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Impact of pre-equilibrium dynamics on jet quenching observables

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Given recent works showing jet quenching's sensitivity to the dynamics of the pre-hydrodynamic phase of heavy-ion collisions, addressing medium-induced radiation in the initial stages becomes crucial. In this talk, we derive the BDMPS-Z emission spectrum off a hard parton accounting for additional medium-induced emissions arising from its vacuum propagation in the pre-hydrodynamics phase. By comparing this set-up with those where the emitter is created inside the medium, but with different starting points, we isolate the contribution of this initial radiation. We then analyze the impact that this extra radiation may have in the determination of the nuclear modification factor and high- p_T azimuthal asymmetry. Our findings show that replacing in-medium propagation by vacuum propagation prior to hydrodynamization leads to an increase in the high- p_T v_2 . However, this increase in the asymmetry is smaller than the one obtained when setting the parton to be created at the hydrodynamization time.

Experiment/Theory

Theory/Phenomenology

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