

DIS on a polarized deuteron with spectator nucleon tagging

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Tagged DIS measurements on a polarized deuteron are possible at an electron-ion collider (EIC) with forward proton and neutron detectors. Using the pole extrapolation method, where one extrapolates to the on-shell pole of the struck nucleon, this would enable the extraction of high precision neutron (spin) structure functions in a wide range of x, Q^2 . We outline the general form of the SIDIS cross section on a polarized spin 1 target, which has 41 structure functions. We show calculations in a factorized model using the NN light-front wave function for the deuteron for unpolarized and polarized observables, with focus on the extraction of g_1 for the quasi-free neutron at an EIC. We discuss the influence of nuclear final-state interactions and shadowing effects on observables and comment on possible extensions such as medium modifications, exclusive channels and nuclei with $A > 2$.

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