Guangcheng Liu

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EDUCATION:

School of Physics and Technology,Wuhan University,Wuhan,Hubei China *2019.9-2023.7(Expected)*

Bachelor of Science in Physics

Tianjuan Class,a joint training class of the School of Physics of WHU and the WIPM of CAS.

- **GPA** 3.85/4.0 (major) 3.87/4.0(total)

RESEARCH EXPERIENCES:

University of Science and Technology of China(USTC) *2021.7-2021.9*

RA,Quantum Information and Quantum Computing Seminar

Advisor:Prof Zhaofeng Su/Cheng Guo

- Learned the QCQI theory through different methods
  - Solved the rotation path problem on Bloch sphere via quaternion method

Wuhan Institute of Physics and Mathematics (WIPM) *2021.7-present*

RA,Experimental study of quantum information processing in the ion trap system

Advisor:Prof Mang Feng/Fei Zhou

- Determined whether the ions(>2) chain is "cold" from carrier transition and blue band transition
  - Derived the formula of population after carrier transition and blue band transition
  - Used Python programming to obtain the mean vibrational quantum number and Rabi frequency
- Preparation of entangled state through Mølmer–Sørensen gate
  - Derived of the evolution of the density matrix of two ions and state occupation under the drive of red and blue detuned lasers via series expansion/phase space method
  - Used Python programming to obtain optimal fidelity and the minimum time for Mølmer–Sørensen gate

COMPUTATIONAL PHYSICS GROUP(lead by Prof. Shengjun Yuan) *2020.12-present*

RA,Quantum Spin Systems and Quantum Computation(Simulation)

Advisor:Prof Shengjun Yuan

- Used Python and C++ programming to simulate the evolution process of electron spins in NMR system with large scale by using Chebyshev polynomial method
- Developed a high-performance universal quantum simulator with MPI that can easily build quantum circuits and map them to various physical systems[such as NMR,Ion Trap,Superconducting and so on]
- Designed a Javascript program to make it extremely easy to build quantum circuits and simulate universal quantum circuit

PUBLICATION

- YI-Quantum Circuit Simulator

[https://elondormancy.github.io/QuantumSimulator/]

SKILLS

- Atomic and optical physics experimental skills
- Programming skills: C,C++,Javascript,Python,Lisp(20k+)