

3.2-P02. A Two-element Coplanar CZT Detector for Radioxenon Measurements

Atmospheric radioxenon detection, specifically the measurements of low concentrations of Xe-131m, Xe-133m, Xe-133, and Xe-135, has proven to be an important method for monitoring nuclear weapons testing. To improve the reliability and maintainability of current radioxenon detection systems employed in the International Monitoring System (IMS), a two-element coplanar CZT detector has been designed, constructed, and experimentally tested at Oregon State University. The detection system comprises of two 20 x 20 x 5 mm³ coplanar CZT detectors assembled face-to-face in a 7.8 cm³ Al gas cell, four charge-sensitive preamplifiers, and a two-channel FPGA-based digital pulse processor. In this paper, detector design and our preliminary measurement results with lab sources and activated xenon radioisotopes will be discussed.

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Track Classification: 3. Advances in sensors, networks and processing