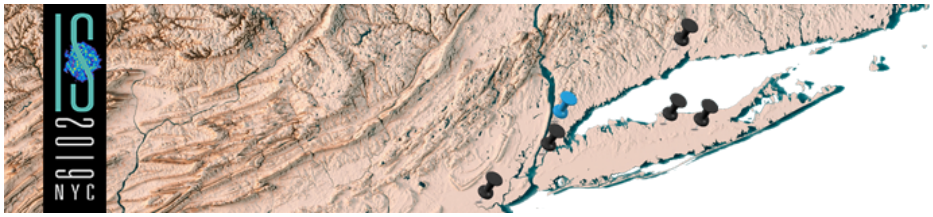

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Higher order flow correlations and their non-linear modes in Pb-Pb collisions at $\sqrt{s_{\rm NN}}$ = 5.02 TeV with ALICE

Tuesday, June 25, 2019 4:09 PM (1 minute)

One of the primary goals of flow studies in heavy-ion collisions during recent years is a better understanding of the transport properties of the quark-gluon plasma (QGP), such as the temperature dependence of the shear viscosity to entropy ratio, $\eta/s(T)$. Flow observables, such as the higher order harmonics (n>3) and their non-linear responses to the initial state anisotropy have a strong potential to constrain $\eta/s(T)$ because of different sensitivities for various stages of heavy-ion collisions. These observables have been published in Pb-Pb collisions at $\sqrt{s_{\rm NN}}$ = 2.76 TeV by the ALICE Collaboration. However, only harmonics up to the fifth order have been measured with good precision, leaving the orders highly sensitive to η/s as predicted un-investigated.

In this talk, we present the measurements of the symmetry-plane correlations and the non-linear coefficients up to the eighth harmonic order in Pb-Pb collisions at $\sqrt{s_{\rm NN}}$ = 5.02 TeV for unidentified charged hadrons. In addition, we present the results of $p_{\rm T}$-differential non-linear flow modes for charged pions, kaons, and (anti-)protons. The results are compared to the lower energy measurements at 2.76 TeV and calculations from state-of-the-art hydrodynamic models.

Primary author: ALICE COLLABORATION

Presenter: PARKKILA, Jasper (University of Jyväskylä)

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