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Exclusive $\pi^+\pi^-$ production in proton-proton collisions at 7 TeV

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Abstract

In this study, the exclusive measurement of charged pions are reported in the proton-proton collisions, in them, protons are not broken. This measurement is performed in Large Hadron Collider (LHC) using Compact Muon Solenoid (CMS) detector collected at a center-of-mass energy of $\sqrt{s}=7$ TeV and with an integrated luminosity of $450 \mu\text{b}^{-1}$. The dipion cross section is measured for single-pion transverse momentum $p_T > 0.2$ GeV/c and rapidity $|y| < 2$, is 20.5 ± 0.3 (stat) ± 3.1 (syst) ± 0.8 (lumi) μb . Besides, the differential cross sections as a function of $\pi^+\pi^-$ invariant mass are compared to phenomenological predictions.

Keywords: exclusive, pion, cross-section

For full article, refer to the Persian section