

Abstract Submitted
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Collective Band Structures in Neutron-Rich ^{108}Mo Nucleus H.B. DING, S.J. ZHU, Tsinghua University, J.H. HAMILTON, A.V. RAMAYYA, J.K. HWANG, Vanderbilt University, Y.X. LUO, Vanderbilt University, Lawrence Berkeley National Lab, J.O. RASMUSSEN, I.Y. LEE, Lawrence Berkeley National Lab, X.L. CHE, J.G. WANG, Q. XU, Tsinghua University — High spin states in the neutron-rich ^{108}Mo nucleus were studied by measuring prompt γ -rays following the spontaneous fission of ^{252}Cf with the Gammasphere detector array. Our high statistics data, 5.7×10^{11} triple coincidences, enabled us to see new bands. The ground-state band is confirmed, and the one-phonon γ -vibrational band is extended up to spin 12. Three new unexpected states are found to feed into the ground and one-phonon γ -band 6^+ and 8^+ states. A new collective band with a band head at 1422.4 keV is observed with energy spacing similar to the one-phonon γ -band and feeding only into this band. These data suggest its assignment as a two-phonon γ -vibrational band. Such bands are seen in $^{104,106}\text{Mo}$. Another new band is proposed as a two-quasi-proton excitation band. Systematic characteristics of the collective bands will be discussed.

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