Contribution ID: **17** Type: **not specified**

Development of quantum machine learning algorithms to study Higgs boson decays with the LHCb detector

Friday 10 December 2021 10:50 (5 minutes)

CERN group or section submitting a project proposal

quantum computing and algorithms

Description

Quantum Machine Learning (QML) algorithms are proposed as an exciting prospective application of quantum technologies. Problems that are classically hard to compute have potential to be solved faster by such new algorithms. The LHCb collaboration has already made a first step by studying the identification of b and b-bar jets showing new possibilities opened by these algorithms.
This new project proposes to demonstrate how QML can improve the determination of the Higgs boson decay rates to b and c jets by exploiting the different b and c jet sub-structure.

Authors: GIANELLE, Alessio (Universita e INFN, Padova (IT)); NICOTRA, Davide (Universita e INFN, Padova (IT)); LUCCHESI, Donatella; VAZQUEZ SIERRA, Carlos (CERN); ZULIANI, Davide (Universita e INFN, Padova (IT)); RODRIGUES, Eduardo (University of Liverpool (GB)); DE VRIES, Jacco Andreas (Universiteit Maastricht (NL)); SESTINI, Lorenzo (Universita e INFN, Padova (IT))

Presenter: LUCCHESI, Donatella

Session Classification: Project and collaboration proposals