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Phonon Quasidiffusion in Cryogenic Dark Matter Search Large Germanium Detectors

S.W. Leman, B. Cabrera, K.A. McCarthy, M. Pyle, R. Resch, B. Sadoulet, K.M. Sundqvist, P.L. Brink, M. Cherry, E. Do Couto E Silva, E. Figueroa-Feliciano, N. Mirabolfathi, B. Serfass, A. Tomada

(Submitted on 18 Jul 2011)

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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Subjects:	Instrumentation and Detectors (physics.ins-det); Materials Science (cond-mat.mtrl-sci); High Energy Physics - Experiment (hep-ex)
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Which authors of this paper are endorsers?

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