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The LEGEND neutrinoless double-beta decay program

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The Large Enriched Germanium Experiment for Neutrinoless $\beta\beta$ Decay (LEGEND) program is a search for the neutrinoless double-beta decay of the ^{76}Ge isotope. Its first phase, LEGEND-200, uses 200-kg of enriched high-purity germanium (HPGe) detectors in an active liquid argon shield and is currently under construction at the Laboratori Nazionali del Gran Sasso (LNGS) in Italy. It has a background index goal of < 0.6 counts/(FWHM t yr), which yields a 3σ discovery half-life sensitivity of beyond 10^{27} years with a 1 ton-year exposure. LEGEND-1000 is a proposed tonne-scale upgrade with 1000-kg of enriched HPGe detectors that will follow LEGEND-200. It will have a discovery sensitivity beyond 10^{28} years. This talk will provide a status update of LEGEND-200 and a review of the proposed LEGEND-1000. Other BSM searches possible in LEGEND are also briefly discussed.

Collaboration name

LEGEND

Primary author: HENNING, Reyco (UNC Chapel Hill)

Presenter: HENNING, Reyco (UNC Chapel Hill)

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