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R&D for Solid Xenon Particle Detector

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The solid (crystallin) phase of xenon possesses many of the same advantages of liquid xenon as a particle detector material including good transparency, 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. 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 scintillation lights and ionization signals from the solid xenon. Both issues are being addressed with a dedicated cryogenic system at Fermilab. In this talk, we will report the recent results of the solid xenon detector R&D.

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