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The STAR BES II and Forward Rapidity Physics and Upgrades

Tuesday 15 May 2018 10:00 (20 minutes)

The second phase of the Beam Energy Scan at RHIC, BES-II, is scheduled for 2019-2020 and will explore with precision measurements the high baryon density region of the QCD phase diagram. Some of the key measurements at center-of-mass energies at 19.6 GeV to 7.7 GeV in collider mode and 7.7 GeV to 3.0 GeV are: the kurtosis of net-protons that could pinpoint the position of a critical point, the directed flow of baryons vs. energy that might prove a softening of the equation of state, and the chiral restoration in the di-lepton channel. The measurements will be enhanced by the detector upgrades to extend STAR's experimental reach. The upgrades currently under way comprise: the replacement of the inner TPC sectors that increases the rapidity coverage of identified particles, the Event Plane Detector that improves the triggering and event plane resolution, and the end-cap TOF that extends the PID capabilities to larger rapidities in one hemisphere of STAR. Building on these upgrades STAR is planning to further enhance its detector capabilities by installing a Forward Calorimeter System integrating an electromagnetic and hadronic calorimeter and a Forward Tracking System combining 3 Silicon mini-strip disks and 4 Small-Strip Thin Gap Chamber (sTGC) wheels ala ATLAS. The upgrade is motivated by studying the initial state of nucleons and nuclei and the exploration of cold QCD physics in the very high and low regions of Bjorken x. The talk will highlight the physics opportunities enabled by these upgrades.

Content type

Experiment

Collaboration

STAR

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