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cos2ϕ azimuthal asymmetry in a back-to-back J/ψ and jet electroproduction at the EIC

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We present an estimate of the cos2ϕ azimuthal asymmetry in back-to-back production of J/ψ and a jet in the process: $e\ p \rightarrow e\ J/\psi\ Jet\ X$. We calculate the asymmetry using TMD factorization in a generalized parton model (GPM) framework and use non-relativistic QCD (NRQCD) to obtain the J/ψ production rate. We incorporate both color singlet and color octet contributions to the asymmetry. This asymmetry will be useful to probe the linearly polarized gluon distribution at the future electron-ion collider (EIC). We present numerical estimates of the asymmetry using two recent parametrization of the gluon TMDs, namely spectator model and Gaussian parameterization. We investigate the effect of TMD evolution of gluon TMDs on the asymmetry.

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