

Abstract Submitted
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Studies of Instrumental Backgrounds in the MAJORANA DEMONSTRATOR SAMEEN YUNUS, University of California, Berkeley and Lawrence Berkeley National Laboratory, LUKAS HEHN, ALAN POON, Lawrence Berkeley National Laboratory, MAJORANA COLLABORATION COLLABORATION — The MJD at the Sanford Underground Research Facilities employs an array of germanium detectors to search for neutrinoless double-beta decay of ^{76}Ge . An analysis framework is currently used to process recorded event-pulses and to remove instrumental background pulses with high efficiency. However, this rejection relies on identifying all different types of non-physical pulses. The aim was to find the general properties that define good physical events in the detectors. This could provide an independent early-stage detection system for potential new types of non-physical events caused, for example, by changes in the electronics and data acquisition systems. To achieve this, we treated the digitized raw waveforms of events as statistical distributions, and studied the (normalized) moments such as mean, RMS, skewness and kurtosis. Correlations between these parameters indicate a clear separation for some types of non-physical pulses with respect to the continuous distribution of good physical events population. Here we present results of a study using this method on MJD data, and a comparison with the existing data techniques. The underlying method promises to be applicable on a wider basis, allowing to pre-filter non-physical events recorded with Ge-detectors in general.

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