Abstract Submitted
for the DNP19 Meeting of
The American Physical Society

Experimental Determination of the Free Neutron F_2 at Large Bjorken-x: The BONuS12 Proton Recoil Detector[1] SOORIYAARACHCHILAGE NADEESHANI, Hampton University, CLAS COLLABORATION — While the proton F_2 structure function has been studied extensively through inelastic electron-proton scattering, much less is known about neutron structure due to the unavailability of high density, free neutron targets. The BONuS12 experiment was proposed to measure the neutron F_2 on a nearly free neutron within a weakly bound deuteron target via the spectator tagging method. Tagging the slow backward moving spectator protons minimizes both off-shell and final-state interaction effects with the measured proton momentum used to correct for the initial-state momentum of the struck neutron. The recoil detector will be used to detect spectator protons with momenta $70 < P_s < 150$ MeV/c and the CEBAF Large Acceptance Spectrometer (CLAS12) to detect the scattered electrons. In this talk, I will present the design and construction of the recoil detector (RTPC), which was lead by Hampton University.

[1]This work is supported by National Science Foundation grant number NSF HRD-1649870

Sooriyaarachchilage Nadeeshani
Hampton University

Date submitted: 11 Jul 2019 Electronic form version 1.4