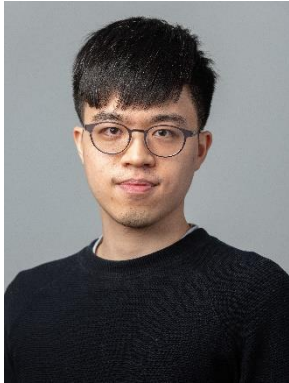


# HAO-CHENG, WENG

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## 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 \(2025\)](#).
  2. [Hao-Cheng Weng](#), John G. Rarity, Krishna C. Balram, and Joe A. Smith, *Multi-NV Quantum Sensing with Photonic Integrated Circuits*, [2025 Conference on Lasers and Electro-Optics Europe & European Quantum Electronics Conference \(CLEO/Europe-EQEC\). IEEE, 2025](#).
- 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](#).
- 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*, under review, [arXiv:2404.04075 \(2024\)](#).
  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](#).
- Photonic integration of solid-state emitters:
  1. 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 \(2025\)](#).
  2. [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](#).

### Master's Research at qLab, 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](#). [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 qLab, 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**

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- **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-photon integrated circuit for quantum information applications.

## **PRIZES AND AWARDS**

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- **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.