

Abstract Submitted
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Searching for the neutrinoless double-beta decay of ^{76}Ge with the LEGEND experiment¹ ALEXEY DROBIZHEV, Lawrence Berkeley National Laboratory, LEGEND COLLABORATION — LEGEND—The Large Enriched Germanium Experiment for Neutrinoless Double-Beta Decay—is an experiment that will search for the neutrinoless double-beta ($0\nu\beta\beta$) decay of ^{76}Ge . The observation of this lepton number violating process would establish the Majorana nature of the neutrino, with implications for physics beyond the standard model. The MAJORANA DEMONSTRATOR and GERDA, two ^{76}Ge experiments currently operating, lead the field in the key design parameters of energy resolution and background reduction. Building on their success, the LEGEND collaboration is developing a phased next-generation $0\nu\beta\beta$ decay search. LEGEND-200, currently ramping up, will host ~ 200 kg of enriched HPGe detectors in the existing GERDA infrastructure at the Laboratori Nazionali del Gran Sasso in Italy. The subsequent LEGEND-1000 detector will be a tonne-scale HPGe array with a ^{76}Ge $0\nu\beta\beta$ half-life sensitivity greater than 10^{28} years. In this talk, we present the plans and physics reach of LEGEND.

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Alexey Drobizhev
Lawrence Berkeley National Laboratory

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