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Transport model studies on reconstructed jets in a hot partonic medium

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Within a multiphase transport model, several experimental observables related to reconstructed jets, including the transverse momentum imbalance for photon-jet, transverse momentum asymmetry for dijet, jet fragmentation function, jet shape, and jet flow, are investigated in Pb+Pb collisions at $\sqrt{s_{\rm NN}}$ = 2.76 TeV. Because the imbalance ratio between photon and jet is sensitive to both production position and passing direction of photon, it could enable a detail tomographic study on the hot partonic medium by selecting different imbalance ratio ranges [1]. Dijet asymmetry evolution functions disclose that final dijet asymmetry is driven by both initial dijet asymmetry and partonic jet energy loss [2]. The measured jet fragmentation function in Pb+Pb collisions is decomposed into two parts from jet fragmentation and coalescence, which indicates a competition between the two jet hadronization mechanisms that dominate different ξ=ln(1/z) ranges and different centrality bins [3]. The subleading jet shape displays a larger medium modification than the leading jet shape, especially in more central Pb+Pb collisions with a larger dijet asymmetry [4]. Azimuthal anisotropies (or flows) of jets (v_2 and v_3) are sensitive to the geometry asymmetry of initial partonic distribution, which is consistent with a path-length dependence of jet energy loss in the QGP [5]. All these results support that jets lose much energy owing to the strong interactions between jets and a hot partonic medium.

References:

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