

Abstract Submitted  
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**SuperCDMS: Taking Cryogenic Dark Matter Search Techniques to 25kg and Beyond** MICHAEL DRAGOWSKY, Case Western Reserve University, SUPERCDMS COLLABORATION — The CDMS II experiment has demonstrated the merits of using athermal phonon signatures in single-crystal semiconductor detectors to search for dark matter in the form of weakly-interacting massive particles (WIMPs), obtaining the world's most sensitive upper limits on the WIMP-nucleon cross section of  $1.6 \times 10^{-43} \text{cm}^2$  (60 GeV/ $c^2$  WIMP) from its exposure of twelve detectors (1.5 kg Ge and 0.6 kg Si) in 2004. The SuperCDMS Collaboration will extend our strategy to perform zero-background experiments featuring progressively larger target mass for WIMP direct detection. The next stage experiment will employ enhanced CDMS II-style detectors, and improved analysis techniques to achieve  $10^{-45} \text{cm}^2$  sensitivity using 25 kg of Ge-based detectors. Such sensitivity in a direct detection dark matter experiment is of great interest for particle physics, astrophysics and cosmology. The design changes and performance obtained from the enhanced detectors, and the current understanding of background levels and rejection techniques applicable to SuperCDMS 25-kg will be reported. Prospects to further improve background rejection through advances in detector design and consideration of the needs to industrialize our fabrication methods will be outlined.

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