

Investigating correlations between jets and the QGP geometry via jet v_n

A measurement of the correlation between the axes of reconstructed jets and the reaction plane of the bulk medium (known as jet v_2) and the higher-order participant planes (jet v_n) provides information on the path-length dependence of medium-induced parton energy loss as well as biases in jet-finding methods. Additionally, knowledge of jet v_n and the ability to reconstruct the event plane in the presence of a jet are necessary in analyses of jet-particle correlations, which are used to study medium-induced jet shape modification.

A simple Monte Carlo Glauber model indicates that the average parton pathlength through the medium depends on the parton's relative angle to the n -th order participant planes, leading to a visible jet v_n . However, measurements of jet v_n are non-trivial because the presence of a jet can significantly bias the participant plane calculation, leading to an overestimation of jet v_n . A method is presented for calculating jet v_n and the event plane in an unbiased way, using knowledge of the azimuthal angle of the jet axis from full jet reconstruction.

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