

Abstract Submitted
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Proton Yields, Multiplicities, and Event-by-event Fluctuations for Au + Au at $\sqrt{s_{NN}}$ from 3 GeV¹ SAMUEL HEPPELMANN, University of California, Davis, STAR COLLABORATION — The first RHIC Beam Energy Scan (BES-I) was run from 2010-2014 to search for the turn-off of signatures of the quark-gluon plasma (QGP), evidence of the first-order phase transition, and the possible QCD critical point. Motivated by the findings of BES-I, STAR has initiated a phase II of the BES program (BES-II). The BES-II program improves upon the earlier BES-I program with detector upgrades to extend the acceptance, higher luminosity to provide 10-20 times better statistics at each energy, and a Fixed-Target program to extend the range of BES-II below the expected critical point. In this talk, results from the first dedicated fixed-target physics run at $\sqrt{s_{NN}} = 3$ GeV will be presented. We present proton (and antiproton) yields and multiplicities. These measurements will be compared with results from AGS experiments E866 and E895. We will discuss the implications of the observed multiplicities and efficiency corrections to the study of cumulants of event-by-event net-proton multiplicities up to the fourth order as a function of rapidity. Results at this energy will help to understand the trends observed in the previous results from the BES program and preliminary results from HADES. We will discuss the future of BES-II fixed-target measurements at RHIC.

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