

## LEGEND - The Large Enriched Germanium Experiment for Neutrinoless $\beta\beta$ Decay

*Wednesday, May 18, 2022 2:50 PM (25 minutes)*

The LEGEND Collaboration pursues a staged experimental program to discover the neutrinoless double-beta decay of the isotope  $^{76}\text{Ge}$ . The discovery-oriented design of LEGEND relies on Ge detectors and liquid argon scintillation to perform an essentially background-free measurement. The first stage of the project, LEGEND-200, is currently under preparation at the Gran Sasso Laboratory in Italy and will reach within five years the sensitivity to observe the decay if its half-life is up to  $10^{27}$  years. The second stage, LEGEND-1000, will operate a ton of Ge detectors and achieve a discovery power beyond  $10^{28}$  years. LEGEND-1000 will not only be able to test the entire parameter space assuming the inverted neutrino mass ordering, but it will also have a high discovery potential assuming normal ordering and other new-physics scenarios.

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