ZHIPING LIU

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Research Interests

- Quantum Information
- Quantum Machine Learning
- Quantum Computation

Education

Nanjing University　　　　　　　　　　　　　　　　**Sep. 2016 – May 2020**
B.A., Physics　　　　　　　　　　　　　　　　　　　　*Nanjing, Jiangsu*

Nanjing University　　　　　　　　　　　　　　　　**Sep. 2020 – Present**
Ph.D., Physics　　　　　　　　　　　　　　　　　　　*Nanjing, Jiangsu*
Supervisor: Zengbing Chen

Research Experience

Research Student　　　　　　　　　　　　　　　　　**Sep 2019 – Jun 2020**
Laboratory of Solid State Microstructure, Nanjing University　　　　*Nanjing, Jiangsu*
- Developed algorithms and software that utilize graph theory to accelerate crystal structure search supervised by Prof. **Jian Sun**

Ph.D. Candidate　　　　　　　　　　　　　　　　　**Sep 2020 – Present**
Nanjing University　　　　　　　　　　　　　　　　　*Nanjing, Jiangsu*
- Working on Quantum machine learning supervised by Prof. **Zengbing Chen** and Prof. **Hualei Yin**.
- Applying deep learning, Bayesian optimization techniques to discrete-modulated continuous-variable quantum key distribution.
- Designing quantum neural networks model.

Research Intern　　　　　　　　　　　　　　　　　**Feb 2023 – July 2023**
Institute for Quantum Computing, Baidu Research.　　　　　　　　*Beijing*
- Working on Quantum algorithm for thermal-state preparation, noisy simulation of protein folding quantum algorithms on NISQ devices mentored by Dr. **Xin Wang**.
- Participate in the development of the Python-based quantum machine learning platform Paddle Quantum 2.4.0. mentored by Dr. **Xin Wang**.
- Participate in surveying applications of LLMs in quantum field mentored by Dr. Kun Fang.

Research Assistant　　　　　　　　　　　　　　　　**July 2023 – Present**
HKUST-GZ Quantum AI Research Lab　　　　　　　　　*Guangzhou, Guangdong*
- Working on quantum resource theory including magic and coherence supervised by Prof. **Xin Wang**.

Publications

- Chengkai Zhu[†] and **Zhiping Liu**[†] and Chenghong Zhu and Xin Wang. 'Limitations of Classically-Simulable Measurements for Quantum State Discrimination', arXiv:2310.11323 (2023).
- Zhou, M. G.[†], **Liu, Z. P.**[†], Yin, H. L.[†], Li, C. L., Xu, T. K., Chen, Z. B. (2023). Quantum Neural Network for Quantum Neural Computing. Research, 6, 0134.
- **Liu, Z. P.**, Zhou, M. G., Liu, W. B., Li, C. L., Gu, J., Yin, H. L., Chen, Z. B. (2022). Automated machine learning for secure key rate in discrete-modulated continuous-variable quantum key distribution. Optics Express, 30(9), 15024-15036.

Patents

∗ H. Yin, M. Zhou, **Z. Liu**, Y. Fu, T. Xu, Z. Chen, A Soft Quantum Neural Network System and Pattern Recognition Method, CN114519430, under review, 2022.

Honor

Third-class People's Scholarship　　　　　　　　　　　　　　**2018**
Nanjing University
First-class People's Scholarship　　　　　　　　　　　　　　**2019**
Nanjing University
Outstanding Graduate　　　　　　　　　　　　　　　　　　**2020**
Nanjing University
Outstanding Postgraduate Student　　　　　　　　　　　　　**2021**
Nanjing University
First-class Doctoral Talent Scholarship　　　　　　　　　　　**2022**
Nanjing University

Technical Skills

Languages: Python, Matlab, C++, R
Technologies/Frameworks: Pytorch, Paddle Quantum, GitHub, Latex

References

Prof. Zengbing Chen: Professor, National Laboratory of Solid State Microstructures, School of Physics and Collaborative Innovation Center of Advanced Microstructures, Nanjing University, zbchen@nju.edu.cn

Prof. Hualei Yin: Associate Professor, National Laboratory of Solid State Microstructures, School of Physics and Collaborative Innovation Center of Advanced Microstructures, Nanjing University, hlyin@nju.edu.cn

Prof. Xin Wang: Associate Professor, Thrust of Artificial Intelligence, Information Hub, Hong Kong University of Science and Technology (Guangzhou), wangxinfelix@gmail.com.

Prof. Jian Sun: Professor, National Laboratory of Solid State Microstructures, School of Physics and Collaborative Innovation Center of Advanced Microstructures, Nanjing University, jiansun@nju.edu.cn