Abstract Submitted for the DNP12 Meeting of The American Physical Society

Simulating Neutron Interactions in the MoNA-LISA/Sweeper Setup with Geant4¹ MAGDALENE MCARTHUR, Howard University, MONA COLLABORATION — The sweeper magnet is a superconducting dipole designed to bend charged particles of 4 Tm rigidity 43 degrees at a radius of approximately one meter. In a typical experiment neutron-unbound states are populated in a reaction in front of the magnet and emitted neutrons are subsequently detected with the high-efficiency position sensitive neutron detector arrays, MoNA and LISA. Before the neutrons interact in MoNA or LISA, they have to pass through the walls of the sweeper magnet chamber. A Monte Carlo simulation was written using Geant 4 which included MoNA and LISA, as well as the geometry of the sweeper magnet and the chamber. In a recent experiment LISA was positioned at large angles were the neutrons passed through the sidewalls of the chamber. The impact of the sidewalls on the neutron spectra was explored for neutrons from the decay of 12Li \rightarrow 11Li + n produced from 50 MeV/u 14B beams on a beryllium target.

¹Research supported by NSSC-MSI research fellowship

Magdalene McArthur Howard University

Date submitted: 03 Aug 2012

Electronic form version 1.4