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MAJORANA: An Ultra-Low Background Enriched-Germanium Detector Array for Fundamental Physics Measurements VICTOR GEHMAN, Los Alamos National Laboratory, MAJORANA COLLABORATION — The MAJORANA collaboration will search for neutrinoless double-beta decay ($0\nu\beta\beta$) by fielding an array of high-purity germanium (HPGe) detectors in ultra-clean electroformed-copper cryostats deep underground. Recent advances in HPGe detector technology, in particular P-type Point-Contact (PPC) detectors, present exciting new techniques for identifying and reducing backgrounds to the $0\nu\beta\beta$ signal. This should result in greatly improved sensitivity over previous generation experiments. The very low energy threshold attainable with PPC detectors also provides for a broader physics program including searches for dark matter and axions. The MAJORANA DEMONSTRATOR is an R&D program that will field three $\sim$20 kg modules of PPC detectors at Sanford Underground Laboratory. Half of the detectors will be enriched to 86% in ^{76}Ge. Here, we will cover the motivation, design, recent progress and current status of this effort, with special attention to its physics reach.

Victor Gehman
Los Alamos National Laboratory

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