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Low Threshold Operation of a Scintillating Xenon Bubble Chamber MATTHEW BRESSLER, Drexel Univ, SBC COLLABORATION — Coincident bubble nucleation and scintillation by background and ^{252}Cf spontaneous fission neutrons in pure superheated liquid xenon were first reported in 2017 with a 30 g prototype bubble chamber, operated at nuclear recoil thresholds above 4 keV. The apparatus was subsequently modified to allow for operation at higher degrees of superheat (lower nuclear recoil thresholds). We now report on operation of the xenon bubble chamber at thermodynamic thresholds as low as 0.5 keV, including tests of bubble nucleation associated with gamma rays, and sensitivity to low energy neutrons from a ^{88}Y-Be photoneutron source. Additionally, these results again demonstrate coincident bubble nucleation and scintillation with ^{252}Cf and background neutrons, and the scintillation channel allows us to make a background-reducing cut for a nuclear recoil efficiency analysis.

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