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Study of jet quenching using photon-jet events in PbPb collisions at 2.76 TeV with CMS

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The first measurement of the transverse momentum (p_T) imbalance of isolated-photon+jet pairs in relativistic heavy ion collisions is reported. The analysis uses data from PbPb collisions at a center-of-mass energy of 2.76 TeV per nucleon pair and corresponding to an integrated luminosity of 150/ub recorded by the CMS experiment at the LHC in 2011. For events containing an isolated photon with transverse momentum $p_T > 60$ GeV/c and an associated jet with $p_T > 30$ GeV/c, the photon-jet p_T imbalance is studied as a function of collision centrality and compared to pp data and PYTHIA calculations at the same center-of-mass energy. Using the p_T of the isolated photon as an estimate of the energy of the associated parton at production, this measurement allows an unbiased characterization of the in-medium parton energy loss.

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