$\gamma_v NN^*$ **Transition Amplitudes and Excited Baryon Structure from CLAS**

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Studying excited nucleon structure through exclusive-meson electroproduction reactions is key for understanding the nature of the strong interaction in the non-perturbative regime. With its nearly complete coverage of the final-state phase space, the CLAS detector at JLab has provided the lion's share of the world's meson-electroproduction data for differential cross sections and the asymmetries arising from single- and double-polarization observables. Electrocouplings for most of the excited nucleon states (N^*) in mass range of up to 1.8 GeV have been determined from several analyses of the CLAS data for photon virtualities (Q^2) up to 5.0 GeV^2 for the π^+n, π^0p, and ηp channels [1] as well as for the $\pi^+\pi^-p$ reaction for $Q^2 < 1.5$ GeV^2 [2, 3].

Physics analyses of these N^* electrocouplings [1, 2] have revealed that the structure of excited nucleon is formed of an internal core of dressed quarks with an external meson-baryon cloud. Our N^*-electrocoupling results afford access to the non-perturbative strong interaction responsible for generating the different N^* states. A dedicated experiment will run after the 12 GeV upgrade to JLab on extraction of the N^* electrocouplings in the yet unexplored region of high photon virtualities ranging from 5.0 to 12 GeV^2. The anticipated results are of particular importance in providing a understanding of the nature of confinement and dynamical chiral symmetry breaking in baryons based upon the QCD [3].

References

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