

First results of GERDA Phase II and consistency with background models

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The GERDA (GERmanium Detector Array) is an experiment for the search of neutrinoless double beta decay ($0\nu\beta\beta$) in Ge-76, located at Laboratori Nazionali del Gran Sasso of INFN (Italy). GERDA operates bare high purity germanium detectors submersed in liquid Argon (LAr). Phase II of data-taking started in Dec 2015 and is currently ongoing. In Phase II 35 kg of germanium detectors enriched in Ge-76 including thirty newly produced Broad Energy Germanium (BEGe) detectors is operating to reach an exposure of 100 kg•yr. The design goal of Phase II is to reduce the background by one order of magnitude to get the sensitivity for $T_{0\nu1/2} = O(10^{26})$ yr. To achieve the necessary background reduction, the setup was complemented with LAr veto. Analysis of the background spectrum of Phase II demonstrates consistency with the background models. Furthermore Ra-226 and Th-232 contamination levels consistent with screening results. In the first Phase II data release we found no hint for a $0\nu\beta\beta$ decay signal and place a limit of this process $T_{0\nu1/2}(\text{Ge}) > 5.2 \cdot 10^{25}$ yr (90% C.L., sensitivity $4.0 \cdot 10^{25}$ yr). First results of GERDA Phase II will be presented.

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