Down Quark Polarization Measurements with CLAS12

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Perturbative Quantum Chromodynamics (pQCD) predicts that the spin of a valence quark will align with the net spin of the nucleon as the quark begins to carry most of the nucleons momentum. Previous measurements have yet to clearly illustrate this prediction for the down quark. A comprehensive program to measure deep inelastic electron scattering using a polarized electron beam and polarized proton and deuteron targets will soon be performed using the recently upgraded facilities at Jefferson Lab. This program will facilitate the extraction of the down quark polarization within a nucleon to a kinematic regime where the struck quark may carry up to 80% of the nucleons momentum using a combination of the accelerator's 12 GeV polarized electron beam and the upgraded detector system in Jefferson Lab's Hall B. The anticipated precision of these measurements and their potential as a test of the pQCD prediction above will be presented.