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Neutron Background from (alpha,n) Reactions for LEGEND TUPENDRA OLI, Univ of South Dakota, LEGEND COLLABORATION — Neutrinoless double beta ($0\nu\beta\beta$) decay is a hypothesized nuclear process which, if observed, would unambiguously demonstrate the violation of lepton number conservation, an observed symmetry of Standard Model of particle physics, and establish the Majorana nature of neutrinos. Majorana fermions are particles that are their own antiparticles. Taking advantage of different approaches made by current generation 76Ge experiments, GERDA and Majorana Demonstrator, to achieve ultra-low background and the best energy resolution, LEGEND (Large Enriched Germanium Experiment for Neutrinoless Double beta decay) aims to develop a phased neutrinoless double beta decay experimental program using 200 kg active mass in the initial phase and 1000 kg active mass in the ultimate phase. In order to achieve further background reduction, a comprehensive understanding of all sources of background is very crucial and neutron-induced background is one of them. Neutrons can be produced either by natural radioactivity via (α, n) reactions and spontaneous fissions from detector components, or by cosmic ray muons. This talk will discuss possible background contributions from the neutrons produced from the natural radioactivity within detector components.

Tupendra Oli
Univ of South Dakota

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