

Multiplicity dependence of charged pion, kaon and (anti)proton production at large transverse momentum in pp collisions at $\sqrt{s} = 13.6$ TeV

Content

The transverse momentum (p_T) spectra of charged pions, kaons and (anti)protons in pp collisions at the Large Hadron Collider (LHC) energies encode information about string interactions, which become more prominent in events with high event activity. These interactions can generate radial flow-like effects that depend on hadron mass. In particular, the proton-to-pion ratio as a function of p_T exhibits a characteristic bump at intermediate p_T (2–10 GeV/c), whose magnitude increases with event activity, while at higher p_T the ratios show little or no dependence on event activity. Such features resemble those observed in heavy-ion collisions, where they are commonly attributed to the formation of a strongly interacting quark-gluon plasma.

In this contribution, measurements of p_T spectra in pp collisions at $\sqrt{s} = 13.6$ TeV are presented. The analysis is based on a data sample approximately 85 times larger than that used in a comparable Run 2 study. The pion (kaon and proton) p_T spectra are measured from 2 GeV/c (3 GeV/c) up to 20 GeV/c. The p_T spectra are reported as a function of the event activity measured with the FT0 detector. Particle identification is performed via the specific energy loss measured in the Time Projection Chamber. Particle ratios and yields are compared to results from Monte Carlo event generators.

Summary

Primary author(s) : Ms. VARGAS TORRES, Paola (UNAM)

Co-author(s) : Dr. SAHU, Dushmanta (Instituto de Ciencias Nucleares); ORTIZ VELASQUEZ, Antonio (ICN, UNAM)

Presenter(s) : Ms. VARGAS TORRES, Paola (UNAM)