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Characteristics of phase transitions in electric monopole transitions strengths using the IBM-1 R.J. CASPERSON, E. WILLIAMS, V. WERNER, Yale University — The Interacting Boson Model-1 (IBM-1) predicts a sudden rise in E0 transition strengths between the lowest two 0^+ states when crossing the phase transition from spherical to deformed nuclei. In addition, the E0 strength is predicted to remain large toward the deformed limits, which was recently supported by new data. In order to identify characteristics of phase transitions and minimize finite N effects, large configuration spaces must be used. Arbitrary precision arithmetic has allowed for calculations of up to 400 bosons using the full parameter space of the IBM-1. The calculations to be presented show that the peaking of the E0 strength at the first order phase transition and the large value in the deformed limit are two independent features. First calculations of isomer shifts for large boson numbers will also presented. Work supported by US DOE under grant number DE-FG02-91ER-40609.

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