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Simulations of TES Sensors for SuperCDMS ADAM ANDERSON, STEVEN LEMAN, KEVIN MCCARTHY, ENECTALI FIGUEROA-FELICIANO, MIT — The Cyrogenic Dark Matter Search (CDMS) instruments germanium crystals with transition-edge sensors (TES) in order to detect phonons produced by nuclear recoils. Phonons are converted into quasiparticle excitations that diffuse into a voltage-biased array of TES wired in parallel. A simulation of the CDMS TES array, including superconducting-normal resistance phase separation, is described. We also discuss measurements to characterize the sensors, which allow us to tune simulation parameters such as the critical temperature and its spatial variation, parasitic resistance, thermal diffusivity, and thermal coupling of the electron and phonon systems. The results of the tuned simulation require phase separation and are compared with test data from the CDMS detectors.

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