

Gluon TMDs in J/ψ + jet production at an EIC

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The process $e + p \rightarrow e + J/\psi + \text{jet} + X$, where the proton can be polarized, is computed in the transverse momentum-dependent (TMD) factorization framework. This framework is applicable in the regime where the J/ψ - jet pair is produced almost back-to-back in the transverse plane, such that its total transverse momentum is a measure of the primordial k_t of the parton. We show that in the kinematical regime of our interest, and at the energies of the planned Electron-Ion Collider (EIC), the contribution of the quark channel is strongly suppressed, such that the cross section can be analyzed solely in function of gluon TMDs. We demonstrate how these gluon TMDs could be disentangled using the various azimuthal asymmetries in the cross section, and comment on the influence of the different production mechanisms of the quarkonium (Color Singlet Model vs Non-Relativistic QCD) on our results.

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