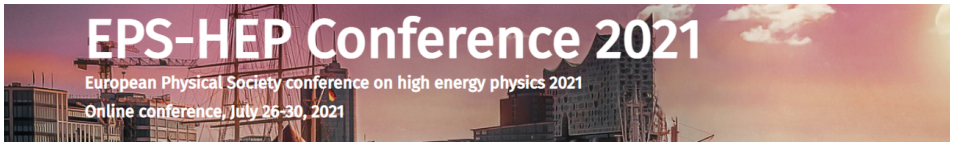

Contribution ID: **593** Type: **Parallel session talk**

Measurements of mixed harmonic cumulants in Pb-Pb collisions at 5.02 TeV with ALICE

Monday 26 July 2021 16:30 (15 minutes)

Multi-particle cumulants of azimuthal angle correlations are compelling tools to constrain the initial conditions and probe the properties of the quark-gluon plasma created in the ultrarelativistic heavy-ion collisions at the LHC. However, only very few of them have been measured experimentally and supplemented with corresponding theoretical calculations.

Using a newly developed correlation technique, we will present the first measurements of mixed harmonic cumulants in Pb–Pb collisions at $\sqrt{s_{\rm NN}} = 5.02$~TeV recorded with the ALICE detector. The centrality dependence of correlations between two flow coefficients as well as the correlations between three flow coefficients, both in terms of their second moments, are shown. In addition, a collection of mixed harmonic cumulants involving higher moments of flow amplitudes v_2 and v_3 is measured for the first time, where the characteristic signature of negative, positive and negative signs for the four-, six- and eight-particle cumulants, respectively, is observed. The measurements are compared to the hydrodynamic calculations using iEBE-VISHNU with AMPT and TRENTo initial conditions. It is shown that these new studies on correlations between three flow coefficients as well as correlations between higher moments of two different flow coefficients can tighten constraints on initial-state models and help extract precise information on the dynamic evolution of the hot and dense matter created in heavy-ion collisions at the LHC.

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Collaboration / Activity

ALICE

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