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The production of Ge-68 in Ge detectors due to fast neutrons V.E. GUISEPPE, S.R. ELLIOTT, V.M. GEHMAN, S.A. WENDER, Los Alamos National Laboratory — A commercial HPGe detector was irradiated with neutrons at the Los Alamos Neutron Science Center for the activation of the radioactive isotope ^{68}Ge and other isotopes that may be produced in Ge via cosmogenic-neutron reactions. The energy spectrum of the neutron beam used has a similar shape to cosmic-ray neutrons but at a much higher flux. Previous estimates of cosmogenic activation in Ge were affected by differing neutron fluxes used and the direct measurements were limited by the small production rate. This work benefits from the greater flux of neutrons to produce a large amount of ^{68}Ge than that by cosmic-ray neutrons. Cosmic activation of ^{68}Ge in Ge crystals is an expected background contribution to Ge-based neutrinoless double-beta decay experiments. A key to double-beta decay experiments is the mitigation of backgrounds to unprecedented levels. In the case of Ge-based experiments, backgrounds will be rejected making use of pulse shape analysis, detector segmentation and granularity, and event time correlation. Operation of the activated Ge detector provides a measurement the activation rate of several isotopes and a study of the effectiveness of some background rejection technologies. Identification and production rates of several cosmogenic isotopes will be presented.

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