

Exclusive $\pi^0 p$ electroproduction in the resonance region with CLAS12

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The excitation of nucleon resonances (N^*) by real and virtual photons is an important source of information on the structure of excited nucleon states and dynamics of the nonperturbative strong interaction underlying the resonance generation from quarks and gluons [1, 2]. This information has already become available from the nucleon resonance electroexcitation amplitudes ($\gamma_v p N^*$ electrocouplings). Exclusive $p\pi^0$ electroproduction channel is the important source of information on $\gamma_v p N^*$ electrocouplings [3]. The CLAS12 detector [4] is the only facility in the world capable to provide information on $\gamma_v p N^*$ electrocouplings from the data of $\pi^0 p$ channel at still almost unexplored range of photon virtualities $Q^2 > 5.0 \text{ GeV}^2$ and to extend the studies of N^* in the mass range $> 2.0 \text{ GeV}$.

The preliminary results from analysis $\pi^0 p$ electroproduction data measured with CLAS12 will be presented in the talk. Application of the exclusive event selection procedure, developed based on MC simulation, to the CLAS12 $\pi^0 p$ data analysis provided high purity sample of $\pi^0 p$ events in the kinematic range covered by the measurements in RG-K run. The results obtained are paving a way for extraction of beam asymmetry and eventually cross sections for exclusive $\pi^0 p$ electroproduction measured with the CLAS12.

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