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Suppression of elliptic anisotropy inside jets in high-energy nuclear collisions

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Particle azimuthal anisotropies inside jets, defined within the momentum plane perpendicular to the jet axis, carry the information of the QCD cascade process for jet formation. In this work, we propose to measure the medium-induced modifications of the elliptic anisotropy inside jets in relativistic heavy-ion collisions to provide novel insight into the jet quenching phenomenon. By simulating the jet propagation in the hot and dense nuclear medium with a Linear Boltzmann Transport model, we observe a de-correlation in the two-particle azimuthal angular distribution for inclusive jet production in AA collisions relative to that in pp collisions, which results in significant suppression of the in-jet elliptic anisotropy coefficient v_2. This phenomenon arises from the stochastic and strong interactions with the thermal QGP medium undergone by the jet particles. Furthermore, the nuclear modifications of the in-jet v_2 are found to be sensitive to the medium properties in the model study, which provide a potential probe for the jet tomography of nuclear matter.

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