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Battelle Number(s):

15374-E

Patent(s) Issued

Available for licensing in all fields

Available Technologies

GammaTracker Imaging Algorithm

SUMMARY

The GammaTracker Imaging Algorithm, when deployed in an instrument, detects and locates gamma rays from all kinds of radioisotopes. Using position-sensitive gamma ray spectroscopy, the imaging technology provides improved sensitivity and reliable identification of present isotopes in a computationally efficient way.

Covered in this patent-pending algorithm are calculations used to find and reconstruct the source position of emitting gamma rays. The calculations can be directly implemented for real-time applications in any low-power, reconfigurable hardware platform, such as a field-programmable gate array. Although typical directional instruments require a memory-intensive image reconstruction step, the method developed at PNNL enables direction-finding without a lot of system overhead. In addition, the method uses gamma-ray energy information to improve performance without requiring the user to have any knowledge of the radioisotopes present.

The GammaTracker imaging algorithm can be applied to handheld instruments, including one in development at PNNL with other partners, for search of vessels, on land or at sea, as well as surveys of an area or facility.

ADVANTAGES

- * Algorithm provides ability to reconstruct radioisotope position (direction).
- * High energy resolution provides more accurate detection and identification.
- * Requires no knowledge of source composition or distribution.
- * Can be implemented directly on low-power embedded hardware.

STATE OF DEVELOPMENT & AVAILABILITY

For more information about the Gamma Tracker Imaging System (a joint project with the University of Michigan, Kansas City Plant and others), please contact Carolyn Seifert at PNNL (carolyn.seifert@pnl.gov). The system utilizes the proprietary algorithm presented on this page.



Patents & Intellectual Property

- » Patent #: 7,928,399

Technology Portfolio(s)

- » Radiation Sensors

Potential Industry Applications

- » Aerospace & Defense
- » Public Administration & Government
- » Security

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