KEMING HE
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EDUCATION

The Hong Kong University of Science and Technology (Guangzhou) **Guangzhou, Guangdong, China**
- **PhD of Artificial Intelligence** *08/2024 – present*
- **Research Interests:** Quantum Information Theory, Quantum Error Correction, Artificial Intelligence

University of Southern California **Los Angeles, California, U.S.**
- **Master of Science, Electrical Engineering** *01/2022 – 05/2023*
- **Relevant Courses:** Quantum Information Processing, Quantum Information Theory, Open Quantum System

Chongqing University **Chongqing, China**
- **Bachelor of Science in Electronic Information Science and Technology** *09/2017 – 06/2021*
- **Relevant Courses:** Electrodynamics, Quantum Mechanics, Signals and Systems, Semiconductor Physics

EXPERIENCE

Hong Kong University of Science and Technology (Guangzhou) **Guangzhou, China**
Ph.D Candidate *09/2024 – present*
Supervisor: Dr. Xin Wang
- Conducted various research in quantum information and quantum computation, including quantum resource theory and quantum error correction
- Researched on LDPC codes in classical and quantum channel coding theory, and developed decoder for circuit level noisy simulation based on machine learning
- Involved on developing Python library for quantum computing and quantum information processing QuAIRKit, quantum LDPC codes

University of Southern California **Los Angeles, U.S.**
Student *03/2023 – 05/2023*
Mentor: Dr. Daniel Lidar
- Studied and analytically solved a model of a qubit coupled to bosonic bath in a cavity within the 1-excitation subspace in open quantum system
- Calculated the model with Ohmic spectral density function by means of various derivation of Lindblad master equation and time convolutionless master equation

Chongqing University **Chongqing, China**
Research Assistant *08/2020 – 06/2021*
Supervisor: Dr. Yingzhou Huang
- Developed ventilating and adjustable sound-absorbing structure that simulated the effect of sound-absorbing in COMSOL
- Designed the STM32-based control unit and maximized the effect of sound-absorbing in terms of sound frequency

PUBLICATIONS

- **He K**, Zhu C, Yao H, et al. No-Go Theorems for Universal Quantum State Purification via Classically Simulable Operations[J]. arXiv preprint arXiv:2504.10516, 2025.
- Chen Y A, Zhu C, **He K**, et al. Hypothesis testing of symmetry in quantum dynamics[J]. Physical Review A, 2025, 111(5): 052406.
- Chen Y A, Zhu C, **He K**, et al. Virtual Quantum Markov Chains[J]. IEEE Transactions on Information Theory, 2025.
- Tian H, Xiang X, **He K**, et al. Automatically Adaptive Ventilated Metamaterial Absorber for Environment with Varying Noises[J]. Advanced Materials Technologies, 2021, 6(12): 2100668.

SERVICES

- Reviewer for the Quantum journal, AQIS25.

TECHNICAL SKILLS

- Proficient in Matlab, Mathematica, Python, LaTeX
- Skillful at Programming, Physical Experiments, and Data Processing