RECENT RESULTS ON $\pi^+\pi^-$ ELECTROPRODUCTION OFF PROTONS

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Measurements of $\pi^+\pi^-$ electroproduction cross sections represent an important part of the program to study the structure of nucleon resonances with CLAS Ref. [1]. This program extends the study of nucleon resonance transition amplitudes (electrocouplings) to masses up to 1.8 GeV and to photon virtualities (Q^2) up to 5.0 GeV^2. These data provide access to the active degrees of freedom in the N* structure at different distance scales, and allow the study of non-perturbative strong interaction mechanisms that are responsible for the formation of the ground and excited nucleon states Ref. [2].

In this talk, we will present cross section measurements of the process $ep \to ep\pi^+\pi^-$ that continue our previous studies of this exclusive channel using the CLAS detector Ref. [3, 4]. Our preliminary data provide complementary kinematical coverage of $1.4 < W < 1.8$ GeV and $0.4 < Q^2 < 1.1$ GeV^2, in comparison with previously available measurements, and enable much finer binning in Q^2. This kinematical region covers high lying nucleon resonances such as $S_{31}(1620)$, $S_{11}(1650)$, $D_{33}(1700)$, and $P_{13}(1720)$, whose hadronic decay widths into $\pi\Delta$ and ρp can be extracted from the same data set, as these resonances decay preferentially to $N\pi\pi$ final states. Furthermore, electrocouplings of the $S_{11}(1650)$ and $F_{15}(1685)$ resonances previously measured in $N\pi$ electroproduction will be obtained independently from the $N\pi\pi$ data.

The analysis of these data within the framework of the JLAB-MSU reaction model (JM) Ref. [5] will improve our knowledge of the Q^2 evolution of the $\gamma_v NN^*$ transition amplitudes considerably, in particular for resonances with masses above 1.6 GeV.

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