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Medium response made efficient: a linearized hydro approach

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When a jet injects energy and momentum into a droplet of QGP, it generates a wake that, after the QGP hadronizes, results in the creation of soft and semi-hard particles correlated with the jet direction. This medium response phenomenon plays a crucial role in describing various jet observables, as demonstrated by many jet quenching studies. However, the computational complexity of current techniques used to describe these wakes has hindered a thorough understanding of their phenomenological consequences. In this talk we will describe a computationally efficient approach to determine the properties of hadrons generated by QGP wakes on an event-by-event, jet-by-jet basis. Using a library of template solutions obtained within linearized hydrodynamics on a Bjorken flow, and employing the appropriate set of scalings, translations, rotations, and boosts to build the wake of any jet via superposition of templates, we achieve results similar to those obtained through 3+1D hydrodynamics, but with a computational cost that is orders of magnitude smaller.

Category

Theory

Collaboration (if applicable)

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