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Single spin asymmetry at two loops in SIDIS

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In [1] it was shown that gT(x) can contribute to a Single Spin Asymmetry in SIDIS. This contribution arises through certain two-loop diagrams which provide the necessary imaginary phase for the asymmetry. In this talk, I discuss our work in [2] where we presented numerical estimates of the above asymmetry at the planned Electron-Ion Collider. Therein we also included an analogous gluon-initiated contribution arising from the G3T(x) distribution.
In our framework, both gT(x) and G3T(x) were considered in the Wilczek-Wandzura (WW) approximation, i.e., as integrals of the quark and gluon helicity distributions respectively. Hence these contributions to the asymmetry can be evaluated unambiguously without inputs from unknown parameters such as genuine twist-3 distributions. We find that the asymmetry associated with the sin(phi_h - phi_S), sin(phi_S) and sin(2phi_h-phi_S) harmonics can reach up to 1-2% at the Electron-Ion Collider.

[1] S. Benić, Y. Hatta, H-n. Li, D.-J. Yang, Phys. Rev. D 100 (2019) 9, 094027
[2] S. Benić, Y. Hatta, A. K, H-n. Li, Phys. Rev. D 104 (2021), 094027

Submitted on behalf of a Collaboration?

No

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