

Abstract Submitted
for the DNP06 Meeting of
The American Physical Society

A Measurement of G_E^n at High Momentum Transfer in Hall A

ROBERT J. FEUERBACH, BOGDAN WOJTSEKHOWSKI, Thomas Jefferson National Accelerator Facility, E02-013 COLLABORATION, HALL A COLLABORATION — A precision measurement of the electric form-factor of the neutron, G_E^n , at Q^2 up to 3.5 GeV^2 was recently completed in Hall A at the Thomas Jefferson National Accelerator Facility (Jefferson Lab). The ratio G_E^n/G_M^n was measured through the beam-target asymmetry A_\perp of electrons quasi-elastically scattered off neutrons in the reaction ${}^3\overline{H}e(\vec{e}, e'n)$. The experiment took advantage of recent developments of the electron beam and target, as well as two detectors new to Jefferson Lab. The measurement used the accelerator's 100% duty-cycle high-polarization (typically 84%) electron beam and a new, hybrid optically-pumped polarized ${}^3\overline{H}e$ target which achieved polarizations above 50%. A medium acceptance (80msr) open-geometry magnetic spectrometer (BigBite) detected the scattered electron, while a new neutron detector was constructed to observe the released neutron. An overview of the experiment and the experimental motivation will be discussed, in particular the large range of predictions from modern calculations for G_E^n at this relatively high Q^2 . Finally, the analysis progress and preliminary results will be presented.

Robert J. Feuerbach
Thomas Jefferson National Accelerator Facility

Date submitted: 30 Jun 2006

Electronic form version 1.4