

Abstract Submitted
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Physics with (un)polarized Proton-Nucleus Collisions at STAR/RHIC K. OLEG EYSER, Brookhaven Natl Lab, STAR COLLABORATION — While there has been tremendous progress in nuclear experiments and theory over the past few decades, we are still left with many open questions regarding the partonic structure of nucleons and nuclei. These include the nature of the nucleon spin itself, transverse momentum dependent parton densities from light to heavy nuclei and their correlation with spin, as well as the role of saturated strong gluon fields and their subsequent regime of non-linear QCD dynamics. The kinematic coverage of world data from semi-inclusive deep inelastic scattering and fixed target hadronic experiments is so far too limited to provide answers to these questions. In 2015, RHIC has successfully collided polarized proton beams with heavy ions enabling unique measurements of various observables for the first time at a center of mass energy of 200 GeV (per nucleon). Among the observables are transverse spin asymmetries and the suppression of direct photons when compared to proton-proton collisions. We will discuss the prospects of these and other possible measurements and how they will complement the physics programs at LHC and a future electron-ion collider.

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