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Identification of high spin states and nearly degenerate $\Delta I=1$ bands in ^{100}Zr J.K. HWANG, A.V. RAMAYYA, J.H. HAMILTON, Vanderbilt Univ., J.O. RASMUSSEN, Y.X. LUO, LBNL, D. FONG, K. LI, C. GOODIN, Vanderbilt Univ., S.J. ZHU, Tsinghua Univ., S.C. WU, LBNL, M.A. STOYER, LLNL, R. DONANGELO, Univ. Fed. do Rio de Janeiro, X.-R. ZHU, Xiamen Univ., H. SAGAWA, Univ. Aizu — Eight new high spin states and twenty-three new γ transitions have been identified in ^{100}Zr from studies of ^{252}Cf spontaneous fission with Gammasphere. A near-spherical excited band in ^{100}Zr based on the 331.1 keV 0^+ state is extended from 4^+ up to 12^+ . A $\Delta I = 1$ band with band-head energy of 2316.1 keV is extended. This band now forms $\Delta I=1$ doublet bands with the previously known $\Delta I=1$ band beginning at 2259.8 keV. The energy difference between the bands with the same spins in the two bands are nearly degenerate, $\Delta E = 25.2(8^+)$, $8.6(9^+)$, $4.8(10^+)$ and $12.1(11^+)$ keV. Our theoretical calculations indicate the coexistence of prolate and oblate shapes for the two 0^+ bands in ^{100}Zr . We propose the possible coexistence of prolate, oblate and triaxial shapes for the highly excited 2 quasiparticle bands.

Jae-Kwang Hwang
Vanderbilt University

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