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Probing gluon distributions with heavy quark pairs at the EIC

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Heavy quark production in deep inelastic scattering proceeds via the Boson Gluon Fusion process and thus provides constraints to the gluon distributions inside the nucleon/ion probed. Measurements of charm and anti-charm hadron pair production in deep inelastic scatterings can be used to probe the gluon transverse momentum dependent distributions (TMDs) in the nucleon/ion. In this talk we will discuss open charm hadron pair reconstruction studies with an all silicon detector design for a future Electron Ion Collider (EIC) experiment, and utilizing them for measuring the TMDs. Statistical uncertainty projections for physics observables in both polarized and unpolarized collisions at the EIC will be discussed.

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