Contribution ID: **64** Type: **not specified**

System size dependence of particle production in pp, p-Pb and Pb-Pb collisions at 5.02 TeV

Tuesday 12 December 2017 12:15 (15 minutes)

The ALICE collaboration has measured the production of light-flavour hadrons in pp, p–Pb and Pb–Pb collisions at$\sqrt{s_{\rm NN}} = 5.02$ TeV over a wide range of transverse momentum ($p_{\rm T}$). The results on π, K, p,$\rm K^{*0}$ and ϕ $p_{\rm T}$ spectra, ratios of the $p_{\rm T}$-integrated yields and mean transverse momentum will be presented for the three colliding systems at the same energy ($\sqrt{s_{\rm NN}}$ = 5.02 TeV), and compared as a function of average charged particle multiplicity measured at mid-rapidity. It will be shown that the production of these particles follows a continuous trend as a function of multiplicity across the three systems. Identified particle ratios provide information on the composition and the thermal properties of the medium. The measurement of short-lived hadronic resonance production and their ratio to stable hadron species, such as ϕ/K and $\rm K^{*0}$/K, is used to infer information on the hadronic phase.

Parton energy loss is investigated by determining the nuclear modification factor ($R_{\rm AA}$). The production of light-flavour hadrons in the most central Pb–Pb collisions relative to pp collisions is found to be strongly suppressed at high $p_{\rm T}$ ($>$ 8 GeV/c), whereas in p–Pb collisions the nuclear modification factors are consistent with unity. This indicates that the strong suppression of high-$p_{\rm T}$ hadrons measured in central Pb–Pb collisions is not due to an initial state effect but instead to the energy loss of partons traversing a hot and dense QCD medium. A similar suppression is observed for all the measured light-flavour hadrons at $p_{\rm T} > 8$ GeV/c. This suggests that the partonic energy loss in the medium for light quark flavors (u, d, s) is independent of flavour.

Author: Dr DASH , Ajay Kumar (National Institute of Science Education and Research, Jatni)

Presenter: Dr DASH , Ajay Kumar (National Institute of Science Education and Research, Jatni)

Session Classification: WG6: Interactions with Nuclei