Abstract Submitted
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Search for the 2_3^+ to 0_2^+ Transition in ^{158}Gd[1] M.C. MARSHALL, R.J. CASPERSON, V. WERNER, A. HEINZ, A. SCHMIDT, J. QIAN, J.R. TERRY, E. WILLIAMS, R. WINKLER, WNSL Yale, Z. BERANT, WNSL, NRC Negev, M. BUNCE, WNSL, Surrey, G. HENNING, WNSL, ENS Cachan, M. SMITH, WNSL, CCSU — Interacting Boson Model 1 (IBM) calculations on Gadolinium nuclei indicate that the quadrupole deformation undergoes a phase transition. The IBM predicts that the deformation of the first excited 0_2^+ state in ^{158}Gd rises beyond that in ^{156}Gd in a first order phase transition, while remaining smaller than that of the ground state [1]. This can be tested via measurement of quadrupole shape invariants. Coulomb excitation in conjunction with the YRAST-Ball array was used at the Yale ESTU tandem accelerator to excite the 2_3^+ state in ^{158}Gd and detect its transition of 63 keV to the 0_2^+ state. The intensity of this low-energy γ-ray has to be measured relative to decays around 900 keV. Therefore, an efficiency calibration with multiple sources covering the entire energy range was performed.
[1] V. Werner et al., Phys. Rev. C (R), submitted (2008).

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