

Dynamical effects on the phase transition signal

Monday, 24 April 2023 17:05 (25 minutes)

The QCD phase transition signals at RHIC are expected to be observed via the measurement of net-proton's high order cumulants [1]. In this talk, we will present our recent study of dynamical effects on the high order cumulants of the QCD chiral field in a system with finite-size. We find much stronger memory effects on the first-order phase transition side than on the crossover side. Besides, the dynamical cumulants at the hypothetical freeze-out line present rich non-monotonic structures, which is suggestive to the explanation of the experimental data [2].

Further, within the same dynamical framework, we also study the dynamical behaviors of the newly developed first-order phase transition criterion Δ [3]. Related factors such as the phase transition scenarios, the initial temperature, the volume size, the relaxation rate, as well as different evolution trajectories are discussed separately [4].

[1] J. Adamet al. (STAR Collaboration), Phys. Rev. Lett.126,092301 (2021).

[2] L. Jiang, H. Stöcker and J. H. Zheng, Eur. Phys. J. C 83 (2023) no.2, 117.

[3] Y. Lu, F. Gao, X. Luo, L. Chang and Y. x. Liu, arXiv:2211.03401.

[4] L. Jiang, F. Gao, H. Song, and Y. x. Liu, in preparations.

Theory / experiment

Theory

Group or collaboration name

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