Contribution ID: **82** Type: **not specified**

Study of identified particle production in high multiplicity pp collisions at $\sqrt{s}$ =13 TeV with ALICE at the LHC

Wednesday 15 January 2025 09:53 (13 minutes)

In proton-proton and proton-lead collisions at the LHC, signatures like those observed in lead-lead collisions arise as the multiplicity of charged particles produced in the collision increases. In AA collisions, these features are attributed to the formation of a deconfined state of matter formed by quarks and gluons, known as the Quark–Gluon Plasma (QGP). Most notably, these include a mass-dependent hardening of the transverse momentum distributions (explained as an effect of the radial flow) and an enhancement of strange hadrons (understood as a release from canonical suppression).
The origin of these phenomena in small collision systems has yet to be understood, warranting new measurements that bridge the gap between small and large collision systems. This contribution presents the measurements of $\pi^{\pm}$ $K^{\pm}$ and p($\bar{p}$) obtained in high-multiplicity triggered events with the ALICE detector at the LHC.
This new set of results allows us to probe the light-flavour particle-production mechanisms at unprecedented charged-particle multiplicities of about five times the one obtained on average in pp collisions, filling the gap between pp and larger systems. The results are compared as a function of the charged-particle multiplicity to measurements in pp, pA, and AA collisions. The particle-production mechanisms affecting dynamics and hadrochemistry are tested by measuring the average transverse momentum and integrated particle yields. The results are compared to predictions from the state-of-the-art Monte Carlo models such as Pythia and EPOS.

Author: KUMAR, Navneet (Panjab University (IN))

Presenter: KUMAR, Navneet (Panjab University (IN))

Session Classification: Parallel D

Track Classification: 6. Collectivity in small systems