Background Reduction Techniques for Ultra-low Background Physics

MICHAEL BROWN, Morehead State University, REYCO HENNING, SEAN MACMULLIN, University of North Carolina — Background reduction receives much attention in neutrino studies and dark matter searches as the events being detected are extremely rare. Knowing your backgrounds well and using extremely low radioactive materials in production are two methods used in such experiments. At the Triangle Universities Nuclear Laboratory the neutron cross section for neon, a candidate material for detecting dark matter, was investigated using energies relevant to backgrounds in these experiments. Also a Monte Carlo simulation was run using MCNPX to determine the best shielding material for keeping detector materials from being activated by high energy cosmic rays. Methods and results for the experiment and simulation will be presented.

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