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Phonon Quasidiffusion in Cryogenic Dark Matter Search Large Germanium Detectors

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We present results on quasidiffusion studies in large, 3 inch diameter, 1 inch thick [100] high purity germanium crystals, cooled to 50 mK in the vacuum of a dilution refrigerator, and exposed with 59.5 keV gamma-rays from an Am-241 calibration source. We compare data obtained in two different detector types, with different phonon sensor area coverage, with results from a Monte Carlo. The Monte Carlo includes phonon quasidiffusion and the generation of phonons created by charge carriers as they are drifted across the detector by ionization readout channels.

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