

Abstract Submitted  
for the DNP15 Meeting of  
The American Physical Society

**Understanding GRETINA using angular correlation method<sup>1</sup>**

MADÉLINE AUSTIN, Argonne National Laboratory — The ability to trace the path of gamma rays through germanium is not only necessary for taking full advantage of GRETINA but also a promising possibility for homeland security defense against nuclear threats. This research tested the current tracking algorithm using the angular correlation method by comparing results from raw and tracked data to the theoretical model for Co-60. It was found that the current tracking method is unsuccessful in reproducing angular correlation. Variations to the tracking algorithm were made in the FM value, tracking angle, number of angles of separation observed, and window of coincidence in attempt to improve correlation results. From these variations it was observed that having a larger FM improved results, reducing the number of observational angles worsened correlation, and that overall larger tracking angles improved with larger windows of coincidence and vice-versa. Future research would be to refine the angle of measurement for raw data and to explore the possibility of an energy dependence by testing other elements.

<sup>1</sup>This work is supported by the United States Department of Energy, Office of Science, under contract number DE-AC02-06CH11357

Madeline Austin  
Argonne National Laboratory

Date submitted: 29 Jul 2015

Electronic form version 1.4