

Abstract Submitted
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Neutron structure with (un)polarized deuterons and forward spectator tagging at the Electron-Ion Collider KIJUN PARK, CHARLES HYDE, Old Dominion University, CHRISTIAN WEISS, DOUGLAS HIGINBOTHAM, PAWEL NADEL-TURONSKI, Jefferson Lab — An Electron-Ion Collider (EIC) would enable novel measurements of neutron structure through deep-inelastic electron-deuteron scattering with coincidence tagging of the forward-moving spectator proton. The free neutron structure functions can be obtained by extrapolating the measured recoil momentum distributions to the on-shell point. Such measurements provide essential information for the flavor separation of the nucleon parton densities, the nucleon spin decomposition, and precision studies of QCD evolution in the flavor-singlet and nonsinglet sectors. The EMC effect in light nuclei can be elucidated by measuring the recoil momentum dependence of the nuclear modification. A Jefferson Lab LDRD project has supported a study of neutron structure measurements with spectator tagging at an EIC, with Monte Carlo simulation of the physical processes and the accelerator and detector requirements. We present results of a model-independent extraction of the free neutron structure function F_2^n , as well as the spin structure function g_1^n , through on-shell extrapolation in the spectator momentum.

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