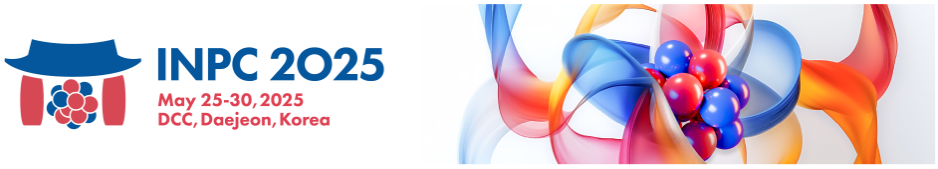

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Heavy quark suppression and anisotropic flow at intermediate momentum

Friday, 30 May 2025 09:25 (15 minutes)

We discuss heavy quark diffusion and radiation in an intermediate-momentum regime where finite mass effects are significant. Based on the collision kernel for diffusion, elastic scattering and semi-collinear gluon-bremsstrahlung can be consistently incorporated into a Boltzmann equation that involves the heavy quark diffusion coefficient. Using the running coupling constant and the diffusion coefficient constrained by lattice QCD data, we calculate the nuclear modification factor and the elliptic flow which are induced by the collisional and radiative energy loss of heavy quarks. The numerical results indicate that medium modifications by two types of energy loss are distinguishable and the significance of the radiative effect is determined by the momentum and temperature dependence of the diffusion coefficient. In hydrodynamically expanding thermal media, the momentum-dependent transition between two mechanisms and the radiative influence on the observables are discussed.

Consent

Primary author: HONG, Juhee (Yonsei University)

Presenter: HONG, Juhee (Yonsei University)

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