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【321】The LEGEND experiment to search for neutrinoless double beta decay

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The observation of neutrinoless double beta ($0\nu\beta\beta$) decay would demonstrate lepton-number violation, imply neutrinos are Majorana particles, and provide information about neutrino masses. LEGEND will search for $0\nu\beta\beta$ with high-purity germanium detectors enriched in ^{76}Ge operated in an active liquid-argon shield. The first phase will deploy 200 kg of Ge crystals and reach a half-life sensitivity of $\sim 10^{27}$yr. The second phase aims to improve the discovery sensitivity by an order of magnitude with 1000 kg of detectors. By combining the lowest background levels and the best energy resolution in the field, LEGEND will perform a quasi-background-free search for an unambiguous signature at the $0\nu\beta\beta$ decay Q-value of 2039 keV.

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