Neutron structure via forward tagging of the $eD \rightarrow e'NX$ **reaction at the Electron-Ion Collider** KIJUN PARK, Old Dominion University, JEFFERSON LAB COLLABORATION — I report about the status of a Jefferson Lab 2014 LDRD project exploring the physics potential of deep-inelastic scattering on polarized light ions with forward spectator nucleon tagging with the proposed Electron-Ion Collider (EIC). Such measurements offer unique capabilities for precision studies of neutron spin structure, nuclear modifications of partonic structure, and multiple scattering effects at high energies. We simulate the tagged processes on the D as a function of the Q^2, x_{Bj}, and the spectator momenta. We quantify the effects of the intrinsic motion of beam particles, as well as the EIC detector acceptance and resolution, on the projected observables. We present results of a model-independent extraction of the free neutron structure function F_2^n through on-shell extrapolation in the spectator momentum [MSargsian]. Comparison of the bound proton structure function F_2^p with the free proton result provides a crucial test of the method and allows for an unambiguous identification of nuclear binding effects. Future work will extend these studies to polarized deuterons (spin structure functions g_1^n and g_1^p) and hard exclusive processes (GPDs), and model the final-state detection through a full GEANT4-based simulation.

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