Benchi Zhao

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Education

2021/10 - 2024/10 **Osaka University** **Ph.D. Engineering Science**

Supervised by Prof. Keisuke FUJII (藤井 啓介)

Research interests: Quantum Resource theory, Quantum Error Mitigation, Variational Quantum Algorithms

2019/10 - 2021/01 **Imperial College London** **M.sc. Physics**

Graduated with merit

Optional Module: Quantum information & Quantum communication

2016/07 - 2019/07 **University of Birmingham** **B.sc. Physics**

Graduated with 1st class honour

Achieved 1st Class scholarship from2016-2019

Careers

2020/10 – 2022/03 **Institution for Quantum Computing, Baidu** **Research Assistant**

1. Investigate variational quantum algorithm (VQA).

2. Participate the development of Paddle Quantum Platform.

3. Investigate quantum machine learning.

4. Finish 10+ Patents and 5 scientific papers

Projects

2020/10 - 2021/08 **Paddle quantum platform**

The paddle quantum is a quantum machine learning platform, and many algorithms could be simulated on it, such as quantum classifier, QAOA, Q-GAN. I participated the development of LOCCNet

module, and lead the development of Quantum Chemistry module. (**https://qml.baidu.com**).

2020/05 - 2020/09 Simulation of optical levitation

This is my master' s final project. Python was used to simulate non-spherical droplets' movement (e.g., ellipsoid) inside the Gaussian beam. An impressive phenomenon was found that if the ellipsoid is too long, the scattering force will push it away from the beam center rather than trap it, which was an exciting discovery. Code for this project has been uploaded to Github (https://github.com/benchizhao/Simulation-of-optical- levitation-of-non-spherical-droplets).

Skills

1. Master Python, familiar with Matlab, Mathematica and C++;

2. Experienced with the development of Quantum machine learning platform (Paddle Quantum);

3. Fluency in English.

Paper

1. **Zhao, B.**, Jing, M., Zhang, L., Zhao, X., Wang, K., & Wang, X. (2023). Retrieving non-linear features from noisy quantum states. *arXiv preprint arXiv:2309.11403*.
2. Zhao, X., Zhang, L., **Zhao, B**., & Wang, X. (2023). Power of quantum measurement in simulating unphysical operations. *arXiv preprint arXiv:2309.09963*.
3. Zhao, X., **Zhao, B.**, Wang, Z., Song, Z., & Wang, X. (2021). Practical distributed quantum information processing with LOCCNet. *npj Quantum Information*, *7*(1), 1-7. **(AQIS 2021 talk)**
4. Chen, R., **Zhao, B.,** & Wang, X. (2021). Variational Quantum Algorithm for Schmidt Decomposition. *arXiv preprint arXiv:2109.10785*.
5. Yu, Z., Zhao, X., **Zhao, B**., & Wang, X. (2022). Optimal quantum dataset for learning a unitary transformation. *Physical Review Applied 19(4), 034017*.
6. Zhao, X., **Zhao, B**., Xia, Z., & Wang, X. (2022). Information recoverability of noisy quantum states. *Quantum 7, 978*. **(TQC 2022 talk)**
7. Wang, Y., **Zhao, B**., & Wang, X. (2022). Quantum algorithms for estimating quantum entropies. *Physical Review Applied 19(4), 044041*.