

Dijet fragmentation functions measured in PbPb collisions with CMS

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The energy loss of fast partons traversing the strongly interacting matter produced in high-energy nuclear collisions is one of the most interesting observables to probe the nature of the produced medium. Analyzing data from PbPb collisions at a center-of-mass energy of 2.76 TeV, recorded with the Compact Muon Solenoid (CMS) detector, parton energy loss is observed as a significant imbalance of dijet transverse momentum. To gain further understanding of the parton energy loss mechanism and how it manifests itself in the distribution of final state particles, parton fragmentation functions are studied for the leading and subleading jet in bins of centrality and dijet imbalance.

Dijets are reconstructed using the anti-kT jet algorithm, with the particle flow method of event reconstruction. Particle flow, which is applied to heavy-ion collisions for the first time in this measurement, allows for improved jet reconstruction by combining track and calorimeter information at the particle level. The fragmentation functions for leading and subleading jets are compared to model calculations and measurements in pp collisions. The results confirm and complement earlier CMS results based on calorimeter jets and yield a detailed picture of parton propagation in the hot QCD medium.

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