NEUTRON PARTON STRUCTURE AND THE LIGHT-FRONT SPECTRAL FUNCTION OF ^{3}He

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After the 12 GeV upgrade, several experiments involving ^{3}He targets will be performed at JLab to extract information on the neutron parton structure for the flavor decomposition of transverse momentum dependent parton distributions (TMDs). The parton TMDs in the neutron will be studied through polarized SIDIS experiments off ^{3}He, where a high-energy pion is detected in coincidence with the scattered electron. To reliably disentangle nuclear and partonic degrees of freedom an accurate theoretical description of the process is needed. In a recent paper the SIDIS process off ^{3}He was studied within non-relativistic nuclear dynamics and the final state interaction between the observed pion and the remnant was described through a distorted spin-dependent spectral function. In the talk it will be shown that actually both Collins and Sivers neutron asymmetries can be safely extracted from the measured Collins and Sivers asymmetries off ^{3}He.

This talk addresses also an approach for the relativistic description of nuclear dynamics based on the Light-front (LF) Hamiltonian Dynamics. The key quantity is the LF spectral function, which allows normalization and momentum sum rule to be satisfied at the same time. Among the preliminary results, a study will be presented on the role of relativity in the EMC effect in ^{3}He, for which JLab data have been taken at 6 GeV.

Our final goal is to evaluate SIDIS cross sections off ^{3}He taking into account both the relativity and the FSI between the observed pion and the remnant, through our LF spin-dependent spectral function.