Measurement of Spin Structure Functions with CLAS at Jefferson Lab

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Spin structure functions of the nucleon in the region of large x and small to moderate Q^2 continue to be of high interest currently. Among the topics one can study in this kinematic regime are spin-dependent resonance transition amplitudes and their interference with each other and the non-resonant background, the behavior of the asymmetry A_1 at large x, and the presence or absence of quark-hadron duality in spin structure functions. The first moment of the spin structure function g_1 goes through a rapid transition from the photon point ($Q^2 = 0$), where it is constrained by the Gerasimov-Drell-Hearn sum rule, to the deep inelastic limit where it is sensitive to the nucleon spin fraction carried by quarks. This opens up the possibility to study the transition from hadronic to quark degrees of freedom over a wide range of Q^2. Recently, we concluded a large experimental program to measure these observables with polarized proton and deuteron targets at Jefferson Lab. A highly polarized electron beam, solid polarized NH_3 and ND_3 targets and the CEBAF Large Acceptance Spectrometer (CLAS) in Hall B were used to accumulate over 23 billion events with 4 different beam energies of 1.6, 2.5, 4.2 and 5.7 GeV. In this talk, results from the 1.6 and 5.7 GeV data will be presented. Details of a new experiment to measure spin structure functions with an 11 GeV electron beam will be described. An overview of a new proposal to measure the EMC effect in spin structure functions will be discussed.