

Abstract Submitted  
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**Investigation Into The Design Of An Accelerator Drive Reactor**

DANIEL JONES, PHILLIP WOMBLE, Western Kentucky University — Using the Monte Carlo N Particle (MCNP-4C2) code, we attempted to simulate an accelerator driven reactor that did not employ any highly enriched nuclear materials and used only high Z materials as reflector/moderators. We will discuss the results of a “toy model” that we created using Th, Pb, and U. Using a rectangular parallel-piped design, 55 MeV neutrons impinged upon a plate of  $^{232}\text{Th}$  to create fission neutrons. The fission neutrons out of the  $^{232}\text{Th}$  plate were moderated to energies around 1 MeV. These slower neutrons were introduced into a mass of fissionable material (such as  $^{235}\text{U}$ ) where the primary criticality would occur. We calculated the relative neutron yield from each section and investigated the practicality of a Pb neutron reflector assembly.

Daniel Jones  
Western Kentucky University

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