

## Status of the LEGEND experiment

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Next-generation neutrinoless double-beta decay ( $0\nu\beta\beta$ ) searches seek the Majorana nature of neutrinos and the existence of a lepton number violating process by covering the  $0\nu\beta\beta$  half-life corresponding to the inverted-ordering neutrino mass scale, assuming the light Majorana neutrino exchange mechanism. The LEGEND experiment, building from the experience of Majorana Demonstrator and GERDA, is the next generation experiment searching for  $0\nu\beta\beta$  in  $^{76}\text{Ge}$ . The current  $^{76}\text{Ge}$   $0\nu\beta\beta$  experiments have the lowest background levels and best energy resolution in the region of interest. The LEGEND collaboration has implemented a phased experimental program based on p-type, inverted-coaxial, point-contact  $^{76}\text{Ge}$  detectors operating within liquid argon. The first phase (LEGEND-200) will reach a discovery sensitivity on the  $0\nu\beta\beta$  half-life of  $10^{27}$  yr in 5 years of data by operating around 200 kg of  $^{76}\text{Ge}$  detectors at LNGS in Italy. In the final phase (LEGEND-1000), the mass of detectors will be increased to 1 ton. The technical design of LEGEND-1000, along with the energy resolution, material selection and background suppression techniques project a quasi-background-free search, achieving a discovery sensitivity on the  $0\nu\beta\beta$  half-life beyond  $10^{28}$  yr. The status of the LEGEND program, technical readiness and discovery potential will be presented.

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