

Semi-inclusive deep inelastic scattering in Wandzura-Wilczek-type approximation

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Abstract. We present the complete cross-section for the production of unpolarized hadrons in semi-inclusive deep-inelastic scattering up to power-suppressed $\mathcal{O}(1/Q^2)$ terms in the Wandzura–Wilczek-type approximation which consists in systematically assuming that $\bar{q}qg$ -terms are much smaller than $\bar{q}q$ -correlators. We compute all twist-2 and twist-3 structure functions and the corresponding asymmetries, and discuss the applicability of the Wandzura–Wilczek-type approximations on the basis of available data. We make predictions that can be tested by data from Jefferson Lab, COMPASS, HERMES, and the future Electron-Ion Collider. The results of this paper can be readily used for phenomenology and for event generators, and will help to improve our understanding of the TMD theory beyond leading twist. For more details see [1] or slides of Anatoly Efremov talk at <https://indico.jinr.ru/getFile.py/access?contribId=25&sessionId=15&resId=0&materialId=slides&confId=433>.

References

- [1] S. Bastami et al., “Semi-Inclusive Deep Inelastic Scattering in Wandzura-Wilczek-type approximation,” [arXiv:1807.10606 \[hep-ph\]](https://arxiv.org/abs/1807.10606) (69 pages, 218 references).

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