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Studying the QCD phase diagram in RHIC-BES at STAR

Tuesday, 25 June 2019 09:00 (45 minutes)

Exploring the QCD phase structure is one of the 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 2014, and many data sets have been collected by the STAR experiment in various collision energies from $\sqrt{s_{NN}} = 200$ GeV down to 7.7 GeV in Au+Au collisions. In order to reduce the uncertainties in the interested energy region ($7.7 < \sqrt{s_{NN}} < 19.6$ GeV), the BES-II program is scheduled for 2019-2021. In this talk, we present the BES-I results on hadron spectra, directed flow and higher-order cumulants of conserved charges which covers the physics issues of the freeze-out, first-order phase transition and the searching for the QCD critical point, respectively. The current status of BES-II and the future prospects for the fixed-target program will be also discussed.

Primary author: Dr NONAKA, Toshihiro (Central China Normal University)

Presenter: Dr NONAKA, Toshihiro (Central China Normal University)

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