Abstract Submitted
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Investigation of Neutron-Induced Backgrounds on 134, 136Xe at En = 5 - 8 MeV for Neutrinoless Double Beta Decay Searches[1] MARY KIDD, Tennessee Technological University, WERNER TORNOW, SEAN FINCH, FNU KRISHICHAYAN, TUNL/Duke University — Neutrinoless double-beta decay ($0\nu\beta\beta$) studies are both the best way to determine the Majorana nature of the neutrino and determine its effective mass. The two main experiments searching for $0\nu\beta\beta$-decay of ^{136}Xe (Q value = 2457.8 keV) are Kamland-Zen and EXO-200. Though both experiments have enriched ^{136}Xe targets, these targets still contain significant quantities of ^{134}Xe. A new nuclear level was reported in ^{134}Xe that decays to the ground state emitting a 2485.7 keV gamma ray [1]. For incident neutron energies of 2.5 4.5 MeV, the γ-ray production cross section for this branch was found to be on the order of 10 mb . Here, we further explore the potential neutron-induced backgrounds on both ^{134}Xe and ^{136}Xe for extended neutron energies from 5 to 8 MeV. We will report our preliminary results for neutron inelastic scattering on ^{134,136}Xe in applications to $0\nu\beta\beta$ decay searches. [1] E.E. Peters, et al., EPJ Web of Conferences, 93, 01027 (2015).

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Mary Kidd
Tennessee Technological University

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