

Studies of the jet axis decorrelation with photon-jet events in PbPb and pp collisions at $\sqrt{s_{NN}} = 5.02$ TeV

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search for medium-induced jet transverse momentum broadening is performed with isolated photon-tagged jet events in proton-proton (pp) and lead-lead (PbPb) collisions at nucleon-nucleon center-of-mass energy 5.02 TeV. The difference between jet axes as determined via energy-weight and winner-take-all clustering schemes, also known as the decorrelation of jet axes and denoted Δj , is measured for the first time in photon-tagged jet events. The pp and PbPb data samples were recorded with the CMS detector at the LHC and correspond to integrated luminosities of 1.69 nb^{-1} and 302 pb^{-1} respectively. Events are required to have a leading isolated photon with $60 < p_T^\gamma < 200$

GeVc, which are correlated with anti-kt $R = 0.3$ jets with $30 < p_T^{jet} < 100$

GeVc opposite in azimuthal angle. The PbPb results are reported as a function of collision centrality and compared to pp reference data. Jets with $p_T^{jet} < 60$

GeVc have consistent shape in PbPb relative to pp. However, jets with $p_T^{jet} > 60$

GeVc in central PbPb show signs of narrowing relative to pp. The results are compared to the \textit{Jewel} and \textit{Pyquen} theoretical models, which include different methods of energy loss.

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