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Exclusive $\pi^+ \pi^-$ production at 7TeV

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We report a measurement of exclusive pion pair production in proton-proton collisions, dominated by $p+p \rightarrow p^{(*)} + \pi^+ \pi^- + p^{(*)}$, where the $\pi^+ \pi^-$ pair is produced at central rapidities y and the incident protons stay intact or dissociate without being detected. The measurement is performed with the CMS detector at the LHC, using an integrated luminosity of $450 \mu\text{b}^{-1}$ collected at a center-of-mass energy of $\sqrt{s} = 7 \text{ TeV}$ in 2010. The cross section measured in the phase space defined by $p_T(\pi) > 0.2 \text{ GeV}/c$ and $|y(\pi)| < 2$ is $20.5 \pm 0.3 \text{ (stat)} \pm 3.1 \text{ (syst)} \pm 0.8 \text{ (lumi)} \mu\text{b}$. The differential $\pi^+ \pi^-$ cross sections as a function of invariant mass, p_T , and y , and the single π cross section as a function of p_T , are also shown and compared to model predictions.

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