

Curriculum Vitae

Owen Rafferty

owen@owenrafferty.com | 1 (262) 757-3998 | owenrafferty.com

RESEARCH INTERESTS

Superconducting devices, quantum information

EDUCATION

University of Chicago Fall 2021–Spring 2022
Pritzker School of Molecular Engineering Ph.D. Program

University of Wisconsin–Madison Fall 2017–Spring 2021
B.S. Physics with Honors
Advisor: Robert McDermott
Thesis: *Resonant absorption and radiation in transmon qubits*

RESEARCH EXPERIENCE

Modeling decoherence in transmon qubits Fall 2019–Summer 2021
UW–Madison Department of Physics, Advisor: Robert McDermott

- Developed a model to explain the coupling of Cooper pair-breaking photons to a transmon qubit’s Josephson junction, partially explaining the universally observed high background density of Bogoliubov quasiparticles in transmons and similar devices

Single-molecule spectroscopy time series analysis and simulation Fall 2018–Summer 2019

UW–Madison Department of Neuroscience, Advisor: Baron Chanda

- Developed a GUI to accompany a single-molecule state trajectory idealization algorithm and wrote auxiliary routines for dwell time analysis
- Developed a GUI to accompany single-molecule trajectory simulation code and wrote supplementary functions to simulate photophysics

PUBLICATIONS

1. C. H. Liu, A. Ballard, D. Olaya, D. R. Schmidt, J. Biesecker, T. Lucas, J. Ullom, S. Patel, **O. Rafferty**, A. Opremcak, K. Dodge, V. Iaiia, T. McBroom, J. L. DuBois, P. F. Hopkins, S. P. Benz, B. L. T. Plourde, and R. McDermott, “Single Flux Quantum-Based Digital Control of Superconducting Qubits in a Multi-Chip Module”, [arXiv:2301.05696](https://arxiv.org/abs/2301.05696) (2023)
2. C. H. Liu, D. C. Harrison, S. Patel, C. D. Wilen, **O. Rafferty**, A. Shearrow, A. Ballard, V. Iaiia, J. Ku, B. L. T. Plourde, and R. McDermott, “Quasiparticle Poisoning of Superconducting Qubits from Resonant Absorption of Pair-breaking Photons”, [arXiv:2203.06577](https://arxiv.org/abs/2203.06577) (2022).
3. **O. Rafferty**, S. Patel, C. H. Liu, S. Abdullah, C. D. Wilen, D. C. Harrison, and R. McDermott, “Spurious Antenna Modes of the Transmon Qubit”, [arXiv:2103.06803](https://arxiv.org/abs/2103.06803) (2021).

HONORS AND AWARDS

Hilldale Undergraduate Research Fellowship, UW–Madison

2020–2021

AFFILIATIONS

American Physical Society

CONTRIBUTED TALKS

Terahertz Radiation Mode of the Transmon Qubit

- UW–Madison Undergraduate Research Symposium, 2021

CONTRIBUTED POSTERS

Modeling the Antenna Mode of the Transmon Qubit

- APS March Meeting, 2021

MISCELLANEOUS

UW–Madison

- Grader, Physics 531: Introduction to Quantum Mechanics, Fall 2019, Fall 2020