DILLON BROADERS

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EDUCATION

Trinity College Dublin *Sep. 2023 - Sep. 2024*
M.Sc. in Quantum Science and Technology
Related courses: Introduction to Quantum Information Science, Open Quantum Systems, Quantum Computation and Algorithms, Quantum Material Science, Physical Implementation of Quantum Technology, Tensor Networks, Quantum Thermodynamics, Machine Learning.

Trinity College Dublin *Sep. 2019 - May 2023*
BA (mod) in Physical Sciences
Related courses: Introduction to Quantum Mechanics, Advanced Quantum Mechanics, Statistical Thermodynamics and Atomic Physics, Computer Simulation I, Computer Simulation II, Electromagnetism, Condensed Matter, Magnetism and Superconductivity.

RESEARCH EXPERIENCE

Petz Recovery in Quantum Processes with Memory (Masters Dissertation) *April 2024 - Aug. 2024*
Supervisors: Prof. Felix C. Binder and Dr. Simon Milz
Group: Quantum Information Theory

Theoretical tools were developed to investigate the causal structure of Petz recovery channels which were applied to semi-causal noise channels.

Quantum Random Walks *Dec. 2023 - Jan. 2024*
Supervisor: Prof. Felix C. Binder
Group: Quantum Information Theory

This was a short numerical project whereby quantum random walks were used to generate random numbers, which could then be fed into a computer program, e.g., a stochastic simulation. The Shannon entropy of the final positions probability distribution was used as a figure of merit to discuss randomness.

Determining the Magnetic Critical Temperature from Experimental Data (UG Dissertation) *Sep. 2022 - Dec 2022*
Supervisors: Prof. Stefano Sanvito
Group: Computational Spintronics

Numerical simulations were performed to determine the effect of changes in spin orientation, spin length and atomic position on the magnetic critical temperature of an Iron lattice.

SCHOLARSHIPS

European Excellence Award, awarded by Trinity College Dublin *July 2023*

RELEVANT SKILLS

Programming Languages	Python (Qiskit, Qutip), Julia
Machine Learning Tools	Tensorflow, Sklearn, Pandas, Numpy

Transcripts available upon request