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Energy and system dependence of nuclear modification factors of inclusive charged particles and identified light hadrons measured in p-Pb, Xe-Xe and Pb-Pb collisions with ALICE

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We report recent ALICE results on primary charged particle and neutral meson production in pp (2.76, 5.02, 7 and 8 TeV), p-Pb (5.02 TeV), Pb-Pb (2.76 and 5.02 TeV) and Xe-Xe (5.44 TeV) collisions. The transverse momentum (p_T) spectra of charged hadrons used in the analysis were measured in the kinematic range of $0.15 < p_T < 50$ GeV/ c and $|\eta| < 0.8$. The charged hadron spectra from Pb-Pb and Xe-Xe collisions are divided in nine centrality intervals in the range of 0-80 %. As we achieved significantly smaller systematic uncertainties in the current analysis, the previously published results from p-Pb and Pb-Pb (2.76 TeV) collisions were reanalyzed.

Neutral mesons were reconstructed through their two-photon decays. The photons were measured via several complementary methods, using either the central tracking system identifying photons converted to e^+e^- pairs in the material of the inner barrel detectors or the electromagnetic calorimeters. Thus we used the respective advantages of the detectors, i.e. the excellent momentum resolution of the conversion photons down to very low transverse momenta and the high reconstruction efficiency and triggering capability of calorimeters. This approach allowed to measure the neutral meson spectra in wide range of transverse momenta.

In this talk we will report a measurement of the nuclear modification factors of primary charged particles and of light neutral mesons in Pb-Pb (2.76 TeV and 5.02 TeV), in Xe-Xe (5.44 TeV) and in p-Pb (5.02 TeV) collisions with ALICE at the LHC. We compare the nuclear modification factors obtained for different collision systems as a function of transverse momentum, collision centrality as well as charged particle multiplicity ($dN_{ch}/d\eta$). We will present comparison to results from other experiments and to model calculations and review several scaling properties such as transverse mass scaling and x_T scaling in pp collisions.

Content type

Experiment

Collaboration

ALICE

Centralised submission by Collaboration

Presenter name already specified

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