

Correlations of anisotropic flow in relativistic heavy-ion collisions at the LHC

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Anisotropic flow is one of the key observables used to probe the properties and evolution of the hot and dense matter produced in heavy-ion collisions.

It was recently realized that event-by-event initial geometry fluctuations in heavy-ion collisions lead to a new type of correlation between different order anisotropic flow, which has unique sensitivity to initial conditions and shear viscosity over entropy density ratio η/s .

In this talk, I discuss the correlation strength between various anisotropic flow harmonics, named (normalized-)symmetric cumulants, in both transport and hydrodynamic model calculations. In addition, the correlations between different order flow symmetry plane will be presented. The results can be naturally understood with recent development of non-linear hydrodynamic response of the created hot and dense matter to initial anisotropy coefficients. A detailed comparison of model calculations and recent experimental measurement, is also presented. Last but not least, I will show how to improve the current development of global Bayesian analysis on constraining the initial conditions and the extraction of the properties of the created QGP in relativistic heavy-ion collisions.

List of tracks

Fluctuation in initial conditions, collective flow and correlations

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