Abstract Submitted
for the DNP13 Meeting of
The American Physical Society

An EIC detector at eRHIC based on the proposed sPHENIX upgrade KIERAN BOYLE, RIKEN BNL Research Center, PHENIX COLLABORATION — One of the proposals for the Electron Ion Collider, eRHIC, would add an electron beam to the current RHIC collider, allowing for polarized e+p collisions as well as collisions of electrons on light and heavy ions. The EIC white paper [1] gives a detailed description of the physics possible with such a machine. The PHENIX experiment at RHIC is currently planning an upgrade, sPHENIX, to its central rapidity detector with a solonoid magnet and electromagnetic and hadron calorimetry to study the quark-gluon plasma with jet probes in heavy ion collisions. We propose to utilize this planned central upgrade–along with an additional forward arm spectrometer for measurements in p+p and p+A of both spin physics and cold (high density) nuclear matter–in e+p and e+A collisions, essentially making this a future eRHIC detector. We present the detector layout for such an eRHIC detector at the current location of PHENIX, and also preliminary studies of its capabilities.

[1] A. Accardi, et al., BNL-98815-2012-JA, JLAB-PHY-12-1652, arXiv:1212.1701

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Date submitted: 01 Jul 2013 Electronic form version 1.4