

Abstract Submitted  
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**Background Reduction in the Majorana Neutrinoless Double-Beta Decay Experiment.** REYCO HENNING, LBNL, MAJORANA COLLABORATION — Majorana is a proposed, scalable, 180-kg array of enriched germanium crystals that will search for neutrinoless double-beta ( $0\nu\beta\beta$ ) decay in  $^{76}\text{Ge}$ . The focus of this talk is the reduction of backgrounds in Majorana, a vital aspect of any low-background experiment. The first step is identification of possible backgrounds, including radioactive contamination in the detector and cosmic-ray induced backgrounds. The next step is estimating background reduction from mitigating techniques, including ultra-pure material manufacturing, shielding, detector granularity, crystal segmentation, pulse-shape analysis, time correlations, and underground manufacturing and operation. Finally, all these components are assembled into a background model. With this background model, we are confident we can improve the current half-life limit of  $0\nu\beta\beta$  decay in  $^{76}\text{Ge}$  from  $2 \times 10^{25}$  years to about  $5.5 \times 10^{26}$  years, in the absence of a  $0\nu\beta\beta$  decay signal.

Reyco Henning  
LBNL

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