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Rare-event searches using the Majorana Demonstrator

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Located at the 4850' level of the Sanford Underground Research Facility (SURF) in Lead, SD, the Majorana Demonstrator (MJD) experiment is searching for neutrinoless double beta decay in Ge-76 with high-purity Germanium (HPGe) detectors. The combination of low-activity materials of the Demonstrator and careful control of cosmic-ray exposure to the enriched Ge detectors have resulted in a low-background level throughout the entire energy spectrum starting from ˜1 keV. The Demonstrator has achieved excellent energy resolution and low energy thresholds for the HPGe detectors, and the experiment has a compelling low-energy physics program with sensitivity to dark matter and axion searches. Multiple competitive searches of physics beyond the standard model are carried out with the MJD commissioning data at low-energies. MJD physics datasets taken later have factor of several reduction in the background at low energy, which enables improved and additional rare-event searches. In this talk, we will discuss the status of rare-event searches of the Majorana Demonstrator with a focus on dark matter candidates.

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