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Open Heavy-Flavor Theory

The diffusion of heavy quarks (HQ) in the quark-gluon plasma (QGP) produced in ultra-relativistic heavy-ion collisions has been a successful probe of the HotQCD matter, allowing to identify a marked non-perturbative dynamics and inferring a spatial diffusion D_s coefficient in agreement with first quenched lattice QCD data, even if within still significant uncertainties.

I will review some recent progress in the theoretical developments of heavy-quark interactions in the QGP and the open issues in comparing the phenomenological determination of $D_s(T)$ and more recent lattice QCD data (supplemented by NREFT) in non-quenched approximation. I will also focus the possibility to access the temperature and momentum dependence of the interaction thanks to development in the phenomenological models and the new and upcoming experimental data.

Furthermore, recent data on heavy baryon production (Λ_c , Ξ_c , Ω_c) have shown unexpected large baryon-to-meson ratio and are allowing to acquire new information about the hadronization process in the heavy quark sector going from e^+e^- , ep, pp, pA and AA collisions challenging the universality of the fragmentation function and making evident the role of the medium in the hadronization process.

session

F. Heavy Flavor and Quarkonia

Primary author: GRECO, Vincenzo (University of Catania, INFN-LNS)

Presenter: GRECO, Vincenzo (University of Catania, INFN-LNS)

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