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Heavy Quark dynamics in a magnetized medium

We evaluate the heavy quark momentum diffusion coefficients in a hot magnetized medium for the most general scenario of any arbitrary values of the external magnetic field. We choose to work with the systematic way of incorporating the effect of the magnetic field, by using the effective gluon and quark propagators, generalized for a hot and magnetized medium. To get gauge independent analytic form factors valid through all Landau levels, we apply the hard thermal loop technique for the resummed effective gluon propagator. The derived effective hard thermal loop gluon propagator and the generalized version of Schwinger quark propagator subsequently allow us to analytically evaluate the longitudinal and transverse momentum diffusion coefficients for charm and bottom quarks beyond the static limit. Within the static limit we also explore another way of incorporating the effect of the magnetic field, i.e. through the magnetized medium modified Debye mass and compare the results to justify the need for structural changes.

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Category

Theory

Collaboration (if applicable)

Author: BANDYOPADHYAY, Aritra

Presenter: BANDYOPADHYAY, Aritra

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