The Transverse Energy as a Barometer of a Saturated Plasma

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Abstract

The evolution of the gluon plasma produced with saturation initial conditions is calculated via Boltzmann transport theory for nuclear collisions at high energy. The effective longitudinal pressure is found to remain significantly below the lattice QCD pressure with these initial conditions until the plasma cools to near the confinement scale. Therefore, the transverse energy per unit of rapidity and its dependence on beam energy provides a sensitive test of gluon saturation models since the fractional transverse energy loss due to final state interactions is predicted to be much smaller and exhibit a weaker energy dependence than if ideal (nondissipative) hydrodynamics applied throughout the evolution.

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