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Higher order fluctuations of strangeness and flavor hierarchy

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In recent years, the study of fluctuations of conserved charges has received increasing attention: they turned out to be a promising tool to study the deconfinement phase transition of QCD, the existence of a critical point in the phase diagram and, more recently, the freeze-out conditions in heavy-ion collisions (HICs).

Recent lattice QCD simulations and phenomenological models have found first indications for a different transition-temperature for strange and light quarks. The study of the higher order moments of the strange particle

distributions measured in HICs would be very useful to clarify this issue.

Preliminary results on the moments of net-charged kaons have been presented by the STAR collaboration, with experimental kinematic cuts but still without corrections due to finite acceptance in the detectors.

Combinations of such moments are related to volume-independent ratios of higher order cumulants, which can be calculated in the Hadron Resonance Gas (HRG) model. I present results for higher order fluctuations of strangeness in the HRG model, including different combinations of stable strange hadrons, resonance feed-down corrections, kinematic cuts, thus getting as close as possible to the future HIC strangeness fluctuation measurements.

On behalf of collaboration:

None

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