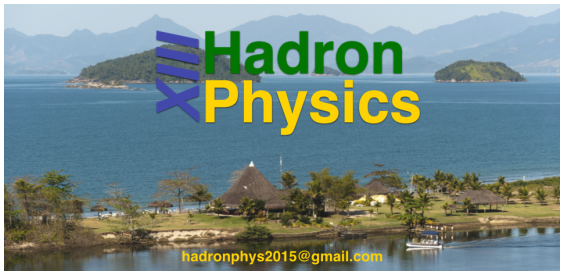

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Jet fragmentation and energy loss in ultrarelativistic heavy ion collisions

In this work we study the suppression of charged and neutral hadrons in ultrarelativistic heavy ion collisions, where the quark gluon plasma (QGP) is believed to be produced. Jet quenching is one of the important phenomena to study the properties of QGP. Jet energy loss in the QGP is the main explanation for jet quenching, which may suppress the number of hadrons produced while the jets traverse the dense and colorful medium created. Here we consider some models to include the energy loss effects, which affect both the p_T spectra and the kinematic region for jet fragmentation. One approach takes into account the energy loss of the partons traversing the medium via a shift in the momentum fraction z of the fragmenting parton carried by the produced hadrons. In addition to that, more complete approaches consider that the fragmentation functions are themselves modified by the medium. Here we also apply the quenching weights formalism, where a parton looses energy through medium-induced gluon radiation. We quantify the medium effects by calculating the nuclear ratio R_{AA} as a function of the transverse momentum of the produced hadron, for several centrality classes. The main ingredients are the shadowing of the nuclear parton distributions, the jet energy loss and the fragmentation functions modified by the hot and dense medium. Our results are compared with RHIC and LHC data, from which we intend to extract properties of the QGP such as its transport coefficient and opacity.

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