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Event-by-event multiharmonic v_n correlations in heavy-ion collisions at $\sqrt{s_{\text{NN}}} = 5.36$ TeV with ALICE

In ultrarelativistic heavy-ion collisions, several nontrivial physics phenomena (e.g. collective anisotropic flow, jet quenching, etc.) can lead to persistent event-by-event azimuthal anisotropies in particle distributions, which are traditionally quantified with Fourier harmonics v_n . Besides the conventional measurements of individual v_n harmonics, further independent information about different stages in heavy-ion collisions can be extracted from multiharmonic v_n correlations, using recently developed Symmetric Cumulants (SC) and Asymmetric Cumulants (AC). These novel observables are particularly suitable for Bayesian studies, after it was demonstrated that they exhibit a better sensitivity to model parameters than the previously used observables.

Of particular interest is a differential measurement of SC and AC observables as a function of transverse momentum p_T , because this enables the separation of the contribution to v_n harmonics from collective flow at low p_T and jet quenching at large p_T .

This contribution presents the differential measurements of SC and AC observables in Run 3 Pb–Pb collisions at $\sqrt{s_{\text{NN}}} = 5.36$ TeV as a function of kinematic variables. Dependence on collision energy is investigated as well by comparing results for SC and AC observables obtained from Pb–Pb collisions in Run 3 at $\sqrt{s_{\text{NN}}} = 5.36$ TeV and Run 1 at $\sqrt{s_{\text{NN}}} = 2.76$ TeV.

Category

Experiment

Collaboration (if applicable)

ALICE

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