

Study of cosmic charge ratio with ALICE at LHC

Abstract

The ratio μ^+/μ^- is defined as the ratio of the number of positively charged muons to the number of negatively charged muons that reach the surface of the Earth. Since most of the primary cosmic rays and the nuclei with which they interact have a positive charge, the production of mesons with this charge is favored, for this reason, it is expected that the number of positively charged muons will be greater than the number of muons with a negative charge. Up to 200 GeV / c, the quantity μ^+/μ^- has been reported as constant. This ratio can be used to improve the models of hadronic interaction and then better predict the flux of atmospheric neutrinos. In this work, we present the measurement of the μ^+/μ^- ratio for atmospheric shower events with data collected in 2015 by the ALICE-LHC detector. This analysis allowed the reconstruction of physics observables of atmospheric muons such as momentum and charge in a momentum range of 10-220 GeV/c.

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