Contribution ID: **118** Type: **Poster**

Achieving High Baryon Densities in the Fragmentation Regions of High Energy Heavy Ion Collisions at LHC and RHIC

Heavy ion collisions at extremely high energy, such as the top energy at RHIC and the typical energy at LHC, exhibit the property of transparency where there is a clear separation between the almost net-baryon-free central rapidity region and the net-baryon-rich fragmentation region. We calculate the net-baryon rapidity loss and the nuclear excitation energy using the energy-momentum tensor obtained from the McLerran-Venugopalan model. Nuclear compression during the collision is further estimated using a simple space-time picture. The results show that extremely high baryon densities, more than ten times larger than the normal nuclear density, can be achieved in the fragmentation regions. Systematic studies including asymmetric collisions, collisions at finite impact parameters and collisions with different nuclei and energy are performed. Our results should provide the initial conditions for the baryon distribution in the ensuing evolution and open a different corner on the QCD phase diagram for experimental probes.

Preferred Track

Initial State Physics and Approach to Equilibrium

Collaboration

Not applicable

Primary author: LI, Ming (University of Minnesota, Twin Cities)

Presenter: LI, Ming (University of Minnesota, Twin Cities)

Session Classification: Poster Session