

Chen Huang

physchen.com ♦ physchenhuang@gmail.com

1037 Luoyu Road, Wuhan, China 430074 ♦ (+86) 152-8048-7660

EDUCATION

Huazhong University of Science and Technology (HUST)	Wuhan, China
B.S. in Physics	09/2018 – 06/2022
GPA: 3.89/4.00 (Top 10%)	
Peking University	Beijing, China
Summer Program: Introduction to Quantum Information Technology, Quantum Mechanics (II)	06/2020 – 07/2020

RESEARCH EXPERIENCE

International Joint Laboratory on Quantum Sensing and Quantum Metrology	Wuhan, China
<i>Research Assistant / Supervisor: Prof. Jianming Cai</i>	04/2019 – Present

Nanoscale Detection of Ions Using a Spin Quantum Sensor (Graduation Project)

- Investigated the distribution of ions in solution under AC voltage and established the relationship between ion distribution and NV sensing
- Calculated the analytical solutions of the electrostatic potential and ion distribution using MATLAB and Python
- Designed a 3D model of the surface forces apparatus (SFA) with AutoCAD

Measurement of Entangled Qubits

- Designed and built the optical parts of the experimental system, including adjusting the half-wave plates and quarter-wave plates to guarantee the polarization state of photons
- Prepared the maximally entangled state of the photon pair based on spontaneous parametric down-conversion (SPDC) process
- Using the single-photon counter, reconstructed the density matrix of photon polarization entangled qubits and calculated the concurrence of the entangled state of the density matrix, $C = 0.825$
- Simulated the dynamics of open quantum systems with the open-source software QuTiP

Bradley Laboratory (University of Saskatchewan)	Saskatchewan, Canada
<i>Research Intern / Supervisor: Prof. Michael Bradley</i>	05/2021 – 09/2021

New Plasma Processing Techniques for Advanced Materials (MITACS Globalink Project)

- Explored cutting-edge plasma processing techniques such as Microwave Plasma Chemical Vapor Deposition (MPCVD) and Plasma Ion Implantation (PII)
- Modeled the motion of particles in a given electromagnetic field and showcased its significance to PII applications

Low Dimensional Physics and Interface Engineering (SJTU) Laboratory	Shanghai, China
<i>Research Intern / Supervisor: Prof. Hao Zheng</i>	07/2021 – 08/2021

STM Study of Topological Insulators

- Fabricated needle tips for STM via the electrochemical method
- Acquired knowledge and hands-on experience with molecular beam epitaxy (MBE) and scanning tunnel microscope (STM)
- Investigated the setup and principle of the dilution refrigerator and the Raman spectrometer; studied the exotic structural and electronic properties of topological insulators at ultralow temperatures

HUST Innovative Base of Physics Experiments (IBPE)	Wuhan, China
<i>Student Research Team Leader / Supervisor: Assoc. Prof. Ming Yang</i>	10/2018 – 08/2019

China Undergraduate Physics Tournament (CUPT) Projects

- Completed 17 projects at CUPT (2019) and won national third place in the competition
- Developed computer skills in MATLAB, Python, COMSOL, and CAD

Image Removal Algorithm Based on Fraunhofer Diffraction

- Studied the principles of pattern recognition and deep learning, then write programs to identify the sample features and automatically classify the diffraction images
- Designed a set of algorithms to remove the starburst phenomenon in pictures based on the combined effect determined by optical Fraunhofer diffraction and CMOS

EXTRACURRICULAR ACTIVITIES

HUST Innovative Base of Physics Experiment (IBPE)

Wuhan, China

Student Leader

05/2019 – 07/2020

- Organized the academic annual meeting of IBPE and routine seminars, including Advanced Algebra (02/2019 – 06/2019), Quantum Mechanics (12/2019 – 05/2020) and Advanced Quantum Mechanics (09/2020 – 12/2020)
- Led freshmen to read “Feynman Physics Lectures” and participate in CUPT research, assigned tasks such as theoretical derivation, experiment design, and computer simulation every week to help them adapt to college physics learning

AWARDS & HONORS

HUST Outstanding Graduate, 2022

Yan Ji-ci Scholarship, 2020 | Institute of Physics, Chinese Academy of Sciences (CAS)

UCAS Undergraduate Scholarship, 2020 | One of 995 undergraduates across China

China National Scholarship, 2019 | Highest honor for undergraduates in China, Top 0.2% among all undergraduates

Outstanding Undergraduates in Term of Academic Performance, 2019 | Highest honor for undergraduates at HUST, Top 1% among all sophomores and juniors

SKILLS

Technical: Scanning Tunnel Microscope (STM), Raman Spectrometer, Dilution Refrigerator, Molecular Beam Epitaxy (MBE)

Computer: Python, MATLAB, QuTiP, LaTeX, COMSOL, AutoCAD, Adobe Premiere Pro