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Recent progress on the Majorana experiment[1] ROB JOHNSON, University of Washington, MAJORANA COLLABORATION — The Majorana collaboration proposes to search for the process of neutrinoless double-beta decay by employing high-purity, segmented, enriched (86% ^{76}Ge) germanium as both source and detector. Recent improvements in signal processing, detector design, and advances in controlling intrinsic and external backgrounds will augment this well-established technique. The Majorana reference design advances a scalable approach in which detectors are deployed in modules consisting of 57 1.1-kg germanium crystals in a cryostat made of electro-formed copper. The experiment's initial phase with one or more modules aims to quickly and definitively test a recent claimed observation of this decay in ^{76}Ge by members of the Heidelberg-Moscow collaboration. In addition, the collaboration seeks to achieve backgrounds near 1 count/tonne/year in a 4 keV region-of-interest around the ^{76}Ge double-beta decay endpoint (2039 keV) in order to demonstrate the required backgrounds for a next-generation experiment with $\geq$ 1 tonne detector mass. With such low backgrounds and after 3 years of running with 60 kg of 76Ge, Majorana will achieve a sensitivity of $T_{1/2} = 2 \times 10^{26}$ years (90% CL), corresponding to a Majorana neutrino mass sensitivity of 200 meV (using the latest RQRPA nuclear matrix element calculations[2]).

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[2]V.A. Rodin, *et al.*, nucl-th/0503063

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