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Particle identification techniques for measuring the hadron composition in charged jets from pp collisions with the ALICE experiment

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Jets provide experimental access to identify cascades of consecutive emission of partons from an initial hard QCD scattering.

The process of parton showering and subsequent hadronisation is broadly known as fragmentation.

Identified final state particles provide an enhanced sensitivity to the flavour dependence of fragmentation.

The ALICE detector at the LHC has excellent tracking and particle identification capabilities. In two independent analysis methods, we identify charged pions, kaons and (anti-)protons with transverse momenta from 150 MeV/c up to about 40 GeV/c using the specific energy loss (dE/dx) in the time projection chamber (TPC).

We measure the hadron composition ($\pi/K/p$) in charged jets at mid-rapidity in pp collisions at $\sqrt{s} = 7$ TeV. Two independent techniques are utilised, the TPC Coherent Fit and the Multi-Template Fit. The details of these techniques will be discussed as well as a comparison of the results to the particle type dependence of inclusive charged hadron production.

On behalf of collaboration:

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