

Status of preparations for the Phase II of the GERDA experiment aimed for the $0\nu\beta\beta$ decay search

Tuesday 23 June 2015 12:10 (25 minutes)

GERDA is a low background experiment aimed for the neutrinoless double beta-decay search. It is located at the LNGS underground laboratory of INFN in Italy. The search is performed using high purity germanium detectors operated in liquid argon (LAr) that are enriched in ^{76}Ge to 86%. The backgrounds from the detector's surrounding are reduced to a background index of 10^{-2} cts/(keV•kg•yr). This is about one order of magnitude better than in predecessor experiments with HPGe detectors. Accumulated statistics allows to derive the most stringent lower limit on the half-life for neutrinoless double beta-decay of ^{76}Ge : $2.1 \cdot 10^{25}$ yr. Currently the preparations for Phase II are ongoing. A LAr scintillation veto has been installed in GERDA. 20 kg of new type BEGe detectors with powerful pulse shape discrimination ability and better energy resolution will be incorporated in the setup soon. We expect that the use of the new active background reduction techniques and cleaner materials would allow us to achieve background index of 10^{-3} cts/(keV•kg•yr) and significantly increase the sensitivity of the experiment. The actual status of the experiment will be presented.

Primary author: Dr LUBASHEVSKIY, Alexey (Max-Planck-Institut für Kernphysik)

Presenter: Dr LUBASHEVSKIY, Alexey (Max-Planck-Institut für Kernphysik)