

Investigation of ^{144}Nd

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A detailed investigation of ^{144}Nd by $(\alpha, 2n)$ reactions combined with the earlier experimental data has led to rather complete knowledge of the ^{144}Nd spectrum. The calculation was performed in the CVM by coupling two neutrons in the $N=82-126$ shell to vibrations. The results obtained only with one free parameter (coupling strength $\hat{a}$) are compared with experiment in table 1.

Theory	Lxp	Theory	Exp
0_1^+ 0.00	0^+ 0.00	1_2^+ 2.41	(2.44)
2_1^+ 0.77	2^+ 0.70	5_2^+ 2.48	$(6^+, 5^+, 4^+)$ 2.42
4_1^+ 1.29	4^+ 1.31	0_3^+ 2.51	(2.45, 2.56)
2_2^+ 1.46	2^+ 1.56	4_4^+ 2.63	(2.59, 2.60, 2.61)
6_1^+ 1.54	6^+ 1.79	2_5^+ 2.66	(2^+) 2.53
3_1^+ 1.79		8_1^+ 2.67	8^+ 2.71
2_3^+ 1.90	(2^+) 2.07	3_3^+ 2.69	(2.65, 2.66)
4_2^+ 1.96	4^+ 2.11	6_3^+ 2.75	(6^+) 2.88
1_1^+ 2.01	(2.09)	2_6^+ 2.81	(2^+) 2.69
0_2^+ 2.10	0^+ 2.08	7_1^+ 2.90	$(7^+, 8^+)$ 2.88
3_2^+ 2.13	(2.11)	1_3^+ 2.93	(1) 2.90
4_3^+ 2.18	(4^+) 2.29	2_7^+ 2.97	2^+ 2.87
5_1^+ 2.19	(2.18)	8_2^+ 2.99	8^+ 2.97
6_2^+ 2.27	6^+ 2.22		
2_4^+ 2.34	(2^+) 2.37		