Abstract Submitted
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Shape coexistence, shape invariants, and ab initio rotation in ^{10}Be[1] MARK A. CAPRIO, PATRICK J. FASANO, University of Notre Dame, ANNA E. MCCOY, TRIUMF, PIETER MARIS, JAMES P. VARY, Iowa State University — *Ab initio* theory describes nuclei from a fully microscopic formulation, with no presupposition of collective degrees of freedom, yet signatures of deformation and rotation nonetheless arise. To extract information on the nature of this emergent collectivity, we must probe the calculated wave functions through appropriate observables. The predicted spectroscopy of ^{10}Be from no-core configuration interaction (NCCI) calculations is suggestive of coexisting rotational structures having qualitatively different intrinsic deformations: one involving triaxiality and the other with large axial deformation arising primarily from the neutrons. We use calculated $E2$ observables, and in particular quadrupole shape invariants, to obtain more direct measures of the nuclear shapes.

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