelerated Calculus   2015-2016

MANUSCRIPTS

M1. The asymptotic log-Sobolev constant equals the Polyak-Łojasiewicz constant
Sinho Chewi, Austin J. Stromme, Andre Wibisono
arXiv preprint 2024

JOURNAL PAPERS

J1. On the sample complexity of entropic optimal transport
Philippe Rigollet, Austin J. Stromme
Annals of Statistics 2025+

J2. Fast convergence of empirical barycenters in Alexandrov spaces and the Wasserstein space
Thibaut Le Gouic, Quentin Paris, Philippe Rigollet, Austin J. Stromme
Journal of the European Math Society (JEMS) 2022

J3. Asymptotics for semi-discrete entropic optimal transport
Jason M. Altschuler, Jon Niles-Weed, Austin J. Stromme
SIAM Journal on Mathematical Analysis (SIMA) 2022

J4. Algebraic Properties of Generalized Graph Laplacians
David Jekel, Avi Levy, Will Dana, Austin Stromme, Collin Litterell
SIAM Journal of Discrete Math (SIDMA) 2018

J5. Frog Model Wakeup Time on the Complete Graph
Nikki Carter, Brittany Dygert, Stephen Lacina, Collin Litterell, Austin Stromme, Andrew You
Rose-Hulman Undergraduate Math Journal 2016

CONFERENCE PAPERS

C1. Provable convergence and limitations of geometric tempering for Langevin dynamics
Omar Chehab, Anna Korba, Austin J. Stromme, Adrien Vacher
International Conference on Learning Representations (ICLR) 2025, *to appear*

C2. Minimum intrinsic dimension scaling for entropic optimal transport
Austin J. Stromme
International Conference on Soft Methods in Probability and Statistics 2024, **Best paper award**

C3. Sampling from a Schrödinger bridge
Austin J. Stromme
Artificial Intelligence and Statistics (AISTATS) 2023

C4. Averaging on the Bures-Wasserstein manifold: dimension-free convergence of gradient descent
Jason M. Altschuler, Sinho Chewi, Patrik Gerber, Austin J. Stromme
Neural Information Processing Systems (NeurIPS) 2021, **Selected for spotlight**

C5. Fast and Smooth Interpolation on Wasserstein Space
Sinho Chewi, Julien Clancy, Thibaut Le Gouic, Philippe Rigollet, George Stepaniants, Austin J. Stromme
Artificial Intelligence and Statistics (AISTATS) 2021

C6. Exponential ergodicity of mirror-Langevin diffusions
Sinho Chewi, Thibaut Le Gouic, Chen Lu, Tyler Maunu, Philippe Rigollet, Austin J. Stromme
Neural Information Processing Systems (NeurIPS) 2020

C7. Gradient descent algorithms for Bures-Wasserstein barycenters
Sinho Chewi, Tyler Maunu, Philippe Rigollet, Austin J. Stromme
Conference on Learning Theory (COLT) 2020

TALKS

- PGMO Days, Paliseau, France, November 2024. *Asymptotic log-Sobolev constants and the Polyak-Łojasiewicz gradient domination condition*

- Séminaire Parisien d'Optimization, Paris, France, November 2024. *Asymptotic log-Sobolev constants and the Polyak-Łojasiewicz gradient domination condition*

- LCDS Seminar, Brown Unversity, Providence, United States, September 2024. *New statistical phenomena for entropic optimal transport*

- Soft Methods in Probability and Statistics Conference, Salzburg, Austria, September 2024. *Minimum intrinsic dimension scaling for entropic optimal transport*
- Seminar on Mathematical Stochastics, Göttingen University, Göttingen, Germany, July 2024. *Minimum intrinsic dimension scaling for entropic optimal transport*
- Workshop on Optimal Transport, Institut d'Études Scientifiques de Cargèse, Cargèse, France, April 2024. *Minimum intrinsic dimension scaling for entropic optimal transport*
- Working Group on Optimal Transport, Institut de Mathématique d'Orsay, Orsay, France, March 2024. *Minimum intrinsic dimension scaling for entropic optimal transport*
- Le Seminaire Palaisien, Palaiseau, France, March 2024. *Minimum intrinsic dimension scaling for entropic optimal transport*
- Mathematics of Data Workshop, Institute for Mathematical Sciences, Singapore, January 2024. *New statistical phenomena for entropic optimal transport*
- Workshop on Statistics in Metric Spaces, ENSAE/CREST, Palaiseau, France, October 2023. *Global, dimension-free convergence of first-order methods for Bures-Wasserstein barycenters*
- Flair Seminar, EPFL, Lausanne, Switzerland, April 2023. *New statistical phenomena for entropic optimal transport*
- LIDS Student Conference, MIT, Boston, United States, February 2023. *On the sample complexity of entropic optimal transport*
- Optimization Working Group, Simons Institute Semester on Geometric Methods in Optimization and Sampling, United States, September 2021. *The Bures-Wasserstein geometry on positive-definite matrices*k
- MLxMIT student seminar, MIT, United States, July 2020. *Gradient descent algorithms for Bures-Wasserstein barycenters*

SERVICE AND AWARDS

- Reviewer for International Conference on Artificial Intelligence and Statistics (AISTATS), International Conference on Learning Representations (ICLR), Neural Information Processing Systems (NeurIPS), Annals of Applied Probability, Annals of Statistics, Bernoulli, Electronic Journal of Statistics, Information and Inference
- Best Paper Award, Conference on Soft Methods in Probability and Statistics, Salzburg, Austria, 2024
- Co-organizer of Online Seminar in Statistics and Geometry, 2024-
- Best talk award, 2023 MIT LIDS Student Conference
- NDSEG Graduate Research Fellowship 2019-2022
- NSF Graduate Fellowship 2019 (declined)
- Graduated *cum laude* from University of Washington 2018
- Goldwater scholarship 2016

LANGUAGES

- English: Native
- French: Intermediate (passed DELF B2 12/2024)
- standard Mandarin: Beginner