Contribution ID: **49** Type: **Invited/Leading contribution**

Studies of Excited Nucleon States via Exclusive KY Electroproduction

Detailed exploration of the spectrum and structure of excited nucleon states from different exclusive reactions in terms of their electro-excitation amplitudes (or $\gamma_v pN^*$ electrocouplings) as a function of four-momentum transfer Q^2 is essential to probe the nature of the non-perturbative strong interaction responsible for their generation. Studies to determine the electrocouplings have been completed from analyses of CLAS πN, ηN, and $\pi\pi N$ data with beam energies up to 6˜GeV and $Q^2 < 5$˜GeV^2. This work has provided the first and only available results for most N^* states up to 1.8˜GeV. Recent and ongoing analyses of these N^* electrocouplings within the continuum Schwinger method have shown a remarkable accord with data, leading to improved insights into the dynamical origins for the emergence of hadron mass. The new experiments with CLAS12 at beam energies up to 11˜GeV are expanding the available data to $Q^2 \approx 12$˜GeV^2. Advances in understanding the spectrum of N^* states and their structure based on these data, as well as data utilizing the KY channels that couple to higher-lying N^* states, will be discussed. The KY electroproduction data will be analyzed within advanced reaction models to extract the electrocouplings for the most prominent contributing states. The expected results from CLAS12 will allow for the exploration of strong interaction dynamics at distance scales where the transition between quark-gluon confinement and pQCD is expected, and where the dominant part of hadron mass is generated.

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Track Classification: Spectroscopy of hadrons