

# Azimuthal correlations of longitudinal structure at midrapidity in Pb-Pb collisions at $\sqrt{s_{NN}} = 2.76$ TeV with ALICE

Longitudinal multiplicity correlations and longitudinal asymmetry studies in heavy-ion collisions have suggested a hint of some asymmetry in the initial geometry and its effects in the final state particle fluctuations. In addition to the expansion of the medium in the transverse direction, commonly quantified using Fourier coefficients ( $v_n$ ), the initial geometry and resulting longitudinal expansion as a function of azimuthal angle enable us to better understand the full 3-dimensional picture of heavy-ion collisions. In this poster, azimuthal correlations of the longitudinal structure of charged particles are reported for Pb-Pb collisions at a nucleon-nucleon center-of-mass energy of 2.76 TeV. Azimuthal angle is divided into regions in-plane and out-of-plane, and coefficients of Legendre polynomials from a decomposition of longitudinal structure at midrapidity ( $|\eta| < 0.8$ ) on an event-by-event basis are estimated in each region for different centralities. Correlations in different azimuthal regions among coefficients of various orders are studied and indicate collective features of longitudinal structure in azimuthal direction. The results are compared with HIJING and AMPT simulations.

## Preferred Track

Correlations and Fluctuations

## Collaboration

ALICE

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