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Spin Correlations in unpolarized high energy collisions

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While jet quenching in relativistic heavy-ion collisions has been extensively studied over decades, the role of spin in this process remains largely unexplored. Since the QCD jets produced in relativistic heavy-ion collision are unpolarized, it seems to be mission impossible to study the quenching of polarized jets.

In recent works [1-3], we demonstrated that the spin correlation of back-to-back dihadron emerges even in unpolarized collisions, empowering unpolarized experiments to shed light on spin effects. We also extend our approach to relativistic heavy-ion collisions, opening up new avenues for investigating the quenching of polarized jets [4]. This talk presents our finding on both the longitudinal and transverse spin correlations of back-to-back dihadron.

References

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[4] X. Li, Z.X. Chen, S. Cao and S.Y. Wei, Correlations of dihadron polarization in central, peripheral, and ultraperipheral heavy-ion collisions, Phys. Rev. D 109 (2024), 014035.

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