

Nucleon resonances spin structure

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We have measured the spin structure of the nucleon in the region of the resonances (final state mass $W < 2$ GeV) at intermediate four-momentum transfer $Q^2 \sim 1.3$ (GeV/c)². Double-spin inclusive asymmetries for longitudinally polarized 5.75 GeV electrons incident on longitudinal and transverse solid polarized targets were measured in Jefferson Lab's Hall C. Frozen ammonia and deuterated ammonia were used as the polarized materials. The neutron spin structure is extracted from the proton and deuteron asymmetries. We present new results for the proton and deuteron spin asymmetries A_1 and A_2 and spin structure functions g_1 and g_2 , and preliminary results for the neutron asymmetries. Sum rules for the spin structure functions (extended Gerasimov-Drell-Hearn, Burkhardt-Cottingham, third moments of $g_2\text{-bar}(x) = g_2(x) - g_2^{\text{twist-2}}(x)$, Bjorken and Efremov-Leader-Teryaev) have been calculated and are compared to theoretical predictions. These are the first measurements of the transverse proton and deuteron spin structure in the resonances.

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