Zhiyuan He

Resume

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Education

- **Central China Normal University**
  Undergraduate Student *August 2017 – Present*
  - Ranking: 5/61(Top 10%)
  - Overall GPA: 86.12/100
  - Major GPA: 87.5/100

- **University of California, Berkeley**
  Visiting Student *September 2019 – August 2020*
  - GPA 3.68/4.0

Research Experience

- **Entanglement Dynamics** **Prof. Xiwen Hou's Group**
  Central China Normal University *May 2018 – September 2019*
  - learning the basic knowledge of quantum information especially the quantum entanglement, thermalization and localization
  - Quantum Simulation of three-qubits entanglement states in noisy environment. In this projects we considered the freezing of quantum correlations, and found that 2-partite correlation is forever frozen. By using Matlab and Julia, we gave the specific figure of this results.(This project was published)
- **Simulation of quantum spin liquid** **Dr. Xiangjun Xia's Group**
  Central China Normal University *October 2019 – September 2020*
  - learning the basic knowledge of quantum spin liquid especially the Fermi Liquid and the computer skills from first principles. In the process I had repeated some references' work, which were all about Density Functional Theory.
  - learning the basic knowledge of graphene. In this process I also have finished the program to calculate the Dirac cones of graphene.
- **Localization in Quantum entanglement systems** **Prof. Xiwen Hou's Group**
  Central China Normal University *October 2020 – Present*
  - The first project we finished was about how to combine machine learning and quantum magnetism systems. We used Deep Neural Networks and two-dimensional Ising model, and the program can give some prewarning of the phase transition points.
  - We try to use quantum discord and quantum mutual information to explore the crucial points of metal-insulator transition and Anderson-MBL(Many-Body Localization) transition. We have finished the mainly parts of the program now, and we have contacted with some experimental group to verify the accuracy of this project

Publications

Tian-Wen Liu, **He, Zhi-Yuan**, and Xi-Wen Hou. Dynamics of quantum correlations for three-qubit states in a noisy environment. *International Journal of Modern Physics B*, 33(14):1950145, 2019.

Awards

- **Institute of High Energy Physics Fellowship(Top 10% students)**
  The Institute of High Energy Physics of the Chinese Academy of Sciences *September 2020*
- **Department of Physics and Technology Fellowship(Top 10% students)**
  Central China Normal university *September 2019*

Languages

- **Chinese:** Native
- **English:** Fluent

Computer Skills

- **C/C++, Python, Julia, Fortran**
- **Matlab, Mathematica**
- **Latex**