THOMAS BOURKE

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Cavendish Laboratory ◇ Cambridge, United Kingdom

RESEARCH INTERESTS

Single-photon avalanche diodes, quantum communications and computing, semiconductors 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 CDT in Nanoscience and Nanotechnology (NanoDTC)
EPSRC Doctoral Landscape Award (DLA) scholar

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.
Final year modules: MPhys research project 75%, mathematical physics 87%, advanced problem solving 75%, advanced quantum theory 74%, nanoscience 77%, photonics 72%

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
Software	Git, VS Code, LaTeX, COMSOL