Abstract Submitted
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The Effect of Hole Mobility on GRETINA Basis Quality[1] V.S. PRASHER, Department of Physics, University of Massachusetts Lowell, Lowell, MA, USA, M. CROMAZ, C.M. CAMPBELL, H.L. CRAWFORD, A. WIENS, A.O. MACCHIAVELLI, I.Y. LEE, Nuclear Science Division, Lawrence Berkeley National Laboratory, Berkeley, CA, USA, D.C. RADFORD, Physics Division, Oak Ridge National Laboratory, Oak Ridge, TN, USA, E. MERCHAN, P. CHOWDHURY, C.J. (KIM) LISTER, Department of Physics, University of Massachusetts Lowell, Lowell, MA, USA — The GRETINA array makes use of the concepts of signal decomposition, which fits the observed waveform from each crystal segment with a linear combination of pre-calculated basis signals to localize the interaction of gamma-rays within the detector volume, and then γ-ray tracking to reconstruct the γ-ray scattering sequence. The capability of reconstructing the position of the interaction with resolution at the level of a few millimeters is a fundamental requirement for reliable tracking and is important to understand and quantify the limiting factors of position resolution. Improvements in signal decomposition can be realized by better modeling the crystals. Specifically, we need a better understanding of drift velocity anisotropy, which causes considerable differences in pulse shape rise time depending on the position of the spatial charge carrier creation. In this presentation we will discuss the sensitivity of the predicted pulse shapes when varying hole mobility parameters and the influence of these changes on the inferred interaction points.

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