Deformation of excited states in collective nuclei using quadrupole shape invariants E. WILLIAMS, V. WERNER, Yale University — Quadrupole shape invariants, formed by the isoscalar electric quadrupole operator, have been shown to provide a model- independent signature of nuclear deformation in a given eigenstate [1,2]. These invariants are of particular interest in cases where few lifetime data are available, as only a few absolute B(E2) values are needed to approximately determine the lowest quadrupole invariants for the ground state. In this work, we have extended earlier studies [3] of quadrupole shape invariants by investigating their general behavior for excited states and band structures in addition to the ground state, as well as exploring the behavior of these invariants at and between various limits of deformation (vibrational, rotational, and γ-soft) within the framework of the interacting boson model (IBA)-1. Preliminary results of this investigation will be presented. [1] K. Kumar. Phys. Rev. Lett. 28, 249 (1972). [2] D. Cline, Annu. Rev. Nucl. Part. Sci. 36, 683 (1986). [3] V. Werner et al. Phys. Rev. C, 61, 021301 (1999). Work supported by US DOE grant number DE-FG02-91ER-40609.

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