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Deformation shrinking of the β -band at the first order shape phase transition V. WERNER, E. WILLIAMS, WNSL, Yale University, C. SCHOLL, P. VON BRENTANO, IKP, Universität zu Köln, Germany — One main effect of the nuclear shape phase transition between spherical and deformed nuclei is the vast rise of the geometrical deformation parameter β for the ground state towards deformed nuclei. This rise is reflected in a the rise of the model independent quadrupole shape invariant $q_2(0_1^+)$, from which an effective ground state β -deformation can be extracted. While one would naively expect similar behavior for the q_2 value of the first excited 0^+ state, which corresponds to the head of the β -vibrational band, the IBM-1 predicts indeed a shrinking of its β -deformation when crossing the first order phase transition between vibrators and well-deformed nuclei. Absolute B(E2) values known for the ground-band and the β -band of $^{152,154}\text{Gd}$ support this effect. This work is supported by USDOE under contract numbers DE-FG02-91ER-40609, and DFG under Br 799/12-1.

Prefer Oral Session
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