

Large- P_T inclusive photoproduction of J/ψ in electron-proton collisions at HERA and the EIC

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We study the inclusive J/ψ production at large transverse momenta at lepton-hadron colliders in the limit when the exchange photon is quasi real, also referred to as photoproduction. Our computation includes the leading- PT leading- v next-to-leading α_s corrections. In particular, we consider the contribution from J/ψ plus another charm quark, by employing for the first time in quarkonium photoproduction the variable-flavour-number scheme. We also include a QED-induced contribution via an off-shell photon which remained ignored in the literature and which we show to be the leading contribution at high PT within the reach of the EIC. In turn, we use our computation of J/ψ +charm to demonstrate its observability at the future EIC and the EIC sensitivity to probe the non-perturbative charm content of the proton at high x .

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