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(I) Search for Majorana Neutrinos in the LEGEND Experiment

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The discovery of the lepton-number-violating neutrinoless double-beta decay process will prove that neutrinos are Majorana fermions. The Large Enriched Germanium Experiment for Neutrinoless double-beta Decay (LEGEND) project will search for this decay in ^{76}Ge. In its first phase —LEGEND-200 —200 kg of ^{76}Ge-enriched high-purity germanium detectors will be deployed in a liquid-argon cryostat. It is under construction at the Laboratori Nazionali del Gran Sasso (LNGS) in Italy. The first phase has a background goal of < 0.6 counts/(FWHM t y), which yields a 3σ half-life discovery sensitivity beyond 10^{27} years. The second phase — LEGEND-1000 —will comprise 1000 kg of enriched germanium detectors. It will be sited deep underground with SNOLAB as the preferred host. LEGEND-1000 will have a discovery sensitivity beyond 10^{28} years. In this talk, I will give an overview of the LEGEND project.

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