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Exploring charm-quark fragmentation with correlation and jet measurements by ALICE

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Fragmentation functions, one of the key components of the factorisation theorem used for computing cross sections for heavy-flavour hadron production, are typically constrained in e^+e^- and ep collisions due to their non-perturbative nature.

However, recent measurements of charm-hadron spectra and ratios at the LHC have questioned the universality of fragmentation functions across leptonic and hadronic collision systems.

This contribution presents measurements of heavy-flavour tagged jets and correlation measurements involving heavy-flavour hadrons. These measurements provide complementary, and more differential, insights on heavy-quark production, fragmentation and hadronisation with respect to single-particle observables.

The studies presented include measurements of the longitudinal jet momentum fraction carried by D^0 mesons and Λ_c^+ baryons reconstructed inside jets in pp collisions. Additionally, the observation of the dead-cone effect, influencing the heavy-quark parton shower and performed via the measurement of D^0 -tagged jets in pp collisions, will be discussed.

We will also present the measurements of azimuthal correlations between D mesons and charged particles in both pp and $p\text{-Pb}$ collisions, to provide a quantitative access to the angular profile, transverse-momentum and multiplicity distributions of the jets produced by the heavy-quark fragmentation. To gain a deeper understanding on possible difference in charm-quark hadronisation into mesons or baryons, the comparison of azimuthal correlations between Λ_c^+ baryons and D mesons with charged particles in pp collisions will be also discussed.

session

F. Heavy Flavor and Quarkonia

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