Clark Miyamoto

PhD Student, NYU Physics — New York, United States.
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Education

New York University 2023 — Current
Doctor of Philosophy, Physics GPA: 3.97/4.00
Honors: MacCracken Fellowship

University of Southern California 2019 — 2023
Bachelor of Science, Physics
Honors: Discovery Scholar, Magna Cum Laude, Physics Department Undergraduate Representative

Research Experience

New York University, *Graduate Research Assistant* 2023 — Current
Research rotations:

- David Hogg: Developed theory on hyperparameter tuning for affine invariant Hamiltonian Monte Carlo (HMC) methods, implemented method in pythonic open-source library.
- Dries Sels: Used Haar measure techniques to inspect expressivity of wavefunction ansatzs in the context of neural quantum states.
- Daniel Stein: Developed spin glass inspired theory of how beliefs propagate between humans in sociological systems. Collaborated with psychologist Prof. Mirta Galesic & cognitive scientist Prof. Henrik Olsson.

University of Southern California, *Undergraduate Research Assistant* 2021 — 2023
Design and simulate superconducting quantum devices under Prof. Eli Levenson-Falk.

- Created a pythonic open-source library to expedite the design & simulation of quantum devices, reducing turnaround time from 40 to 4 hours.
- Designed novel superconducting qubit devices which were part of published work.
- Built and optimized radio frequency mixing system, DAC, and power supply for superconducting qubit control systems.

Publications

1. (In preparation) **Clark Miyamoto**, Yifan Chen, 2025, *Hyperparameter tuning for affine invariant Hamiltonian Monte Carlo.*
2. (In preparation) **Clark Miyamoto**, Yifan Chen, David Hogg, 2025, *h-emcee: pythonic affine invariant Hamiltonian Monte Carlo.*
3. Vivek Maurya, Haimeng Zhang, Daria Kowsari, Andre Kuo, Darian M Hartsell, **Clark Miyamoto**, et al., 2024, *On-demand driven dissipation for cavity reset and cooling*, PRX Quantum, **5**, 020321.
4. Sadman Shanto, Andre Kuo, **Clark Miyamoto**, et al., 2024, *SQuADDS: A validated design database and simulation workflow for superconducting qubit design*, Quantum, **8**, 1465.

Conferences / Workshops

- Princeton Machine Learning Theory Summer School 2025
  Poster: *Hyperparameter tuning for affine invariant Hamiltonian Monte Carlo.*
- IAIFI Summer School 2025
- Beg Rohu Summer School of Physics: Learning with Machines, Physics and Minds. 2025
  Poster: *How CNNs learn additional symmetries.*
- American Physics Society, March Meeting. 2023
  Poster: *Developing a library of modular superconducting qubit components for rapid device design.*

Teaching

Teaching Assistant at New York University

- PHYS-UA 131: Electricity & Magnetism I Fall 2025
- PHYS-UA 91: Physics I for Majors Fall 2024

Selected Courses Taken

* Denotes undergraduate courses.

- Data Science for Physicists
- Machine Learning for Physicists
- Inference and Representation (Audited)
- Bayesian Machine Learning (Audited)
- Stochastic Calculus (Audited)
- Stochastic Optimal Control for Finance (Audited)
- *Mathematical Physics
- *String Theory
- Quantum Field Theory I & II
- *General Relativity
- Quantum Mechanics
- Statistical Physics
- Electrodynamics
- Classical Mechanics

Service

New York University, Seminar Organizer 2023 — Current

- Organize a weekly seminar on generative models in the math & data science departments.
- Initated a weekly machine learning seminar in the physics department.

University of Southern California, Physics Department Undergraduate Representative 2022 — 2023

- Designed and implemented a new physics course: PHYS 499 String Theory for Undergrads.
- Updated introductory physics course curriculum to include Python coding.
- Host various professional and social events to help undergrads find a sense of community within the department.