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Understanding the Energy Spectrum from the Second Run of CDMSlite MARK PEPIN, University of Minnesota, Twin Cities, SUPERCDMS COLLABORATION — The first run of the CDMSlite experiment demonstrated the use of Neganov-Luke phonon amplification in a single SuperCDMS detector to achieve lower energy thresholds for the direct detection of dark matter. A longer physics run with improved noise rejection has been recorded with a larger voltage bias of -70 V applied across the same detector, yielding an amplification factor of 15 (for electron recoils) and reducing the statistical uncertainty of the measured background rate. In order to extract optimal dark-matter sensitivity with these data it is important to understand the shape and composition of the background spectrum at the lowest energies. The dominant backgrounds in this high-voltage mode are from Compton scatters, internal activation lines (primarily from ^{71}Ge decays), and microphonic noise. This presentation will consider the contributions from these sources and how the electric field geometry in the detector can distort the spectra. Prospects for new results will also be discussed.

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