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Observation of double J/ψ production in pPb collisions with CMS

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The first observation of the simultaneous production of two J/ψ mesons in proton-nucleus collisions will be presented. The analysis is based on a data sample recorded at a nucleon-nucleon center-of-mass energy of 8.16 TeV by the CMS experiment at the CERN LHC corresponding to an integrated luminosity of 174.6 nb^{-1}. The J/ψ mesons are reconstructed in their $\mu^+\mu^-$ decay channel for transverse momenta $p_{\mathrm{T}} > 6.5$ GeV and rapidity $|y| < 2.4$. The measured inclusive fiducial cross section $\sigma(\mathrm{pPb} \to \mathrm{J}/\psi\mathrm{J}/\psi + \mathrm{X})$ will be compared to perturbative quantum chromodynamics predictions at next-to-leading-order accuracy, including nuclear parton densities effects, for the production of two J/ψ mesons in single- (SPS) and double- (DPS) parton scatterings. A fit of the data to the expected $\mathrm{pPb} \to \mathrm{J}/\psi\mathrm{J}/\psi + \mathrm{X}$ SPS and DPS kinematic distributions of the two J/ψ mesons will provide new constraints on the effective DPS cross section of σ_{eff}, related to the transverse distribution of partons in the proton.

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