

Abstract Submitted  
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**An Improved Background Model for the MAJORANA DEMONSTRATOR**<sup>1</sup> CHRISTOPHER HAUFE, Univ of NC - Chapel Hill, MAJORANA COLLABORATION — The MAJORANA collaboration is searching for neutrinoless double-beta decay in Ge-76 using modular arrays of enriched, high-purity Ge detectors. The detectors are distributed between two modules contained in a low background shield at the Sanford Underground Research Facility in Lead, South Dakota. A low background index has been achieved at the  $0\nu\beta\beta$  Q-value, and low backgrounds in the low-energy region near threshold have enabled searches for other beyond the standard model processes. Background model fits using two different statistical approaches aim to determine the sources of observed backgrounds and to explain deviations from assay-based projections. Probability density functions of sources distant from the detector array have been introduced to the model through high-statistic simulations. These pdfs allow the model to address low-efficiency shine paths that were difficult to address in the past. The improved background model presented here will help inform design choices and background considerations for the next-generation LEGEND experiment.

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