

LEGEND-200 Preliminary Design Background Modeling

The LEGEND Collaboration aims to explore the range of majorana neutrino masses allowed by the inverted mass hierarchy by building upon the successes of the GERDA experiment and the Majorana Demonstrator in the deployment of a 1000-kg array of germanium detectors enriched in ^{76}Ge . The first phase of the LEGEND experimental program, LEGEND-200, will make use of existing detectors, materials, and infrastructure by assembling a 200-kg detector array in the existing GERDA cryostat at LNGS. By combining the liquid argon veto demonstrated in GERDA with the low-radioactivity materials developed for the Majorana Demonstrator, LEGEND-200 has the capability of being a world-leading $0\nu\beta\beta$ experiment constructed on short timescales and at relatively modest cost. Here we detail the preliminary background modeling of LEGEND-200, indicating the feasibility of constructing an array likely to be background-free in the $0\nu\beta\beta$ -region of interest in 1 ton-year of exposure.

Authorship annotation

for the LEGEND Collaboration

Session and Location

Monday Session, Poster Wall #64 (Auditorium Gallery Right)

Poster included in proceedings:

yes

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Track Classification: Poster (not participating in poster prize competition)