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Alpha Background Discrimination in the MAJORANA DEMONSTRATOR[1] JULIETA GRUSZKO[2], Massachusetts Institute of Technology, THE MAJORANA COLLABORATION — The MAJORANA DEMONSTRATOR (MJD) searches for neutrinoless double-beta decay of ^{76}Ge using arrays of high-purity germanium detectors. If observed, this process would have implications for grand-unification and the predominance of matter over antimatter in the universe. A problematic background in such large granular detector arrays is posed by alpha particles. In MJD, potential background events that are consistent with energy-degraded alphas originating on the passivated detector surface have been observed. We have studied these events by scanning the passivated surface of a P-type point contact detector like those used in MJD with a collimated alpha source. We observe that surface alpha events exhibit high charge-trapping, with a significant fraction of the trapped charge being re-released slowly. This leads to both a reduced prompt signal and a measurable change in slope of the tail of a recorded pulse. In this contribution we discuss the characteristics of these events and the filter developed to identify the occurrence of this delayed charge recovery, allowing for the efficient rejection of passivated surface alpha events while retaining 99.8% of bulk events. We also discuss the impact of this filter on the sensitivity of MJD.

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