

Abstract:

Jet production in PbPb collisions at a per-nucleon center-of-mass energy of 2.76 TeV has been studied using the ATLAS detector at the LHC. Interactions between the high- $p_T$  partons and the hot, dense medium, produced in these ultrarelativistic collisions, are expected to cause the loss of the jet energy (jet quenching). This thesis presents results of the jet analysis done on the data taken during the 2011 heavy-ion run at the LHC as well as PYTHIA Monte Carlo reference. Jets are reconstructed using the anti- $k_t$  jet clustering algorithm and studied as a function of collision centrality and dijet energy imbalance. With increasing centrality, dijets are observed to be increasingly asymmetric, consistent with the theory of jet quenching. The study of charged particle tracks indicates the increase of the low- $p_T$  tracks in the strongly quenched jets.