

E8 4 High-spin rotational bands and systematics of even-even $T_z = 1$ nuclei in the $A = 80$ region.* D. RUDOLPH, C. BAKTASH, H.-Q. JIN, C.-H. YU, ORNL C.J. GROSS, ORISE W. SATULA, UT,JIHIR R. WYSS, Royal Inst. Tech.,Sweden M. DEVLIN, D.R. LAFOSSÉ, F. LERMA, D.G. SARANTITES, Washington Univ. I. BIRRIEL, J.X. SALADIN, D. WINCHELL, V. WOOD, Pitts. Univ. G. SYLVAN, S.L. TABOR, FSU High-spin states of the $T_z = 1$ nuclei ^{74}Kr , ^{78}Sr , and ^{82}Zr were studied with the reaction $^{28}\text{Si} + ^{58}\text{Ni}$ at 130 MeV beam energy. The GAMMASPHERE array in conjunction with the 4π charged-particle detector array MICROBALL were used to detect γ rays in coincidence with evaporated light charged particles. The known $\pi = +$, $\alpha = 0$ yrast bands were extended to $I = 28 \hbar$ at 20 MeV excitation energy. For all three nuclei, a number of positive- and negative-parity side-bands were established; altogether 15 new rotational bands were found. The data are discussed using the pairing-and-deformation self-consistent total routhian surface (TRS) model. The structures of ^{74}Kr and ^{78}Sr are governed by the shell gaps at large prolate deformation while ^{82}Zr seems to exhibit shape coexistence. Isospin $T = 0$ pairing might influence the structure of the negative-parity bands in ^{74}Kr . Evidence is presented that nearly identical bands in this mass region are due to the fp orbitals acting as spectators. In general, these data can be interpreted using conventional mean-field theories without any need to invoke additional $T = 0$ np pairing correlations.

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