LI-LI YE

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Education

- **Arizona State University, Tempe, Arizona, US.** *2021-Present*
  Ph.D. Candidate in Electrical Engineering
  Advisor: Dr. Ying-Cheng Lai.
- **Lan-Zhou University, Cheng-Guan, Gan-Su, China.** *2020-2023*
  M.S. Theoretical Physics
  Advisor: Dr. Liang Huang
- **Lan-Zhou University, Cheng-Guan, Gan-Su, China.** *2016-2020*
  B.S. Theoretical Physics
  Advisor: Dr. Liang Huang

Research

2.1 Quantum transport, Dirac electron scattering in Dirac materials

1. L.-L. Ye, and Y.-C. Lai. Irregular Bloch-Zener oscillations in two-dimensional flat-band Dirac materials. Physical Review B 107 (16), 165422, (2023).
2. L.-L. Ye, C.-D. Han, and Y.-C. Lai. Spin-dependent edge states in two-dimensional Dirac materials with a flat band. Phys. Rev. B 108 (23), 235404, (2023).
3. L.-L. Ye, C.-D. Han, and Y.-C. Lai. Optical properties of two-dimensional Dirac–Weyl materials with a flatband. Appli. Phys. Lett. 124 (6), (2024).
4. L.-L. Ye, C.-Z. Wang, and Y.-C. Lai. Experimental scheme for determining the Berry phase in two-dimensional quantum materials with a flat band. Phys. Rev. B 110 (7), 075108, (2024).
5.C.-D. Han, **L.-L. Ye**, Z. Lin, V. Kovanis, and Y.-C. Lai. Deep-learning design of graphene metasurfaces for quantum control and Dirac electron holography. APL Mach. Learn. 2, 036105 (2024).

2.2 Machine learning in quantum information and quantum computing

6. L.-L. Ye, C. Arenz, J. M. Lukens, Y.-C. Lai. Entanglement engineering of optomechanical systems by reinforcement learning. arXiv preprint arXiv:2406.04550.
7. M.-H. Guo, Y. Weng, **L.-L. Ye**, and Y.-C. Lai. Continuous variational quantum algorithms for time series. 2023 International Joint Conference on Neural Networks (IJCNN), 01-08, (2023).
8.L.-L. Ye, and Y.-C. Lai. Controlling nonergodicity in quantum many-body systems by reinforcement learning. (available manuscript)
9.L.-L. Ye, M. Moradi, C. Arenz, and Y.-C. Lai. Reinforcement-learning-based quantum control for quantum computing. (in preparation)

2.3 Quantum chaos

10. Z.-Y. Li, **L.-L. Ye**, R.-H. Ni, C.-Z. Wang, L. Huang, Y.-C. Lai, C. Grebogi. Relativistic quantum scarring, spin-induced phase, and quantization in a symmetric Dirac billiard system. Journal of Physics A: Mathematical and Theoretical 55 (37), 374003, (2022).
11. L.-L. Ye, L. Huang, and Y.-C. Lai. Relativistic quantum scar in curved Dirac Fermion system (available manuscript).

2.4 Others in physics

12. S. Panahi, **L.-L. Ye**, and Y.-C. Lai. Higher-order exceptional points in noise-assisted sensing structure (available manuscript).
13. L.-L. Ye, C.-D. Han, and Y.-C. Lai. Geometry-induced wave-function collapse. Phys. Rev. A 106 (2), 022207 (2022).

Technical skills and experiences

Programming languages/ soft skills: Qiskit, Qutip, Matlab, Python, C, Mathematica, Tensorflow, Keras, LaTex.
Machine learning skills: Reinforcement learning projects, Convolutional Neural Network projects, and so on.
Quantum algorithm skills: Quantum excellence in 2023 Qiskit summer school of IBM and the conference paper about variational quantum algorithm.
International conference: 2023 APS 4 Corners Meeting, and 2024 APS March Meeting(submitted).
Coursework: Topics in Reinforcement Learning, Quantum Information and Quantum Computing, Quantum Optics and Quantum Information, Statistical Machine Learning: Theory to Practice, Mathematical Foundations of ML, and so on.

Positions of responsibility

•**Graduate Research Assistant** Research skills in Arizona State University *2021-2025*

Honars and Awards

•**Three-year national scholarship** Bachelor student in Lan-Zhou University *2017-2019*

•**The first-class scholarship** Master student in Lan-Zhou University *Nov. 2020*