Contribution ID: **59** Type: **not specified**

Nonperturbative Heavy-Flavor Diffusion and Hadronization in a Hydrodynamic Description of Heavy-Ion Collisions

Friday, 16 November 2012 09:00 (30 minutes)

We compute open heavy-flavor (HF) transport in relativistic heavy-ion collisions by combining a strong-coupling treatment in both macro- and microscopic dynamics (hydro and nonperturbative diffusion interactions) [1]. The hydrodynamic bulk evolution is quantitatively constrained by bulk and multi-strange hadron spectra and elliptic flow [2]. In the Quark-Gluon Plasma (QGP) phase, heavy-quark diffusion coefficients are taken from a non-perturbative T-matrix approach. The latter leads to resonance formation close to Tc which is implemented as a hadronization (recombination) mechanism on a hydrodynamic hypersurface. In the hadronic phase, the diffusion of HF mesons is obtained from effective hadronic theory [3]. We compute observables at RHIC and LHC for both HF mesons and non-photonic electrons [4,5]. In particular, we suggest the R_AA and v_2 of the D_s mesons as a unique observable due to the coupling of charm to the strangeness enhancement in AA collisions [4], which allows to quantitatively test key components of our approach, including recombination and hadronic diffusion effects.

References:

[1] M. He, R. J. Fries and R. Rapp, Phys.Rev. C86,014903 (2012).
[2] M. He, R. J. Fries and R. Rapp, Phys. Rev. C85, 044911 (2012).
[3] M. He, R. J. Fries and R. Rapp, Phys. Lett. B701, 445 (2011).
[4] M. He, R. J. Fries and R. Rapp, arXiv:1204.4442 [nucl-th].
[5] M. He, R. J. Fries and R. Rapp, arXiv:1208.0256 [nucl-th].

Primary author: Dr HE, Min (Hunan University,China)

Co-authors: Prof. FRIES, Rainer (Texas A&M University); Prof. RAPP, Ralf (Texas A&M University)

Presenter: Dr HE, Min (Hunan University,China)

Session Classification: HF decays leptons