A study of negatively charged hadrons in Pb-Pb collisions in the NA57 experiment at the CERN SPS

Paul Bacon

Thesis

Heavy Ion Physics Group,
School of Physics and Astronomy,
University of Birmingham.

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Abstract

Using data taken by the NA57 Collaboration at the CERN SPS, for Pb-Pb collisions at both 158 GeV/c and 40 GeV/c energies, results have been obtained for yields per unit of rapidity and inverse slope measurements. A thorough investigation has been performed on the stability of the acceptance region used in the analysis of both beam energies and a detailed explanation of the analysis methods used is given. Furthermore a study has been completed to determine R_{CP} in the three data sets which were considered. These results can be used in future analysis by the NA57 collaboration as part of a signature of the Quark Gluon Plasma (QGP).

An Overview of QGP physics as well as several signatures which can be used to detect the formation of a QGP state are given. The results found in this analysis are compared to those found by the STAR collaboration and to theoretical models for R_{CP}.