Contribution ID: **307** Type: **Parallel Talk**

Elucidating the properties of hot nuclear matter with a comprehensive description of ultra-relativistic heavy-ion collisions

Wednesday, May 16, 2018 5:10 PM (20 minutes)

We present the latest developments in the ab-initio description of the initial state of heavy ion collisions at high energies and its coupling to relativistic viscous hydrodynamics. This includes the extension of the IP-Glasma model to include subnucleonic geometry fluctuations, shown to be present in electron-proton scattering, and the inclusion of the full energy-momentum tensor of the Glasma phase at the time of matching to hydrodynamics. After analyzing the effects of these improvements on observables, we present detailed calculations from the combined IP-Glasma+MUSIC+UrQMD model, which also includes the microscopic hadron gas description in the low temperature region. We will show results for multiplicity distributions, transverse momentum spectra, flow observables including higher cumulants, event-plane correlations, and HBT radii in Pb+Pb collisions at 5.02 TeV, as well as predictions for Xe+Xe collisions at 5.44 TeV. We will discuss how the simultaneous description of this wide range of different observables in different systems can be used to constrain the transport properties of the quark-gluon plasma, including the temperature dependence of shear and bulk viscosities.

Content type

Theory

Collaboration

Centralised submission by Collaboration

Presenter name already specified

Primary author: Dr SCHENKE, Bjoern (Brookhaven National Laboratory)

Co-authors: Dr SHEN, Chun (Brookhaven National Laboratory); Dr TRIBEDY, Prithwish (Brookhaven National Laboratory)

Presenter: Dr SCHENKE, Bjoern (Brookhaven National Laboratory)

Session Classification: Collective dynamics

Track Classification: Collective dynamics