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Status of the search for neutrinoless double-beta decay with GERDA

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The GERDA experiment searches for the neutrinoless double-beta decay using high purity germanium detectors enriched in ^{76}Ge , simultaneously used as source and detector. The observation of such a process would demonstrate the presence of a Majorana term in the neutrino mass and prove that lepton number is not conserved. The experimental setup is located at the LNGS underground laboratory of INFN in Italy. The detectors are operated in liquid argon, which cools the detectors and shields them against radiation. Superior background rejection by pulse shape discrimination and usage of liquid argon active veto allowed to reach the desired background level of 10^{-3} counts/(keV·kg·yr). Such background index allows GERDA to be a “background free experiment” up to design exposure of 100 kg·yr. The details of the background reduction techniques will be presented. In 2018, germanium detectors of a new type and new fiber shrouds for liquid argon veto were installed in GERDA. The results on the performance of the upgraded experimental setup will be discussed together with the latest results from GERDA.

Collaboration name

GERDA

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