

Abstract Submitted  
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**Low energy background in a SuperCDMS HVeV detector** RUNZE REN, Northwestern University, SUPERCDMS COLLABORATION — The SuperCDMS collaboration has been developing low-threshold silicon and germanium detectors optimized for phonon signals from dark matter-nucleus interactions. One series of these devices is called high-voltage eV-resolution (HVeV) detectors. These gram-scale detectors can operate both with no electrical bias in the crystal, measuring only the recoil energy, and under an electric field, which amplifies the signal from electron-hole pairs generated from the recoil events through the Neganov-Trofimov-Luke effect. A recently improved version of the HVeV detector achieved a phonon energy resolution of 2.7 eV. Background exposures on the order of 1 gram-day were acquired with this detector at 0 V and at high voltages in an above-ground laboratory. The 0 V data was used to set a nuclear recoil dark matter limit. The data showed an unexplained excess of events below 200 eV which was further studied by comparing the 0 V data with high voltage data. Several hypotheses are proposed, which will continue to be investigated in future experiments.

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