

Survival of high-pT light and heavy flavors in a dense medium

Abstract content

An attempt at a critical examination of high-pT paradigms is presented. The popular interpretation for the observed quenching of high-pT light and heavy flavored hadrons by energy loss is based on the assumption that hadronization is lasting long time. We challenge this assumption, which has not received any justification so far, and make several observations: (i) the production time of leading hadrons is constrained by energy conservation and is rather short. (ii) The pre-hadron q-qbar dipoles are produced with a rather large starting size, which is quickly evolving, especially for light-heavy dipoles. (iv) Provided that the mean free path of the dipoles is short, the nuclear suppression factor $R_{\{AA\}}$ does not depend on the medium density, but only on the pre-hadron production length. The suppression of light and heavy flavors observed at RHIC is well explained with no parameter fitted, and predictions for LHC are made.

Summary

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