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First results on neutrinoless double beta decay of Ge-76 by the GERDA experiment

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Reported will be the result from the first phase of the GERmanium Detector Array (GERDA) experiment at the Gran Sasso Laboratory (INFN) on the search for neutrino-less double beta decay of the isotope 76Ge. The observation of this lepton number violating process, which is predicted by models beyond the Standard Model of particle physics, would imply that neutrinos are Majorana particles, ie. neutrinos are their own anti-particles. Provided that the exchange of light Majorana neutrinos is the leading mechanism of neutrino-less double beta decay, measuring or constraining the half-life sheds also light on the absolute neutrino mass scale. The data considered in the presented analysis was collected between November 2011 and May 2013 with a total exposure of 21.6 kg·yr. A blind analysis has been performed and all calibrations and event selection criteria had been finalized before the data were processed in the blinded 10 keV window around the Qββ-value of the 76Ge decay.

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