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**Polarized Electron - Polarized Deuteron Deep-Inelastic Scattering in Electron-Ion Collider with Tagging** MISAK SARGSIAN, Florida International University, WIM COSYN, Ghent University, Belgium, CHRISTIAN WEISS, Jefferson Lab — For the past several years there have been an intensive research and development for the possible electron-ion collider that will be able to probe deep inelastic processes at unprecedentedly high energies in eA channel. One of the important advantages of the collider kinematics in DIS processes is the possibility for an unambiguous separation of hadrons emerging from DIS and hadrons fragmenting from the target nucleus. This creates a unique possibility for tagging the interacting nucleon with the recoil slow fragments in the DIS process. The situation is most clean for the deuteron target in which case the recoil particle is a nucleon. In addition, the possibility of having polarized deuteron beams will create unprecedented opportunities in probing polarization degrees of freedom for parton distributions in the interacting bound nucleon. In this work we develop a theoretical framework for the polarized electron-polarized deuteron deep inelastic scattering in which the recoil nucleon is detected in the target fragmentation region. Two main contributions for which theoretical models are developed are the plane-wave impulse approximation, in which no reinteractions are taking place between the final state products of DIS and the recoil nucleon.

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