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Recent Results and Methods on Higher Order and Off-diagonal Cumulants of Identified Net-particle Multiplicity Distributions in Au+Au Collisions at STAR

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The ratios of the cumulants of identified net-particle multiplicity distributions have been suggested to be sensitive to the onset of QCD phase transition and to the additional fluctuations expected from the close proximity to the critical point [1,2,3].

We report the first measurements of 6th order cumulants of net-charge distributions, up to 3rd order cumulants of net- Λ distributions, and off-diagonal cumulants of net-charge, net-proton, and net-kaon distributions for Au+Au collisions at BES energies using particle species dependent efficiencies. Net-proton cumulants up to 4th order have been obtained with unfolding to correct for non-binomial detector effects as well as a new method for volume fluctuation corrections [4]. We show the first measurement of cumulant ratios (C_2/C_1 , C_3/C_2) of net- Λ , which are each subject to strangeness and baryon number conservation. We extract the chemical freeze-out parameters (μ_B , T) from these measurements under the assumption that the experimental multiplicity cumulant ratios are equivalent to the ratios of susceptibilities from the lattice.

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Content type

Experiment

Collaboration

STAR

Centralised submission by Collaboration

Presenter name already specified

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