Austin Brown | C.V.

Texas A&M University – College Station – Texas, USA
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Research interests

My main research focus is on the design, reliability, and computational efficiency of Markov chain Monte Carlo algorithms by studying their convergence properties with optimal transportation. Creating reliable, computationally efficient Markov chain Monte Carlo algorithms in high dimensions for practitioners is a central motivation for my research. Additionally, I am interested in applications of Markov chain Monte Carlo to Bayesian error-in-variable models for machine learning, astrophysics, and epidemiology. My other research interests are in applications of optimal transport to stochastic processes, and I am also interested in combining optimal transport and theory for Markov chain Monte Carlo to study generative A.I. models in the future.

My dissertation "Some Convergence Results for Metropolis-Hastings Algorithms" is available online `https://conservancy.umn.edu/handle/11299/243073`.

Education

University of Minnesota - Twin Cities **Minneapolis, MN**
Ph.D. in Statistics *August 2022*
Dissertation: "Some Convergence Results for Metropolis-Hastings Algorithms"
Advisor: Galin L. Jones
Committee: Charles Geyer, Qian Qin, Wei-Kuo Chen

University of Florida **Gainesville, FL**
B.S. in Mathematics *July 2017*
Major in Mathematics and minor in Statistics

Appointments

Texas A&M University **College Station, Texas**
Assistant Professor, Department of Statistics *August 2025–Present*

University of Toronto **Toronto, Ontario**
Postdoctoral Fellow, Department of Statistical Sciences *July 2023–July 2025*
Advisor: Jeffrey S. Rosenthal

University of Warwick **Coventry, England**
Research Fellow, Statistics Department *September 2022–June 2023*
Advisor: Krzysztof Łatuszynski

Publications and preprints

[1] A. Brown, "A non-asymptotic error analysis for parallel Monte Carlo estimation from many short Markov chains," *Statistics and Computing, to appear*, 2025.

[2] A. Brown and J. S. Rosenthal, "Monte Carlo with approximate solutions to Dacorogna–Moser flows," *Preprint*, 2025.

[3] A. Brown and J. S. Rosenthal, "Weak convergence of adaptive Markov chain Monte Carlo," *Journal of Applied Probability*, p. 1–22, 2025.

[4] A. Brown and G. Jones, "Lower bounds on the rate of convergence for accept-reject-based Markov chains in Wasserstein and total variation distances," *Bernoulli*, vol. 31, no. 3, pp. 1908 – 1928, 2025.

[5] A. Brown and J. S. Rosenthal, "Upper and lower bounds on the subgeometric convergence of adaptive Markov chain Monte Carlo," *Preprint, submitted*, 2024.

[6] S. Sixta, J. S. Rosenthal, and A. Brown, "Bounding and estimating MCMC convergence rates using common random number simulations," *Preprint, revision requested at Stochastic Models*, 2025.

[7] A. Brown and G. L. Jones, "Exact convergence analysis for Metropolis–Hastings independence samplers in Wasserstein distances," *Journal of Applied Probability*, vol. 61, no. 1, p. 33–54, 2024.

[8] A. Brown, "Geometric ergodicity of Gibbs samplers for Bayesian error-in-variable regression," *Electronic Journal of Statistics*, vol. 18, no. 1, pp. 1495–1516, 2024.

[9] A. Brown and G. L. Jones, "Convergence rates of Metropolis–Hastings algorithms," *WIREs Computational Statistics*, vol. 16, no. 5, p. e70002, 2024.

[10] A. Brown, K. Łatuszyński, and G. Roberts, "Adaptive pseudo-marginal Metropolis-Hastings," *In progress*, 2023.

Invited seminar talks and conference posters

19th International CMStatistics 2025 **London, UK**
Invited Conference Talk at University of Birkbeck *December 2025*
Talk Title: Some Insights into the Reliability and Limitations of Adaptive MCMC
Slides:

The Fast and Curious 2: MCMC in Action **Toronto, Canada**
Invited Conference Talk at University of Toronto *September 2025*
Talk Title: Some Insights into the Reliability and Limitations of Adaptive MCMC
Slides: `https://austindavidbrown.github.io/talk/toronto2025.pdf`

University of Florida **Gainesville, FL**
University of Florida Statistics Seminar *September 2023*
Talk Title: Lower Bounds for Metropolis-Hastings in Wasserstein distances
Slides: `https://austindavidbrown.github.io/talk/uf2023.pdf`

University of Warwick **Coventry, UK**
Algorithms and Computationally Intensive Inference Seminar *January 2023*
Talk Title: Lower Bounds on the Rate of Convergence for Accept-Reject-Based Markov Chains
Slides: `https://austindavidbrown.github.io/talk/warwick2023.pdf`

