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Probing deuteron short-range structure with tensor polarization and spectator tagging WIM COSYN, Florida International University, CHRISTIAN WEISS, Jefferson Lab — Deep-inelastic scattering on a polarized deuteron with detection of the spectator nucleon (spectator tagging) offers new opportunities for exploring the short-range structure of the deuteron and the properties of nucleon interactions. Tensor-polarized observables are unique to the interacting two-nucleon system (spin-1) and proportional to the D-wave amplitude of the internal motion. The detection of the spectator nucleon fixes the momentum in the initial deuteron configuration and allows one to control the relative magnitude of S- and D-waves. This makes it possible to measure the tensor-polarized asymmetry A_{zz} in configurations where it attains its maximal values of +1 and -2, resulting in a large tensor-polarized signal. (In contrast, in inclusive DIS measurements without spectator tagging one measures only an average over all deuteron configurations, in which the tensor-polarized signal is reduced.) We comment on the feasibility of tensor-polarized tagging measurements at the future electron-ion collider with forward proton/neutron detectors, and the influence of nuclear final-state interactions on the tensor observables.

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