International Conference on Quantum Energy 2025
hosted by Dipartimento di Fisica e Astronomia Galileo Galilei
an event by ICQE

Contribution ID: **79** Type: **Invited**

Quantum Machine Learning Applications in High Energy Physics and Beyond

Thursday 5 June 2025 14:30 (30 minutes)

This talk will review recent applications of quantum machine learning to problems in high energy particle physics motivated by the analysis of data from the Large Hadron Collider at CERN, Geneva. Typical tasks include the classifications of jets as quarks or gluons; the classification of calorimeter clusters as electrons or photons; generative modelling of fragmentation and hadronization in jets; and representation learning. The explored hybrid quantum architectures include: quantum equivariant deep neural networks, quantum equivariant graph neural networks, quantum transformers, quantum diffusion models, quantum GANs, etc.

Theme

Primary author: Prof. MATCHEV, Konstantin (University of Alabama)

Presenter: Prof. MATCHEV, Konstantin (University of Alabama)

Track Classification: Theme 1. Energy advantage and cost of quantum technology