

Jet Azimuthal Anisotropies in Heavy-Ion Collisions

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In this work we present the first semi-analytical predictions of the azimuthal anisotropies for jets in heavy-ion collisions, obtaining a quantitative agreement with available experimental data. Jets are multi-partonic, extended objects and their energy loss is sensitive to substructure fluctuations. We find that jet azimuthal anisotropies have a specially strong dependence on color coherence physics due to the marked length-dependence of the critical angle θ_c . By combining our predictions for the collision systems and center of mass energies studied at RHIC and the LHC we show that the relative size of jet azimuthal anisotropies for jets with different cone-sizes R follow a universal trend that indicates a transition from a coherent regime of jet quenching to a decoherent regime. These results suggest a way forward to reveal the role played by the physics of jet color decoherence in probing deconfined QCD matter.

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