Abstract Submitted
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Precision Measurement of the Neutron Asymmetry A_1^n at Large Bjorken x at 12 GeV JLab[1] MINGYU CHEN, University of Virginia — The virtual photon asymmetry A_1 is one of the fundamental quantities that provide information on the spin structure of the nucleon. The value of A_1 at high x_{Bj} is of particular interest because valence quark dominate in this region, which makes it a relatively clean region to study the nucleon spin structure. There are several theoretical calculations that apply to the high x valence quark region, and here we will focus on the neutron A_1^n. With the 12 GeV upgrade of JLab, a new experiment on A_1^n is being carried out using a 10.4 GeV beam, a polarized ^3He target, and the HMS and the Super-HMS (spectrometers) in Hall C. This measurement will reach a deeper valence quark region: $x \sim 0.75$. And once combined with expected data from the upgraded CLAS12 experiment on the proton A_1^p, we will finally be able to reveal whether $\Delta d/d$ turns positive (as in pQCD) or remain negative at high x (as in RCQM). We will present the physics of A_1^n and present preliminary analysis results of the experiment. Performance of an upgraded polarized ^3He target will be presented.

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