

Abstract Submitted  
for the DNP10 Meeting of  
The American Physical Society

**Increased Precision of  $^3\text{He}$  target's Polarization Determination Through LabView Automated EPR Measurement for Nuclear Physics Experiments<sup>1</sup>** JESSICA DOEHRMANN, Bethel University, G. LASKARIS, H. GAO, Q. YE, W. ZHENG, Duke University, T. AVERETT, College of William & Mary, G.D. CATES, W.A. TOBIAS, University of Virginia — Polarized  $^3\text{He}$  is used as an effective neutron target in the GDH sum rule, Compton scattering and 3-body photodisintegration experiments. These experiments have been carried out to determine the GDH integral on  $^3\text{He}$  from the two-body breakup threshold to the pion production threshold as well as nucleon spin polarizabilities and asymmetries. The polarization of the  $^3\text{He}$  target is measured through NMR and EPR measurements. To reduce the uncertainties in asymmetries and nucleon spin polarizabilities, it is necessary to increase the precision in the measurement of  $^3\text{He}$  polarization. In order to achieve this goal, the EPR measurement process was automated by LabView, controlling the electronic instruments through GPIB interface. The calculated  $^3\text{He}$  polarization using the LabView program is consistent with the results obtained from NMR water calibration measurements.

<sup>1</sup>This work is supported by the U.S Department of Energy under grant number DE-FG02-03ER41231 and the National Science Foundation under grant number NSF-PHY-08-51813.

Jessica Doehrmann  
Bethel University

Date submitted: 02 Aug 2010

Electronic form version 1.4