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Neutron Scattering in MoNA detector bars for Comparison with Simulation[1] A. WANTZ, J.E. BOONE, W.F. ROGERS, Indiana Wesleyan Univ, N. FRANK, Augustana College, A.N. KUCHERA, Davidson College, S. MOSBY, Los Alamos National Lab, M. THOENNESSEN, NSCL/FRIB Michigan State Univ, MONA COLLABORATION — In order to test the effectiveness and accuracy of Monte Carlo simulation (GEANT4 with Menate_R), used by the MoNA collaboration for interpreting neutron-scattering data from the MoNA (Modular Neutron Array) and LISA (Large multi-Institutional Scintillator Arrays at NSCL, MSU, an experiment was conducted at Los Alamos LANSCE center in which 16 MoNA detector bars were exposed to a well characterized neutron beam. Each MoNA bar consists of BC408 organic scintillator measuring 200x10x10 cm^3 with PMTs attached to each end. In order to properly characterize important neutron scattering signatures over a wide range of incoming neutron energy, such as scattering angle, mean distance between scatters, multiplicity, and dark-scatter, it is important that background be fully understood and corrected for. Background sources include neutrons scattered from the collimator on entrance to the room, decay of neutron-activation within the bars, neutrons scattering in the room, and cosmic muons. Several methods for accounting for and removing background contributions to data were developed so that data can be compared directly with simulation (which does not contain these background features). Results, including scattering data comparisons with simulation will be presented.

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