

## **Dynamics of the conserved net-baryon density near QCD critical point within QGP profile**

Searching the QCD critical point is one of the most important goals of the relativistic heavy-ion collisions. It is essential to build a realistic dynamical model near the QCD critical point and predict the characteristic signature induced by critical fluctuations in experimental measurements. By studying the dynamics of the conserved net-baryon density near critical point, it was found that both second- and fourth-order multiplicity fluctuations behave non-monotonically with respect to the increasing rapidity acceptance [1,2]. However, these works base on the assumption that the QGP fireball is homogeneous with constant temperature and chemical potential in the coordinate space, which is not realistic in the context of heavy-ion collisions. In this talk, we will present the dynamics of conserved net-baryon density near the critical point within the inhomogeneous temperature and chemical potential background, borrowing from hydrodynamic simulations [3]. With the freeze-out hyper surface obtained by the hydro simulation, we find the pronounced enhancement of multiplicity fluctuations at large rapidity, which corresponds to the early evolution of conserved net-baryon density.

[1] Miki Sakaida, Masayuki Asakawa, Hirotsugu Fujii, Masakiyo Kitazawa. Phys.Rev.C 95 (2017) 6, 064905

[2] Grégoire Pihan, Marcus Bluhm, Masakiyo Kitazawa, Taklit Sami, Marlene Nahrgang. Phys.Rev.C 107 (2023) 1, 014908

[3] Shanjin Wu and Huichao Song. In preparation.

**Author:** WU, Shanjin

**Co-author:** SONG, Huichao

**Presenter:** WU, Shanjin