

Correlations with identified particles in pp at $\sqrt{s}=7$ TeV and p-Pb at $\sqrt{s_{NN}}=5.02$ TeV

Particle correlations in azimuth (φ) and pseudorapidity (η) difference are a powerful tool, widely used in all collision systems to study numerous sources of correlations. Examples include the collective behaviour of the QGP medium, jets, quantum statistics or Coulomb effects, conservation laws, and decays of resonances. In this talk, we report such measurements from ALICE with identified particles (pions, kaons, protons, and lambdas) in pp at $\sqrt{s} = 7$ TeV and p-Pb at $\sqrt{s_{NN}} = 5.02$ TeV collisions. The analysis of identified particles in pp collisions reveals differences in particle production between baryons and mesons, which reflect the specific conservation laws for these quantum numbers. For baryon pairs, where both particles have the same baryon number, a near-side anti-correlation structure is observed instead of a peak. Such effects have usually been connected to conservation laws in e^+e^- collisions and were thought to be under theoretical control; however, our results present a challenge to the contemporary models (PYTHIA, PHOJET). In case of p-Pb collisions at LHC energies, we report results of two particle correlations with identified trigger particles (pions and protons) selected from the intermediate p_T range ($2.0 < p_T < 4.0$ GeV/c), where an inclusive baryon to meson enhancement has been observed. Our results are reported as a function of multiplicity. The large enhancement of the baryon to meson ratio observed at intermediate p_T in central heavy ion collisions at RHIC and the LHC can be attributed to coalescence and/or radial flow. These mechanisms may lead to a dilution of the near side jet-like yield, that impacts baryons and mesons differently. For these results, a comparison between data and model predictions (AMPT and EPOS3) will also be presented.

Preferred Track

QCD in small systems

Collaboration

ALICE

Author: Mr SARKAR, Debojit (Department of Atomic Energy (IN))

Presenter: Mr SARKAR, Debojit (Department of Atomic Energy (IN))

Session Classification: Poster Session