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Proton Form Factor Ratio G_E/G_M from Double Spin Asymmetry with Polarized Beam and Target ANUSHA LIYANAGE, Hampton University, SANE COLLABORATION — Along with experiment E07-003 (SANE, Spin Asymmetries of the Nucleon Experiment), which has been performed in Hall C at Jefferson Lab with a polarized ammonia target to study the proton's spin structure, elastic scattering was carried out simultaneously, with electrons detected in the Big Electron Telescope Array (BETA) in coincidence with recoiling protons reconstructed by the High Momentum Spectrometer (HMS). The elastic double spin asymmetry allows to extract the proton electric to magnetic form factor ratio G_E/G_M at high momentum transfers, $Q^2 = 5.25 \ (\text{GeV/c})^2$ and $Q^2 = 6.25 \ (\text{GeV/c})^2$. In addition to the coincidence data, inclusively scattered electrons from polarized ammonia were detected by HMS, which allows to measure the beam-target asymmetry in the elastic region and to extract the G_E/G_M at $Q^2 = 2.2$ (GeV/c)². This alternative measurement of G_E/G_M will verify the dramatic discrepancy at high Q^2 between the Rosenbluth and the recoil polarization transfer method with a different technique. The current status of the analysis and some preliminary results will be presented.

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