Abstract Submitted for the DNP12 Meeting of The American Physical Society

Lifetime Measurements in ¹⁶⁰Gd¹ S.R. LESHER, I. MARSH, Univ. of Wisconsin - La Crosse, A. APRAHAMIAN, C. CASARELLA, M. SMITH, Univ. of Notre Dame, B.P. CRIDER, E.E. PETERS, S.W. YATES, Univ. of Kentucky — The nature of low-lying excitations, $K^{\pi} = 0^+$ bands in deformed nuclei remain enigmatic in the field, especially in relationship to quadrupole vibrations. One method of characterizing these states is by reduced transition probabilities, B(E2) values, a measure of the collectivity. These values can be measured directly by Coulomb excitation or calculated from measured lifetime values. Within the deformed region, there are five stable Gd isotopes, three of which have been studied to obtain B(E2) values, a fourth, ¹⁶⁰Gd is the focus of this work. We have examined ¹⁶⁰Gd with the (n,n' γ) reaction and neutron energies up to 3.0 MeV to confirm known 0⁺ states and to determine their lifetimes through DSAM measurements. Gamma-ray excitation functions and angular distribution measurements have been performed and preliminary results will be presented.

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