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First Results from the CAGE Scanner: Investigating Surface Backgrounds in HPGe Detectors for LEGEND[1] GULDEN OTHMAN, University of North Carolina at Chapel Hill, LEGEND COLLABORATION — A potential source of backgrounds in a ton-scale ^{76}Ge-based neutrinoless double-beta decay experiment could arise from ionizing particle interactions occurring near the surfaces of high purity germanium (HPGe) detectors. The Collimated Alphas, Gammas, and Electrons scanner (CAGE) is a test stand that allows for in-depth studies of surface events on HPGe detectors. This is accomplished by using vacuum-side, moveable and rotatable collimated radiation sources to characterize the response of HPGe detectors to radiation at specific locations and incidence angles on the detector surface. LEGEND is a search for neutrinoless double-beta decay in the ^{76}Ge isotope that will begin operation of a 200 kg array, LEGEND-200, in 2021, with a plan to scale up to 1000 kg of ^{76}Ge-enriched HPGe detectors, LEGEND-1000, in a phased approach. To reach LEGEND-1000's goal of a discovery sensitivity at half-life beyond 10^{28} yr, understanding and discriminating against backgrounds from surface events is essential. In this talk we present the first results from CAGE with studies using an alpha source, and discuss the future prospects of CAGE.

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