Stanford

# Adrienne Propp

Ph.D. Student in Computational and Mathematical Engineering, admitted Autumn 2021

## Bio

### BIO

I am a fourth year PhD student in ICME (the Institute for Computational and Mathematical Engineering). Prior to Stanford, I was working as a technical analyst at the RAND Corporation where I spent most of my time designing microsimulations and other models to investigate topics in healthcare, education, disaster relief, and international relations.

My research interests lie at the intersection of mathematics, data, and modeling, which has led me to a focus on scientific machine learning (SciML). Specifically, I am working on developing new graph-based surrogate modeling methods for low-data regimes. I am grateful to be advised by Daniel Tartakovsky, During my PhD, I have also collaborated with Jenny Suckale to model volcanic lava fountaining, and Susan Athey and Sanath Kumar Krishnamurthy to design improved algorithms for contextual bandits.

Past research projects have ranged from computational models of the heart to inverse modeling to predict satellite performance.

### EDUCATION AND CERTIFICATIONS

- M.Sc., University of Oxford , Mathematical Modelling and Scientific Computing (2018)
- B.A., Harvard University , Applied Mathematics (2017)

## Publications

### PUBLICATIONS

- **DISCOVERY OF PROBABILISTIC DIRICHLET-TO-NEUMANN MAPS ON GRAPHS** *SIAM JOURNAL ON SCIENTIFIC COMPUTING*
  Propp, A. M., Actor, J. A., Walker, E., Owhadi, H., Trask, N., Tartakovsky, D. M.
  2026; 48 (2): C191-C215
- **The Longitudinal Health, Income, and Employment Model (LHIEM): A Discrete-Time Microsimulation Model for Policy Analysis** *JASSS-THE JOURNAL OF ARTIFICIAL SOCIETIES AND SOCIAL SIMULATION*
  Propp, A. M., Vardavas, R., Price, C. C., Kapinos, K. A.
  2025; 28 (2)
- **TRANSFER LEARNING ON MULTI-DIMENSIONAL DATA: A NOVEL APPROACH TO NEURAL NETWORK-BASED SURROGATE MODELING** *JOURNAL OF MACHINE LEARNING FOR MODELING AND COMPUTING*
  Propp, A. M., Tartakovsky, D. M.
  2025; 6 (2): 13-27
- **Towards Costless Model Selection in Contextual Bandits: A Bias-Variance Perspective**
  Krishnamurthy, S., Propp, A., Athey, S.

edited by Dasgupta, S., Mandt, S., Li, Y.
JMLR-JOURNAL MACHINE LEARNING RESEARCH.2024

- **An orthotropic electro-viscoelastic model for the heart with stress-assisted diffusion** *BIOMECHANICS AND MODELING IN MECHANOBIOLOGY*
  Propp, A., Gizzi, A., Levrero-Florencio, F., Ruiz-Baier, R.
  2020; 19 (2): 633-659

- **High-intensity laser-accelerated ion beam produced from cryogenic micro-jet target** *REVIEW OF SCIENTIFIC INSTRUMENTS*
  Gauthier, M., Kim, J. B., Curry, C. B., Aurand, B., Gamboa, E. J., Gode, S., Goyon, C., Hazi, A., Kerr, S., Pak, A., PROPP, A., Ramakrishna, B., Ruby, et al
  2016; 87 (11)

- **Absolute dosimetric characterization of Gafchromic EBT3 and HDv2 films using commercial flat-bed scanners and evaluation of the scanner response function variability.** *Review of scientific instruments*
  Chen, S. N., Gauthier, M., Bazalova-Carter, M., Bolanos, S., Glenzer, S., Riquier, R., Revet, G., Antici, P., Morabito, A., PROPP, A., Starodubtsev, M., Fuchs, J.
  2016; 87 (7): 073301-?