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The Scintillating Bubble Chamber (SBC)

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The Scintillating Bubble Chamber (SBC) collaboration is combining the liquid argon scintillation and bubble chamber technologies to measure sub-keV nuclear recoils. SBC detectors benefit from the excellent electron-recoil insensitivity inherent in bubble chambers with the addition of energy reconstruction provided from the scintillation signal. Noble liquids can be superheated to a greater extent than Freons used in past bubble chambers for dark matter searches while remaining blind to electron recoils backgrounds allowing for a targeted energy threshold of 100 eV. The collaboration is building two functionally-identical detectors. The first, soon-to-be moving underground in the MINOS tunnel at Fermilab, will be used for engineering and calibration studies and has further potential in measurement of the coherent elastic neutrino-nucleus scattering on argon. A low-background version for the dark matter search will be operated underground at SNOLAB. I will discuss the motivation for sub-keV nuclear recoil studies, the current status of the SBC experimental program, and the low-mass dark matter potential.

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