



Contribution ID: 418

Type: **Poster**

Impact of higher mass-states on the freeze-out conditions in heavy ion collisions

Tuesday 29 September 2015 16:30 (2 hours)

Fluctuations of conserved charges have proven to be a good tool to investigate the QCD phase diagram in many aspects, like the conditions for the deconfinement transition from hadrons to quarks and the determination of the chemical freeze-out parameters.

We use a Hadron Resonance Gas (HRG) model to study the hadronic phase of an Heavy-Ion collision, and compare our results with recent lattice QCD simulations and experimental measurements.

We show that the inclusion of higher mass states, recently measured in the experiments, improves the agreement with the lattice results for a key set of observables related to strangeness fluctuations.

We find that, with these new states, the freeze-out conditions resulting from the analysis of net-proton and net-charge moments are consistent with our previous findings. A comparison with experimental data from the STAR collaboration on ratios of particle yields still hints at a shift between the freeze-out temperatures needed to describe the light and the (multi-)strange sectors.

On behalf of collaboration:

NONE

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Session Classification: Poster Session

Track Classification: Correlations and Fluctuations