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Development of a high efficiency neutron detector array at HRIBF S.N. LIDDICK, UNIRIB, K. RYKACZEWSKI, R. LILLIE, M.J. SALTMARSH, ORNL, J. BATCHELDER, UNIRIB, S. ILYUSHKIN, J.A. WINGER, Mississippi State — A new high-efficiency neutron detector array is being developed at the HRIBF to complement existing experimental equipment for the beta decay studies of neutron-rich fission fragments. The neutron detector array will consist of 2 foot long ^3He tubes at 10 atmosphere surrounded by a polyethylene moderator. With an expected efficiency of $\sim 70\%$ the array will greatly aid in the determination of absolute beta-delayed neutron branching ratios when combined with the “ranging-out” of postaccelerated radioactive ion beams [1]. Geant4 [2] and MCNP calculations have been performed to simulate the efficiency of the array in a variety of geometries and results were compared to the efficiencies of existing neutron detectors. Simulation results will be presented. Work supported by DOE grants DE-AC05-00OR-22725, DE-AC05-76OR00033 and DE-FG02-96ER41006.

References

- [1] C. J. Gross, *et al.* Proc. of ENAM Conf., EPJDirect, in press (2005).
- [2] S. Agostinelli, *et al.*, Nucl. Instrum. Methods Phys. Res. A506, (2003), 250.

- Prefer Oral Session
- Prefer Poster Session

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