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Modification of Jet Properties in Central Relativistic Heavy-ion Collisions in a Transport Model[1] WEIYAO KE, University of California, Berkeley; Lawrence-Berkeley National Laboratory, XIN-NIAN WANG, Lawrence-Berkeley National Laboratory — In relativistic heavy-ion collisions, hot QCD medium effects modify jets relative to those produced in proton proton collisions. Interaction between medium and constituents of jets takes place from the hard process scale down to the soft medium scale, providing rich information on the dynamics of hard processes in a hot nuclear environment. In this work, we used a transport model approach to understand the modifications of jet properties in heavy-ion collisions and addressed the origin of these modifications to physical ingredients implemented in the transport model. In particular, we studied the inclusive jet nuclear modification factor R_{AA} at RHIC and LHC, modification to jet fragmentation function $D(z)$, and jet shape $\rho(r)$, focusing on the central region of heavy-ion collisions. We found the redistribution of jet constituents at large r and small z are sensitive to the jet-induced medium excitation and elastic collisions, while medium-induced radiative processes are important to understand suppression of high-p_T particles. Finally, we discuss how the combinations of these observables help to determine the applicable regime of a perturbative partonic transport approach and map out the transport parameters of partons at different energy scales.

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