

Abstract Submitted
for the NES11 Meeting of
The American Physical Society

Nuclear Spectroscopy using Novel, Position-Sensitive Detectors¹

S. LAKSHMI, P. CHOWDHURY, E. JACKSON, S.S. HOTA, S.K. TANDEL, University of Massachusetts, Lowell, MA, USA, C.J. LISTER, S. GROS, Argonne National Laboratory, Argonne, IL, USA, M. MCCLISH, R. FARREL, K. SHAH, Radiation Monitoring Devices Inc., Watertown, MA, USA — Novel, position-sensitive particle and gamma detectors were tested for applications in nuclear physics experiments. Angular correlation between the alpha particle decay of ^{224}Ra to an excited state in ^{220}Rn , and the subsequent gamma decay to the ground state in ^{220}Rn was measured. A 1 inch² position-sensitive 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. A large solid angle coverage has been achieved in a single, fixed geometry, due to the excellent position resolution 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 will be presented.

¹Work supported by the U.S. Department of Energy.

S. Lakshmi
University of Massachusetts Lowell

Date submitted: 11 Mar 2011

Electronic form version 1.4