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Soft gluon multiplicity distribution revisited

Content :

The energy loss of high energy partons propagating
through a thermalized system of quarks and gluons created in heavy ion
collisions at relativistic energies has been measured through nuclear
suppression factors at Relativistic Heavy Ion Collider (RHIC)
energy. The two most important
mechanisms for the energy loss are radiative and collisional processes.
Therefore, it is very important to understand and theoretically improve
the calculations of partonic energy loss in thermal medium.
In this spirit soft gluon radiation from partonic interaction of the
type: $2\,\rightarrow\, 2\,$ + gluon has been revisited and a correction term
to the widely used Gunion-Bertsch (GB) formula is obtained. It is observed
that the correction to the gluon spectrum is appreciable for low
temperature domain. The effect of this
correction term in the energy loss mechanism has been studied and its
consequence on R_{AA} and v_2 has been discussed. The $ \eta/s $ has also been
estimated using the correction term.

Primary authors : Mr. DAS, SANTOSH KUMAR (VARIABLE ENERGY CYCLOTRON CENTRE)

Co-authors : Dr. ALAM, Jan-e (VARIABLE ENERGY CYCLOTRON CENTRE)

Presenter : Mr. DAS, SANTOSH KUMAR (VARIABLE ENERGY CYCLOTRON CENTRE)

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