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Probing the QCD origin of Nuclear Forces at JLab12 & EIC¹

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We review several directions of studies of QCD origin of nuclear forces at EIC. The main emphasis is given to the studies that will be initiated within the 12 GeV fixed target program of the Jefferson Lab and will be continued at EIC energies and collider kinematics. Such studies include the probing QCD content of the NN repulsive core, the role of the gluons in the formation of nuclear forces at short distances, hidden-color component of the nuclear wave function, the dynamics of the quark - hadron transition and hadronization in deep-inelastic semi-inclusive processes involving nuclear targets. We demonstrate how the collider kinematics provide an unprecedented advantage in tagging high momentum components of the nuclear wave function at momenta that are currently considered inaccessible. Utilizing these kinematics we present the theoretical estimates of the several key processes and emphasize their discovery power in probing different aspects of the QCD dynamics of the nuclear forces at short distances.

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