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Analysis of Backgrounds in the Majorana Experiment DONGMING MEI, Los Alamos National Laboratory, MAJORANA COLLABORATION — The search for neutrinoless double-beta decay requires experiments with extremely low levels of background from other sources. Double-beta decay experiments require a well founded and considered background understanding to guide the detector design and development. Today the Majorana collaboration has explored elimination or mitigation techniques for several types of background known form the previous generation of experiments. Because ultimately the backgrounds determine the sensitivity of any double-beta decay experiment, it is important to predict and understand the origin and the components of as yet undetected backgrounds to plan for appropriate reduction or mitigation methods. We summarize the known and expected backgrounds for Majorana, with particular emphasis on the muon-induced background in the detector fabrication, transportation on the surface and the detector operation underground. These background estimates guide the pre-commissioning efforts on the all aspects of the Majorana detector development including the shield and the depth requirements.

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