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Nuclear Effects in Polarized ^{3}He Structure Functions and Asymmetries[1] JACOB ETHIER, Stetson University, DeLand, FL, WALLY MELNITCHOUK, Thomas Jefferson National Accelerator Facility, Newport News, VA — In polarized electron-nucleon scattering, spin structure functions (SSFs) give information about quark spin contributions to the total nucleon spin. Since free neutron targets are nonexistent, nuclei such as ^{3}He (two protons and one neutron) and deuterium (one proton and one neutron) are commonly used as effective neutron targets to gather SF data. Given that the neutron is not free but is bound inside the nucleus results in consequences for its internal quark structure. The aim of this work was to study theoretical models of ^{3}He SSFs and polarization asymmetries (ratios of polarized to unpolarized SFs) that account for these bound nucleon effects so that neutron information can be reliably extracted from nuclear data. The ^{3}He SSFs and asymmetries can be calculated by smearing the proton and neutron SSFs with the light-cone momentum distributions of the nucleons in the nucleus. The full calculations of the ^{3}He SSFs and asymmetries reveal a distinct difference in resonance structure compared to the free nucleon SSFs.

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