

The STAR beam energy scan phase II physics and upgrades

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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. The program will examine the energy regime of interest determined from the results of BES-I. Some of the key measurements anticipated 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 EOS, and the chiral restoration in the dilepton channel. The measurements will be possible with the order of magnitude better statistics provided by the electron cooling upgrade of RHIC and with the detector upgrades planned to extend STAR's experimental reach. The upgrades are: the replacement of the inner TPC sectors (*i*TPC) that increases the rapidity coverage of identified particles, the Event Plane Detector (EPD) that improves the triggering and event plane resolution, and the end-cap TOF (*e*TOF) that extends the PID capabilities to larger rapidities in one hemisphere of STAR. The talk will highlight the physics opportunities enabled by these upgrades.

Preferred Track

Future Experimental Facilities, Upgrades, and Instrumentation

Collaboration

STAR

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