Evan Hockings

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Education

Doctor of Philosophy (Physics) 2021–Present
University of Sydney
Thesis: Scalable noise characterisation of fault-tolerant quantum computers Advisors: Andrew Doherty, Robin Harper

Bachelor of Science (Advanced Mathematics) (Honours) in Physics 2017–2020
Honours Class I and the University Medal University of Sydney
Thesis: Scalable estimation of quantum noise Advisor: Steven Flammia
Undergraduate weighted average mark: 90 Majors: Physics, Mathematics

Awards and Honours

- Unitary Foundation Microgrant 2024
- Australian Government Research Training Program Scholarship 2021–2024
- University of Sydney Honours Scholarship 2020
- Dean's List of Excellence in Academic Performance 2017, 2018, 2019, 2020
- Faculty of Science Olympiad Scholarship 2017–2020
- Sydney Scholars Award 2017–2019
- School of Physics Julius Sumner Miller Scholarships for Academic Excellence No. 3 2019
- Walter Burfitt Scholarship No. 2 for Physics 2019
- University of Sydney Academic Merit Prize 2017, 2018
- Science Foundation for Physics Scholarship No. 2 2018
- School of Physics Julius Sumner Miller Scholarships for Academic Excellence No. 1 2017
- International Chemistry Olympiad Bronze Medal 2016

Publications

1. R. Harper, C. Lainé, **E. T. Hockings**, C. McLauchlan, G. M. Nixon, B. J. Brown, S. D. Bartlett. Improving error suppression with noise-aware decoding. arXiv preprint, 2025. **arXiv:2504.07258**.
2. **E. T. Hockings**, A. C. Doherty, R. Harper. Improving error suppression with noise-aware decoding. arXiv preprint, 2025. **arXiv:2502.21044**.
3. **E. T. Hockings**. QuantumACES.jl: design noise characterisation experiments for quantum computers. **Journal of Open Source Software 10, 107, 7707, 2025**.
4. **E. T. Hockings**, A. C. Doherty, R. Harper. Scalable noise characterisation of syndrome extraction circuits with averaged circuit eigenvalue sampling. **PRX Quantum 6, 010334, 2025**. **arXiv:2404.06545**.
5. Y. Li, R. P. Sabatini, S. K. K. Prasad, **E. T. Hockings**, T. W. Schmidt, G. Lakhwani. Improved optical confinement in ambipolar field-effect transistors toward electrical injection organic lasers. **Applied Physics Letters 119, 163303, 2021**.

Software

QuantumACES.jl

- Open-source Julia package for designing, simulating, and implementing scalable noise characterisation experiments for quantum computers, supported by the Unitary Foundation.

Talks

1. Scalable noise characterisation of syndrome extraction circuits with averaged circuit eigenvalue sampling.
    1.1. Invited talk at EQUS Annual Workshop 2024, December 12th, 2024.
    1.2. Invited talk at IBM Research, Yorktown Heights, October 17th, 2024.
    1.3. Contributed talk at Assessing Performance of Quantum Computers (APQC) 2024, October 7th, 2024.
    1.4. Invited online talk at Thomas Monz's group, University of Innsbruck, August 1st, 2024.
    1.5. Invited talk at Coogee'24 Sydney Quantum Information Theory Workshop, April 4th, 2024.
    1.6. Contributed talk at School of Physics HDR Symposium (awarded 3rd place), University of Sydney, November 10th, 2023.

Experience

Physics Research Assistant — September 2024–Present
Advisor: Stephen Bartlett — School of Physics, University of Sydney

Chemistry Research Assistant — February–June 2019
Advisor: Girish Lakhwani — School of Chemistry, University of Sydney

Physics Summer Research Internship — November 2018–January 2019
Advisor: Daniel Cocks — Research School of Physics, Australian National University

Chemistry Summer Research Internship — January–March 2018
Advisor: Girish Lakhwani — School of Chemistry, University of Sydney