

CHEN HUANG

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EDUCATION

• Imperial College London

M.Sc. in Physics with Extended Research, advised by Dr. John Michniewicz

London, UK

Sep. 2023 – Sep. 2025 (Expected)

- **Project:** Charge Noise in Semiconductor Spin Qubits for Quantum Computing

• Huazhong University of Science and Technology (HUST)

B.S. in Physics, advised by Prof. Jianming Cai

GPA: 89.5/100 (top 5%)

Wuhan, CN

Sep. 2018 – Jun. 2022

RESEARCH EXPERIENCE

• Quantum Optics and Laser Science (QOLS) Group, Imperial College London

Research Intern, advised by Dr. John Michniewicz

London, UK

Jun. 2024 – Present

Charge Noise in Semiconductor Spin Qubits for Quantum Computing

- Performed wire bonding to connect quantum devices to holders for precise characterization.
- Characterized charge noise in semiconductor quantum dots using DC electron transport in dilution fridge systems.
- Developed an automated Python package to standardize communication protocols across diverse devices.

• Beijing Academy of Quantum Information Sciences (BAQIS)

Research Intern (remote), advised by Dr. Jingbo Wang

Beijing, CN

May 2024 – Present

Rydberg Quantum Computing and Compilation

- Designed and improved compilation strategies using graph theory algorithms, optimizing the compilation procedure, enhancing efficiency and reducing decoherence in Rydberg atom systems.
- Implemented zoned architecture to improve qubit scheduling and placement for entanglement, achieving a significant increase in total fidelity compared to existing solutions.
- Currently authoring a paper on this work, detailing advancements in compilation strategies, zoned architecture for qubit placement, and their impact on fidelity in Rydberg atom systems.

• Institute for Quantum Computing, Baidu, Inc.

Research Intern, advised by Dr. Jingbo Wang

Beijing, CN

Mar. 2023 – Sep. 2023

Automated Calibration of Experimental Parameters in Trapped-Ion Quantum Computing

- Designed and implemented a comprehensive calibration process for the trapped-ion system, enabling precise determination of key parameters, including phonon frequency ω_k and the Lamb-Dicke parameters η_{jk} .
- Developed a Python-based automated calibration tool for tuning experimental parameters in trapped-ion quantum computing setups, significantly reducing manual calibration time and enhancing parameter precision.
- Contributed to the development of three patents aimed at enhancing calibration techniques in trapped-ion quantum computing.

• International Joint Lab on Quantum Sensing and Quantum Metrology, HUST

Research Assistant, advised by Prof. Jianming Cai

Wuhan, CN

Apr. 2019 – Dec. 2022

Nanoscale Detection of Ions Using a Spin Quantum Sensor

- Derived analytical solutions for electrostatic potential and ion distribution using the Poisson-Nernst-Planck (PNP) equation with MATLAB and Mathematica.
- Applied spin-echo techniques to measure the decoherence time of individual NV centers for nanoscale electron spin sensing in solution.
- Investigated ion dynamics under AC voltage using a simplified 1D model of a surface forces apparatus (SFA), and Established a correlation between AC voltage and NV-based sensing outcomes.

Measurements of Entangled Qubits

- Conducted experiments on photon polarization-entangled qubits using spontaneous parametric down-conversion (SPDC) in nonlinear BBO crystals. Verified high entanglement with a concurrence value of 0.825 through quantum state tomography.
- Reconstructed the density matrix of entangled photon pairs and demonstrated Bell inequality violation.
- Utilized QuTiP for calculating entanglement measures and visualizing quantum states.

PATENTS

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

SKILLS

- **Experimental:** Wire Bonding, Dilution Refrigerator, Scanning Tunneling Microscope (STM)
- **Programming and Software:** Python (advanced development, package creation, scientific computing), MATLAB, \LaTeX , AutoCAD, Mathematica, Swift
- **Languages:** Mandarin (Native), Hokkien (Bilingual), English (Professional), German (Basic)

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 terms of Academic Performance**, HUST, 2019 (*Highest honor for undergraduates at HUST, top 1%*)
- **National Scholarship**, Ministry of Education of China, 2019 (*Highest honor for university students in China*)

LEADERSHIP

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

Chairperson

Wuhan, CN

May 2019 – Jul. 2020

- Led a team of over 50 members, overseeing various research and academic activities.
- Mentored freshperson on topics from “The Feynman Lectures on Physics” and supervised their participation in IYPT research, assigning tasks such as theoretical derivations, experimental design, and simulations to support their transition into college-level physics.
- Chaired IBPE’s academic annual meetings and organized seminars on topics such as Advanced Algebra, Quantum Mechanics, and Quantum Computing.