Kai Groves
1280 Main St W,
Hamilton, ON L8S 4L8
Canada

November 27, 2016

McMaster Engineering Physics Journal
1280 Main St W,
Hamilton, ON L8S 4L8
Canada

Dear Editor,

Please consider the attached manuscript titled: **"Simple Experimental Design for Calculation of Neutron Removal Cross Sections"** for publication in the McMaster Journal of Engineering Physics.

This manuscript outlines a simple experimental technique that could be used to give an estimate of the fast neutron shielding capabilities of various materials prior to use in a shielding analysis simulation. The technique extends on work done in the 1950s at Oak Ridge National Laboratory and involves finding the effective fast neutron removal cross section for various candidate materials. Materials with the highest removal cross sections are postulated to provide the most effective shielding for fast neutron fields. This hypothesis is tested by comparing the known removal cross sections of several shielding materials to their shielding performance, which were previously determined by rigorous computer simulations. The limitations of this technique are also discussed. In particular, it is noted that the technique provides no information about the absorption of thermal neutrons and the subsequent radiation that could be produced. As such, some candidate shielding materials, such as Iron, which appears to be promising from its removal cross section, would not actually be a good fast neutron shielding in an actual application.

Thank you for your time and consideration, and please do not hesitate to contact me if I can be of any further assistance or provide and further information.

Sincerely,

Kai Groves
groveskj@mcmaster.ca
Undergraduate Student
McMaster University