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Study of jet quenching using dijets in PbPb Collisions with CMS

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Jets are an important tool to probe the hot, dense medium that is produced in ultra-relativistic heavy ion collisions. The large collision energy at the LHC provides copious production of dijets with energies that can be cleanly identified above the heavy ion background. The multipurpose Compact Muon Solenoid (CMS) detector is well designed to measure these hard scattering processes with its high resolution calorimeters and high precision silicon tracker. Jet quenching was observed by a significant imbalance of dijet transverse momentum in PbPb collisions at a center-of-mass energy of = 2.76 TeV. The fraction of unbalanced dijets is found to increase strongly with increasing collision centrality. The dijet imbalance persists to the highest jet momenta studied, while angular distributions are only weakly modified. The redistribution of the quenched jet energy was studied using the transverse momentum balance of charged tracks projected onto the direction of the leading jet. In contrast to pp collisions, a large fraction of the momentum balance for asymmetric jets is found to be carried by low momentum particles at large angular distance to the jet axis.

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