

# Cumulants and Correlation Functions vs the QCD phase diagram

*Wednesday, February 8, 2017 3:00 PM (20 minutes)*

We will discuss the relation between particle number cumulants and multi-particle correlation functions. It is argued that measuring couplings of the genuine correlation functions could provide cleaner information on possible non-trivial dynamics in heavy-ion collisions. We extract integrated multi-particle correlation functions from the presently available experimental data on proton cumulants. We find that the STAR data contain significant four-particle correlations, at least at the lower energies, with indication of changing dynamics in central collisions. We also find that these correlations are rather long-ranged in rapidity. Based on the signs of genuine correlation functions we provide exclusion plots for the QCD phase diagram.

## Preferred Track

QCD at High Temperature

## Collaboration

Not applicable

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**Session Classification:** Parallel Session 7.2: Correlations and Fluctuations (II)

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