RECENT RESULTS ON CENTRAL EXCLUSIVE PRODUCTION WITH THE STAR DETECTOR AT RHIC

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We report on the measurement of the central exclusive production process $pp \rightarrow ph^+h^-p$ in proton-proton collisions at two different center-of-mass energies, namely $\sqrt{s} = 200$ GeV and $\sqrt{s} = 510$ GeV, with the STAR detector at RHIC. At these energies, the process is dominated by a double Pomeron exchange mechanism. The charged particle pairs were constructed by combining oppositely charged tracks within the central detector of STAR, the Time Projection Chamber and the Time of Flight systems. The pairs were identified using the ionization energy loss and the time of flight method. Additionally, the diffractively scattered protons, which remain 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. In this talk, we present differential cross sections for centrally produced $\pi^+\pi^-$, K^+K^-, and $p\bar{p}$ pairs measured within the STAR acceptance at $\sqrt{s} = 200$ GeV together with the preliminary results on the measurement of the same physics process at the higher center-of-mass energy, $\sqrt{s} = 510$ GeV.