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Clocking the particle production and tracking radial flow effects at top LHC Run 3 energy with ALICE

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Balance functions have been extensively used to elucidate the time evolution of quark production in heavy-ion collisions. Early models predicted two stages in the quark production, one for light quarks and one for the slightly heavier strange quark, separated by a period of isentropic expansion. This led to the notion of clocking the particle production and tracking radial flow effects. The evolution of the azimuthal widths of the Balance functions has been later associated to the diffusivity of light quarks.

In this contribution, Balance functions in different multiplicity classes of pp Run 3 collisions at $\sqrt{s} = 13.6$ TeV recorded by ALICE are reported and compared with ALICE published results on pp collisions at $\sqrt{s} = 7$ TeV. Results not only allow to validate the new data-taking machinery and analysis framework but also shed light on the evolution of Balance functions, their widths, and integral, with the collision energy. with the collision energy.

Category

Experiment

Collaboration (if applicable)

ALICE

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