

Identifying Heavy-Flavor Jets Using Vectors of Locally Aggregated Descriptors

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Jets of collimated particles serve a multitude of purposes in high energy collisions. Recently, studies of jet interaction with the quark-gluon plasma (QGP) created in high energy heavy ion collisions are of growing interest, particularly towards understanding partonic energy loss in the QGP medium and its related modifications of the jet shower and fragmentation. Since the QGP is a colored medium, the extent of jet quenching and consequently, the transport properties of the medium are expected to be sensitive to fundamental properties of the jets such as the flavor of the parton that initiates the jet. Identifying the jet flavor enables an extraction of the mass dependence in jet-QGP interactions. We present a novel approach to tagging heavy-flavor jets at collider experiments utilizing the information contained within jet constituents via the JetVLAD model architecture. We show the performance of this model as characterized by common metrics and showcase its ability to extract high purity heavy-flavor jet sample at various realistic jet momenta and production cross-sections. Such studies open new opportunities for future high purity heavy-flavor measurements at jet energies accessible at current and future collider experiments

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