



Skewness of Event-by-event Elliptic Flow Fluctuations in PbPb collisions at $\sqrt{s_{NN}} = 5.02$ TeV with CMS

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Event-by-event elliptic flow harmonic distributions $p(v_2)$ are measured in PbPb collisions at $\sqrt{s_{NN}} = 5.02$ TeV using the CMS detector for the integrated p_T range $0.3 < p_T < 3.0$ GeV/c and pseudorapidity range $|\eta| < 1.0$. In order to gain insight on the nature of the initial geometry fluctuations, cumulant flow harmonics are calculated from the moments of the v_2 probability distribution $p(v_2)$. A fine-level splitting between the higher-order cumulants is observed. The skewness with respect to the reaction plane is estimated from the cumulants and found to be negative, which suggests a non-Gaussian nature for the initial-state fluctuations, as predicted by hydrodynamic models. These observations suggest a non-Gaussian nature of the initial-state fluctuations. Furthermore, assuming that the flow harmonics are linearly proportional to the initial-state eccentricities, the $p(v_2)$ distributions are fitted using an elliptic power law parameterization to study the initial-state geometry fluctuations.

List of tracks

Hydrodynamics

Primary author: THE CMS COLLABORATION

Presenter: NAZAROVA, Elizaveta (M.V. Lomonosov Moscow State University (RU))

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