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## Identification and Elimination of Bubble Chamber Backgrounds for Dark Matter Detection

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The PICO Collaboration continues to produce the most stringent direct detection limits on spin-dependent WIMP-proton dark matter interactions. This success is due to the unparalleled capability of bubble chamber detectors to reject radioactive backgrounds and their unique ability to use target nuclei unavailable to other technologies. Despite this success, past runs with PICO detectors have been consistently limited by backgrounds of unknown origin. The primary component of this background is now identified as originating from particulate contamination and was eliminated in the recent science results from the PICO-2L chamber. I will present a summary of these efforts, including calibration studies on the precise nature of this particulate-induced background and progress on the next science run of our primary physics device, PICO-60. Our developing knowledge of these backgrounds enables us not only to mitigate them in PICO-60, which promises to probe spin-dependent dark matter interactions by up to two orders of magnitude beyond PICO's current leading limits, but also potentially to distinguish them on an event-by-event basis from a dark matter signal.

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