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Coexistence of transverse and longitudinal wobbling modes in ^{187}Au[1] NIRUPAMA SENSHARMA, UMESH GARG, STEFAN FRAUENDORF, D. P. BURDETTE, J. L. COZZI, K. B. HOWARD, University of Notre Dame, Q. B. CHEN, Technische Universitat Munchen, Germany, S. ZHU, Brookhaven National Laboratory, M. P. CARPENTER, P. COPP, F. G. KONDEV, T. LAURITSEN, J. LI, D. SEWERYNIAK, J. WU, Argonne National Laboratory, A. D. AYANGEAKAA, D. J. HARTLEY, United States Naval Academy, R. V. F JANSSENS, University of North Carolina Chapel Hill, A. M. FORNEY, W. B. WALTERS, University of Maryland, College Park, S. S. GHUGRE, UGC-DAE Consortium for Scientific Research, India, R. PALIT, Tata Institute of Fundamental Research, India — Nuclear wobbling motion has been investigated in the ^{187}Au nucleus. The ^{174}Yb(^{19}F,6n)^{187}Au reaction was used to populate the levels of interest using the Gammasphere array. Detailed analysis has revealed two separate wobbling bands built on $(\pi h_{9/2})^1$ and $(\pi h_{11/2})^{-1}$ configurations. The wobbling nature of these bands has been verified by angular distribution measurements showing a ΔI = 1, E2 nature of the $n_{\omega+1} \rightarrow n_{\omega}$ transitions. Most interestingly, the two structures have been found to exhibit different types of wobbling: transverse and longitudinal. ^{187}Au is the case of the first cleanly established longitudinal wobbler and of the coexistence of both forms of wobbling, a phenomenon never observed before. Particle Rotor Model calculations have been found to be in good agreement with the experiment.

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