

Abstract Submitted
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Search for one- and two-phonon octupole vibrational states in the spherical nuclei near ^{132}Sn J.K. HWANG, J.H. HAMILTON, A.V. RAMAYYA, Vanderbilt University, Y.X. LUO, Vanderbilt University/LBNL — Excited high spin states in ^{135}I , ^{136}Xe , ^{137}Cs , ^{138}Ba , ^{139}La , ^{140}Ce and ^{142}Nd with $N=82$ are reorganized and interpreted in a different way to find one- phonon octupole vibrational (POV) bands. Two nearly identical (similar) bands with $\Delta I=3$ are found in these nuclei. From the presence of two nearly identical excited bands with $\Delta I=3$ in these nuclei, one-POV bands are proposed. Also, high spin states of ^{134}Sb , $^{134,135}\text{Te}$, $^{135,136}\text{I}$, ^{137}Xe and ^{139}Ba near ^{132}Sn are reanalyzed in order to search for one- and two-POV states. New spins and parities are tentatively assigned to the 2203.9 keV state in ^{137}Xe and the 1976.6 and 2091.7 keV states in ^{139}Ba from the state energy plots of the $N = 82$ and 83 nuclei. High spin states of ^{134}Sb , $^{134,135}\text{Te}$, $^{135,136}\text{I}$, ^{137}Xe and ^{139}Ba connected by E1, E3/M2 and E3 transitions are proposed, for the first time, as zero-, one- and two-POV states. One- and two-POV states in ^{134}Sb and ^{135}Te are built on a $7^- (\pi g_{7/2} \nu f_{7/2})$ state and a $19/2^- (\nu f_{7/2} \otimes 6_1^+)$ state, respectively. One-POV states built on the $19/2^- (\nu f_{7/2} \otimes 6_1^+)$ and the $21/2^- (\nu h_{9/2} \otimes 6_2^+)$ states coexist in ^{137}Xe . Then, one- and two-POV states in ^{139}Ba are built only on the $21/2^- (\nu h_{9/2} \otimes 6_2^+)$ state. One- and two-POV states in ^{134}Te are built on the 6_2^+ state with some mixing with the 6_1^+ state.

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