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Design Improvements to Cables and Connectors in the MAJORANA DEMONSTRATOR

The MAJORANA DEMONSTRATOR, a modular array containing both natural and ^{76}Ge-enriched germanium p-type point contact detectors, is currently searching for neutrinoless double-beta decay in ^{76}Ge. The DEMONSTRATOR uses custom high voltage and signal cables to bias the detectors and to read out the deposited charge respectively. These purposefully low-mass cables and connectors must meet stringent radiopurity requirements and maintain electrical integrity while being subjected to thermal and mechanical stress. Based on the DEMONSTRATOR's operational performance, a replacement set of cables and connectors is being developed with the aim of increasing overall reliability while maintaining low connector mass and radiopurity. We will discuss the motivations for the upgrade, the ongoing performance tests, issues encountered, and potential future application to LEGEND, a next-generation tonne-scale ^{76}Ge experiment.

Authorship annotation

on behalf of the MAJORANA Collaboration

Session and Location

Wednesday Session, Poster Wall #203 (Ballroom)

Poster included in proceedings:

yes

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Track Classification: Poster (participating in poster prize competition)