

Abstract Submitted  
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**Continuum studies in Gd nuclei by particle- $\gamma$  coincidences** T.J. ROSS, University of Richmond, R.O. HUGHES, C.W. BEAUSANG, J.M. ALLMOND, J.T. BURKE, L.W. PHAIR, N. SCIELZO, C.T. ANGELL, M.S. BASUNIA, D.L. BLEUEL, R.J. CASPERSON, P. FALLON, R. HATARIK, J. MUNSON, S. PASCHALIS, M. PETRI, J.J. RESSLER — An experiment was carried out at the 88-Inch Cyclotron at Lawrence Berkeley National Laboratory to study Gd isotopes in the vicinity of the N=90 transitional region. A 25 MeV proton beam was incident on  $^{158/155/154}\text{Gd}$  targets and used to populate states in  $^{152-158}\text{Gd}$  by (p,p'), (p,d) and (p,t) reactions. The exit channel is selected by gating on charged particles using the STARS Si-Telescope array, which also gives the excitation energy of the residual nucleus. Coincident  $\gamma$  information is obtained using the LIBERACE Clover array. Particle- $\gamma$  coincidences provide a powerful tool for probing the residual nucleus [1]. For example, particles in coincidence with a specific  $\gamma$  ray produce a spectrum representing all levels populated in the nucleus that subsequently decay into the state from which the  $\gamma$  ray originates. Results will be presented that give an insight into the population distribution of the high level density region above the pair gap in the even-even Gd nuclei via light ion reactions. [1] J. M. Allmond et al. Phys.Rev.C 81, 064316 (2010) Work supported in part via DOE grant numbers DE-FG02-05 ER41379 & DE-FG52-06 NA26206(University of Richmond), DE-AC52 07NA27344(LLNL) and DE-AC02 05CH11231(LBNL).

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