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Neutral meson production in pp, p-Pb and Pb-Pb collisions with ALICE at the LHC

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The ALICE experiment is mainly devoted to the study of Quark-Gluon Plasma (QGP) expected to be created in heavy-ion collisions at the LHC and RHIC AA collision energies. In the early stage of such collisions, partons and photons can be produced in energetic hard processes. High energy partons will interact with the QGP, and from the measurement of the particles issued from the parton fragmentation in vacuum, one can infer transport properties of the QGP. Study of high- p_T hadrons production is important to constrain the properties of the hot dense medium. The strong suppression of high- p_T hadrons in heavy-ion collisions has been explained by the energy loss of the partons in medium and it can be investigated experimentally via the nuclear modification factor (R_{AA}) of hadrons.

ALICE measures neutral mesons at mid-rapidity in a wide p_T range in pp , p -Pb and Pb-Pb collisions. Neutral mesons (π^0 and η) are reconstructed via complementary methods, using the ALICE electromagnetic calorimeters, PHOS and EMCal, and by the central tracking system, identifying photons converted to e^+e^- pairs in the material of the inner barrel detectors (TPC and ITS). Measurement of neutral meson spectra in pp collisions at $\sqrt{s} = 0.9, 2.76, 7$ and 8 TeV provide valuable comparison data for pQCD calculations and allow to study scaling properties of hadron production at the LHC energies. The study of neutral meson production in p -Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV is of importance to quantify the suppression and disentangle initial and final state effects on the suppression itself. The latest results of neutral meson production in pp , p -Pb and Pb-Pb collisions in LHC-Run1 will be shown in this presentation. The current status of neutral meson measurement in LHC-Run2 will be presented.

Summary

Presentation type

Oral

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