

Abstract Submitted  
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**Cross-section measurements for neutron activation of long-lived radioisotopes in TeO<sub>2</sub>**<sup>1</sup> B.S. WANG, E.B. NORMAN, Univ. of California at Berkeley, N.D. SCIELZO, Lawrence Livermore National Lab., S.A. WENDER, M. DEVLIN, Los Alamos National Lab., A.R. SMITH, Lawrence Berkeley National Lab. — CUORE (Cryogenic Underground Observatory for Rare Events) is an experiment that will search for neutrinoless double-beta ( $0\nu\beta\beta$ ) decay. In CUORE, an array of 988 high-resolution, low-background TeO<sub>2</sub> bolometers will be operated at a temperature of 10 mK and will serve as both the source and the detector of  $0\nu\beta\beta$  decay. All sources of background that can obscure the  $0\nu\beta\beta$  decay signature must be characterized and well-understood. One of these sources is activation by cosmic ray neutrons. This process can produce long-lived radioisotopes in the TeO<sub>2</sub> bolometers. A reliable estimation of this background is essential but difficult to obtain because of the lack of cross-section data. Therefore, cross-section measurements have been carried out at LANSCE (Los Alamos Neutron Science Center). In these measurements, TeO<sub>2</sub> crystals have been exposed to a spectrum of neutrons mimicking the cosmic ray neutron spectrum. The cross-sections, which have been extracted using gamma-ray counting, will be used to obtain an estimate of the cosmogenic activation background that will be present in CUORE.

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