

# XXVIII International Workshop on Deep-Inelastic Scattering and Related Subjects



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## Recent results on Central Exclusive Production with the STAR detector

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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 in proton-proton collisions at center-of-mass energy of  $\sqrt{s} = 200$  GeV. All final-state particles of the process  $pp \rightarrow p' + h^+h^- + p'$  were reconstructed, including forward-scattered protons detected in the Roman Pot system. As a result, the Double Pomeron Exchange (DPE) events were selected and the non-exclusive backgrounds were efficiently rejected.

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.

For  $\pi^+\pi^-$  production, the fiducial cross section was extrapolated to the 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.

We also present preliminary results on the measurement of the same physics process at higher  $\sqrt{s} = 510$  GeV. The data demonstrate features similar to those observed at  $\sqrt{s} = 200$  GeV.

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