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E0 transitions in the deformed nucleus ^{158}Dy E. WILLIAMS, WNSL, Yale University, New Haven, CT 06520 USA, T. KIBEDI, Department of Nuclear Physics, The Australian National University (ANU), Canberra, ACT 0200, Australia, V. WERNER, WNSL, G. DRACOULIS, ANU, T. AHN, R.J. CASPERSON, WNSL, A. DEVLIN, ANU, A. HEINZ, G. ILIE, WNSL, A. JIA XIN TEH, G.J. LANE, ANU, D. MCCARTHY, J. QIAN, A. SCHMIDT, WNSL, A.E. STUCHBERY, ANU, J.R. TERRY, WNSL — The physics governing large E0 strengths between low-lying collective 0^+ states has recently been a topic of considerable debate. In the deformed limit, where data is scarce, the *sd*-Interacting Boson Model-1 unequivocally predicts large E0 strengths between the first excited collective 0^+ state and the ground state. To test this prediction, and further explore the as of yet ill-understood structure of the 0_2^+ state in rare earth nuclei, the deformed nucleus ^{158}Dy was populated via electron capture decay from ^{158}Er and ^{158}Ho. Gamma-rays and internal conversion electrons were measured; internal conversion coefficients and B(E0)/B(E2) ratios were obtained. Preliminary results of this work will be presented. Work supported by US DOE grant number DE-FG02-91ER-40609 and The ANU.

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