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Charm jet and correlation measurements with ALICE in pp and p – Pb collisions at the LHC

Content

Experimental measurements of the charm quark showering processes are an important test for the current understanding of QCD. At the same time, in heavy-ion collisions, charm quarks represent ideal probes for studying the Quark-Gluon Plasma (QGP), being them produced in the very early stages of the collision from a hard-parton scattering. In particular, angular correlation measurements are sensible to the charm production mechanisms and allow to study its hadronization processes by means of the angular distribution of the fragmentation products with respect to the tagged particle. In a complementar approach, jets measurements can give a more direct access to the initial parton kinematics.

The pp frame provides a powerful test for the validation of the MonteCarlo models reproducing the charm showering process and a reference for larger systems. Measurements in p - Pb, instead, can shed light on the modification induced by cold nuclear matter effects in both the heavy-flavour quark production and in the jet shape.

Measurements of the azimuthal correlation distribution between D mesons and charged particles in pp and p - Pb collisions at several centre-of-mass energies will be shown and compared with various MonteCarlo expectations. Moreover, results about azimuthal correlations between heavy-flavour decay electrons and hadrons in pp collisions at $\sqrt{s} = 5$ TeV will be introduced.

The production cross section of D^0 jets at $\sqrt{s} = 5.02$, 7, 13 TeV and Λ_C-tagged jets at $\sqrt{s} = 13$ TeV, together with their jet momentum fraction measurements will be shown. Results about the radial displacement in D^0 and Λ_C jets in pp at $\sqrt{s} = 13$ TeV will be also illustrated.

The nuclear modification factor of jets tagged with D^0 mesons or with with electrons from heavy-flavour hadron decays in p - Pb collisions at $\sqrt{s_{NN}} = 5$ TeV will be also shown.

Summary

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