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Differential studies of multi-harmonic v_n correlations in heavy-ion collisions with ALICE

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Results from heavy-ion collisions confirmed the scenario in which the deconfined state of nuclear matter, dubbed the quark–gluon plasma (QGP), undergoes a collective expansion. Collective anisotropic flow, quantified with Fourier harmonics of azimuthal distribution of particles, v_n , is one of the most sensitive experimental probes to constrain QGP properties. Recently developed multi-harmonic flow observables, Symmetric Cumulants (SC) and Asymmetric Cumulants (AC) of v_n amplitudes, provide new and independent information from their correlations and fluctuations, since they satisfy all fundamental properties of multivariate cumulants in a strict mathematical sense.

In this contribution, the first differential measurements of SC and AC observables in Pb–Pb collisions measured with ALICE as a function of kinematic variables are presented. The analysis is performed in parallel using the legacy code and the newly deployed O2 framework for Run 3 analyses in ALICE.

Category

Experiment

Collaboration (if applicable)

ALICE Collaboration

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