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Abstract for an Invited Paper for the APR18 Meeting of the American Physical Society

Henry Primakoff Award for Early-Career Particle Physics Talk: Tiny Bubbles in the Mine: Dark Matter Detection via Bubble Chamber ERIC DAHL, Northwestern University

Bubble chambers play a unique role in the hunt for dark matter, with both backgrounds and sensitivity that are complementary to the rest of the WIMP direct detection field. This complementarity is critical to maximize the communitys chances for a dark matter discovery and will be the key to understanding any future WIMP signal. The PICO Collaborations recent success (including the first ever zero-background result from a bubble chamber dark matter detector) has opened the door for continued exploration with this technique. I will review the PICO program, showing final results from the PICO-60 experiment at SNOLAB, backgrounds discovered and overcome along the way, and the road forward with PICO-500. I will also describe progress on scintillating noble-liquid bubble chambers, with particular emphasis on the background discrimination and low-threshold (sub-keV) performance of this new hybrid technology.