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## **【335】 Probing neutrinoless double beta decay with LEGEND**

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The dominance of matter over antimatter is one of the most puzzling questions in particle physics and cosmology. Since the Standard Model prohibits reactions violating the lepton number, the answer may lie in Beyond SM processes. The LEGEND experiment is designed to probe one such reaction: the neutrinoless double beta ( $0\nu\beta\beta$ ) of  $^{76}\text{Ge}$ . Observing this decay would shed light on the matter-antimatter asymmetry, the absolute neutrino mass scale and order, and definitively prove the Majorana nature of neutrinos. Since 2023, LEGEND has been operating 142 kg of  $^{76}\text{Ge}$  detectors placed in an active LAr shield, aiming to achieve a half-life sensitivity exceeding  $10^{27}$  years after an exposure of 1 tonne-year.

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