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Performance Estimation of Liquid Argon Veto in LEGEND-200 and LEGEND-1000[1] RUSHABH GALA, North Carolina State University, LEGEND COLLABORATION — Neutrinoless double-beta decay is a hypothesized lepton-number-violating process. LEGEND-200 and LEGEND-1000 are the two phasses of the planned experiment by the LEGEND Collaboration to search for this process with 200 and 1000 kilograms of germanium detectors enriched in ^{76}Ge respectively. To achieve the $0\nu\beta\beta$ half-life sensitivities in excess of 10^{27} yrs (LEGEND-200) and 10^{28} years (LEGEND-1000), the detectors need to be operated with backgrounds at or below the level of 0.6 counts / (FWHM tn yr) for LEGEND-200 and 0.03 counts / (FWHM tn yr) for LEGEND-1000. For the LEGEND experiment, liquid argon(LAr) is used primarily for two purposes; It serves as a cooling medium for the Ge detectors, and also as a veto medium due to its scintillating properties in the VUV region. When gamma rays produced by the radioactive isotopes interact with the LAr volume, scintillation light is produced. As LAr is transparent to its own light, it can be wavelength shifted and collected by the photodetectors placed in the array and used as an active veto for compton-scattering-induced backgrounds. In this talk, I will discuss the performance of the LAr veto in the LEGEND-200 and LEGEND-1000 detectors.

[1]NSF Division of Nuclear Physics, DOE Office of Nuclear Physics

Rushabh Gala
North Carolina State University

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