Abstract Submitted for the DNP07 Meeting of The American Physical Society

Efficiency and Multi-Hit Capability Improvements of MoNA TOVA YOAST-HULL, Kenyon College, ARTEMIS SPYROU, MICHAEL THOEN-NESSEN, NSCL, EDWARD WHITE, University of Notre Dame, MONA COLLAB-ORATION — Located at the National Superconducting Cyclotron Lab at Michigan State University, the Modular Neutron Array (MoNA) consists of 144 detectors 2 meters in length stacked in a nine by sixteen block. MoNA is designed to be used with a sweeper magnet to detect and study rare nuclei at and beyond the neutron dripline that decay by neutron emission. MoNA can also be used to detect high-energy cosmic-ray muons. Recently MoNA has been relocated and reassembled in order to improve the efficiency and the multi-hit capability. When MoNA was relocated, it was separated into four groups of vertical columns instead of one large block. This separation improves the accuracy of identifying two-neutron events from scattered single neutron events. In addition, the new location allows for the columns to be located at different angles increasing the efficiency for larger decay energies. Following the reassembly the array had to be recalibrated in order to calculate timing, energy, and x-position of the neutrons. The relative timing offsets of the individual detectors was performed using cosmic-ray muons. The new setup, with the larger separation of columns between the groups required a new method to determine the offsets between the columns. Cosmic-ray data were taken to record a sufficient number of muons traversing detectors of both of two separated columns. The relative offsets between all columns were then sequentially determined.

> Tova Yoast-Hull Kenyon College

Date submitted: 03 Aug 2007

Electronic form version 1.4