

# SPECTROSCOPY OF THE PROTON EMITTER $^{109}\text{I}$ <sup>1</sup>

C.-H. Yu, A. Galindo-Uribarri, S. D. Paul<sup>2</sup>, M. P. Carpenter<sup>3</sup>, C. N. Davids<sup>3</sup>,  
R. V. F. Janssens<sup>3</sup>, C. J. Lister<sup>3</sup>, D. Seweryniak<sup>3</sup>, J. Uusitalo<sup>3</sup>, and B. D. MacDonald<sup>4</sup>

Excited states in the proton-unbound nucleus  $^{109}\text{I}$  were populated using the  $^{54}\text{Fe}(^{58}\text{Ni}, p2n)$  reaction at a beam energy of 220 MeV. Gamma rays in  $^{109}\text{I}$  were identified using the recoil decay tagging technique. The analysis of proton-correlated  $\gamma\gamma$  coincidence data produced the yrast decay sequence in  $^{109}\text{I}$ , which can be understood as built on the  $h_{11/2}$  proton state. This sequence is completely different from that reported previously. A comparison of the  $h_{11/2}$  band in  $^{109}\text{I}$  with those in heavier iodines shows that  $^{109}\text{I}$  continues the trend of decreasing quadrupole deformation with decreasing neutron number in the light iodine isotopes.

---

<sup>1</sup>Abstract of paper submitted to Phys. Rev. C.

<sup>2</sup>Oak Ridge Institute for Science and Education, Oak Ridge, TN 37831.

<sup>3</sup>Argonne National Laboratory, Argonne, IL 60439.

<sup>4</sup>Georgia Institute of Technology, Atlanta, GA 30332.