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WITHDRAWN Characterization and mitigation of particulate sources of backgrounds in the PICO-60 experiment

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The PICO experiment is a dark matter search using superheated liquid C_3F_8. The experiment operates two bubble chambers, PICO-2L and PICO-60, at the SNOLAB facility 2km underground, and is designed to be most sensitive to spin-carrying dark matter particles with a mass range of 10-10,000 GeV/c^2. PICO bubble chambers are threshold detectors that can be operated within a set of conditions where they are insensitive to minimally ionizing particles. Acoustic, pressure and video information is used to discriminate between nuclear recoil events and background alpha events.

PICO-60 is presently being upgraded to perform dark matter searches with 60 kg of active liquid at a threshold energy of 3.2 keV. A large fraction of the background events in the previous run of PICO-60 with CF_3I exhibited behaviours consistent with particulates in the active volume. In this talk, an overview of the particulate contamination and background events with a possible particulate origin will be presented. The procedure developed to identify the particulates and to characterize them and their sources will be discussed, along with assay results from previous run. Strategies for mitigation of the generation mechanism and modifications to the detector to eliminate the particulate load on the detector in the next run are also presented.

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