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Summary

Neutrinoless double-beta (0νββ) decay is one of the most promising approaches to answer the question of whether neutrinos are Majorana particles. In the standard inverted-ordering neutrino mass scenario, the minimum possible value of mββ corresponds to a half-life around 10^28 years for 0νββ decay in 76Ge, which is a target for next generation of 76Ge-based experiments.

GERDA and MAJORANA DEMONSTRATOR are the current generation of experiments searching for 0νββ decay in 76Ge. These experiments use high-purity germanium (HPGe) detectors that are highly-enriched in 76Ge. They have achieved the best intrinsic energy resolution and the lowest background rate in the signal search region among all 0νββ experiments.

Taking advantage of these successes, a new international collaboration - the Large Enriched Germanium Experiment for Neutrinoless ββ Decay (LEGEND) - has been formed to build, following a phased approach, a ton-scale experiment with discovery potential reaching a half-life of 1028 years or longer. The preparation for the first phase of LEGEND, where a 200 kg 76Ge detectors array will be deployed, is currently underway. In this talk, I will present the status of the ongoing efforts and an overview of the planning development and execution of LEGEND.

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