

Abstract Submitted  
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**Modeling backgrounds to the MAJORANA neutrinoless double-beta decay experiment** ALEXIS SCHUBERT, University of Washington, MAJORANA COLLABORATION — The MAJORANA Collaboration<sup>1</sup> proposes a search for neutrinoless double-beta decay ( $0\nu\beta\beta$ ) of  $^{76}\text{Ge}$  in an array of germanium detectors. The observation of  $0\nu\beta\beta$  could determine the mass scale of the neutrino and determine whether the neutrino is a Majorana particle. MAJORANA plans to begin searching for  $0\nu\beta\beta$  with the DEMONSTRATOR, a 60-kg detector array. To achieve high sensitivity, MAJORANA requires an extremely low background rate. Radioactive decays and cosmogenically-induced radiation create backgrounds to the potential  $0\nu\beta\beta$  signal. MAJORANA will minimize backgrounds by operating deep underground, using high-purity materials, and installing passive and active shielding. Pulse-shape analysis, detector-to-detector coincidences, and timing correlation will separate many remaining backgrounds from potential  $0\nu\beta\beta$  events. Understanding and minimization of backgrounds to the  $0\nu\beta\beta$  signal are critical to the sensitivity of the experiment. A MAJORANA background model will describe the expected background energy spectrum using simulation results validated with experimental data. This talk will describe the current status of the MAJORANA background model.

<sup>1</sup>F.T. Avignone III (2007) arXiv:0711.4808v1

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