Abstract Submitted
for the DNP10 Meeting of
The American Physical Society

MoNA and Two-Neutron Decay Analysis[1] AMANDA GROVOM, ALEGRA AULIE, WARREN F. ROGERS, Westmont College, MONA COLLABORATION — The Modular Neutron Array (MoNA) is a large, high-efficiency position-sensitive neutron detector array housed at the National Superconducting Cyclotron Laboratory at Michigan State University, consisting of 144 2-meter long scintillator bars with a PMT positioned at each end, designed to detect the energy and trajectory of fast neutrons emitted in the breakup of exotic neutron-rich nuclei. Because a single neutron can scatter multiple times within MoNA, (including a large presence of dark-scattering from Carbon), the experimental challenge to distinguish between single and multiple neutron decay events is significant. We've developed special data-sorting routines that selectively filter on a combination of factors such as neutron velocity and scattering angle, hit-pattern distribution, neutron-fragment opening angle, and decay energy in order to reduce the Carbon scattering background and enhance correlations between pairs of neutrons. We've applied this analysis to the 2-neutron decays of ^{24}O and ^{13}Li from data sets from previous MoNA experiments. Results will be presented.

[1]Research supported by NSF grant PHY-0502010.

Warren Rogers
Westmont College

Date submitted: 16 Aug 2010 Electronic form version 1.4