Abstract Submitted for the DNP11 Meeting of The American Physical Society

Nuclear Spectroscopy using Novel, Position-Sensitive Detectors¹ S. LAKSHMI, P. CHOWDHURY, E.G. JACKSON, S. HOTA, University of Massachusetts Lowell, C.J. LISTER, S. GROS, Argonne National Laboratory, M. MC-CLISH, R. FARREL, K. SHAH, Radiation Monitoring Devices Inc. -Novel, position-sensitive particle and gamma detectors were tested for applications in nuclear physics experiments. An efficient compact setup was used to measure angular correlation between the alpha particle decay of ²²⁴Ra to an excited state in ²²⁰Rn, and the subsequent gamma decay to the ground state in ²²⁰Rn. A 1" X 1" positionsensitive avalanche photo-diode (PSAPD) was used for detecting the alpha particles and a planar germanium double-sided strip detector (GeDSSD) for detecting the gamma rays. Significant solid angle coverage is achieved in a single, fixed geometry, due to the excellent position resolutions of the PSAPD (400 microns) and the GeDSSD (5 mm) by positioning the detectors close to the source. Distortion correction algorithms for the PSAPD, pixel efficiencies, method of angle reconstruction and the measured angular correlation have been improved iteratively. Latest results will be presented.

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