

Abstract Submitted  
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**Neutron-Induced Partial Cross Section Measurements on Cu, Ge and Pb at  $E_n = 8$  and 12 MeV for Background Radiation in  $0\nu\beta\beta$  Decay Experiments** E. KWAN, J.H. ESTERLINE, B. FALLIN, C.R. HOWELL, A. HUTCHESON, M.F. KIDD, A. TONCHEV, W. TORNOW, TUNL-Duke, C. ANGELL, H. KARWOWSKI, TUNL-UNC, J. KELLEY, TUNL-NCSU, D. MEI, USD, S. HILDERBRAND, NCCU, D.B. MASTERS, Samford Univ, R.S. PEDRONI, NCATSU, G.J. WEISEL, Penn State Univ-Altoona — The search for the existence of  $0\nu\beta\beta$  decay plays an important role in the uncovering of physics beyond the standard model. The detection of such decay would confirm that neutrinos are Majorana particles. The large lifetimes (*i.e.*,  $T_{1/2}({}^{76}\text{Ge}) > 10^{25}$  y) and the corresponding long measuring times require extensive understanding of background radiation induced by neutron interactions with shielding and detector materials. For example, neutron induced  $\gamma$ -ray transitions in Pb and Cu and their escape peaks could interfere with the identification of the 2039 keV signature of  $0\nu\beta\beta$  in the case of  ${}^{76}\text{Ge}$ . Thus, it is necessary to determine the yields from possible background sources. The neutron-induced partial cross sections for  $\gamma$ -ray transitions in Cu, enriched  ${}^{76}\text{Ge}$ , and Pb were measured at TUNL using an array of HPGe detectors at  $E_n=8$  and 12 MeV. The experimental setup and preliminary results will be presented. Supported by DOE Grants DE-FG02-97ER41033 & DE- FG02-97ER41042.

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