Abstract Submitted
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Neutron Inelastic Scattering on 134Xe at En = 5 - 8 MeV[1] MARY KIDD, Tennessee Tech Univ, WERNER TORNOW, SEAN FINCH, FNU KRISHICHAYAN, MEGHA BHIKE, 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. Recently, a new nuclear level was discovered in ^{134}Xe that decays to the ground state emitting a 2485.7 keV gamma ray [1]. The γ-ray production cross section for this branch was found to be on the order of 10 mb for incident neutron energies of 2.5 4.5 MeV. Here, we have extended the investigation of this level to higher incident neutron energies, and further explore the potential neutron-induced backgrounds on both ^{134}Xe and ^{136}Xe for extended neutron energies. We will report our preliminary results for neutron inelastic scattering on ^{134}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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