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Forward-backward correlations in Pb–Pb collisions at 2.76 and 5.02 TeV with ALICE

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The analysis of forward-backward (FB) multiplicity and event-averaged transverse momentum correlations between particles produced in the forward ($\eta > 0$) and backward ($\eta < 0$) hemispheres of the nucleus-nucleus interaction brings new information, important in the context of our understanding the early dynamics of ultra-relativistic heavy ion collisions.

In this talk, we present new data on forward-backward correlations between charged particles produced in Pb-Pb collisions at $\sqrt{s_{NN}} = 2.76$ and 5.02 TeV measured with the ALICE detector at the LHC. We focus on the dependence of (a) the FB multiplicity *correlation coefficient* b_{corr} , (b) an *intensive observable*, namely the event-averaged transverse momentum *correlation coefficient* b_{corr}^{PT} , and (c) the *strongly – intensive quantity* Σ on (1) pseudorapidity gap (2) centrality and (3) width of the centrality bin.

The strongly-intensive observables and event-mean transverse momenta are robust against volume fluctuations and thus the centrality determination methods, which provides higher sensitivity of the FB correlation strength to the properties of the initial state and evolution of the medium created in AA collisions.

Our results from centrality selected Pb-Pb collisions are compared to pp collisions at the same collision energy, showing the role of the system size w.r.t. short-range and long-range correlations present in the process, and to Monte Carlo simulations using several event generators.

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