

Abstract Submitted  
for the DNP08 Meeting of  
The American Physical Society

**Neutron damage tests of a highly segmented Germanium detector**

T.J. ROSS, C.W. BEAUSANG, University of RIchmond, I.Y. LEE, A.O. MACCHI-  
AVELLI, S. GROS, M. CROMAZ, R.M. CLARK, P. FALLON, HENRIK JEPPE-  
SEN, Lawrence Berkeley National Lab., J.M. ALLMOND, University of Richmond  
— Gamma ray energy tracking arrays such as GRETINA/GRETA and AGATA are  
the latest evolution in gamma ray detection. By locating the interaction points, in  
3-dimensions, of individual gamma ray interactions such arrays allow the energies  
of gamma rays to be reconstructed. This leads to excellent energy resolution, su-  
perior peak-to-total ratio and photo peak efficiency and resolving powers up to a  
thousand times superior to the best current generation array. The position infor-  
mation is extracted from the detailed pulse shapes recorded in each segment. It is  
anticipated that these tracking-detectors will experience significant neutron fluxes  
during in beam experiments. Thus it is important to test the response of highly-  
segmented Ge detectors when subjected to high-energy neutrons. In a one week test  
carried out at the 88-Inch Cyclotron at LBNL the P3 prototype detector for the  
GRETINA array was exposed to a neutron flux equivalent to at least one and a half  
years normal use. The detector was then successfully annealed. Preliminary results  
for the energy and position resolution, prior to and after neutron damage, and after  
annealing will be presented.

Timothy Ross  
University of Richmond

Date submitted: 11 Jul 2008

Electronic form version 1.4