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Revealing the structural nature of the Cd isotopes P.E. GARRETT, A. DIAZ VARELA, K.L. GREEN, D.S. JAMIESON, B. JIGMEDDORJ, University of Guelph, J.L. WOOD, Georgia Institute of Technology, S.W. YATES, University of Kentucky — The even-even Cd isotopes have provided fertile ground for the investigation of collectivity in nuclei. Soon after the development of the Bohr model, the stable Cd isotopes were identified as nearly harmonic vibrators based on their excitation energy patterns. The measurements of enhanced $B(E2)$ values appeared to support this interpretation. Shape co-existing rotational-like intruder bands were discovered, and mixing between the configurations was invoked to explain the deviation of the decay pattern of multiphonon vibrational states. Very recently, a detailed analysis of the low-lying levels of ^{110}Cd combining results of the $(n, n'\gamma)$ reaction and high-statistics β decay, provided strong evidence that the mixing between configurations is weak, except for the ground-state band and "$K^\pi = 0^+$" intruder band. The analysis of the levels in ^{110}Cd has now been extended to 3 MeV, and combined with data for ^{112}Cd and previous Coulomb excitation data for ^{114}Cd, enables a detailed map of the $E2$ collectivity in these nuclei, demanding a complete re-interpretation of the structure of the stable Cd isotopes.

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