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Ab Initio Study of the Level Ordering Anomaly in ^{11}Be[1] CHRISTIAN FORSSEN, PETR NAVRATIL, W. ERICH ORMAND, LLNL, ETIENNE CAURIER, IRES CNRS Strasbourg — We are presenting the first *ab initio* structure investigation of the loosely bound ^{11}Be nucleus, together with a study of the surrounding, stable isotopes ^{9}Be, ^{11}B and ^{13}C. The nuclear structure of these isotopes is particularly interesting due to the appearance of a parity-inverted ground state in ^{11}Be. Our study is performed in the framework of the *ab initio* no-core shell model (NCSM). Results obtained using four different, high-precision two-nucleon interactions, in model spaces up to $9\hbar\Omega$ (with matrix dimensions exceeding 1.1×10^9), are shown. We present results on binding energies, excitation spectra, radii, and electromagnetic observables. Furthermore, the recently developed ability to extract cluster form factors from NCSM wave functions is utilized, and the overlap of the ^{11}Be ground state with different ^{10}Be+n channels is studied. Support from the LDRD contract No. 04-ERD-058, and from U.S. Department of Energy, Office of Science, (Work Proposal Number SCW0498) is acknowledged.

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