Evan Hockings

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Positions

Member of Technical Staff July 2025–Present
Iceberg Quantum

Education

Doctor of Philosophy (Physics) 2021–2025
University of Sydney
Thesis: 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
Weighted average mark: 90 Majors: Physics, Mathematics

Research Experience

Physics Research Assistant September 2024–July 2025
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

Awards and Honours

- Unitary Foundation Microgrant (supporting **QuantumACES.jl**) 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 noise characterisation experiments for quantum computers. **Journal of Open Source Software 10, 107, 7707, 2025**.

Talks

1. "Improving error suppression with noise-aware decoding." Invited talk at Sydney Quantum Theory Group, March 26th, 2025.
2. "Scalable noise characterisation of syndrome extraction circuits with averaged circuit eigenvalue sampling." Invited talk at EQUS Annual Workshop 2024, December 12th, 2024.
3. "Scalable noise characterisation of syndrome extraction circuits with averaged circuit eigenvalue sampling." Invited talk at IBM Research, Yorktown Heights, October 17th, 2024.
4. "Scalable noise characterisation of syndrome extraction circuits with averaged circuit eigenvalue sampling." Contributed talk at Assessing Performance of Quantum Computers (APQC) 2024, October 7th, 2024.
5. "Scalable noise characterisation of syndrome extraction circuits with averaged circuit eigenvalue sampling." Invited online talk at Thomas Monz's group, University of Innsbruck, August 1st, 2024.
6. "Scalable noise characterisation of syndrome extraction circuits with averaged circuit eigenvalue sampling." Invited talk at Coogee'24 Sydney Quantum Information Theory Workshop, April 4th, 2024.
7. "Scalable noise characterisation of syndrome extraction circuits with averaged circuit eigenvalue sampling." Contributed talk at School of Physics HDR Symposium (3rd place), University of Sydney, November 10th, 2023.