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Dynamical energy loss as a novel tomographic tool of QGP at RHIC and LHC

Tuesday 29 September 2015 14:00 (20 minutes)

High momentum suppression of light and heavy flavor observables is considered to be an excellent probe of jet-medium interactions in QCD matter created at RHIC and LHC. Utilizing this tool requires accurate suppression predictions for different experiments, probes and experimental conditions, and their unbiased comparison with experimental data. With this goal, we developed the dynamical energy loss formalism towards generating predictions for non-central collisions; the formalism takes into account both radiative and collisional energy loss computed within the same theoretical framework, dynamical (as opposed to static) scattering centers, finite magnetic mass, running coupling and uses no free parameters in comparison with experimental data. Within this formalism, we will provide predictions, and a systematic comparison with experimental data, for a diverse set of suppression data: all available light and heavy flavor probes, lower and high momentum ranges, various centrality ranges and various collision energies at RHIC and LHC. We will also provide clear qualitative and quantitative predictions for the upcoming RHIC and LHC experiments. Comprehensive agreement between our predictions and experimental results provides us with a good deal of confidence that our dynamical energy loss formalism can well explain the jet-medium interactions in QGP, which will be further tested by the obtained predictions for the upcoming data. Application of this model, as a novel high-precision tomographic tool of QGP medium, will also be discussed.

On behalf of collaboration:

NONE

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