

Curriculum Vitae

KeLi Qu

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Education

City University of Hong Kong **2025.08.25–2025.12.23**

Exchange student | Major in Mathematics and Physics

- **Core Courses:** Applied Differential Geometry, Quantum Mechanics, Radiotherapy Physics
- **Research Project:** QCNN for HEP data analysis, Applications of Reinforcement Learning in Quantum Computing and Quantum Information

Shandong University **2022.09–present**

B.Sc. in Physics(Honors Class) | GPA: 88.64/100

- **Core Courses:** Quantum Mechanics, Group Theory, Introduction to Experimental Methods in Particle Physics, Computational Physics and Experiment
- **Research Project:** ATLAS experiment at the LHC, Thermal properties of ultra-wide bandgap semiconductor and thermal management of devices

Research Experience

06/2025–08/2025 **Summer Research | Prof. WANG Xin Sunny**

QCNN for High Energy Physics data analysis

- Basic knowledge of quantum computing and quantum information
- Familiar with Python library for QIQC and Quantum Machine Learning
- As the demand for analyzing massive datasets in high-energy physics continues to grow, quantum machine learning has demonstrated quantum supremacy in certain problems, highlighting its increasing importance for data analysis in future high-luminosity LHC experiments.

Inspired by the particle track identification algorithm used in the Deep Underground Neutrino Experiment (DUNE), using quantum convolutional neural network to construct a classifier for top quark jet image.

09/2024–Present **Research Project 2 | Prof. Yanlin Liu**

ATLAS experiment at the LHC

- Learned Python computational science and data analysis methods
- Learn to use Boosted Decision Tree methods (implemented via XGBoost), develop a signal-to-background discrimination scheme to analyze the VBF and ggF processes of the $H \rightarrow \mu\mu$ in the ATLAS experiment.
- Familiar with the workflow of working on the CERN Lxplus

- 01/2024-06/2024 **Research Project 1 | Prof. Jiayue Yang**
Thermal properties of ultra-wide bandgap semiconductor and thermal management of devices
- Basic knowledge of machine learning
 - Familiar with the use of LAMMPS(Large-scale Atomic/Molecular Massively Parallel Simulator)
 - Studied molecular dynamics and finite element methods in the research of microchannel heat dissipation and thermoelectric coupling of devices

Lab Skills

Quantum Computing and Quantum Information:	Python library for QIQC and QML
Particle Physics:	Familiar with the workflow at CERN Lxplus and Gitlab
Semiconductor Physics:	Finite element analysis, Molecular dynamics simulation
Programming Skills:	Python,LAMMPS,Shell,Woalfram Mathematica

Awards & Honors

2025	Joint TDLI and INPAC Winter School in Particle Physics		Successfully completed
2024	China Undergraduate Mathematical Contest in Modeling		Second prize in Shandong province
2023	Algorithm Competition for College Students		Excellence Award in Group A
2022	Mathematics competition of Chinese College Student		Third prize in Shandong province



Figure 1: 2025 Joint TDLI and INPAC Winter School in Particle Physics



2024 China Undergraduate Mathematical Contest in Modeling



2022 Mathematics Competition of Chinese College Student



2023 Algorithm Competition for College Students