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Results from the Majorana Demonstrator

The Majorana Demonstrator is an experiment searching for neutrinoless double beta decay in ^{76}Ge . The Demonstrator consists of two modules of p-type point-contact (PPC) germanium detectors operating at the 4850' level of the Sanford Underground Research Facility in Lead, SD. The experiment has recently concluded its primary physics data taking campaign in March 2021, having operated since 2015. Published results using a 26 kg-yr exposure have achieved a world-leading energy resolution of 2.5 keV FWHM and one of the lowest background indexes at the double beta decay Q-value, and set a half-life lower limit of 2.7×10^{25} yr (90% C.L.). The low backgrounds, low-energy thresholds, and excellent energy resolutions also enable competitive searches for double beta decay to excited states and beyond the Standard Model (BSM) physics. In 2020, one module underwent a significant hardware upgrade, including the replacement of several original PPC detectors with four larger, novel geometry inverted coaxial point contact (ICPC) detectors. In this talk, we present the latest results from the Majorana Demonstrator, focusing on the increased available exposure, improved analysis, and performance since the upgrade.

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