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Pre-hydrodynamic jet momentum broadening beyond the jet quenching parameter

It has recently been widely acknowledged that the initial stages are important for correctly describing jet quenching in heavy-ion collisions. In particular, the initial stages influence the emission spectrum of hard partons traversing the plasma. Such calculations require the knowledge of the momentum-broadening kernel C , which describes the probability of a jet parton receiving a momentum kick. While it is often employed in a harmonic approximation using the jet quenching parameter \hat{q} , in this talk, I will present our results for the kernel C from QCD kinetic theory beyond this approximation. We show that the kernel is consistent with previous extractions of \hat{q} and find that it is highly anisotropic at early times and that small-momentum exchange processes are more likely than expected from a Landau-matched thermal system. Our results may lead to a better description of jet quenching during the initial stages, which can be particularly significant for the ongoing and upcoming light-ion collision programs.

Category

Theory

Collaboration (if applicable)

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