

Status of The Solid Xenon Project at Fermilab

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The solid (crystalline) phase of xenon possesses many of the same advantages of liquid xenon as a particle detector material including good transparency and ionization drift, self-shielding, low intrinsic background, and high scintillation light yield. Many of the properties of solid xenon have been measured previously employing small volumes and thin films. However, few systematic studies have been successfully produced using large volumes of solid xenon. Two major R&D issues must be addressed to make a solid xenon particle detector; the demonstration of the scalability of solid xenon and the capability to readout solid xenon signals. Both issues are being addressed with a dedicated cryogenic system at Fermilab. The first phase of this project entailed growing approximately a kilogram of transparent solid phase xenon and was successfully completed in 2010 at Fermilab. The second phase of this project is underway where the signals from scintillation light and electron drift in solid xenon will be measured. These measurements are expected to be completed this year. In this talk, we will discuss the recent progress of solid xenon detector R&D performed at Fermilab.

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