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Light neutral meson production at the LHC energies with ALICE

This talk presents a complete overview of ALICE measurements of π^0 , η , and ω meson production in pp and p-Pb collisions using the Run 2 data, from $\sqrt{s} = 900$ GeV up to 13 TeV, over an unprecedented transverse momentum range. The ALICE measurements of neutral meson production give constraints on parton distribution functions (PDF) and fragmentation functions (FF), and provide essential background corrections for direct photon and dilepton analyses. The results in pp collisions at $\sqrt{s} = 13$ TeV are furthermore shown as a function of the event charged-particle multiplicity and the correlation of the π^0 and η meson with jets.

Measurements in high-multiplicity pp collisions have revealed similarities to Pb-Pb collisions for observables that were previously attributed to the formation of a QGP, suggesting a continuous evolution from small to large collision systems. In addition, the correlation of neutral mesons and jets measured in pp collisions provides further constraints on the meson FF. The status of the analysis of the high-statistics Run 3 data using the upgraded ALICE detector will also be presented.

Category

Experiment

Collaboration (if applicable)

ALICE

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