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The Boer-Mulders effect in polarised charmonium production within Soft Gluon Resummation approach

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The TMD factorisation is a theoretical approach for description of hard processes at small transverse momentum domain [1]. The Soft Gluon Resummation approach is a model to obtain expressions for TMD parton distributions and take into account their evolution [2, 3]. Unpolarised J/ψ production can be quite satisfyingly described within this model [4, 5]. In this study, we estimate angular coefficients in angular distribution of leptonic decay of J/ψ, these coefficients are experimentally measured observables related to charmonium polarisation. Except unpolarised PDFs, we take into account Boer-Mulders PDFs which describe linearly polarised partons in unpolarised hadrons and they are expected to impact on polarisation observables more than on unpolarised production cross section [6]. In unpolarised charmonium production, the Boer-Mulders PDFs contribution is suppressed by unpolarised PDFs. Hadronisation of quarks into charmonium is considered using the NRQCD [7].

References:
[1] J. C. Collins, Foundations of Perturbative QCD (2011).
[2] D. Boer, W. J. den Dunnen, Nucl. Phys. B 886 (2014), 421.
[3] J. C. Collins, D. E. Soper, Nucl. Phys. B 193 (1981), 381.
[4] P. Sun, C. P. Yuan, F. Yuan, Phys. Rev. D 88 (2013), 054008.
[5] V. A. Saleev, K. K. Shilyaev, Mod. Phys. Lett. A (2025), 2550145.
[6] R. Boussarie, M. Burkardt, et al., arXiv:2304.03302 [hep-ph] (2023).
[7] G. T. Bodwin, E. Braaten, G. P. Lepage, Phys. Rev. D 51 (1995), 1125.

Authors: SHILYAEV, Kirill; Prof. SALEEV, Vladimir (Samara National Research University)

Presenter: SHILYAEV, Kirill

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