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Medium modification of dijets at LHC energies

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One of the manifestations of strong jet-energy loss in heavy-ion collisions is the large energy or p_{T} imbalance of jet-pairs that are produced back-to-back. It is generally argued that this asymmetry is caused by the difference in the path-length traversed by the jets in the medium. We utilize this magnitude of momentum imbalance (x_j) as a parameter to study the path-length effect of jet-energy loss on some intra-jet properties of leading and sub-leading jets, using a pQCD-inspired model for jet-medium interactions, JEWEL. We calculate the radial momentum density distributions for leading and subleading jets in proton-proton collisions at 5.02 TeV as a function of dijet momentum imbalance x_j and their modifications in Pb-Pb collisions at same energy. Our study shows, for events with large dijet-asymmetry, modifications to sub-leading jets are stronger than leading jets while, in symmetric events both leading and sub-leading jets are significantly modified. These observations may indicate an apparent role of path-length effect on the jet energy loss mechanisms.

Session

Heavy Ions and QCD

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