

## Status and Initial Results of the Majorana Demonstrator

*Tuesday, 29 May 2018 16:40 (30 minutes)*

Located at the 4850' level of the Sanford Underground Research Facility (SURF), the Majorana Demonstrator (MJD) experiment is searching for neutrinoless double beta ( $0\nu\beta\beta$ ) decay in  $^{76}\text{Ge}$  with high-purity Germanium (HPGe) detectors. The initial goals of the Demonstrator are to establish the required background and scalability of a ton-scale Ge-based experiment.

The construction and commissioning of the Demonstrator has been completed and the multiple-year data-taking has started. Initial results from the first physics run has demonstrated an unprecedented energy resolution of 2.5 keV FWHM at  $Q_{\beta\beta}$  and an ultra-low background that is consistent with the background goals. The initial 10 kg·yr of enriched Ge exposure resulted in a lower limit on the  $0\nu\beta\beta$  decay half-life of  $1.9 \times 10^{25}$  yr (90% CL). In this talk, we will discuss the status of the Majorana Demonstrator, the recent physics results, and the implications and status of the LEGEND ton-scale Ge-based neutrinoless double-beta decay program.

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Majorana Collaboration

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