Xia Liu

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EDUCATION

University of Chinese Academy of Sciences — Beijing, China
Ph.D. in Cryptography — Sep 2019 - Present

Qingdao University — Qingdao, China
B.S. in Mathematics — Sep 2014 - Jun 2018

EXPERIENCE

Institute for Quantum Computing, Baidu Research — Beijing, China
Intern — Jul 2021 - May 2023
Mentor: Dr. Xin Wang

- Explored variational quantum circuit compiling and quantum metrology with Paddle Quantum.
- Conducted research in variational quantum algorithms, leading to one manuscript and two patents.
- Involved in the development of Paddle Quantum and Qulearn.

UCAS Institute of Information Engineering — Beijing, China
Ph.D. candidate — Sep 2019 - Present
Mentor: Prof. Li Yang

- Involved in the project of quantum security research of public key cryptography.
- Participate in the quantum security research of cryptographic protocols, and investigate the feasibility of Shor's algorithm on ion trap quantum computers.

Qingdao University Department of Business — Qingdao, China
Research Assistant — Oct 2015 - Jun 2017
Mentor: Prof. Chongfeng Wang

- Participated in the key statistical research project of Shandong Province: Research on collaborative innovation mechanism of strategic emerging industrial clusters.
- Investigated the impact of innovation network on innovation performance with the biological industry as an example.

HONORS

Outstanding student Award — 2020-2021, 2021-2022
For excellent performance in UCAS.

First prize of the 15-th Challenge Cup — 2017
Challenge Cup National College Students Extracurricular Academic Science and Technology Works Competition.

Outstanding student Award — 2016
For excellent performance in Qingdao University.

Provincial government inspirational Scholarship — 2016

PUBLICATIONS

X. Liu, H. Yang, L. Yang,
Minimizing CNOT-count in quantum circuit of the extended Shor's algorithm for ECDLP,
arXiv:2305.11410 [quant-ph].

X. Liu, G. Liu, H. Zhang, J. Huang, X. Wang,
Mitigating barren plateaus of variational quantum eigensolvers,
arXiv:2205.13539 [quant-ph].

W. Gao, L. Yang, D. Zhang, **X. Liu**,
Quantum Identity-Based Encryption from the Learning with Errors Problem,
Cryptography, 6(1), 9.

X. Liu, H. Yang, L. Yang,
CNOT-count optimized quantum circuit of the Shor's algorithm,
arXiv:2112.11358[quant-ph].

PATENTS

Xin Wang, Jiaxin Huang, **Xia Liu**, Zihe Wang,
基态能量的确定方法、装置、设备及存储介质,
Publication number: CN114418103A.

Xin Wang, **Xia Liu**, Jiaxin Huang,
量子电路处理方法、电路、计算设备、装置及存储介质,
Publication number: CN114492813A.

PROJECTS

Paddle Quantum
https://qml.baidu.com/
A Python package that supports the construction and training of quantum neural networks, and provides easy-to-use quantum machine learning development kits.

Qulearn
https://qulearn.baidu.com/textbook/preface
Qulearn is a quantum learning knowledge base integrating textbooks, videos, courses and programming, which provides guidance from theory to practice and greatly reduces the threshold of quantum computing learning and development.