



Contribution ID: 90

Type: **not specified**

Fluctuations in an integrated dynamical approach for heavy-ion collisions

Thursday, 12 September 2013 15:50 (20 minutes)

Recently, the higher harmonics v_n ($n > 2$) are systematically observed at RHIC and LHC and attract a lot of theoretical and experimental interests. Initial state fluctuations turned out to be important to explain these higher harmonics through event-by-event hydrodynamic simulations. In addition attempts are made to extract transport properties of the created matter such as shear viscosity from the higher harmonics data.

In the heavy-ion reactions, the higher harmonics are created not only by initial state fluctuations. For example, thermal fluctuation in the hydrodynamic stage of the quark-gluon plasma also plays an important role in event-by-event descriptions. To obtain the properties of the quark-gluon plasma from experimental data quantitatively, an integrated dynamical approach which describe all the stages of the heavy-ion reaction is required. The approach includes models of initial states, hydrodynamics of quark-gluon plasma and subsequent hadronic cascades. It is important to properly implement all the possible sources of fluctuations in an integrated model and perform event-by-event simulations for quantitative analysis. First, we formulate the relativistic fluctuating hydrodynamics with the thermal fluctuation by putting an emphasis on non-linearity and causality, and discuss significant behavior of the fluctuations using the fluctuation-dissipation relations. Also, recent results obtained by massive number of event-by-event simulations are shown.

Primary author: MURASE, Koichi (The University of Tokyo)

Co-author: HIRANO, Tetsufumi (Sophia Univ)

Presenter: MURASE, Koichi (The University of Tokyo)

Session Classification: Parallel talks - Session 1A