Curriculum Vitae

Keli Qu

Shandong University | My Home Page
Phone: +86 173-9173-5297 | Email: keliqu@mail.sdu.edu.cn

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, Radio-Therapy 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: 88.81/100

- **Core Courses**: Quantum Mechanics, Group Theory, Introduction to Experimental Methods in Particle Physics, Computational Physics and Experiment
- **Research Project**: ATLAS experiment at the LHC, Simulation and Physics Prediction for STCF

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
- 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 (implemented via XGBoost), develop a signal-to-background discrimination scheme to analyze the VBF and ggF processes of the $H \to \mu\mu$ in the ATLAS experiment.
- Familiar with the workflow of working on the CERN Lxplus

Upcoming Thesis **Undergraduate Thesis | Super Tau-Charm Facility (STCF)**
Simulation and Physics Prediction
- Focus on simulation and physics prediction for the STCF, a next-generation e^+e^- collider targeting the tau-charm energy region.
- Utilize Geant4-based Monte Carlo frameworks to model detector response and backgrounds.
- Conduct physics studies to predict the experimental sensitivity for specific channels, complementing research at LHC and Belle II.

Lab Skills

Quantum Computing and Quantum Information:	Python library for QIQC and QML
Particle Physics:	Familiar with the workflow at CERN Lxplus and Gitlab
Programming Skills:	Python, LAMMPS, Shell, Wolfram Mathematica
Skills will be learned:	Geant4-based MC tools, OSCAR framework

Awards & Honors

2025 **Merit Student**
2025 **Academic Scholarship** | SDU (TOP 30%)
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