

DIS on the (polarized) deuteron: opportunities beyond inclusive scattering.

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We consider the process of DIS on a (polarized) deuteron with detection of a nucleon in the nuclear fragmentation region (spectator tagging). Its advantages and complications compared to inclusive scattering are discussed with emphasis on the method of pole extrapolation to obtain on-shell nucleon structure in a model independent way and the issue of nuclear final-state interactions (FSIs). The general structure of the cross section for SIDIS on a spin 1 target is outlined, which has additional tensor polarisation structures compared to the familiar spin 1/2 (nucleon) case. We introduce a factorized model, where deuteron structure is described using the NN light-front wave function and which accounts for relativistic spin effects and can include FSIs in the high- x region. Applications discussed in the model are a) comparison with existing unpolarized measurements (DeepS & BONuS @JLab); b) pole extrapolation of F_{2n} using the BONuS data; c) neutron spin structure measurements possible at an EIC; d) tensor polarized deuteron structure.