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TMD shape function and its effect in J/ψ photo- and electroproduction

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In this talk, I present predictions for the unpolarized differential cross-section of J/ψ electroproduction at the Electron-Ion Collider (EIC) in the low transverse momentum region. I also compare with the experimental data for photoproduction at HERA. The calculation was performed at next-to-leading order (NLO) in the hard function and resummed at next-to-next-to-leading logarithmic accuracy in both the gluon transverse momentum dependent (TMD) parton distribution function and the TMD shape function with the shape function non-cusp anomalous dimension at NLO. The analysis emphasizes the impact of the TMD shape function on the theoretical predictions, with a focus on modeling choices and the associated theoretical uncertainties coming from different sources as scale variation and LDME sets. Finally, preliminary results for other relevant processes are also presented and briefly discussed.

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