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Study of the central exclusive production of $\pi^+\pi^-$, K^+K^- and $p\bar{p}$ pairs in proton-proton collisions at $\sqrt{s} = 510$ GeV with the STAR detector at RHIC

We report on the measurement of the central exclusive production process $pp \rightarrow pXp$ in proton-proton collisions at RHIC with the STAR detector at $\sqrt{s} = 510$ GeV. At this energy, this process is dominated by a double Pomeron exchange mechanism. The tracks of the centrally produced system X were reconstructed in the central detector of STAR, the Time Projection Chamber and the Time of Flight systems, and were identified using the ionization energy loss and the time of flight method. The diffractively scattered protons, moving intact inside the RHIC beam pipe after the collision, were measured in the Roman Pots system allowing full control of the interaction's kinematics and verification of its exclusivity. The preliminary results on the invariant mass distributions of centrally produced $\pi^+\pi^-$, K^+K^- and $p\bar{p}$ pairs measured within the STAR acceptance are presented.

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Collaboration / Activity

The STAR collaboration

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