

The origin of the modification of the z_g distribution in AA collisions

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The measurement of jet substructure provides important detailed information on the dynamics of the jet-QGP interaction. However, our ability to reliably extract such information is contingent on understanding the sensitivity of any given substructure observable to specific features of in-medium jet dynamics. Monte Carlo event generators with transparent physics content and that have been validated for a wide set of observables, e.g. JEWEL, are powerful tools to establish the sensitivity of observables to specifics of jet-QGP interaction. Using the generic procedure we put forward in Eur.Phys.J. C76 (2016) no.5, 288 (arXiv:1512.08107 [hep-ph]) – where we applied it to establish the origin of the excess dijet asymmetry observed in AA collisions as due to fluctuations of the jet fragmentation pattern rather than, as widely believed in the community, to the difference in the amount of matter traversed by the two jets in the pair – we examine the z_g substructure observable recently measured by CMS and STAR. We find straightforward interpretations of the z_g measurement as indicating a QGP-induced modification of the QCD splitting function to be over-simplistic and confounded by the observable sensitivity to fluctuations of the jet-medium interaction pattern. We propose several complementary measurements that can further elucidate the potential of this, and related observables, to give information on in-medium jet dynamics.

Preferred Track

Jets and High pT Hadrons

Collaboration

Not applicable

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