## **XIX International Workshop on Neutrino Telescopes**



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## The LEGEND neutrinoless double-beta decay program

Tuesday, 23 February 2021 17:30 (20 minutes)

The Large Enriched Germanium Experiment for Neutrinoless  $\beta\beta$  Decay (LEGEND) program is a search for the neutrinoless double-beta decay of the <sup>76</sup>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  $3\sigma$  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

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Track Classification: Neutrino Masses and Mixings