



# CHEN HUANG

✉ [chen.huang23@imperial.ac.uk](mailto:chen.huang23@imperial.ac.uk)  [LinkedIn](#)  [Personal Website](#)

## EDUCATION

- **Imperial College London** **London, UK**  
*M.Sc. in Physics with Extended Research, advised by Dr. John Michniewicz* *Sep. 2023 – Jun. 2025 (Expected)*
- **Huazhong University of Science and Technology (HUST)** **Wuhan, CN**  
*B.S. in Physics, advised by Prof. Jianming Cai* *GPA: 89.5/100 (top 5%)* *Sep. 2018 – Jun. 2022*

## RESEARCH EXPERIENCE

- **Quantum Optics and Laser Science (QOLS) Group, Imperial College London** **London, UK**  
*M.Sc. Student, advised by Dr. John Michniewicz* *Jun. 2024 – Present*  
**Charge Noise in Semiconductor Spin Qubits for Quantum Computing**
  - Conducted wire bonding to connect quantum devices to chip holders for characterization purposes.
  - Characterized charge transport properties of semiconductor quantum dots under cryogenic conditions using dilution refrigerators.
  - Developed an automated Python package standardizing communication protocols across diverse experimental devices.
- **Quantum Operating System Group, Beijing Academy of Quantum Information Sciences (BAQIS)** **Beijing, CN**  
*Research Intern (remote), advised by Dr. Jingbo Wang* *May 2024 – Present*  
**Compilation for Neutral Atom Quantum Computers**
  - Designed a novel zoned architecture for neutral atom quantum platforms, dividing computational zones into storage and entanglement regions to enhance scalability and enable parallelism.
  - Developed a Python-based compilation tool utilizing ASAP scheduling and simulated annealing algorithms to optimize qubit placement and routing in neutral atom quantum computing.
  - Achieved a 5.4x improvement in quantum circuit fidelity for 100-qubit systems compared to the state-of-the-art platform.
- **Institute for Quantum Computing, Baidu, Inc.** **Beijing, CN**  
*Research Intern, advised by Dr. Jingbo Wang* *Mar. 2023 – Sep. 2023*  
**Automated Calibration of Experimental Parameters in Trapped-Ion Quantum Computer**
  - Designed and implemented a calibration framework for trapped-ion systems, enabling precise measurement of phonon frequencies ( $\omega_k$ ) and Lamb-Dicke parameters ( $\eta_{jk}$ ).
  - Developed a Python-based automated calibration tool, significantly reducing manual intervention and improving parameter accuracy.
  - Contributed to three patents enhancing calibration methods for trapped-ion quantum computing systems.
- **International Joint Lab on Quantum Sensing and Quantum Metrology, HUST** **Wuhan, CN**  
*Research Assistant, advised by Prof. Jianming Cai* *Apr. 2019 – Dec. 2022*  
**Nanoscale Detection of Ions Using a Spin Quantum Sensor**
  - Derived analytical solutions for electrostatic potential and ion distribution by solving the Poisson-Nernst-Planck (PNP) equation using MATLAB and Mathematica.
  - Developed a 2D axisymmetric model of a Surface Forces Apparatus cavity and conducted finite element analysis in COMSOL.
  - Examined ion dynamics under AC voltage in a simplified 1D surface forces apparatus model, establishing correlations between AC voltage and NV-based sensing.  
**Measurements of Entangled Qubits**
  - Conducted experiments with photon polarization-entangled qubits generated via SPDC in nonlinear BBO crystals, achieving high concurrence (0.825) verified through quantum state tomography.
  - Reconstructed density matrices of entangled photon pairs, demonstrating Bell inequality violation.
  - Utilized QuTiP to compute entanglement measures and visualize quantum states.

## PUBLICATIONS

- **C. Huang**, X. Zhao, H. Xu, W. Zhuang, M.-J. Hu, D. E. Liu, and J. Wang, “ZAP: Zoned Architecture and Parallelizable Compiler for Field Programmable Atom Array,” *arXiv preprint arXiv:2411.14037*, 2024.

## PATENTS

- J. Wang and **C. Huang**, “Ion trap chip parameter determining method and device, electronic equipment and medium,” *Chinese Patent CN117371547*, Granted 2023.
- J. Wang and **C. Huang**, “Ion trap chip parameter calibration method and device, electronic equipment and medium,” *Chinese Patent CN117494829*, Granted 2023.
- **C. Huang** and J. Wang, “Ion trap chip parameter correction method and device, electronic equipment and medium,” *Chinese Patent CN117454997*, 2023.

## SKILLS

---

- **Experimental:** Wire Bonding, Dilution Refrigerator, Scanning Tunneling Microscope (STM), Raman Spectrometer
- **Programming and Software:** Python (advanced development, package creation, scientific computing), MATLAB,  $\text{\LaTeX}$ , AutoCAD, Mathematica

## AWARDS AND HONORS

---

- **Outstanding Intern**, Baidu, Inc., 2023
- **Outstanding Graduate**, HUST, 2022
- **UCAS Scholarship**, University of Chinese Academy of Sciences, 2020
- **Yan Ji-ci Scholarship**, Institute of Physics, Chinese Academy of Sciences, 2020
- **Outstanding Undergraduate in Term of Academic Performance**, HUST, 2019 (*The greatest honor for undergraduates at HUST, top 1%*)
- **National Scholarship**, Ministry of Education of China, 2019 (*The highest honor for university students in China, awarded to top 0.2% nationwide*)

## LEADERSHIP

---

- **Innovative Base of Physics Experiments (IBPE), HUST**

*Chairperson*

**Wuhan, CN**

*May 2019 – Jul. 2020*

- Chaired IBPE's annual academic meetings and organized seminars on advanced topics, including *Advanced Algebra*, *Quantum Mechanics*, and *Quantum Computing*.
- Mentored a Feynman reading group for first-year students, assigning weekly tasks from *The Feynman Lectures on Physics*, including theoretical derivations, experimental design, and simulations.
- Founded *IBPE Review Letters* to document and disseminate the intellectual contributions of IBPE members.