R. Cameron Dennis, Ph.D.

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Professional Profile

Award-winning physicist and computational modeler with extensive experience in statistical physics, machine learning, and quantitative finance. Expert in developing predictive models, advising junior scientists, and bridging the gap between complex theoretical research and practical applications. Adept at tackling new domains.

Education

University of Pennsylvania *Mar 2024 – Present*
Postdoctoral Researcher, Mechanical Engineering
Research on viscoelastic solids under oscillatory shear. Developed computational tools to analyze material deformation.

University of Pennsylvania & Syracuse University *Jan 2022 – Present*
Postdoctoral Researcher, Soft Matter Theory
Implemented machine learning techniques to study avalanche dynamics in granular matter; led multi-institution collaborations.

University of Oregon *Aug 2016 – Aug 2021*
Ph.D. in Physics
Computational modeling of soft matter and glassy systems; published in high-impact journals.

Wabash College *Aug 2012 – May 2016*
B.A. in Mathematics and Physics (Summa Cum Laude, Phi Beta Kappa)

Skills

Programming: Python, C++, CUDA, Parallel Computing, pandas, SQL, TensorFlow, PyTorch
Machine Learning: Time Series, Generative Models, Statistical Modeling, Bayesian Inference
Physics: Statistical Mechanics, Stochastic PDEs, Complex Systems, Glasses, Jamming
Finance: Options Pricing, Risk Analysis, Quantitative Modeling
Mentorship: Advising junior scientists, teaching experience, interdisciplinary collaboration

Experience

University of Pennsylvania – Postdoctoral Researcher *2024 – Present*
Leading development of computational models for viscoelastic materials; integrating statistical physics with mechanical engineering; collaborating with experimental teams for validation.

University of Pennsylvania & Syracuse University – Postdoctoral Researcher *2022 – Present*
Applied machine learning to study mechanical failure and avalanche dynamics; spearheaded research teams, mentored students, and implemented predictive modeling frameworks.

University of Oregon – Ph.D. Researcher *2016 – 2021*
Developed numerical models for glassy dynamics and soft sphere packing; created high-performance simulations of energy landscapes; published pioneering research on jamming transitions.

Teaching Experience

University of Pennsylvania – Lecturer *2022*
Co-instructor for *Physical Models of Biological Systems*, designing coursework and mentoring students.

University of Oregon – Teaching Assistant *2016 – 2021*
Led recitations and labs for Thermal Physics, Electricity and Magnetism, and Modern Physics; developed course materials and guided research projects.

Selected Publications

- "The Jamming Energy Landscape is Hierarchical and Ultrametric," *Phys. Rev. Lett.*, 124, 078002.
- "Dionysian Hard Sphere Packings are Mechanically Stable at Vanishingly Low Densities," *Phys. Rev. Lett.*, 128, 018002.
- "Finite Size Effects in the Microscopic Critical Properties of Jammed Configurations," *Phys. Rev. E*, 104, 014102.

Awards

Weiser Doctoral Thesis Award, University of Oregon *2022*
Dissertation Award, University of Oregon *2021*
Research as Art Winner, ArtSci Oregon *2019*
Phi Beta Kappa Prize, Wabash College *2015*