

Derek L Hansen, PhD

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🏠 Washington, DC

Education



- 2023 **PhD in Statistics and Scientific Computing**
University of Michigan
Dissertation: "Mechanistic and Data-Adaptive Bayesian Methods for Scientific Inference"
Advisor: Jeffrey Regier
- 2016 **Bachelor of Science in Mathematics & Bachelor of Arts in Economics**
University of Oklahoma

Work Experience



- 2025-present **Northwell Health, Feinstein Institutes for Medical Research**
Senior Data Engineer
- 2023-2025 **Food and Drug Administration, Center for Devices and Radiological Health**
Mathematical Statistician
- 2022 **Amazon Web Services**
Applied Scientist Intern
- 2021 **KLA Corporation**
Algorithms Intern
- 2016 - 2018 **Federal Reserve Board of Governors**
Senior Research Assistant



Publications

Derek Hansen, Danielle C. Maddix, Shima Alizadeh, Gaurav Gupta, and Michael W. Mahoney. "Learning physical models that can respect conservation laws." *Physica D: Nonlinear Phenomena* 457 (2024): 133952.

Derek Hansen, Danielle C. Maddix, Shima Alizadeh, Gaurav Gupta, and Michael W. Mahoney (2023). "Learning Physical Models that Can Respect Conservation Laws". *International Conference on Machine Learning*.  [arxiv:2302.11002](https://arxiv.org/abs/2302.11002).  [amazon-science/probconserv](https://github.com/amazon-science/probconserv).


Derek Hansen, Danielle C. Maddix, Shima Alizadeh, Gaurav Gupta, and Michael W. Mahoney (2023). "Learning Physical Models that Can Respect Conservation Laws". *ICLR 2023 Workshop on Physics for Machine Learning*.


Derek Hansen, Brian Manzo, and Jeffrey Regier (2022). "Normalizing Flows for Knockoff-free Controlled Variable Selection". *Advances in Neural Information Processing Systems* 36.  [arxiv:2106.01528](https://arxiv.org/abs/2106.01528).  [dereklhansen/flowselect](https://github.com/dereklhansen/flowselect).

Derek Hansen, Ismael Mendoza, Runjing Liu, Ziteng Pang, Zhe Zhao, Camille Avestruz, Jeffrey Regier (2022). "Scalable Bayesian Inference for Detection and Deblending in Astronomical Images". *ICML 2022 Workshop on Machine Learning for Astrophysics*.  [arxiv:2207.05642](https://arxiv.org/abs/2207.05642).  [prob-ml/bliss](https://github.com/prob-ml/bliss)


Preprints

Derek Hansen and Drew Yarger. "A probabilistic model of ocean floats under ice".

 [arxiv:2210.00118](https://arxiv.org/abs/2210.00118)

Dobrislav Dobrev, **Derek Hansen**, and Pawel Szerszen. "A Randomized Missing Data Approach to Robust Filtering with Applications in Economics and Finance".  [arxiv:2104.14664](https://arxiv.org/abs/2104.14664).

Contributed Discussion

Rob Trangucci, **Derek Hansen**, and Yang Chen. "Contributed Discussion". In: Leisen, F., Villa, C., & Walker, S. G. (2020). On a Class of Objective Priors from Scoring Rules (with Discussion). Bayesian Analysis, 15(4), 1345–1423.  [doi:10.1214/19-BA1187](https://doi.org/10.1214/19-BA1187).

Awards & Fellowships

2025	Teamwork/Collegiality Incentive Award Food and Drug Administration
2018-2023	Graduate Research Fellowship Program (GRFP) National Science Foundation
2022	Top Reviewer Neurips 2022
2019	Outstanding First-Year PhD Student University of Michigan Department of Statistics

Teaching Experience

Graduate Student Instructor

Winter 2022	Stats 507: Data Science and Analytics using Python
Winter 2021	A graduate-level introduction to Python for data analysis.
Fall 2020	Stats 306: Introduction to Statistical Computing An undergraduate course on data visualization using the ggplot package in the R language.

Workshops

Summer 2020	Fall Prep Workshop Designed and led a week-long workshop of analysis and linear algebra for incoming PhD students.
Spring 2020	Applied Qualifying Exam (QR) Workshop Designed and led a workshop in statistics and R for PhD students taking the Applied QR.

Software

ProbConserv: <https://github.com/amazon-science/probconserv>

Bayesian Light Source Separator (BLISS): <https://github.com/prob-ml/bliss>

Oral Presentations

- 2022 **MSSISS**
University of Michigan
Scalable Bayesian Inference for Detecting and Deblending Stars and Galaxies in Crowded Fields
- 2022 **Ocean Sciences Meeting**
Virtual
ArgoSSM: A State-space Model of Ocean Floats under Ice
- 2021 **Data for Public Good**
University of Michigan
ArgoSSM: A Bayesian state-space framework for predicting the location of missing temperature sensors in the Southern Ocean
- 2019 **Conference on High Frequency Finance and Analytics**
Stevens Institute of Technology
A Randomized Missing Data Approach to Robust Filtering with Applications in Economics and Finance

Poster Presentations

- 2022 **Neurips**
New Orleans Convention Center
Learning Physical Models that Can Respect Conservation Laws
- 2020 **MIDAS Symposium**
University of Michigan
ArgoSSM: A Bayesian state-space framework for predicting the location of missing temperature sensors in the Southern Ocean
- 2019 **MSSISS**
University of Michigan
A Randomized Missing Data Approach to Robust Filtering with Applications in Economics and Finance
- 2018 **MIDAS Symposium**
University of Michigan
A Randomized Missing Data Approach to Robust Filtering with Applications in Economics and Finance

Peer Reviews

- Journal of the American Statistical Association (Case Studies & Applications)
- International Conference on Machine Learning (ICML) (2022, 2024, 2025)
- Neurips (2022, 2025)
- International Conference on Learning Representations (ICLR) (2025)
- ICLR Workshop AI 4 Differential Equations 2024