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Evidence for Breakdown of Vibrational Motion in ^{110}Cd JACK BANGAY, PAUL GARRETT, LAURA BIANCO, KYLE LEACH, PAUL FINLAY, KATIE GREEN, ANDREW PHILLIPS, EVAN RAND, CARL SVENSSON, CHANDANA SUMITHRARACHCHI, JAMES WONG, University of Guelph — ^{110}Cd has long been considered an excellent example of a vibrational nucleus. However, recent work with other even-even Cadmium isotopes show a breakdown of vibrational motion at the 2 and 3-phonon level, suggesting the need for more precise measurements on ^{110}Cd . The structure of ^{110}Cd is studied with the $(n, n'\gamma)$ reaction performed at the University of Kentucky, as well as with the high statistics β -decay of ^{110}In performed at the TRIUMF-ISAC facility using the 8π spectrometer. Excitation functions and angular distributions from the $(n, n'\gamma)$ reaction provide us with spectroscopic information on the level scheme, including level lifetimes and spins. This data is complemented by the $\gamma\gamma$ coincidences measured in the ^{110}In β -decay that allows the observation of, or stringent limit on, weak, low-energy branches between levels at high excitation energy. Details of the analysis to date, including candidates for the full octupole-quadrupole coupled quintuplet, will be presented.

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