INTAS 2005-1000008-7996

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Funded under: IC-INTAS

GERDA: The Germanium Detector Array for the search of neutrinoless double beta decays of Ge-76 at LNGS

From 2006-10-01 to 2008-09-30

Project details

Total cost:
EUR 140 000

EU contribution:
EUR 150 000

Coordinated in:
Germany

Objective

The study of neutrinoless double beta decay is the most powerful approach to the fundamental question if the neutrino is a Majorana particle, i.e. its own anti-particle. The observation of neutrinoless DBD would not only establish the Majorana nature of the neutrino but also represent a measurement of its effective mass. So far, the most sensitive results have been obtained with Ge-76, and a group has claimed for the first time positive indications for neutrinoless DBD in Ge-76. The new GERDA experiment [1] will operate in the Gran Sasso underground laboratory an array of bare enriched Ge-76 diodes in a shield of liquid nitrogen or argon. This shield together with an additional water layer will reduce the external backgrounds by more than two orders of magnitude as compared to previous DBD experiments. The research program which is proposed here for funding through INTAS comprises three major directions which are central for the success of the GERDA experiment. This includes 1) the design and construction of major parts of the experimental infrastructures, 2) the refurbishment and characterization of the existing 76Ge detectors for Phase I of GERDA, and 3) the production of new enriched segmented 76Ge detectors for Phase II of GERDA including background studies. [1] http://www.mpi-hd.mpg.de/ge76/proposal.pdf

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