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Transverse momentum distribution of charged particles and identified hadrons in p–Pb collisions at the LHC with ALICE

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Hadron production has been measured at mid-rapidity by the ALICE experiment at the LHC in proton-lead (p–Pb) collisions at $\sqrt{s_{NN}} = 5.02$ TeV. The transverse momentum (p_T) distribution of primary charged particles and of identified light-flavoured hadrons (π^\pm , K^\pm , K_S^0 , p , \bar{p} , Λ , $\bar{\Lambda}$) are presented in this report. Charged-particle tracks are reconstructed in the central barrel over a wide momentum range and furthermore they can be identified by exploiting specific energy loss (dE/dx), time-of-flight and topological particle-identification techniques. Particle-production yields, spectral shapes and particle ratios are measured in several centrality/multiplicity classes and are compared with results obtained in Pb–Pb collisions at the LHC.

The measurement of charged-particle transverse momentum spectra and nuclear modification factor R_{pPb} indicates that the strong suppression of high- p_T hadrons observed in Pb–Pb collisions is not due to initial-state effects, but it is rather a fingerprint of jet quenching in hot QCD matter. The systematic study of the hadronic spectral shapes as a function of the particle mass and of particle ratios as a function of charged-particle density provides further insights into collective phenomena, as observed in Pb–Pb collisions. Similar features that could be present in high-multiplicity p–Pb collisions will also be discussed.

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