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Studies of light-flavor hadron production in pp, pA and AA collisions with ALICE at the LHC

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Studies of the production of light-flavor hadrons in different collision systems are of prominent importance to investigate the hadronisation process. Recently, the ALICE Collaboration has presented results from pp, pA and AA collisions, exploiting its detector's excellent tracking and PID capabilities down to low transverse momentum. Pions, kaons, protons and (multi-)strange hadrons have been measured at different energies. The results revealed unexpected features, such as strangeness enhancement and collective-like behavior in small collision systems, formerly thought to be achievable only in heavy-ion collisions. These features are quantitatively similar across colliding systems if the charged particle multiplicity generated in the collision is used as a reference. To understand the origins of these unexpected phenomena, event shape observables can be exploited, as they serve as a powerful tool to disentangle soft and hard contributions to particle production. Results on strange particle production as a function of event multiplicity in different collision systems and at different center-of-mass energies will be presented. Measurements on the production of light-flavor hadrons as a function of Transverse Spherocity (S_0) and Relative Transverse Activity (R_{T}) will be also shown. The evolution of charged particle average transverse momentum with multiplicity, S_0, and R_{T} will be discussed in the context of radial flow and state-of-the-art phenomenological models.

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