

Initial stage jet momentum broadening in a Light-Front Hamiltonian approach

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We study the momentum broadening of a high energy quark jet in the high-density gluon medium created right after the collision of two ultrarelativistic heavy nuclei, the Glasma. Previous Glasma studies consider the jet as a classical probe particle, for which position and momentum are simultaneously determined. In this talk, we use the light-front QCD Hamiltonian formalism to treat the jet as a fully quantum state and compute its real-time evolution while propagating through the Glasma classical background fields, that appear as an interaction potential in the quantum evolution of the jet. We present results for the momentum broadening and jet quenching parameter, $\hat{q}$, experimented by a jet at mid-rapidity, paying special attention to the anisotropies in the momentum broadening between the longitudinal and transverse directions with respect to the collision axis. We emphasize the similarities and differences with the classical calculations that have been carried out so far.

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