

Abstract Submitted
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An Improved Event Plane Detector for the STAR Experiment

JUSTIN EWIGLEBEN, Lehigh University, STAR EPD GROUP TEAM — The BES program at RHIC has shown hints of a critical point and first order phase transition at the BES energies. Key measurements for locating the critical point and determining the first order phase transition are limited by poor event plane resolution, limited statistics and a TPC-only centrality determination. Therefore, phase II of the BES program was proposed to take data with upgraded detectors and increased statistics for the further investigation. A new event plane and collision centrality detector is planned to replace the existing detector, the BBC, with higher granularity and acceptance. The design of the EPD consists of two scintillator discs at $z = \pm 3.75\text{m}$ from the center of STAR, covering $2.2 < \eta < 5.1$, the same as the BBC. The detector will be read out by silicon photomultipliers - an inexpensive and magnetic field insensitive replacement for the traditional phototube. A prototype of the detector, consisting of a single sector was integrated into STAR during the 2016 run, which will be shown. The optimized segmentation, size and shape of the final design was decided in order to maximize event plane resolution, centrality estimation and flow harmonic measurements. We will discuss the plans to install one quarter of a disc into STAR for the 2017 run.

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