Contribution ID: **360** Type: **Parallel Talk**

Identification of b-jets using QCD-inspired observables

Friday, 8 July 2022 15:15 (15 minutes)

The identification of the origin of hadronic jets is a key aspect in particle physics at hadron colliders. In this talk I will discuss the separation of hadronic jets that contain bottom quarks (b-jets) from jets featuring only light partons using a newly developed approach reported in arXiv:2202.05082 [hep-ph].
This approach exploits QCD-inspired jet substructure observables, such as one-dimensional jet angularities and the two-dimensional primary Lund plane, as inputs to modern machine-learning algorithms to efficiently separate b-jets from light ones. In order to test our tagging procedure, we consider simulated events where a Z boson is produced is association with jets and show that using jet angularities as an input for a deep neural network, as well as using images obtained from the primary Lund jet plane as input to a convolutional neural network, one can achieve tagging accuracy comparable with the accuracy of track-based taggers used by the LHC experiments. We argue that the complementary usage of the track-based taggers together with the ones based upon QCD-inspired observables could improve b-tagging accuracy.

In-person participation

Yes

Primary authors: KAUR, Charanjit; SFORZA, Federico (Istituto Nazionale di Fisica Nucleare); FEDKEVYCH, Oleh (Istituto Nazionale di Fisica Nucleare); MARZANI, Simone (Istituto Nazionale di Fisica Nucleare)

Presenter: SFORZA, Federico (Istituto Nazionale di Fisica Nucleare)

Session Classification: Strong interactions and Hadron Physics

Track Classification: Strong interactions and Hadron Physics