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Insight into the light-flavour particle production mechanism from studies of the transverse spherocity dependence in pp collisions at $\sqrt{s}$ = 13 TeV with ALICE at the LHC

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The ALICE experiment at LHC has unique capabilities for the identification of light-flavour particles. Recent observations by ALICE of heavy-ion-like features such as enhanced strangeness production and long-range azimuthal correlation in high-multiplicity pp collisions pave the way to rethink particle production in small collision systems. Event shape observables like transverse spherocity are sensitive to isotropic and jetty topologies, which are useful tools to distinguish the pp collisions dominated by soft or hard physics. The interplay between multiplicity and transverse spherocity on light-flavour particle production can be understood by comparing the results obtained by selecting multiplicity and/or transverse spherocity. This contribution presents recent results on light-flavour particle production (π, K, p, ϕ, K^{*0}, K^0_s, Λ, Ξ) at midrapidity obtained by the ALICE experiment in pp collisions at $\sqrt{s}$ = 13 TeV as a function of event multiplicities and transverse spherocity. The results are even obtained by going to the most extreme selections such as the highest 0-1% in multiplicity and the highest 0-10% in transverse spherocity. The results include the transverse momentum spectra, yields, $\langle p_{\mathrm{T}} \rangle$ and their ratio to the yields of long-lived particles. These measurements will be compared with the Monte Carlo (MC) predictions obtained from models such as PYTHIA8, EPOS and Herwig7.

Collaboration

ALICE

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