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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 $\sqrt{s_{NN}} = 200$ 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 $\sqrt{s_{NN}} \approx 7.7$ 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

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Internet talk

Yes

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