

Cosmogenic Background in CDMSlite

The Super Cryogenic Dark Matter Search (SuperCDMS) experiment uses state-of-the-art cryogenic germanium detectors designed to detect Weakly Interacting Massive Particles (WIMPs). WIMPs are a class of candidate particles for the elusive dark matter, which constitutes approximately 27% of the Universe. The CDMS Low Ionization Threshold Experiment (CDMSlite) used a modified operational mode, sacrificing background discrimination to reach lower energy thresholds and thus sensitivity to lower mass WIMPs than reached by most other techniques. The observed CDMSlite spectrum shows clear evidence for contributions from a number of cosmogenically activated isotopes (^{68}Ga , ^{65}Zn , ^{55}Fe , ^3H , and ^{71}Ge , which is also radiogenically produced in SuperCDMS). A maximum likelihood fit is performed to extract rates for several of these contributions. Particular focus is placed on tritium, which is expected to be a limiting background for the next-generation experiment SuperCDMS SNOLAB.

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