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Type: Talk

Studying the QCD phase diagram through higher-order fluctuations in RHIC-BES at STAR

Tuesday, 31 August 2021 11:00 (30 minutes)

Understanding QCD phase structure is one of ultimate goals of high-energy heavy-ion colliding experiments. At BNL-RHIC, the Beam Energy Scan (BES-I) program was carried out from 2010 to 2017.

Data sets of Au+Au collisions were collected for various collision energies

from $\sqrt{s_{\rm NN}} = 200$ GeV down to 7.7 GeV by the STAR experiment.

Recently, the STAR collaboration reported a nonmonotonic beam energy dependence of the fourth-order fluctuations

of net-proton multiplicity distributions, which could hint a signal from the QCD critical end point at $\sqrt{s_{\rm NN}} \approx 7.7$ GeV.

In this talk, we will present results on fluctuations of net-particle distributions from the BES-I program. Recent progress on the fifth- and sixth-order fluctuations will be reported, and will be compared to theoretical calculations. Future prospects for new data from BES-II and fixed-target programs will be also discussed.

Is this abstract from experiment?

Yes

Name of experiment and experimental site

STAR collaboration

Is the speaker for that presentation defined?

Yes

Details

Toshihiro Nonaka

Internet talk

Yes

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