



Contribution ID: 154

Type: **Theory talk**

Net-particle number fluctuations in a hydrodynamic description of heavy-ion collisions at RHIC and LHC

Tuesday 18 May 2021 11:10 (20 minutes)

We generalize the Cooper-Frye particlization routine to make it suitable for describing event-by-event fluctuations in heavy-ion collisions. This is achieved via a newly developed subensemble method, allowing to incorporate the effects of exact global conservation of multiple charges, thermal smearing, and resonance decays on fluctuations of various particle numbers. Utilizing viscous hydrodynamic simulations of heavy-ion collisions, we study the behavior of cumulants of net-proton, net-Lambda, net-pion and net-kaon distributions at RHIC and LHC energies. The experimental data on net-proton cumulants at $\sqrt{s_{NN}} > 20$ GeV are consistent with simultaneous effects of global baryon conservation and repulsive interactions in baryon sector, the latter being in line with the behavior of baryon number susceptibilities observed in lattice QCD. The data at lower collision energies show possible indications for sizable attractive interactions among baryons.

Collaboration

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Session Classification: Bulk (Fluctuation)