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Jet suppression from small to large radius

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The angular dependence of jet suppression encodes key information about the process of energy and momentum hydrodynamization, and for this reason can be used to greatly improve our understanding of fundamental aspects of the jet/QGP interaction. In this work we study jet suppression from small to very large radius, for low and very high energy jets at the LHC and RHIC. We use the hybrid strong/weak coupling model for jet quenching that combines perturbative shower evolution with an effective strongly coupled description of the energy and momentum transfer from the jet into the QGP. Because of momentum conservation, the wake created by the jet enhances or depletes the amount of particles generated at the freeze-out hypersurface depending on their orientation with respect to the jet. We find that jet suppression is surprisingly independent of the anti- k_T radius R , first slightly increasing as one increases R , then at larger values of R very slowly decreasing [1]. This nearly independence of jet suppression with increasing values of R arises mainly from two competing effects, namely the larger energy loss of the hard jet components, which tends to increase suppression, versus the partial recovery of the lost energy due to medium response, reducing suppression. We also find that the boosted medium from the recoiling jet reduces the amount of plasma in the direction opposite to it in the transverse plane, increasing the amount of jet suppression due to an over-subtraction effect. We show that this characteristic signature of the hydrodynamization of part of the jet energy can be quantified by selecting samples of dijet configurations with different relative pseudorapidities between the leading and the subleading jet.

[1] D. Pablos, arXiv:1907.12301 - accepted by PRL

Collaboration (if applicable)

Track

Jets and High Momentum Hadrons

Contribution type

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