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Overview and Status of the MAJORANA DEMONSTRATOR[1]

SUSANNE MERTENS[2], Lawrence Berkeley Natl Lab — A unique way to explore the nature of the neutrino is the search for neutrinoless double beta decay ($\beta\beta(0\nu)$-decay). Observation of $\beta\beta(0\nu)$-decay would decisively prove that neutrinos are Majorana particles and that lepton number is violated. The MAJORANA DEMONSTRATOR will perform a search for $\beta\beta(0\nu)$-decay in 76Ge. The experiment is currently under construction at the Sanford Underground Laboratory in South Dakota, USA. It will use an array of 40 kg of HPGe detectors, up to 30 kg of which will be enriched to 86% in 76Ge, surrounded by passive and active shielding. The major goal is to demonstrate a path forward to achieving a background rate at or below 1 cnt/(ROI-t-y) in the 4 keV region of interest (ROI) around the 2039-keV Q-value of the 76Ge $\beta\beta(0\nu)$-decay. This is required for the next generation of tonne-scale germanium-based $\beta\beta(0\nu)$-decay searches that will probe the neutrino mass scale in the inverted-hierarchy region. This talk will give a general overview of the experiment and its current status.

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