

Heavy flavor measurements at the EIC with an all Silicon tracker

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Heavy quark production in deep inelastic scattering at the leading order proceeds via the Photon Gluon Fusion process and thus provides a valuable tool to constrain the gluon distributions inside the nucleon/ion probed. Measurements of heavy flavor production can significantly improve the constraints on nuclear gluon distribution functions and gluon polarization in protons. Heavy flavor hadron pair measurements can offer direct constraints on the Transverse Momentum Dependent gluon distributions (gluon TMDs) in protons. Recent studies also propose heavy flavor hadrons as a sensitive probe to study the hadronization mechanism. In this talk we will discuss the prospects of heavy flavor measurements at a future EIC detector with an all Silicon tracker. The impact of the heavy flavor hadron reconstruction on the design requirements of the detector is studied, particularly on the particle identification and secondary vertex reconstruction capabilities. Statistical uncertainty projections for various physics observables in both polarized and unpolarized collisions at the EIC will be discussed.