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Multiple Band Structures in ^{131}Nd and ^{130}Nd .¹ W. REVIOL, H.Q. JIN, L.L. RIEDINGER, B.H. SMITH, N.P. YODER, *University of Tennessee*, A. GALINDO-URIBARRI, *Oak Ridge National Laboratory*, D.G. SARANTITES, D. LAFOSSE, J.N. WILSON, *Washington University*, S.M. MULLINS, *Australian National University* — Rotational bands have been assigned to the neutron-deficient nuclei $^{130,131}\text{Nd}$ through the analysis of a Gammasphere plus Microball experiment at Berkeley, using the ^{40}Ca on ^{94}Mo reaction at 180 MeV. Whereas we have analyzed the exit channels with 3 protons leading to light Pr isotopes, here we report on the results for the 2p gated gamma-ray data, which are dominated by $^{130,131}\text{Nd}$. The new level scheme for ^{131}Nd consists of four bands, significantly extending the earlier data², which we assign to the 7/2[523], 5/2[402], 1/2[411], and perhaps 1/2[541] neutron configurations. The observed signature splitting in the last one is much smaller than expected for a 1/2[541] orbital. Calculations to address this issue will be presented. In addition to the yrast band of ^{130}Nd ,³ we assign bands built on the high and low K couplings of the 7/2[523] and 5/2[402] orbitals, the γ -vibrational band and one other sequence. Besides these normal-deformed bands, we also observe one band of enhanced or super deformation in each case.

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²D. Watson, University of Liverpool Annual Report (1987/88).

³R. Wadsworth et al., Z. Phys. A333, 411 (1989).

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