Position dependence analysis in phonon-based detectors

Main author:

KIM Inwook

Co-authors:

Choi Junho, Seoul National Univ, Korea /Center for Underground Physics, Institute for Basic Science, Korea

Choi Seonho, Department of Physics and Astronomy, Seoul National University, Seoul 151-747, Republic of Korea

Danevich Fedor, Institute for Nuclear Research, Kyiv 03680, Ukraine

Elena Sala, Center for Underground Physics, Institute for Basic Science, Daejeon 305-811, Republic of Korea

Fleischmann Andreas, Kirchho-Institute for Physics, Heidelberg University, Im NeuenheimerFeld 227, D-69120 Heidelberg, Germany

Ha Chang Hyon, Center for Underground Physics, Institute for Basic Science, Daejeon 305-811, Republic of Korea

Jo Hyon-Suk, Center for Underground Physics, Institute for Basic Science, Daejeon 305-811, Republic of Korea

Kang Chan Suk, Center for Underground Physics, Institute for Basic Science, Daejeon 305-811, Republic of Korea

Kim Yeongduk, Center for Underground Physics, Institute for Basic Science, Korea/ Department of Physics, Sejong University, Korea

Kim So-ra, Center for Underground Physics, Institute for Basic Science, Daejeon 305-811, Republic of Korea

Kim Hyelim, Department of Physics, Kyungpook National Univ, Korea /Center for Underground Physics, Institute for Basic Science, Korea

Kim Hong Ju, Department of Physics, Kyungpook National Univ, Korea /Center for Underground Physics, Institute for Basic Science, Korea

Kim Geon-Bo, Department of Physics and Astronomy, Seoul National Univ, Korea /Institute for Basic Science, Korea

KIM Inwook, Seoul National University, Republic of Korea

Kornoukhov Vasily, Center for Underground Physics, Institute for Basic Science, Republic of Korea / Research Institute of Stanford

Lee Minkyu, Korea Research Institute of Standards and Science, Daejeon 305-340, Republic of Korea

Lee Juhee, Center for Underground Physics, Institute for Basic Science, Daejeon 305-811, Republic of Korea

Lee Hyejin, Center for Underground Physics, Institute for Basic Science, Daejeon 305-811, Republic of Korea

Seung-Yoon Oh, Department of Physics, Sejong Univ, Korea /Center for Underground Physics, Institute for Basic Science, Korea

So Jungho, Center for Underground Physics, Institute for Basic Science, Daejeon 305-811, Republic of Korea

Yoon Young Soo, Center for Underground Physics, Institute for Basic Science, Daejeon 305-811, Republic of Korea

Yoon Wonsik, Center for Underground Physics, Institute for Basic Science, Daejeon 305-811, Republic of Korea

Position dependence of signals in phonon-based detectors that consist of a large volume absorber and phonon collecting film on its surface is one of the major factors that degrades energy resolution in rare event search experiments. For the better detection performance, techniques are being developed to identify and minimize any position dependence. Here we report the idea and the result of a dual-phonon detection method which uses two identical phonon sensors to analyse the event position, and a position-dependent correction method using a GEANT4 simulation.