

Global and Local Temperature Fluctuations in High Energy Heavy-ion Collisions

Monday, 5 October 2015 19:55 (5 minutes)

Temperature fluctuations may have two distinct origins, first, quantum fluctuations that are initial state fluctuations, and second, thermodynamical fluctuations. We discuss a method of extracting the thermodynamic temperature from the mean transverse momentum of pions, by using controllable parameters such as centrality of the system, and range of the transverse momenta. Event-by-event fluctuations in global temperature over a large phase space provide the specific heat of the system. We present Beam Energy Scan of sp. heat from data, AMPT and HRG model prediction. The production of a large number of particles in every event, it is possible to divide the phase space into small bins and obtain local temperature for each bin. The origin of the local fluctuations has been studied with the help of event-by-event hydrodynamic calculations, which diminishes with the elapse of time. We discuss the hydrodynamic calculations and a feasibility study at LHC using AMPT simulated data.

Primary author: Mr BASU, Sumit (Variable Energy Cyclotron Centre)

Co-author: Prof. NAYAK, Tapan (Variable Energy Cyclotron Centre)

Presenter: Mr BASU, Sumit (Variable Energy Cyclotron Centre)

Session Classification: Poster session

Track Classification: Collective Phenomena in High Energy Collisions