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Collective rotation from *ab initio* theory¹ MARK A. CAPRIO, University of Notre Dame, PIETER MARIS, JAMES P. VARY, Iowa State University — The challenge of *ab initio* nuclear theory is to quantitatively predict the complex and highly-correlated behavior of the nuclear many-body system, starting from the underlying internucleon interactions. We may now seek to understand the wealth of nuclear collective phenomena through *ab initio* approaches. No-core configuration interaction (NCCI) calculations for *p*-shell nuclei give rise to rotational bands, as evidenced by rotational patterns for excitation energies, electromagnetic moments, and electromagnetic transitions. In this talk, the intrinsic structure of these bands is discussed, and the predicted rotational bands are compared to experiment.

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