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Understanding mass hierarchy in different energy loss mechanisms through heavy flavor data

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The theoretical analysis of experimental observations, such as the mass hierarchy effect, often neglects some ingredients, which may be proven to have a significant impact. The forthcoming measurements at RHIC and LHC will generate heavy flavor data with unprecedented precision, providing an opportunity to utilize high-pT heavy flavor data to analyze the interaction mechanisms in the quark-gluon plasma. To this end, we use our recently developed DREENA framework based on the dynamical energy loss formalism. We present [1]: i) How to disentangle the signature of different interaction mechanisms (i.e., radiative and collisional energy losses) at the same dataset. ii) Novel observables susceptible to these different mechanisms to be tested by future high-precision measurements. iii) Analytical and numerical extraction of the mass hierarchy/dead cone effect in energy losses through this observable.

[1] Bojana Ilic and Magdalena Djordjevic, arXiv:2203.06646 [hep-ph]

Present via

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