

Abstract Submitted
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Characterization of a Broken Lithium-6 Glass Neutron Detector for Improved Gamma Insensitivity STEVEN GARDINER, LAWRENCE REES, BART CZIRR, Brigham Young University — The gamma sensitivity of a neutron detector consisting of shards of ^6Li -loaded glass scintillator was experimentally investigated. The intrinsic gamma-neutron detection efficiency (defined as the fraction of incident gamma rays which are misidentified as neutrons) of the detector was measured to be less than 1×10^{-6} . Theoretical modeling with MCNP was also used to search for an optimally efficient broken glass detector design. The detector was modeled as a solid cylinder of poly(methyl methacrylate) with thousands of small scintillating glass spheres embedded within it. To enable the rapid specification of customizable geometries involving thousands of glass spheres, a library of Wolfram Mathematica functions was developed as an MCNP input file generation tool.

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