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## Off-diagonal Cumulants of Net-charge, Net-proton, and Net-kaon Multiplicity Distributions in Au+Au collisions at STAR

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Event-by-event fluctuations of conserved quantities have been extensively used to study the thermodynamic properties around phase transition region of QCD matter. According to lattice QCD calculation, the off-diagonal cumulants of net-charge ( $Q$ ), net-baryon ( $B$ ) and net-strangeness ( $S$ ) and their ratios to diagonal cumulants are sensitive to the evolution of the system and to constrain the freeze-out parameters in the QCD phase diagram [1,2].

In this poster, we report a first measurement of  $2^{nd}$ -order off-diagonal cumulants of net-charge, net-proton and net-kaon multiplicity distributions at RHIC in Au+Au collisions at  $\sqrt{s_{NN}} = 7.7, 11.5, 14.5, 19.6, 27, 39, 62.4$  and 200 GeV. We study beam energy, centrality, and acceptance ( $\eta$ ) window dependence of off-diagonal cumulants after implementing efficiency and other experimental corrections. The measured cumulants ratios are compared with the predictions from UrQMD and hadron resonance gas models. The results will be discussed in the context of understanding the correlated fluctuations of the conserved quantities.

### References

- [1] A. Majumder and B. Muller, Phys. Rev. C74, 054901 (2006).
- [2] F. Karsch and K. Redlich, Phys. Lett. B695, 136 (2011).

### Content type

Experiment

### Collaboration

STAR

### Centralised submission by Collaboration

Presenter name already specified

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