

Abstract Submitted
for the DNP12 Meeting of
The American Physical Society

Neutron-Induced Reactions on Copper and Zero-Neutrino Double-Beta Decay Searches MATTHEW GOODEN, JOHN KELLEY, North Carolina State University and TUNL, BRENT FALLIN, Duke University, SEAN FINCH, CALVIN HOWELL, GENCHO RUSEV, ANTON TONCHEV, WERNER TORNOW, Duke University and TUNL — Cross-section measurements of $(n,x\gamma)$ reactions on ^{nat}Cu were carried out at TUNL using monoenergetic neutrons at six energies of $E_n = 6, 8, 10, 12, 14, 16$ MeV. These studies were performed to provide accurate cross-section data on materials abundant in experimental setups involving HPGe detectors used to search for rare events, like the neutrino-less double-beta decay of ^{76}Ge . Spallation and (α,n) neutrons are expected to cause the largest source of external background in the energy region of interest. At TUNL pulsed neutron beams were produced via the $^2\text{H}(d,n)^3\text{He}$ reaction and the deexcitation γ rays from the reaction $^{nat}\text{Cu}(n,x\gamma)$ were detected with clover HPGe detectors. Our cross-section data will be compared to theoretical calculations and to data recently obtained at LANL with a white neutron beam.

Matthew Gooden
North Carolina State University and TUNL

Date submitted: 01 Jul 2012

Electronic form version 1.4