

Workshop on Forward Physics and QCD at the LHC, the future Electron Ion Collider and Cosmic Ray Physics



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Cosmic-ray physics in ALICE at CERN

ALICE is one of the four main experiments at the CERN Large Hadron Collider. The location of the ALICE detector allows us to study the muonic component of cosmic rays, since it is located 52 meters underground with 28 meters of rock above it. The ALICE detector is able to detect atmospheric muons from extensive air showers, making possible the study of topics related to cosmic-ray physics. At this depth, only atmospheric muons with energies greater than 15 GeV can reach the detection zone. The analysis of the multiplicity distribution of atmospheric muons reconstructed by the Time Projection Chamber (TPC) of ALICE is presented. The comparison with modern Monte Carlo simulations solves the long standing issue of rate of events with an extremely large multiplicity of muons. An overview of analyses of recent data collected by ALICE is also discussed.

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