Abstract Submitted
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The Spin Asymmetries of the Nucleon Experiment WHITNEY ARMSTRONG, Temple University, SANE COLLABORATION — The Spin Asymmetries of the Nucleon Experiment (SANE) measured the virtual Compton scattering asymmetries, A_1 and A_2, from which the spin structure functions of the proton, g_1 and g_2, can be obtained. The kinematics for these measurements are in a range of Bjorken x, $0.3 < x < 0.8$, where extraction of the twist three matrix element d_2^p (an integral with respect to x of $2g_1 + 3g_2$ weighted by x^2) is most sensitive. The observable, d_2, is a measure of the average restoring Lorentz color force experienced by a quark inside a polarized nucleon after it is struck by a virtual photon in electron Deep Inelastic Scattering (DIS)[1]. The data was taken at the Thomas Jefferson National Accelerator Facility's Hall C, using beam energies of 4.7 and 5.9 GeV, probing the nucleon at scales ranging from $Q^2 = 2.5\ GeV^2$ up to $Q^2 = 6.5\ GeV^2$. In this polarized electron scattering off a polarized proton target experiment two inclusive double spin asymmetries, $A_{\parallel}$ and A_{80} ($\simeq A_{\perp}$) were measured using the BETA detector. BETA is a device without magnetic momentum dispersion that consists of a front scintillator hodoscope followed by a threshold gas Cherenkov counter, a Lucite hodoscope and a large array of lead glass detectors. In addition to motivating the physics of the proton's spin structure we shall discuss the analysis and present preliminary results.
[1] M. Burkardt, AIP Conf. Proc. 1149, 62 (2009) [arXiv:0902.0163 [hep-ph]].

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