

THOMAS BOURKE

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Cavendish Laboratory ◇ Cambridge, United Kingdom

RESEARCH INTERESTS

Single-photon avalanche diodes, quantum communications and computing, semiconductor devices, optoelectronics

EDUCATION

University of Cambridge

2025 - present

PhD Candidate in Physics (industry co-supervised project with Toshiba)

Supervisors: Louise Hirst, Mark Stevenson

Member of Darwin College

Member of EPSRC CDT in Nanoscience and Nanotechnology (NanoDTC)

University of Bath

2021 - 2025

Master of Physics, *First-class honours*

Final year project: Novel 2D magnetic materials for emerging IT technologies. See summary here.

Supervisors: Adelina Ilie, Kei Takashina

Select modules: Quantum mechanics, nanoscience, photonics, mathematical physics, condensed matter physics

Member of PhySoc

EXPERIENCE

Toshiba Research Europe

Oct. 2025 - Present

Doctoral Student

Cambridge, UK

- Carried out research in Toshiba's Cambridge Research Laboratory on single-photon avalanche diodes.

Leonardo

Summer 2024

Systems Engineering summer intern

Edinburgh, UK

- Developed a data extraction tool for radar systems using Python, which extracted key information from a variety of data sources (images, log files, un-interpreted binary).
- Created a SQL database to streamline storage and retrieval of key events in radar surveillance data (switching scanning modes, POIs identified) along with accompanying metadata.
- Prepared and delivered poster presentations to diverse audiences from within the company.

EVENTS AND CONFERENCES

UK Quantum Hackathon | University of Edinburgh

July 2025

Carried out molecular chemistry simulation problem using VQE and SQD quantum/classical hybrid algorithms. See summary here.

UK Quantum Hackathon | University of Warwick

July 2024

Tackled Grover's algorithm search problem at 3-day hackathon, which concluded in a presentation delivering our findings to the rest of the cohort. See summary here.

PhySoc Hackathon | University of Bath

March 2024

Awarded 2nd place in astrophysics themed hackathon in which I created a black hole 3D model using Blender.

Careers in Quantum | *University of Bristol*

March 2024

Networked with academics and industry professionals at University of Bristol Quantum Engineering CDT.

Oxford Physics Summit | *University of Oxford*

Feb. 2024

Attended workshops on quantum computing and neuromorphic computing, networked with young career researchers from across the UK.

VOLUNTEERING

Student-Staff Liaison Committee | *University of Bath*

2024-2025

Represented student interests in academic matters such as curriculum development, assessment policies and academic regulations.

Physics Society Welfare and Inclusivity Officer | *University of Bath*

2023-2024

Coordinated PhySoc Movember fundraising campaign, contributing to £30,000 raised university-wide. Organised PhySoc x Optica astrophysics-themed hackathon, liased with Optica student chapter to arrange funding and event space access.

TECHNICAL SKILLS

Computer Languages	Python, C++, MATLAB
Libraries	pandas, NumPy, SciPy, Matplotlib
Databases	SQL
Tools	Git, VS Code, L ^A T _E X, COMSOL