Contribution ID: **210** Type: **Oral report**

Application GNN/QAOA on Jet-Origin-Identification/Jet-Clustering

Thursday, 15 August 2024 16:55 (15 minutes)

The rapid development of Deep Learning and Quantum Computing has benefited or potentially will benefit high-energy physics experiments. To enhance the scientific discovery power of high-energy collider experiments, we propose and realize the concept of jet-origin identification, which categorizes jets into five quark species (b, c, s, u, d), their corresponding antiquarks, and the gluon. We uniquely solve jet clustering using the Quantum Approximate Optimization Algorithm (QAOA). For small-scale jet clustering problems, the QAOA has achieved performance similar to the classical jet clustering algorithm, ee_kt.

Primary author: Mr ZHU, Yongfeng (PKU)

Presenter: Mr ZHU, Yongfeng (PKU)

Session Classification: 分会场五

Track Classification: 粒子物理实验技术