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Particle production as a function of system size and underlying-event activity measured with ALICE at the LHC

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ALICE has performed several measurements aimed at understanding the heavy-ion-like patterns observed in small collision systems. New approaches can be helpful to clarify particle production mechanisms in pp collisions, as well as the similarities observed among the systems created in pp, p-A and A-A collisions.

In this talk we report on charged-particle transverse momentum distributions as a function of event multiplicity. The distributions are obtained using a 2D-unfolding procedure. We compare unidentified charged-particle production at different collision energies, as well as that for pp, p-Pb and Pb-Pb collisions at the same energy. In order to understand the role of autocorrelations in small systems, it has been proposed to exploit the usage of the underlying event as a multiplicity estimator to factorize the hardest and the softer components of the events. This approach can also be used to study collective effects in events with exceptionally large activity in the underlying-event region with respect to the event-averaged mean. For this purpose, in this talk we also present the charged particle transverse momentum distributions as a function of underlying-event activity in pp collisions. All results will be compared with QCD-inspired event generators, as well as with existing measurements adopting the mid- and forward-pseudorapidity multiplicity estimators.

Author: ALICE COLLABORATION

Presenter: KRUGER, Mario (Johann-Wolfgang-Goethe Univ. (DE))

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