Pseudorapidity distributions of charged hadrons in xenon-xenon collisions at root S-NN=5.44 TeV

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Abstract

Measurements of the pseudorapidity distributions of charged hadrons produced in xenon-xenon collisions at a nucleon-nucleon centre-of-mass energy of root S-NN = 5.44 TeV are presented. The measurements are based on data collected by the CMS experiment at the LHC. The yield of primary charged hadrons produced in xenon-xenon collisions in the pseudorapidity range vertical bar eta vertical bar < 3.2 is determined using the silicon pixel detector in the CMS tracking system. For the 5% most central collisions, the chargedhadron pseudorapidity density in the midrapidity region vertical bar eta vertical bar < 0.5 is found to be 1 187 +/- 36 (syst), with a negligible statistical uncertainty. The rapidity distribution of charged hadrons is also presented in the range vertical bar y vertical bar < 3.2 and is found to be independent of rapidity around y = 0. Existing Monte-Carlo event generators are unable to simultaneously describe both results. Comparisons of charged-hadron multiplicities between xenon-xenon and lead-lead collisions at similar collision energies show that particle production at midrapidity is strongly dependent on the collision geometry in addition to the system size and collision energy. (C) 2019 The Author(s). Published by Elsevier B.V.

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