

Search for neutrinoless double beta decay with GERDA Phase II

Thursday, May 25, 2017 4:50 PM (20 minutes)

The GERDA experiment is designed to search for neutrinoless double beta decay of Ge-76. In its second phase 37 HPGe detectors enriched in the isotope Ge-76 are directly immersed into liquid argon. The radio-pure cryogenic liquid acts as passive and active shield and as a cooling medium for the detectors simultaneously. Recently a half-life limit on $0\nu\beta\beta$ decay of Ge-76 of $T_{1/2} > 5 \cdot 10^{25}$ yr has been published. The background rate in the energy region of interest, after pulse shape discrimination and liquid argon veto cuts, is in the range ~few counts/ROI ton yr. This makes GERDA the first $0\nu\beta\beta$ experiment that has a background so low that <1 counts are expected in the ROI within the anticipated life time of the experiment. The experimental efforts needed to reach this low background level will be discussed and the current understanding of the background sources will be presented.

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Session Classification: Session 6