Neutron Spin Structure in the Resonance Region and Quark-Hadron Duality

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Quark-Hadron duality has been experimentally demonstrated for the spin independent structure function F_2. Duality is observed when, at the same value of scaling variable x_{bj}, the smooth scaling curve at high momentum transfer becomes an average over the resonances at lower momentum transfer. Jefferson Lab experiment 01-012 used the polarized ^{3}He target in Hall A for an extraction of the neutron spin structure function g_1^n and the virtual photon asymmetry A_1^n in the resonance region over a Q^2 range from 1.0 to 4.0 $(GeV/c)^2$. Data from E01-012 combined with Deep Inelastic Scattering data will provide a test of quark-hadron duality predictions for g_1^n and A_1^n. This will be one of the first tests of the spin and flavor dependence of quark-hadron duality. The demonstration of duality for spin structure functions will enable us to use the resonance data to study the nucleon spin structure in the large x_{bj} region.