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Measurements of jet fragmentation functions and of their moments in pp collisions at $\sqrt{s}$ = 2.76 TeV with the ALICE detector.

Produced in a hard scattering at the early stage of the collision a highly energetic parton is first expected to lose energy in the medium before fragmenting into a hadronic spray of particles called jet. A detailed study of the modification of the jet structure and of its fragmentation pattern in vacuum and in medium should provide insights into the QGP properties.
The jet fragmentation functions describe the momentum distribution of hadrons inside a reconstructed jet. In proton-proton (pp) collisions their measurement is important for understanding the mechanisms of parton fragmentation. Such measurements also provide a test of perturbative Quantum Chromo Dynamics (pQCD) as well as a baseline for similar measurements in p-A collisions (revealing potential cold nuclear matter effects) or in A-A collisions (shedding light on the energy loss mechanisms in presence of a hot and dense medium). However, in heavy-ion collisions the presence of a large underlying event and of its event-by-event fluctuations makes the measurement of jet fragmentation functions a challenging task. The use of the fragmentation function moments has been proposed [1] as a way to overcome this difficulty.

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. This allows assessing possible modifications of the jet structure and helps constraining the jet fragmentation functions.

We will present the ALICE measurements of charged-jet fragmentation functions in pp collisions at $\sqrt{s}$ = 2.76 TeV. The first studies of fragmentation function moments will be discussed. The results will also be compared to model predictions.

[1] M. Cacciari et al. Eur.Phys.J C73 (2013) 2319 (arxiv:1209.6086), "Jet fragmentation function moments in heavy ion collisions".

Preferred Track

Jets and High pT Hadrons

Collaboration

ALICE

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