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Exploring neural networks to improve b-jet tagging with the ALICE detector

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Highly energetic jets are sensitive probes for the kinematics and the topology of nuclear collisions. Jets are collimated sprays of charged and neutral particles, which are produced in the fragmentation of hard scattered partons in an early stage of the collision. Heavy-quark jets, originating from beauty or charm quarks (b- and c-jets), are particularly good probes to shed light on the characteristics of the hot medium which is formed in heavy-ion collisions and to understand the parton energy loss in the medium. There exist several algorithms to tag b-jets. One approach is to identify b-jets by reconstructing displaced secondary vertices and applying rectangular cuts on their topology. Machine learning is a promising tool to perform better in such a classification task on similar input features. In particular, deep learning methods might be able to catch features from low-level parameters which are not exploited by the classical cut-based method. In this talk, first simulation results of a neural network based method to tag b-jets in p-Pb collisions at 5.02 TeV with the ALICE detector will be presented.

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