

1 Recent results on Central Exclusive Production
2 with the STAR detector

3 Rafał Sikora for the STAR Collaboration

4 **Abstract**

5 We present results on the Central Exclusive Production of charged particle pairs h^+h^- ($h = \pi, K, p$) obtained in the STAR experiment at RHIC
6 in proton-proton collisions at center-of-mass energy of $\sqrt{s} = 200$ GeV. All
7 final-state particles of the process $pp \rightarrow p' + h^+h^- + p'$ were reconstructed,
8 including forward-scattered protons detected in the Roman Pot system.
9 As a result, the Double Pomeron Exchange (DPE) events were selected
10 and the non-exclusive backgrounds were efficiently rejected.
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12 Differential fiducial cross sections were measured as functions of observables related to the central hadronic final state and to the forward-scattered protons. The measured cross sections were compared to phenomenological predictions based on the DPE model. Structures observed in the mass spectra of $\pi^+\pi^-$ and K^+K^- pairs were found consistent with the DPE model, while angular distributions of pions suggested a dominant spin-0 contribution to $\pi^+\pi^-$ production.
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19 For $\pi^+\pi^-$ production, the fiducial cross section was extrapolated to the
20 Lorentz-invariant region and was successfully modeled assuming the continuum production and at least three resonances, the $f_0(980)$, $f_2(1270)$, and $f_0(1500)$, with a possible small contribution from the $f_0(1370)$. Fits to the extrapolated differential cross section as a function of squared four-momentum transfers in proton vertices enabled extraction of the exponential slope parameters in several bins of the invariant mass of $\pi^+\pi^-$ pairs. These parameters are sensitive to the size of the interaction region.
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27 We also present preliminary results on the measurement of the same
28 physics process at higher $\sqrt{s} = 510$ GeV. The data demonstrate features
29 similar to those observed at $\sqrt{s} = 200$ GeV.