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First D^0 -tagged jet axes difference measurement in pp collisions at $\sqrt{s} = 5.02$ TeV with ALICE

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Measurements of heavy-flavor hadron production play an important role in the testing of pQCD calculations, and represent a critical component in studies of the quark-gluon plasma (QGP) created in heavy-ion collisions. We study three different D^0 -tagged jet axes, with varying degrees of sensitivity to wide-angle radiation: Standard, Soft Drop groomed, and Winner-Take-All (WTA). By considering the angles between different axes, we can study the radiation pattern inside the reconstructed jets, thus providing insight into the associated fragmentation and hadronization processes. In this poster, we present the first D^0 -tagged jet axes difference studies carried out in pp collision at 5.02 TeV with the ALICE experiment at the LHC, with jets of transverse momentum $p_{T,\text{jet}} > 5$ GeV/ c and D^0 -mesons with $p_{T,D^0} > 2$ GeV/ c . The measurements include the radial distributions of D^0 mesons with respect to the jet axis, $\Delta R_{D,\text{jet}}$, as well as a study of the opening angle, ΔR_{axis} , between various definitions for the axis of a D^0 -tagged jet. We compare these results with those obtained from the inclusive, gluon-dominated, sample of jets. These measurements, at relatively low jet momentum, are sensitive to heavy-flavor production mechanisms and will serve as important groundwork for an in-depth understanding of charm-quark diffusion in the QGP.

Category

Experiment

Collaboration (if applicable)

ALICE

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