curriculum vitæ of
R. Cameron Dennis
Statistical Physics · Material Science · Glass Physics
Complex Systems · Numerical · Theoretical

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Mar 1 2024 – Present
Postdoctoral Researcher in Physics — University of Pennsylvania Department of Mechanical Engineering

I worked under the advisement of Celia Reina and Prashant Purohit in mechanical engineering and applied mechanics. Our project involved the thermal and structural properties of visco-elastic solids under oscillatory shear.

Jan 1, 2022 – Present
Postdoctoral Researcher in Physics — University of Pennsylvania and Syracuse University

I worked under the advisement of Andrea J. Liu and Lisa M. Manning in soft matter theory. We primarily focused our attention to machine-learned softness and avalanche dynamics of granular matter.

Aug 2016 – Aug 2021
Ph.D. in Physics — University of Oregon

I received my Ph.D in Eric Corwin's lab (corwinLab.uoregon.edu) working on understanding the networks and energy landscapes of jammed soft spheres and glassy systems. My work was primarily numerical and theoretical.

Aug. 2012 – May 2016
Bachelor's degrees in Mathematics and Physics (summa cum laude) — Wabash College, Indiana

Graduated with distinction in both Mathematics (GPA: 4.0) and Physics (GPA: 4.0). Overall GPA: 3.96. Graduated Summa Cum Laude and Phi Beta Kappa.

Awards

January 2022
Weiser Doctoral Thesis Award — University of Oregon Physics Department

Awarded for an outstanding PhD thesis

October 2019
Research as Art Winner — ArtSci Oregon

June 2017
Departmental Exam Award — University of Oregon Physics Department

Awarded to the student who performed best in their academics

May 2016
Mackintosh Fellowship — Wabash College

Scholarship provided to graduation seniors upon selection based on departmental recommendations.

May 2015
Phi Beta Kappa Prize — Wabash College

Awarded to that undergraduate who is judged to have produced the most original and meritorious piece of work, whether artistic or analytical.

May 2015
Fuller Prize — Wabash College Department of Physics

This award is presented annually to the junior physics major who is judged by the Physics Department to be most worthy. The award was established in 1979 by Harold Q Fuller, Class of 1928.

May 2015
Writing Prize — Wabash College Department of Physics

This an award was established by the Physics Department to encourage and reward quality writing in physics. It is given to the physics student who, in the judgment of the Physics Department, has written a paper on original experimental or theoretical work that demonstrates the highest standards of scientific writing.

Skills

- Programming
  1. `Python`
  2. `C++`
  3. `GPU/parallel computing`
  4. `CUDA`
  5. `FORTRAN 90`
- Statistical Physics
- Complex Systems
- Networks
- Phase Transitions
- Glasses and Jamming
- Machine Learning
- Quantum Field Theory

Teaching

Sep. 2022–Dec 2022 University of Pennsylvania

- Physical Models of Biological Systems (Co-Instructor)

Sep. 2016–Aug 2021 University of Oregon

- Introductory Physics Labs (TA)
- Electronics (TA)
- Electricity and Magnetism (TA)
- Modern Physics (TA)
- Thermal Physics (TA)
- Glass Physics (Co-Instructor)

Sep. 2014–May 2016 Wabash College
Writing Center Tutor

Sep. 2013–May 2016 Wabash College
Physics Tutor

Publications

1. "Finite size effects in the microscopic critical properties of jammed configurations: a comprehensive study of the effects of different types of disorder", P Charbonneau, EI Corwin, RC Dennis, R Díaz Hernández Rojas, H Ikeda, G Parisi, F Ricci-Tersenghi, Phys. Rev. E 104, 014102

2. "Dionysian hard sphere packings are mechanically stable at vanishingly low densities", RC Dennis, EI Corwin, PRL, 128, 018002

3. "The Jamming Energy Landscape is Hierarchical and Ultrametric", RC Dennis, EI Corwin, PRL, 124, 078002.

4. "Hyperuniform Jammed Sphere Packings have Anomalous Material Properties", Jack R. Dale, RC Dennis, EI Corwin, Phys. Rev. E 106, 024903

5. "Emergence of zero modes in disordered solids under periodic tiling", RC Dennis, Varda F Hagh, Eric I Corwin, Phys. Rev. E 106, 044901

6. "Methods for Creation and Linear Elastic Response Analysis of Packings of Semi-flexible Soft Polymer Chains", RC Dennis, submitted

7. "The Role of Structure on Avalanche Dynamics under Athermal Quasistatic Shear", R. Cameron Dennis, Andrea J. Liu, M. Lisa Manning, in preparation

8. "The Ideal Glass and The Ideal Disk Packing in Two Dimensions", V Bolton-Lum, RC Dennis, P Morse, E Corwin arXiv preprint arXiv:2404.07492, submitted

9. "The Role of Transient Chaos in Avalanche Dynamics of Disordered Solids", D. Ruiz de Castilla and R. C. Dennis, in preparation

10. "Time-Softness Equivalence in Glass Formers", R. C. Dennis, W. Qiu, C. Reina, P. Purohit, in preparation