

First results from CLAS12 on $\pi^+\pi^-p$ electroproduction in fully exclusive kinematic

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Studies of the excited nucleon state spectrum and structure offer unique insight into the dynamics of strong interaction in the regime of large QCD running coupling, i.e. the regime of strong QCD. The experimental program at Hall B in Jefferson Laboratory with the CLAS detector using electron and photon beams has provided the first and only available in the world results on electroexcitation amplitudes ($\gamma_e p N^*$ electrocouplings) for the most resonances in the mass range up to 1.8 GeV and photon virtuality up to $Q^2 < 5.0 \text{ GeV}^2$. Experiments with the CLAS12 detector will extend our knowledge on the N^* spectra, in particular, in the mass range above 2.0 GeV. Studies of $\pi^+\pi^-p$ electroproduction represent an important part of these efforts. The first results of studying this complex electroproduction channel will be outlined in the talk.

The analysis of the 6.5 GeV data set obtained by Run Group-K (RG-K) will be presented. The $\pi^+\pi^-p$ channel's event selection has been performed in accordance with the RG-K's general procedures. Using Monte Carlo simulation several further selections on different kinematic variables have been developed which allowed to observe resonance structures in the missing mass distributions.

The expected results will allow us to explore the spectrum of high-lying resonances contributing to the $\pi^+\pi^-p$ electroproduction including the search for predicted in quark models but still not observed in experiments so-called "missing" resonances and the new expected states of hadron matter, so-called hybrid baryons with glue as an active structural component.

The speaker is a student or young scientist

Yes

Section

1. Intermediate and high energies, heavy ion collisions

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