

## Status Report of the GERDA Phase II Startup

**Authors :** Valerio D'Andrea

**Abstract :** The GERmanium Detector Array (GERDA) experiment, located at the Laboratori Nazionali del Gran Sasso (LNGS) of INFN, searches for  $0\nu\beta\beta$  of  $^{76}\text{Ge}$ . Germanium diodes enriched to  $\sim 86\%$  in the double beta emitter  $^{76}\text{Ge}(\text{enrGe})$  are exposed being both source and detectors of  $0\nu\beta\beta$  decay. Neutrinoless double beta decay is considered a powerful probe to address still open issues in the neutrino sector of the (beyond) Standard Model of particle Physics. Since 2013, just after the completion of the first part of its experimental program (Phase I), the GERDA setup has been upgraded to perform its next step in the  $0\nu\beta\beta$  searches (Phase II). Phase II aims to reach a sensitivity to the  $0\nu\beta\beta$  decay half-life larger than 1026 yr in about 3 years of physics data taking. This exposing a detector mass of about 35 kg of enrGe and with a background index of about  $10^{-3}$  cts/(keV·kg·yr). One of the main new implementations is the liquid argon scintillation light read-out, to veto those events that only partially deposit their energy both in Ge and in the surrounding LAr. In this paper, the GERDA Phase II expected goals, the upgrade work and few selected features from the 2015 commissioning and 2016 calibration runs will be presented. The main Phase I achievements will be also reviewed.

**Keywords :** gerda, double beta decay, LNGS, germanium

**Conference Title :** ICNPA 2016 : International Conference on Neutrino Physics and Astrophysics

**Conference Location :** Madrid, Spain

**Conference Dates :** March 24-25, 2016