Contribution ID: **54** Type: **Poster**

Rapidity decorrelation from hydrodynamic fluctuations in high energy nuclear collisions

Monday, 21 May 2018 18:30 (0 minutes)

Fluctuations have been playing an important role in understanding observables
in high-energy nuclear collisions.
Higher harmonics of azimuthal angle distributions, for example, can be attributed to
initial fluctuations of transverse profile from event to event.
In this presentation, we focus on thermal fluctuations
during hydrodynamic evolution
(i.e. hydrodynamic fluctuations)
of the QGP fluids in the intermediate stage
and investigate the effects of them on several
observables
in high energy nuclear collisions.

We employ an integrated dynamical model [2,3]
which combines full three-dimensional relativistic fluctuating hydrodynamics
with Monte-Carlo version of the Glauber model for
event-by-event initialization
and the hadronic cascade model in the late rescattering stage.
By using this model, we first adjust initial parameters
and transport coefficients to reproduce $dN_{\rm ch}/d\eta$
and centrality dependence of integrated v_2
in Pb+Pb collisions at the LHC energy.
We next analyze observables for longitudinal flow correlations of the n-th order higher harmonics
$R_{n;n|n;n}(\eta)$ [4]
for separation of the flow magnitude fluctuations
from the event-plane twist along the rapidity.
From this analysis, we see how hydrodynamic fluctuations
break longitudinal correlations of the magnitude and the event-plane angle
of anisotropic flow parameters.

References

[1] K. Murase and T. Hirano,
“Relativistic fluctuating hydrodynamics with memory functions and colored noises,”
arXiv:1304.3243 [nucl-th].

[2] Koichi Murase, “Causal hydrodynamic fluctuations and their effects on high-energy
nuclear collisions”, Ph. D thesis, the University of Tokyo (2015).

[3] K. Murase and T. Hirano, “Hydrodynamic fluctuations and dissipation in an integrated dynamical model”,
arXiv: 1601.02260 [nucl-th].

[4] Jiangyong Jia et al., “ Observables for longitudinal flow correlations in heavy-ion collisions”,
arXiv:1701.02183 [nucl-th].

Primary author: Mrs SAKAI, Azumi (Sophia University)

Co-authors: Mr MURASE, Koichi (The University of Tokyo); Prof. HIRANO, Tetsufumi (Sophia University)

Presenter: Mrs SAKAI, Azumi (Sophia University)

Session Classification: Poster Session