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Search for Neutrinoless Double-Beta Decay with LEGEND-1000

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The Large Enriched Germanium Experiment for Neutrinoless $\beta\beta$ Decay (LEGEND) is a ton-scale, ^{76}Ge -based, neutrinoless double-beta ($0\nu\beta\beta$) decay experimental program with a discovery potential of half-lives beyond 10^{28} years.

LEGEND takes a phased approach that enables the collaboration to gradually increase the detector mass and exposure, and at the same time reduce the background in the signal region of interest. The first, 200-kg, phase of the experiment (LEGEND-200) is currently being commissioned at the Gran Sasso underground laboratory (Laboratori Nazionali del Gran Sasso, LNGS) in Italy. The subsequent ton-scale phase of the experiment (LEGEND-1000) is currently in the conceptual design stage and construction is expected to start as early as 2025.

In this contribution the physics reach, background requirements as well as the conceptual design and timeline of LEGEND-1000 will be presented.

In-person participation

No

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