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Transverse momentum spectra and the nuclear modification factor of charged particles with ALICE

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The observed suppression of particle production at high transverse momentum in nucleus-nucleus collisions at high energies is an effect of the energy loss of partons as they propagate through the hot and dense QCD medium. The measurement of transverse momentum spectra of primary charged particles in Pb-Pb collisions and the comparison to the measurement in pp collisions are important to quantify the properties of the deconfined medium. In 2015, pp and Pb-Pb collisions have been recorded at the LHC at the record energies of $\sqrt{s} = 13$ and $\sqrt{s_{NN}} = 5.02$ TeV, respectively. The inclusive charged particle production is measured with the ALICE detector in the pseudo-rapidity range $|\eta| < 0.8$ and in the transverse momentum range $0.15 < p_T < 40$ GeV/c. The spectra in Pb-Pb, determined for several centrality intervals, is compared to the reference spectrum in pp collisions by calculating the nuclear modification factor R_{AA} . We observe that the suppression of high- p_T particles strongly depends on the event centrality. The data are compared to measurements at the lower collision energy of 2.76 TeV and to model predictions.

Summary

Author: PEREZ LEZAMA, Edgar (Johann-Wolfgang-Goethe Univ. (DE))

Presenter: PEREZ LEZAMA, Edgar (Johann-Wolfgang-Goethe Univ. (DE))

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