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Measurement of isolated photon-jet correlations in PbPb collisions at sqrt(s)=2.76TeV with CMS

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Modification of jets transitioning through the quark–gluon plasma (QGP), or quenching, has been well established by the RHIC and LHC data, using particle correlation and recently, reconstructed jets. At LHC, the first measurement of the jet quenching employed dijets. However, the advantage of the large yield of dijets is offset by loss of the perturbative final state information, as both jets interact with the medium. This also causes the observed high p_T dijet to be predominantly emitted from the surface. These shortcomings can be addressed by measuring isolated photon–jet correlation, where the directly produced photons carries the kinematic information before interaction with the QGP. We describe the measurement of the momentum imbalance and azimuthal correlation of isolated photon–jet pairs from sqrt(s_NN) = 2.76 TeV PbPb collisions at the LHC, and compare it to both the sqrt(s) = 2.76 TeV pp collision data and PYTHIA calculations. We discuss the characterization of the in-medium parton energy loss using the results.

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