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Typ: Talk

Exploring the deadcone effect in heavy ion collisions with energy correlators

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The dynamics of jet formation in heavy ion collisions (HICs) is influenced by the presence of a quark-gluon plasma (QGP) and is imprinted into a jet's multi-scale substructure. In recent work, we demonstrated that the two-point energy correlator, measured on a massless in-medium jet, provides a sensitive probe of this dynamics and can robustly identify the scales defined by the properties of the QGP. In this talk we present the extension of our work to heavy flavour jets produced in HICs. This introduces new dynamics into the jet formation, namely the deadcone effect. We show that energy correlators allow us to disentangle the dynamics of the deadcone from interactions with the QGP. We identify two limits: the near-massless limit where the deadcone is not affected by the medium and measurements of medium properties follow similar profiles to the massless case, and the large-mass limit where the medium radiation begins to populate the deadcone producing a zombie cone. Building on our previous work, our study further demonstrates the spectacular ability of energy correlators to disentangle complicated competing jet dynamics.

Experiment/Theory

Theory/Phenomenology

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Sitzung Einordnung: Parallel: Jets and their modification in QCD Matter

Track Klassifizierung: Jets and their modification in QCD matter