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Spin Structure Functions of the Proton - SANE experiment

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The Spin Asymmetries of the Nucleon Experiment (SANE) is a measurement of inclusive electron scattering parallel and near perpendicular double spin asymmetries from a proton target. The main goal of the experiment was to measure $A_{\|}$ and A_{80} and to extract the spin asymmetries of the proton A_1^p, A_2^p and the spin structure functions g_1^p and g_2^p. Using the Thomas Jefferson National Accelerator Facility's polarized electron beam and the University of Virginia's polarized frozen ammonia ($^{14}NH_3$) target in Hall C, the experiment ran in 2009, collecting data in a Q^2 region from 2.5 to 6.5 GeV^2 and between Bjorken x of 0.3 and 0.8. Particle detection was accomplished using the Big Electron Telescope Array (BETA), a novel non-magnetic detector. The physics motivation for the experiment and a brief overview of the polarized target and the detector will be presented along with the analysis developed in order to extract the proton spin asymmetries and structure functions. Results will be presented.