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Higher order flow harmonics and its correlations in 2.76A TeV Pb+Pb collisions

Thursday 30 June 2016 11:00 (20 minutes)

In this talk, we present our recent investigations on the higher order flow harmonics in 2.76A TeV Pb+Pb collisions using the iEBE-VISHNU hybrid model.

(1). Using iEBE-VISHNU model with AMPT initial conditions, we calculate the higher order flow harmonics of identified hadrons in 2.76A TeV Pb+Pb collisions. Our model calculations generally reproduce the recent ALICE data on higher order flow harmonics, which shows a similar mass ordering of $v_3(p_T)$ and $v_4(p_T)$ as one observed in $v_2(p_T)$.
We also explore the development of v_n mass ordering during the hadronic evolution through the comparison runs from iEBE-VISHNU hybrid model and pure hydrodynamics with different decoupling temperatures.

(2). Using iEBE-VISH2+1 model, we investigate the correlations between different order flow harmonics in Pb+Pb collisions at 2.76A TeV. Comparisons between hydrodynamic calculations and the experimental measurements from ALICE Collaboration show that hydrodynamics can qualitatively describe the data on $SC^v(3,2)$ and $SC^v(4,2)$, which indicate the v_2 and v_3 are anti-correlated, and the v_2 and v_4 are correlated. We also predict other correlation of flow harmonics $SC^v(5,2)$, $SC^v(4,3)$ and $SC^v(5,3)$, and propose some other observables, such as the normalized symmetric cumulants $NSC(m,n)$, the Pearson correlation coefficients $C(v_m^2, v_n^2)$, and discuss their dependences on the different initial scenarios (Monte Carlo Glauber, Monte Carlo KLN and AMPT) and shear viscosities.

References:

[1]. HJX, Zhuopeng Li, Huichao Song High order flow harmonics of identified hadrons in 2.76 A TeV Pb+Pb collisions, arXiv.1602.02029

[2]. Xiangrong Zhu, You Zhou, HJX, Huichao Song, Correlations of event-by-event flow harmonics in 2.76A TeV Pb–Pb collision, in prepare

On behalf of collaboration:

None

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