

## PROTON FORM FACTOR RATIO $G_E/G_M$ FROM THE DOUBLE SPIN ASYMMETRY

Experiment E07-003 (SANE, Spin Asymmetries of the Nucleon Experiment) was carried out in Hall C at Jefferson Lab in 2009 to study the proton spin structure functions with a dynamically polarized ammonia target and longitudinally polarized electron beam. By detecting inclusively scattered electrons from the polarized ammonia target in the High Momentum spectrometer (HMS), elastic measurements were carried out in parallel. The elastic double spin asymmetry allows to extract the proton electric to magnetic form factor ratio  $G_E/G_M$  at  $Q^2 = 2.2(\text{GeV}/c)^2$ .

To reach higher  $Q^2$  than that of the inclusive data, elastically scattered protons were detected in the HMS in coincidence with electrons detected in a non-magnetic detector array, BETA. The beam-target asymmetry for elastic kinematics was measured to extract the  $G_E/G_M$  at  $Q^2 = 5.25 (\text{GeV}/c)^2$  and  $Q^2 = 6.25 (\text{GeV}/c)^2$ .

This alternative measurement of  $G_E/G_M$  aimed to independently verify the dramatic discrepancy at high  $Q^2$  between the Rosenbluth and the recoil polarization transfer method. The experiment and the results will be presented in detail.