Bioinference 2023 **England, UK**
Conference Poster at University of Oxford *June 2023*
Poster Title: Geometric ergodicity of Gibbs samplers for Bayesian error-in-variable regression
Poster: `https://austindavidbrown.github.io/poster/bioinference2023.pdf`

University of Warwick Departmental Conference 2023 **Wales, UK**
Conference Talk at University of Warwick *April 2023*
Talk Title: Exact convergence for independence samplers in Wasserstein distance.
Slides: `https://austindavidbrown.github.io/talk/warwickdepartmental2023.pdf`

Teaching experience

Texas A&M University **College Station, TX**
Principles of Statistics II (STAT212) (∼ 95 students) *Fall 2025*

University of Toronto - St. George **Toronto, Canada**
Methods of Data Analysis 1 (STA 302) (∼ 300 students) *Fall 2024*

University of Toronto - St. George **Toronto, Canada**
Methods of Data Analysis 1 (STA 302) (∼ 250 students) *Fall 2023*

University of Minnesota - Twin Cities **Minneapolis, MN**
Introduction to Statistical Analysis (STAT 3011) (∼ 80 students) *Spring 2021*

University of Minnesota - Twin Cities **Minneapolis, MN**
Regression and Correlated Data (STAT 3032) (∼ 70 students) *Spring 2020*

Academic service

I have refereed 8 articles for probability and statistics journals both theoretical and applied including Journal of the Royal Statistical Society: Series B, Advances in Applied Probability, Journal of Applied Probability, Bayesian Analysis, Journal of Computational and Graphical Statistics, Sankhya: Series B, Probability and Engineering and Informational Sciences, Statistics Surveys, PLOS ONE. I have also assisted in editing *An Introduction to Envelopes* by Dennis Cook.

I have a have taken part in the following PhD committees for students:

Sophia Korte, Texas A&M University, Department of Physics *Sept. 2025–Present*

I have a have taken part in the following committees and organizations:

Computing Resources, Texas A&M University, Department of Statistics *Sept. 2025–Sept. 2026*
University of Toronto Brown Bag Departmental Seminar (Co-organizer) *Sept. 2023–Present*
American Statistical Association LGBTQ+ Advocacy Committee *Aug. 2023–Aug. 2024*
University of Warwick Stonewall Self-Assessment (LGBTQ+ Inclusion) *Sept. 2022–June 2023*
University of Warwick Statistics Department IT Committee *Sept. 2022–June 2023*
University of Warwick ACII Seminar (Organizer) *Jan. 2023–June 2023*

Organizations and memberships

Institute of Mathematical Statistics (IMS), Membership ID: 41146 *2025-2026*
Bernoulli Society, Membership ID: 41146 *2025-2026*
American Statistical Association (ASA), Membership ID: 256904 *2025-2026*
International Statistics Institute (ISI), Membership ID: 100503 *2025-2026*

Funding, scholarships, and awards

Beverly and Richard Fink Fellowship ($56000+Tuition) *2017–2022*
Lynn Lin Fellowship ($2000) *2019–2019*
First Year Scholarship ($2500) *2017–2017*

Mentorships

University of Toronto - St George **Toronto, Canada**

2024

I have acted as a mentor to 2 PhD students and 1 undergraduate student on their own individual research projects

Extracurricular activities

- Markov Chain Monte Carlo Group (2019–2022)
  Discussion of the state of the art MCMC literature

Statistical software

cmhi: A Python package for the centered Metropolis-Hastings independence algorithm. github.com/austindavidbrown/Centered-Metropolis-Hastings

mhlb: A Python implementation to estimate lower bounds on the geometric convergence rate for RWM Metropolis-Hastings. https://github.com/austindavidbrown/lower-bounds-for-Metropolis-Hastings

BayesEIV: Simulations for the paper "Geometric ergodicity of Gibbs samplers for Bayesian error-in-variable regression". github.com/austindavidbrown/BayesEIV

msc-estimator: Python simulation code for the paper "A non-asymptotic error analysis for parallel Monte Carlo estimation from many short Markov chains". github.com/austindavidbrown/msc-estimator

Programming language proficiency

Python: Pytorch, Autograd, Numpy, Matplotlib *Expert*

R: Rmarkdown *Expert*

C++: C++14 specification and above *Intermediate*

Languages

- English (native)
- Spanish (novice)
- French (novice)

References

- Galin Jones. University of Minnesota - Twin Cities. Email: galin@umn.edu
- Jeffrey S. Rosenthal. University of Toronto. Email: jeff@math.toronto.edu

- Qian Qin. University of Minnesota - Twin Cities. Email: qqin@umn.edu
- Krzysztof Latuszynski. University of Warwick. Email: K.G.Latuszynski@warwick.ac.uk