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Jet production in pp and p-Pb collisions with the ALICE experiment at LHC

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Produced in a hard scattering an energetic parton will lead to a parton shower which will be fragmenting into a hadronic spray of particles called jet. The mass of the jet is sensitive to the initial virtuality of the parton at the origin of the shower. The jet fragmentation functions and their moments, describe the momentum distribution of hadrons inside a reconstructed jet. Their measurement is important for understanding the mechanisms of parton fragmentation. Well defined jet shapes observables, preserving collinear and infrared safety, like the first radial moment or the jet constituent momentum dispersion provide complementary information on the fragmentation process and can be compared to perturbative QCD (pQCD) calculations. This comparison can also be made with measurements of the differential jet production cross section and of jet properties in proton-proton (pp) collisions. Proton-Lead collisions allow to probe cold nuclear matter effects and both systems are also used as a reference to measurements of the properties of the medium created in Heavy Ion Collisions.

The central barrel of the ALICE detector at the LHC has unique tracking capabilities enabling to measure charged particles down to transverse momenta as low as 150 MeV/c and provides particle identification (PID). Combining information from the ALICE Time Projection Chamber and from the Electromagnetic Calorimeters EMCAL/DCAL allows to precisely measure the jet energy.

An overview of recent results on jet physics in pp and p-Pb collisions from the ALICE experiment at the LHC will be presented. The results will be compared to pQCD calculations at leading and next-to-leading order.

Experimental Collaboration

ALICE Collaboration

Presenter: SHABETAI, Alexandre (Centre National de la Recherche Scientifique (FR))**Session Classification:** QCD and hadronic physics**Track Classification:** QCD and Hadronic Physics