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Central Exclusive $\pi^+\pi^-$ Production in $p\bar{p}$ Collisions at $\sqrt{s} = 0.9$ and 1.96 TeV at the Tevatron

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We have measured exclusive $\pi^+\pi^-$ production in proton-antiproton collisions at $\sqrt{s} = 0.9$ and 1.96 TeV in the Collider Detector at Fermilab. We selected events with exactly two oppositely charged particles in $|\eta| < 1.3$, with no other particles detected in $|\eta| < 5.9$. The central $\pi^+\pi^-$ was required to have rapidity $|y| < 1$. By requiring no other charged particles, these events are dominated by double pomeron exchange, which constrains the quantum numbers of the central state. The data show resonance structures attributed to the f_0 and f_2 mesons. We place upper limits on exclusive $\chi_{c0} \rightarrow \pi^+\pi^-$ and $\chi_{c0} \rightarrow K^+K^-$.

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