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Latest LEGEND-200 results for germanium-based neutrinoless double beta decay searches

The LEGEND experiment is designed to search for neutrinoless double beta decay of Ge-76. This decay, if observed, would establish the Majorana nature of neutrinos and demonstrate lepton number non-conservation. The first stage of the program, LEGEND-200, is currently taking physics data at the INFN Laboratori Nazionali del Gran Sasso and can accommodate up to about 200 kg of enriched high-purity germanium detectors.

This contribution presents the latest LEGEND-200 results, with emphasis on the performance of the germanium detector array, energy reconstruction, detector stability, and background levels in the region of interest. Recent hardware upgrades of LEGEND-200 are also discussed, including the optimization of components with lower background. The impact of these improvements on detector operation, data quality, and background reduction is presented. The contribution concludes with the ongoing LEGEND-200 program, including continued data taking, further detector deployment, and the path toward reaching the experiment design exposure and sensitivity.

Primary author: D'ANDREA, Valerio (INFN Laboratori Nazionali del Gran Sasso)

Presenter: D'ANDREA, Valerio (INFN Laboratori Nazionali del Gran Sasso)