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GERDA searches for 0νββ and other ββ decay modes of 76Ge

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The GERDA collaboration searches for the 0νββ decay of 76Ge by operating bare germanium detectors in an active liquid argon shield. GERDA is the first experiment that surpasses a sensitivity for the 0νββ decay half-life of T1/2 > 10^26 yr (90% C.L.) and that operates in a background-free regime such that the expected number of background events is less than 1 in the energy region of interest at the final exposure of 100 kg*yr. The present status of GERDA and the results obtained in searching for 0νββ and other ββ decay modes such as 2νββ decay to the ground and exited states of 76Se and Majoron emitting 0νββχ0 decay modes will be presented. A combination of the GERDA 0νββ results with the results of the other searches using different isotopes with respect to upper limits on the effective Majorana electron neutrino mass will be given too. Some aspects of the analysis and results interpretation of searching for several exotic ββ mechanisms associated with bosonic neutrinos, Lorentz invariance violation, and others, using calorimetric type detectors like GERDA are going to be discussed.

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