

Kieran Dalton

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EDUCATION

University of Cambridge

2021-2022

MSci, Physics

- Major Courses: Advanced Quantum Condensed Matter, Theories of Quantum Matter, Atomic and Optical.
- Minor Courses: Quantum Information, Superconductivity and Quantum Coherence, Nanoelectronic Systems.
- Project: Quantum algorithms for molecular simulations - Supervised by Dr David Arvidsson Shukur.

University of Cambridge

2018-2021

BA, Physical Natural Sciences

- Grade: Double First.
- Third year results: First class, 20th in cohort. Awarded Foundation Scholarship and Foundress Prize.
 - * Research Review: Superconducting Qubits for Quantum Computers.
 - * Further Work: Measurement of e/h using the Josephson Effect.
- Second year results: Exam percentages in high first range (No official rankings given in 2020).
- First year results: First class, 4th in cohort of 604 students. Awarded Satish Kumar Aggarwal Prize for outstanding first-year performance in Mathematics or Natural Sciences and a College Scholarship.

RESEARCH EXPERIENCE

Masters Project: Quantum algorithms for molecular simulations

2021

Dr David Arvidsson Shukur, Quantum Information Group

University of Cambridge

- Simulating ADAPT-VQE and QEB-ADAPT-VQE with noise.
- Comparing noise dependence for qubit and fermionic excitations.
- Technologies: CUDA, OpenFermion, Qiskit.

Summer Research Intern: Superconducting qubit package simulation

2021

Martin Weides, Quantum Circuits Group

University of Glasgow

- Simulating qubit package to identify spurious modes.
- Worked on thermalisation/noise improvements to the package design.
- Technologies: Qiskit Metal, Ansys HFSS.

Summer Research Intern: 5G Reflective Surfaces

2020

Anas Mohsin Al-Rawi, Cavendish Laboratory

Royal Society, BT

- Simulating 5G reflectors using a 2.5D raytracing model tested at Adastral Park.
- Investigated metamaterial reflectors.
- Technologies: MATLAB Communications Toolbox, RadioMobile.

SUMMER SCHOOLS

Qiskit Global Summer School

2021

IBM Quantum

Online

- Lectures: classical/quantum machine learning, quantum circuits, noise in quantum computers.
- Highlights: Variational quantum algorithms, advanced QML algorithms, qiskit labs.
- Qiskit lab exercises: Cumulative Score of 100/100.

Quantum Cryptography School for Young Students

2018

Institute for Quantum Computing

Waterloo, Ontario

- Lectures: Quantum mechanics, classical/quantum cryptography, quantum algorithms.
- Involved in experiments and small group discussions with resident researchers.

International Summer School for Young Physicists

2017

Perimeter Institute

Waterloo, Ontario

- Lectures: General relativity, quantum mechanics, cosmology, black holes.
- Focus Topic: Quantum algorithms, including Grover Search and Shor Code, with a final group presentation.
- Highlight: SNOLAB visit, Institute for Quantum Computing visit, Neil Turok keynote.

PROJECTS

PAWB Summer School

2016-2018

Photonics Academy of Wales

Bangor University

- Designed and constructed a solar tracking device for photovoltaic cells, using the Rayleigh sky model.
- Circuitry: Operational amplifiers, voltage comparators, monostables, multivibrators, and custom logic control (with D-flip flops).
- Returned to mentor students in optoelectronics and circuit production techniques.

Engineering Education Scheme Wales

2017-2018

STEM Cymru

Bangor University

- Designed and constructed a self-levelling platform capable of returning to any angular orientation relative to the horizontal.
- Circuitry: Laser diode, rotational optical encoder, and logic circuitry.
- Position: Team leader.
- Team Awards: AIRBUS 'Best Application of Engineering and Technology' award, CREST Gold award, and attended the 2018 National Big Bang Final.
- Individual Awards: Runner-Up EESW Young Engineer of the Year 2018, for this and my previous project.

TECHNICAL SKILLS

Proficient: Python, Matlab, \LaTeX .

Familiar: Qiskit, Git, C++, Mathematica, Java.

Software/OS: Ansys HFSS, Linux.

OTHER

Societies: Cambridge University Physics Society (Year Rep and Sponsorship Officer).

Sports: Football, Triathlon, Pembroke River Swimming (Co-Founder).