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Design of a Fully Optimized DIS Detector at eRHIC

The 2015 Long Range Plan for Nuclear Science in the US has endorsed the realization of a high-energy high-luminosity polarized Electron-Ion Collider as the next major construction project in the US after the completion of FRIB. The facility and associated experiment(s) will address fundamental questions in QCD. One of the considered construction options is the addition of a high-energy polarized electron beam to the existing RHIC hadron machine, converting it into an Electron-Ion Collider (eRHIC). A detector, designed to efficiently register and identify deep inelastic electron scattering (DIS) processes in a wide range of center-of-mass energies available with the new collider is one of the key elements of such an upgrade. The progress on the detector design work will be shown, and the new simulation results, in particular on the DVCS process registration, will be presented.

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