Contribution ID: **523** Type: **Poster**

Factorization of two-particle probability distributions in Pb–Pb collisions at $\sqrt{s_{NN}} = 5.02$ TeV with ALICE

Tuesday, May 15, 2018 7:10 PM (30 minutes)

The flow coefficients v_n are commonly extracted from multi-particle distributions where the properties of one or several particles are averaged over a large range in pseudorapidity η or transverse momentum p_{T}.
Such approaches assume that the observed multi-particle distributions can be factorized into a product of single-particle distributions.
However, it is known that this condition is violated even in ideal hydrodynamics due to initial state fluctuations or the presence of non-flow.
Detailed studies of a possible violation of this factorization assumption can therefore be used to constrain the size of such fluctuations as well as to identify possible non-flow contributions.
A factorization breakdown can be measured directly in multi-particle probability distributions.
This poster presents an explicit approach to the η-dependent factorization of two-particle probability distributions within $-3.4 \leq \eta \leq 5$ in the latest $\sqrt{s_{NN}} = 5.02$ TeV Pb–Pb data measured with ALICE.
A factorizing phase-space region is identified by varying the minimal $\Delta\eta$ separation between particles; the factorization breakdown for small separations is attributed to non-flow and detector effects.
The analysis yields the well known v_n coefficients as the result of the factorization process.
These flow coefficients are compared to similar results measured with the Q-cumulant method.
All findings are also compared to model calculations and previous studies at $\sqrt{s_{NN}} = 2.76$ TeV.

Content type

Experiment

Collaboration

ALICE

Centralised submission by Collaboration

Presenter name already specified

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Session Classification: Poster Session

Track Classification: Collective dynamics