

Dark matter search results from DEAP-3600 at SNOLAB

Wednesday, July 29, 2020 6:55 PM (25 minutes)

Dark matter search results and a detailed background model for DEAP-3600 will be presented. DEAP-3600 is searching for dark matter interactions with a liquid argon target, shielded from cosmic rays by over 2 km of rock at SNOLAB in Sudbury, Canada. The spherical detector consists of 3.3 tonnes of liquid argon in a large ultralow-background acrylic cryostat instrumented with 255 photomultiplier tubes. DEAP-3600 is sensitive to nuclear recoils from dark matter particles, which cause the emission of prompt scintillation light. Backgrounds come from alpha particles on the inner detector surfaces, from external neutrons, from argon-39 beta decays, and from trace radioactivity in detector components. This talk presents the latest results from DEAP-3600, which demonstrate excellent performance for pulse-shape discrimination, event reconstruction, background rejection and sensitivity to dark matter.

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