

High Precision Event Localization Scintillator Crystals

Disclosure Number

201102590

Technology Summary

Our goal is to realize 3D spatial resolution of energy depositions due to gamma rays within a bulk scintillator-based detector. Past efforts along these lines have been of interest to the medical imaging community. Medical imaging systems generally achieve 2D position-resolution by subdividing the detector crystal into many small pixels. Gamma-ray interactions in scintillator crystals generate an expanding sphere of scintillation light. It is well known that the location of an event can be determined in two dimensions by sampling the 2D footprint of this sphere on the input window of a position-sensitive photodetector such as a position-sensitive photomultiplier tube (PSPMT) or a position-sensitive avalanche photo diode (PSAPD). Our goal is to achieve a resolution of order 1 mm.

Inventor

ZIOCK, KLAUS-PETER

Global Nuclear Security Technology Div

Licensing Contact

SPEIGHT II, MELVIN D

UT-Battelle, LLC

Oak Ridge National Laboratory

Room 143, 4500N, MS: 6196

1 Bethel Valley Road

Oak Ridge, TN 37831

Office Phone: (865) 241-6564

E-mail: DSPEIGHT@ORNL.GOV

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