Light Cone 2017 (LC2017)
Frontiers in Light Front Hadron Physics : Theory and Experiment
18th - 22nd September 2017, University of Mumbai

Contribution ID: **36** Type: **not specified**

Viscous effects on Heavy Quark Radiative Energy Loss in a QCD Medium

Jet quenching provides tomographic information of the evolution of the QCD matter formed in the ultra-relativistic heavy ion collisions.
Perturbative QCD calculation for the jet quenching requires the informations of both elastic and inelastic scatterings. We study the heavy quark radiative energy loss in a dynamically screened expanding QCD medium by incorporating the off-equilibrium distribution function in the kinematics.
Viscous effects on the inelastic energy loss are explicitly incorporated via viscous corrections to the bosonic and fermionic thermal distribution functions.
The non-ideal effect to the many-body interactions are also included through the Hard Thermal Loop technique. The jet energy loss is studied within relativistic viscous hydrodynamic evolution of matter.
In the boost invariant longitudinal expansion of the medium, the specific flow direction gives rise to an anisotropy in the QCD plasma.
We explore the directional dependence of the radiative energy loss in the expanding viscous QCD plasma. The results have direct implications on the D meson spectra as well as on the nuclear modification factor.

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