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Gluon Bremsstrahlung Off Charm Quark & Charm Quark Equilibrium Distribution Function

The effect of soft gluon bremsstrahlung off the charm quark on different transport coefficients like drag, transverse and longitudinal diffusion of charm has been observed while it is propagating inside Quark Gluon Plasma. The elastic collision of charm with the medium particles and the gluon radiation are seen to contribute in comparable magnitudes while evaluating of the transport coefficients. However, it is noticed that the ultimate shape of the charm quark distribution function after it has come to equilibrium remains more or less unaffected by the radiation of charm. We also observe that the shear viscosity to entropy ratio of the quark gluon plasma (QGP) is closer to the experimentally extracted value when the gluon radiation by the charm quark is included.

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