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Studying Nucleon Spin Structure at the Spin Physics Detector (SPD)

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Primary focus of the Spin Physics Detector (SPD) at the Nuclotron based Ion Collider Facility (NICA) is to study nucleon spin structure in the three dimensions. At the SPD, measurements of cross-sections and spin asymmetries sensitive to the unpolarized and various polarized (helicity, Sivers, Boer-Mulders) gluon distributions will be performed. Measurements from collisions of polarized protons (deuterons) of energies up to 27 (13.5) GeV with luminosity up to $10^{32} \text{ cm}^{-2} \text{ s}^{-1}$ ($10^{31} \text{ cm}^{-2} \text{ s}^{-1}$) will provide data in the moderate and large Bjorken- x , making them complementary to the present (i.e. STAR, PHENIX) and future (i.e. EIC, AFTER) high energy spin experiments. This will allow for a much improved global analyses and understanding of spin structures of a basic building block of Nature. With polarized deuteron collisions, SPD will be a unique laboratory for probing tensor polarized gluon distr

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