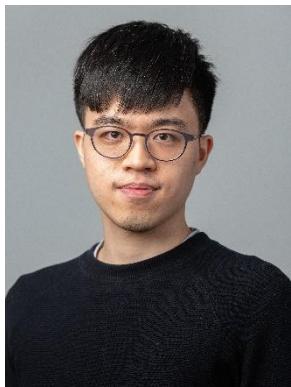


# HAO-CHENG, WENG

Quantum experimentalist | United Kingdom & Taiwan | [haocheng.weng@bristol.ac.uk](mailto:haocheng.weng@bristol.ac.uk) | <https://haochengweng.github.io/>



## EDUCATION

<b>PhD in Physics and Quantum Engineering</b>	2022 – 2026 (expected)
- The QET Labs and the University of Bristol, Bristol, United Kingdom	
<b>Master of Science in Physics</b>	2022
- National Tsing Hua University, Hsinchu, Taiwan	
<b>Bachelor of Science in Physics</b>	2019
- National Tsing Hua University, Hsinchu, Taiwan	

## RESEARCH HIGHLIGHTS

### PhD Research at QET Labs, University of Bristol

2022 – now

- Multi-NV quantum sensing:
  1. Hao-Cheng Weng, John G. Rarity, Krishna C. Balram, and Joe A. Smith, *Photonic-Integrated Quantum Sensor Array for Microscale Magnetic Localisation*, under review, [arxiv:2511.11496 \(2025\)](https://arxiv.org/abs/2511.11496).
- Microelectronic control of optically active spins:
  1. Hao-Cheng Weng, John G. Rarity, Krishna C. Balram, and Joe A. Smith, *Crosstalk-Mitigated Microelectronic Control for Optically Active Spins*, [Physical Review Applied 25, 024025 \(2026\)](https://doi.org/10.1103/PhysRevApplied.25.024025).
  2. Hao-Cheng Weng, Krishna C. Balram, and Joe A. Smith, *Crosstalk-Mitigated Microelectronic Control for Optically-Active Spins*, [UK patent application No. GB 2404816.7](https://www.google.com/patents/US2024048167).
- Photonic integration of solid-state emitters:
  1. Hao-Cheng Weng, Jorge Monroy-Ruz, Jonathan C. F. Matthews, John G. Rarity, Krishna C. Balram, and Joe A. Smith, *Heterogeneous Integration of Solid-State Quantum Systems with a Foundry Photonics Platform*, [ACS Photonics 2023 10 \(9\), 3302-3309](https://doi.org/10.1021/acs.photonics.3c00902).
  2. Vivekanand Tiwari, Zhaojin Liu, Hao-Cheng Weng, Krishna C. Balram, John G. Rarity, Soumen Mandal, Oliver A. Williams, Gavin W. Morley, and Joe A. Smith, *Single photon emission from lithographically-positioned engineered nanodiamonds for cryogenic applications*, [arXiv:2508.06424 \(2025\)](https://arxiv.org/abs/2508.06424).
- Quantum information and thermodynamics:
  1. Chung-Yun Hsieh, Benjamin Stratton, Hao-Cheng Weng, and Valerio Scarani, *Informational Nonequilibrium Concentration*, [Physical Review A 111.5 \(2025\): 052423](https://doi.org/10.1103/PhysRevA.111.052423).

### Master's Research at qpLab, National Tsing Hua University

2020 – 2022

- Quantum computation with high-dimensional single photons:
  1. Hao-Cheng Weng and Chih-Sung Chuu, *Implementation of Shor's algorithm with a single photon in 32 dimensions*, [Physical Review Applied 22.3 \(2024\): 034003](https://doi.org/10.1103/PhysRevApplied.22.034003). [Press coverage](#).
- Reviving and enhancing quantum correlations of photons:

1. Yen-An Shih, Wan-Guan Chang, Gelo Noel M. Tabia, Hao-Cheng Weng, Tsung-Ying Tsai, Chih-Sung Chuu, Huan-Yu Ku, and Costantino Budroni, *Experimentally enhancing high-dimensional subchannel discrimination via optimal local filtering*, [Phys. Rev. Research 7, L032035 \(2025\)](#).
2. Huan-Yu Ku, Hao-Cheng Weng, Yen-An Shih, Po-Chen Kuo, Neill Lambert, Franco Nori, Chih-Sung Chuu, and Yueh-Nan Chen, *Hidden Nonmacrorealism: Reviving the Leggett-Garg Inequality with Stochastic Operations*, [Phys. Rev. Research 3, 043083 \(2021\)](#).

## Undergraduate Research at qpLab, National Tsing Hua University

2018 – 2019

- Temporal quantum correlations on superconducting qubits:
  1. Hao-Cheng Weng, Chen-Yeh Wei, Huan-Yu Ku, Shin-Liang Chen, Yueh-Nan Chen, and Chih-Sung Chuu, *Observation of a full hierarchy of temporal quantum correlations with a superconducting qubit*, [Physical Review A 111.5 \(2025\): 052439](#).

## SCHOLARSHIPS

- 2024-2026 Taiwan Ministry of Education Scholarship: funding PhD study on NV centers for prototyping CMOS compatible quantum processors.
- 2022-2026 University of Bristol Fully Funded PhD Studentship: awarded for researching large scale spin-photonic integrated circuit for quantum information applications.

## PRIZES AND AWARDS

- 2024 M4QN Lab Exchange Award: funded research visit to the University of Cambridge, [link](#).
- 2024 Bristol Quantum Information Technologies Workshop Best Poster Prize: Crosstalk-Mitigated Microelectronic Control for Optically-Active Spins.
- 2023 Hon Hai Technology Award: awarded for pioneer research on heterogeneous integration of solid-state quantum systems with a foundry photonics platform, [link](#).
- 2022 Postgraduates Student Thesis Award, Physical Society of Taiwan: Hierarchy and Revival of Temporal Quantum Correlations.