Christian Pratt

Physics Ph.D. Candidate
University of California, Davis

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Education

2021 —	Ph.D. *Physics* University of California, Davis Advisor: Prof. James P. Crutchfield *Expected graduation date*: Fall 2025
2022	M.Sc. *Physics* University of California, Davis
2021	B.Sc. *Physics* University of California, Davis
2019	A.A. *Mathematics* San Diego Community College District

Research Positions

2022 —	Graduate student researcher Complexity Sciences Center University of California, Davis Advisor: Prof. James P. Crutchfield
2019 - 2021	Undergraduate research student Experimental particle physics University of California, Davis Advisor: Prof. Michael Mulhearn

Publications

2025   **C. Z. Pratt**, K. J. Ray, and J. P. Crutchfield. Controlled erasure as a building block for universal thermodynamically robust superconducting computing. *Chaos.* [10.1063/5.0227130](#)

2025   **C. Z. Pratt**, K. J. Ray, and J. P. Crutchfield. Extracting equations of motion from superconducting circuits. *Physical Review Research.* [10.1103/PhysRevResearch.7.013014](#)

2021   J. Swaney, M. Mulhearn, **C. Z. Pratt**, C. Shimmin, and D. Whiteson. Measurement of smartphone sensor efficiency to cosmic ray muons. [arXiv:2107.06332](#)

Presentations

2025   Controlled Erasure as a Building Block for Universal Thermodynamically-Robust Superconducting Computing. *Society for Industrial and Applied Mathematics (SIAM) Conference on Applications of Dynamical Systems (DS25).* Denver, Colorado.

2025   **[Invited Poster]** Computing with Dynamical Energy Landscapes. *Interdisciplinary Graduate Research Exhibition.* University of California, Davis.

2025   Controlled Erasure as a Building Block for Universal Thermodynamically-Robust Superconducting Computing. *APS March Meeting 2025.* Anaheim, California.

2024   [Controlled Erasure as a Building Block for Universal Thermodynamically-Robust Superconducting Computing](#). *Technical seminar.* Complexity Sciences Center, University of California, Davis.

2024   Universal Dynamical Computing on the Nanoscale. *Dynamic Days 2024.* Davis, California.

2023   Universal Dynamical Computing on the Nanoscale. *Information Engines at the Frontiers of Nanoscale Thermodynamics.* Telluride, Colorado.

2023   Equations of Motion for Dynamical Computing. *Army Research Office on-site visit.* Complexity Sciences Center, University of California, Davis.

Teaching

2025   University of California, Davis: Teaching Assistant
256A: Physics of Information
256B: Physics of Computation

2021 - 2022   University of California, Davis: Teaching Assistant

7B: Fluid mechanics, electrical circuits, Newtonian mechanics
7C: Modern physics, waves, optics
9A: Classical mechanics

Awards & Honors

2025	Ryan Couch Memorial Travel Award Department of Physics and Astronomy University of California, Davis
Winter 2025, Spring 2024, Spring 2023	Graduate Student Researcher Fellowship Department of Physics and Astronomy University of California, Davis
2018	NASA Community College Aerospace Scholar
2016 - 2019	Dean's Honors List San Diego Community College District

Service and Outreach

2025	Session Chair for CS28: Electronic, Optical, and Condensed Matter Systems. *Society for Industrial and Applied Mathematics (SIAM) Conference on Applications of Dynamical Systems (DS25)*. Denver, Colorado.
2020 - 2021	Mentor, Support Encourage and Develop For Children (SendForC)
2018	Volunteer, New Story Charity
2017 - 2018	Volunteer, San Diego Rescue Mission
2016 - 2018	Volunteer, San Diego Air and Space Museum

Last updated: July 20, 2025