

Abstract Submitted
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An optically tagged, isotropic neutron fission chamber¹ JOHN E ELLSWORTH, LAWRENCE B REES, J BART CZIRR, ALEC RAYMOND, Brigham Young University, Physics and Astronomy — Developing and studying neutron detector and spectrometer technologies requires a well-defined source of neutrons. These studies have required the use of facilities that own and operate a fission chamber, access to which is limited, costly, and often remote. We are therefore developing a table top source that provides a signal which can be used for accurate energy measurements by time-of-flight techniques. It is formed of a small spherically shaped scintillator activated with a fissile material and viewed by a photomultiplier tube. Of the estimated 140 Ph.D. programs in the U.S., about 10 train students in neutron-based nuclear physics [S. M. Grimes 2014]. We anticipate more institutions could be involved in neutron science if modest cost sources like this were available. Areas of research include detailed studies of neutron spectra, studying the efficiency of various neutron detectors, and searching for correlated, two neutron emissions from fission.

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