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Searching for neutrinoless double-beta decay with GERDA

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The GERDA experiment searches for the lepton number violating neutrinoless double-beta decay of 76Ge operating bare, enriched Ge diodes in liquid argon. The BEGe detectors feature an excellent background discrimination from the analysis of the time profile of the detector signals, while the instrumentation of the cryogenic liquid volume surrounding the germanium detectors acts as an active veto to further suppress the external background. With a total exposure of 82.4 kg · yr we remain in the background free regime and have achieved a median sensitivity on the half-life of T1/2>1.1 x 10ˆ26 yr (90% C.L.). We observed no signal and derive a lower limit of T1/2>0.9 x 10ˆ26 yr (90% C.L.). In this talk we will summarize the basic concept of the GERDA design, the data taking and the physics results obtained in Phase II. We will then present the last upgrade performed and the expected performances for the full 100 kg · yr exposure.

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