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Measurement of exclusive Y photoproduction from protons in p Pb collisions at √sNN=5.02TeV (Article) (Open Access)

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Abstract

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The exclusive photoproduction of Y (nS) meson states from protons, γp→Y(nS)p (with n = 1 , 2 , 3), is studied in ultraperipheral p Pb collisions at a centre-of-mass energy per nucleon pair of sNN=5.02TeV. The measurement is performed using the Y (nS) → μ + μ - decay mode, with data collected by the CMS experiment corresponding to an integrated luminosity of 32.6nb-1. Differential cross sections as functions of the Y (nS) transverse momentum squared pT2, and rapidity y, are presented. The Y (1 S) photoproduction cross section is extracted in the rapidity range | y| < 2.2 , which corresponds to photon–proton centre-of-mass energies in the range 91<Wγp<826GeV. The data are compared to theoretical predictions based on perturbative quantum chromodynamics and to previous measurements. © 2019, CERN for the benefit of the CMS collaboration.

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