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Quark-Hadron Duality on the Neutron (^{3}He) Spin Structure PATRICIA SOLVIGNON, Argonne National Laboratory, THE JEFFERSON LAB HALL A COLLABORATION — In 1970, Bloom and Gilman made a surprising observation that the spin-independent structure function F_2 measured in the resonance region averages on the curve determined by the deep inelastic scattering data when a proper scaling variable is used. This phenomenon is called quark-hadron duality and links the non-pertubative and perturbative regimes of QCD. Recently, quark-hadron duality has been quantitatively established for the spin-independent structure function F_2 of the proton in Jefferson Lab Hall C. New results are also coming out for the spin structure function g_1 on the proton and the deuteron from Halls B and C. Jefferson Lab Hall A experiment E01-012 used the polarized ^{3}He target for a measurement of the spin structure function $g_1^{^3\mathrm{He}}$ and the virtual photon asymmetry $A_1^{^3\mathrm{He}}$ in the resonance region over a Q^2 range from 1.0 to 4.0 $(GeV/c)^2$. Data from E01-012 compared with deep inelastic scattering data will provide a test of quark-hadron duality for the spin structure functions of the neutron. 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 help to study the transition from partonic to hadronic degrees of freedom and to quantifie the size of higher twist effects. Details of the experiment and final results will be presented.

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