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A Novel Point Contact HPGe Detector for Searching for Neutrinoless Double-Beta Decay VICTOR M. GEHMAN, Los Alamos National Laboratory, MAJORANA COLLABORATION — The MAJORANA collaboration is investigating a new design for high-purity germanium (HPGe) detectors that could increase the physics reach and decrease the cost of our next generation neutrinoless double-beta decay ($0\nu\beta\beta$) search. The p-type, point-contact (PPC) HPGe detector (that is, a detector with a very compact central contact geometry), has a number of very attractive characteristics which could do much to help the field of $0\nu\beta\beta$, as well as the search for many other types of rare events. This new detector design allows for very low energy thresholds (potentially as low as 0.1 keV), and powerful background rejection through comparatively simple pulse shape analysis algorithms using only the digitized signal from the central contact. As with any new technology however, the PPC detectors must be characterized for reliability, robustness and reproducible fabrication. We present the current status of our efforts, with emphasis on one such detector, “MJ70” procured for the MAJORANA collaboration from PHDs Co. This detector is currently undergoing careful evaluation. This presentation will focus on the characterization program for PPCs, as well as how these detectors fit into the broader MAJORANA R&D program.

Victor M. Gehman
Los Alamos National Laboratory

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