Contribution ID: **85** Type: **Talk**

Study of freeze-out dynamics in STAR at RHIC beam energy scan program

Thursday, 25 July 2013 14:20 (20 minutes)

The STAR experiment at RHIC has collected data at various collision energies in its beam energy scan (BES) program to study the QCD phase diagram. The BES program covers a large part of the QCD phase diagram in terms of temperature (T) versus baryon chemical potential (μ_B). The collected data set can be used to study the kinetic and chemical freeze-out dynamics. The kinetic and chemical freeze-out parameters can be extracted using the transverse momentum (p_T) spectra of hadrons and the total yields within the framework of statistical model assuming thermal equilibrium.

We report the centrality and energy dependence of chemical freeze-out parameters (temperature, baryon and strangeness chemical potential, and strangeness saturation factor) in Au+Au collisions at $\sqrt{s_{NN}} = 7.7$, 11.5, 27, and 39 GeV. The chemical freeze-out conditions are obtained by comparing the experimentally measured ratios of particle yields at mid-rapidity, which includes $\pi^{\pm}$, $emphK^{\pm}$, $emphp$, $em\bar{p}hp$, K^0_S, Λ, $\bar{\Lambda}$, Ξ^-, and $\bar{\Xi}^+$ to those obtained from the statistical-thermal model calculations (THERMUS). The kinetic freeze-out parameters of temperature and radial collective flow are obtained by fitting the invariant pT differential yields of the produced hadrons, as a function of transverse momentum using a Blast Wave model.

Primary author: Ms DAS, Sabita (Brookhaven National Laboratory, USA and Institute of Physics, India)

Presenter: Ms DAS, Sabita (Brookhaven National Laboratory, USA and Institute of Physics, India)

Session Classification: Beam Energy Scan