

Abstract

Experimental study of high energy heavy-ion collisions is of great interest because of the possible formation of the new form of matter, quark gluon plasma (QGP). The QGP formation is difficult to prove due to the very short timescales at which heavy-ion collisions take place but there are several phenomena that suggest the QGP is created in HI collisions. One of these is the so called jet quenching which in general describes the set of modifications that jets produced in heavy-ion collisions undergo due to the interaction with medium created in the collision. The measurement of jets and their properties in heavy-ion collisions is difficult due to the large underlying event background and fluctuations present in Pb+Pb collisions. This thesis presents the reconstruction steps that allow ATLAS experiment at the LHC to publish high precision measurements of jet properties in Pb+Pb collisions. One of these is the measurement of jet fragmentation in pp and Pb+Pb collisions at $\sqrt{s_{NN}} = 2.76$ TeV. Significant modifications of jet fragmentation in Pb+Pb collisions are observed.