Abstract Submitted
for the APR16 Meeting of
The American Physical Society

A_y^0 Measurement from Quasi-Elastic $^3\mathbf{He}^\uparrow(e,e'n)$ Scattering at Jefferson Lab ELENA LONG, University of New Hampshire, JEFFERSON LAB HALL A COLLABORATION — Due to the lack of free neutron targets, studies of the structure of the neutron are typically made by scattering electrons from either ^{2}H or ^{3}He targets. In order to extract useful neutron information from a ^{3}He target, one must first understand how the neutron in a ^{3}He system differs from a free neutron by taking into account nuclear effects such as final state interactions and meson exchange currents. The target single spin asymmetry A_y^0 is an ideal probe of such effects, as any deviation from zero indicates effects beyond plane wave impulse approximation. When nuclear effects within the ^{3}He wave function are taken into account, calculations show that this asymmetry can become large ($> 50\%$). New measurements of the target single spin asymmetry A_y^0 were made at Jefferson Lab using the quasi-elastic $^3\mathrm{He}^\uparrow(\mathrm{e},\mathrm{e'n})$ reaction. The measured asymmetry decreases by over two orders of magnitude, from $> 70\%$ at $Q^2 = 0.1$ (GeV/c)^2 to nearly zero at $Q^2 = 1$ (GeV/c)^2, providing evidence of the dominance and fall-off of nuclear effects when studying neutron structure by electron scattering from ^{3}He. Details of the measurement will be presented.

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Date submitted: 08 Jan 2016 Electronic form version 1.4