Baryon-strangeness Correlation in Au+Au Collisions at $\sqrt{s_{NN}} = 3$ GeV by STAR Fixed-target Experiment

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Higher-order cumulants of conserved quantities are proposed as key signatures for studying the QCD phase structure and for exploring the phase boundary and the critical point. It is also suggested that the correlation between baryon and strangeness number is a diagnostic to the degree of freedom of strongly interacting matter [1, 2] and may be used to identify the onset of deconfinement.

In this poster, we will report the second-order baryon-strangeness correlations in Au+Au collisions at $\sqrt{s_{NN}} = 3$ GeV from STAR fixed-target experiment. Experimental data will be compared with various model calculations. Physics implications as well as an outlook on baryon-strangeness correlation will also be discussed.

References

[1] V. Koch, A. Majumder, and J. Randrup. Baryon-strangeness correlations: A Diagnostic of strongly interacting matter. *Phys. Rev. Lett.*, 95:182301, 2005.

[2] M. Cheng et al. Baryon Number, Strangeness and Electric Charge Fluctuations in QCD at High Temperature. *Phys. Rev. D*, 79:074505, 2009.