

3D Nucleon Structure and Deeply Virtual Meson Production

Valery Kubarovsky
Jefferson Lab, USA

Deeply virtual Compton scattering (DVCS), and deeply virtual meson electroproduction (DVMP) were recognized as important contributors to the study of the three-dimensional structure of the nucleon in terms of the quark and gluon fields. Exclusive electron scattering reactions at high momentum transfers directly related to Generalized Parton Distributions (GPDs). Most reactions studied, such as DVCS or vector meson electroproduction, are primarily sensitive to the chiral-even GPDs. The chiral-odd GPDs are difficult to access since hard subprocesses with the quark spin-flip are suppressed. It turns out that pseudoscalar meson electroproduction, and especially π^0 and η production, were identified as especially sensitive to the parton helicity-flip subprocesses. Dedicated experiments to study Deeply Virtual Meson Production have been carried out at Jefferson Lab. The cross sections and asymmetries of the exclusive pseudoscalar meson electroproduction processes in a very wide kinematic range of Q^2 , x_B and t have been measured with CLAS. The comparison of these data with the theoretical models will be presented. The extraction of the transversity GPDs parameters using global fit of the world data will be discussed in the report. The review of the current 12-GeV Jlab program and expected results will be discussed in the report.