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Constraints on nuclear parton distribution functions with dijets and isolated photons in pp, pPb and PbPb collisions at 5.02 TeV with the CMS detector

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Dijet measurements in pPb collisions have been shown to be one of the most important tools for constraining the gluon nuclear parton distribution functions (nPDFs) at large Bjorken-x. The dijet pseudorapidity distributions are measured as a function of dijet average transverse momentum in order to study the nuclear modifications of PDFs at various factorization scales. The final results from pp and pPb data samples are compared with next-to-leading-order perturbative QCD predictions obtained from both nucleon and nuclear PDFs. Likewise, high transverse momentum prompt photons produced directly from the hard scattering of two partons provide a direct test of perturbative QCD (pQCD) and the nPDFs, as colorless objects that do not interact with the medium. The fragmentation and decay contribution to the photon signal can be suppressed by imposing an isolation requirement. Isolated photon spectra are compared in pp and PbPb to extract the nuclear modification factor. In this talk, we show the latest constraints on nPDFs from studies of dijet pseudo-rapidity distributions in pp and pPb, and isolated photon spectra in pp and PbPb with the CMS detector.

Summary

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