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Dihadron spin correlations in unpolarized high energy collisions

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The emergence of spin correlations through quantum entanglement in unpolarized high-energy collisions offers a unique opportunity to investigate spin-dependent fragmentation functions, even with unpolarized experiments. In a series of studies [1-5], we investigated the longitudinal and transverse spin correlations of back-to-back dihadrons produced in unpolarized e^+e^-, pp and ep collisions. We demonstrate the phenomenological application of quantum entanglements.

References

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[3] Dihadron helicity correlation in photon-nucleus collisions; Z.X. Chen, H. Dong, S.Y. Wei; Phys.Rev.D 110, 056040 (2024).

[4] Transverse spin correlation of back-to-back dihadron in unpolarized collisions; L. Yang, Y.K. Song, S.Y. Wei; arXiv:2410.20917.

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