Abstract Submitted
for the DNP13 Meeting of
The American Physical Society

Evaluation of New Contact Technology for A Planar High-Purity Germanium Double-Sided Strip Detector[1] E. JACKSON, P. CHOWDHURY, C.J. LISTER, C. DIAZ, M. SKINNER, University of Massachusetts Lowell, E. HULL, R. PEHL, PHDs Co. — New technologies for making position sensitive γ-ray detectors have applications in space science, medical imaging, homeland security, and nuclear structure research. One promising approach uses high-purity germanium wafers in Low Energy Photon Spectrometer (LEPS) geometry, where segmentation of the electrodes into strips forms a Double-Sided Strip Detector (DSSD). The position-sensitivity afforded by the many strips is ideal for the study of Compton scattering and polarization. However, challenges with the manufacture and performance of the rectifying contacts continue to plague the advancement of planar DSSDs. The data gathered from the combination of multiple strips' signals suffers from cross-talk between the strips and charge loss due to wide inter-strip gaps [1]. A planar, high-purity DSSD has been developed by PHDs Co. with an alternative electrode material, amorphous germanium, that can be placed such that the gaps between the strips are half the width required by other contact material. This research seeks to quantify the performance gains of the amorphous germanium contacts and smaller inter-strip gaps while exploring the possibilities for this DSSD as an imager and polarization detector.

[1] S. Gross, *et al.*, Nucl. Inst. Meth. A 602, 467 (2009).

[1]Research supported by the U.S. Department of Energy (DE-FG02-94ER40848).

E. Jackson
University of Massachusetts Lowell

Date submitted: 26 Jun 2013 Electronic form version 1.4