



Contribution ID: 111

Type: Oral presentation

Searches for exotic dark matter with the Majorana Demonstrator

Monday 18 July 2022 15:00 (20 minutes)

With its excellent energy resolution and ultra-low backgrounds, the high-purity germanium detectors in the MAJORANA DEMONSTRATOR enable several searches for beyond the Standard Model physics ranging from the primary neutrinoless double beta decay search to searches for several classes of exotic dark matter models. Many of these dark matter models predict a peaked signature in an energy spectrum, which can be clearly resolved by germanium detectors. The MAJORANA detectors were operated in a low-background shield at the Sanford Underground Research Facility, and our search utilizes the 1–100 keV region of a 37 kg-year exposure collected between May 2016 and November 2019. In this talk, I will present new experimental limits for fermionic dark matter absorption, sub-GeV dark matter 3-2 body scattering, bosonic dark matter (axionlike particles and dark photons), and keV-scale sterile neutrino dark matter.

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Session Classification: Parallel 1B - Further experiments