

Status of the GERDA experiment

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Abstract

The Germanium Detector Array (GERDA) searches for the neutrinoless double beta decay of ^{76}Ge , a test of whether neutrinos are Majorana or Dirac particles.

High Purity Germanium (HPGe) detectors enriched in the isotope-76 are operated bare in liquid argon (LAr) that serves as cooling medium and shields against radiation. Phase I data taking began on 1 Nov. 2011. The measurements are stable with a resolution (FWHM) in all enriched detectors better than 5.3 keV at 2.6 MeV. With 14.6 kg total mass and the current background index of $0.020+0.006-0.004$ cts/(keV kg yr) we expect to reach a sensitivity on $T_{1/2}$ of $1.5 \cdot 10^{25}$ years (90% CL.) by the end of this year. Integrating the actual mass by 3.5 kg of newly produced enriched detectors we could reach by spring 2013 the Phase I design sensitivity of $2 \cdot 10^{25}$ years, which should be enough to probe the claim of an observation by part of the Heidelberg-Moscow collaboration. Phase II will then focus on increasing the sensitivity of the experiment by deploying additional enriched detectors and by reducing the background index further, making use of a liquid argon scintillation veto. The results from the first year of data taking will be presented.

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