

Abstract Submitted
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Proton-Neutron Mixed-Symmetry States of Vibrational Nuclei Near the $N = 82$ Shell Closure¹ NORBERT PIETRALLA, T. AHN, B. BOCHEV, A. COSTIN, K. DUSLING, T.C. LI, S. PONTILLO, G. RAINOVSKI, Y. RONG, Nuclear Structure Lab, SUNY, Stony Brook — Proton-neutron (pn) mixed-symmetry states (MSSs) have been defined in the pn-version of the interacting boson model (IBM-2). They are quadrupole-collective structures with wave functions that contain antisymmetric parts with respect to the pn contribution. This makes them sensitive to isovector parts of the effective pn interaction in the valence shell. Multiphonon structures with mixed-symmetry have been discovered [1] and studied in vibrational even-even nuclei near the $N = 50$ shell closure. A program for investigating MSSs has been initiated at the Nuclear Structure Lab of SUNY at Stony Brook. We report on our identification of one-phonon $2_{1,ms}^+$ MSSs of even-even vibrational nuclei near the $N = 82$ shell closure with ^{136}Ba , $^{136,138}\text{Ce}$, and $N = 86$ isotones [2] as examples. Experimental techniques, results, and consequences will be discussed.

[1] N. Pietralla *et al.*, Phys. Rev. Lett. **83**, 1303 (1999); Phys. Rev. Lett. **84**, 3775 (2000).

[2] T.C. Li, N. Pietralla *et al.*, Phys.Rev. C **71**, 044318 (2005).

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