

## Light Collection for the Scintillating Bubble Chamber (SBC)

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The ongoing search for dark matter continues to evolve, and the quest to reach lower cross-sections is leading to novel techniques. A novel low-background technology for the detection of low energy nuclear recoils involves the use of a bubble chamber which employs noble elements (such as argon and xenon) as the active mass to collect additional scintillation data simultaneously. With recent developments in bubble chambers and the added scintillation channel, the scintillating bubble chamber (SBC) collaboration plans to achieve a threshold as low as 100eV and a projected WIMP-sensitivity of  $3.0 \times 10^{-43} \text{ cm}^2$ , for a WIMP mass of 0.7 GeV/c<sup>2</sup>. SBC is currently constructing a 10-liter LAr spiked with 100 ppm of LXe chamber at Fermilab with operation scheduled to start mid-2022. One of the most important tasks is to maximize light collection which requires the characterization of 32 Hamamatsu VUV4 SiPMs (silicon photomultipliers). The characterization includes the dark noise rate, photo detection efficiency, and crosstalk as a function of temperature and breakdown voltage. This talk will focus on the scintillation collection system, the current progress of the off-situ characterization of the SiPM array, and preliminary results.

### Reference to paper (DOI or arXiv)

### Your gender (free text)

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