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Jet shape depending on the gradient of jet transport coefficient in heavy-ion collisions

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Jet shape is studied with a linear Boltzmann transport model for event-by-event simulations of photon-tagged jets in heavy-ion collisions. The transverse momentum asymmetry A_{\perp} is shown to increase with the initial transverse position when the gradient of jet transport coefficient \hat{q} increases until at the edge of the nonuniform medium. On one hand, the shape of the photon-tagged jet selected by the smaller A_{\perp} events is “fatter” for the transverse momentum distribution inside the jet due to stronger jet quenching. On the other hand, the jet shape with higher p_T^{jet} is “thinner” due to surface emission of the initial jets. Our numerical results show that the different choices for both final observables A_{\perp} and p_T^{jet} demonstrate different initial jet creation sites and therefore different jet shapes depending on the gradient of \hat{q} .

Experiment/Theory

Theory/Phenomenology

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