



Contribution ID : 149

Type : **not specified**

Collisional parton energy loss in a finite size QCD medium reexamined: Off-mass-shell effects.

Wednesday, 8 October 2008 19:00 (0:20)

Abstract content

Summary

We study the collisional energy loss mechanism for particles produced off mass shell in a finite size QCD medium. The off-mass-shell effects introduced consider particles produced in wave packets instead of plane waves and a length scale associated with an in-medium particle lifetime. We show that these effects reduce the energy loss as compared to the case when the particles are described as freely propagating from the source. The reduction in energy loss is stronger as the scale becomes of the order of or smaller than the medium size. We discuss possible consequences of the result on the description of the energy loss process in the parton recombination scenario.

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Session Classification : Posters