

Abstract Submitted
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Testing Monte Carlo Simulations for Neutron Scattering in MoNA¹ A. HAMANN, S. GARRETT, T. SEAGREN, N.E. TAYLOR, W.F. ROGERS, Westmont College, MONA COLLABORATION — Monte Carlo simulations provide an important tool for nuclear physics research, both in preparing for experiments, and in interpreting experimental data. The Modular Neutron Array (MoNA) and the Large area multi-Institutional Scintillator Array (LISA) are used in conjunction with the Sweeper Magnet and charged particle detector chamber at the National Superconducting Cyclotron Laboratory (NSCL) at Michigan State University to study the properties of exotic, neutron-rich nuclei. We use simulations to model our BC408 scintillator detectors and extract physics results from experimental data. We have developed specific simulations in preparation for an experiment we will conduct at the Los Alamos Neutron Science Center (LANSCE), where we will direct a well-defined neutron beam onto a cluster of 16 MoNA detector bars and observe the scattering patterns of single neutrons. Simulations enable us to study the predicted light output generated by individual neutron scattering channels from Carbon and Hydrogen. The data we will generate in the LANSCE experiment will provide a large experimental database with which to test the reliability of our simulations. This is important since our understanding of nuclei far from stability is becoming increasingly reliant on simulations.

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