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Forward-backward correlations between event-mean transverse momenta in Pb-Pb collisions

Forward-backward (FB) correlations are usually measured between observables obtained in an event-by-event analysis in two separated pseudorapidity intervals.
The conventional observable for the FB correlations analysis is the charged particle multiplicity.
In the present study, instead of the multiplicity, we took an intensive observable, namely the event-averaged transverse momentum of particles measured in each of the two pseudorapidity intervals.
The strength of the FB correlations between event-mean transverse momenta is robust against volume fluctuations and thus the centrality determination methods,
which provides higher sensitivity of this quantity to the properties of the initial state
and evolution of the medium created in AA collisions.
The magnitude of the FB correlation strength is obtained
for different gaps between pseudorapidity intervals at different centralities of the Pb-Pb collisions measured at $\sqrt{s_{\mathrm{NN}}} = 2.76$ and 5.02 TeV with the ALICE detector at the LHC. The FB correlations are studied also in different combinations of azimuthal windows, selected within the pseudorapidity intervals.
Results are compared to AMPT and HIJING event generators and to the MC model with fusion of quark-gluon strings.

Preferred Track

Correlations and Fluctuations

Collaboration

ALICE

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