

LLAMA - A novel system for in-situ monitoring of optical parameters in liquid argon

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Large volume liquid argon (LAr) detectors require a precise assessment of optical key parameters for both modeling and interpreting the data. These parameters include light yield, the triplet lifetime and in particular, the attenuation length of the 128 nm primary scintillation wavelength. A change in impurity concentrations within the LAr volume affects these values and therefore requires a dedicated monitoring system, especially for long-term measurements.

The next-generation neutrinoless double beta decay experiment LEGEND employs the LAr technology as part of its active veto system. The LLAMA (LEGEND Liquid Argon Monitoring Apparatus) will reside permanently in the LAr volume of LEGEND, measuring the aforementioned optical key parameters continuously. In advance of the installation in LEGEND, LLAMA will be utilized for characterizing the LAr used in the GERDA experiment.

An overview of LLAMA, as well as first results will be presented.

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