

$^{150}\text{Nd}(\text{d,p})$ 1984BuZK,1975SmZT,1967Ne08

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 110, 1 (2009)	20-Nov-2008

E=12 MeV.

The published work of 1967Ne08 used 10-MeV deuterons on enriched neodymium oxide targets on carbon backings. The results of a similar experiment using 12 MeV deuterons and $30 \mu\text{gm}/\text{cm}^2$ metallic neodymium on carbon backing was reported in a preprint (1975SmZT) with further details by private communication to the evaluator (1984BuZK). Both experiments used enriched material (96% ^{150}Nd). The resolutions achieved were FWHM=8 keV and ≈ 13 keV in 1984BuZK and 1967Ne08, respectively. Angular distributions were carried out in both experiments with measurements from 15 to 110 degrees and 30 to 110 degrees in 1984BuZK and 1967Ne08, respectively. 1967Ne08 failed to discover g.s. proton group. Because of this, all their excitation energies must be increased by 27 keV to make their data consistent with 1984BuZK and the $^{150}\text{Nd}(\text{n},\gamma)$ data. The evaluator has adopted values from 1975SmZT and 1984BuZK with additions from 1967Ne08.

 ^{151}Nd Levels

E(level)	J^π	L	E(level)	L	E(level)
0.0 ^{†a}	3/2 ⁺	(2,3)	733 4		1639 [#] 5
22.5 10		2	752.4 [†] 20		1672 [‡] 5
57 ^{†b} 3			766 [‡] 5		1697 [‡] 8
95.9 ^{†c} 10		>2	846.0 20	1	1751 [#] 7
107.5 10		3	893.0 20	1	1777 [‡] 7
174.0 [†] 10			942.3 [†] 20		1813 [‡] 5
189.1 10		1	951.1 ^{†&} 20		1834 [#] 8
258.9 [†] 10		6,5	963.5 20		1881 [‡] 9
335.7 10		3	995.9 20		1918 [‡] 4
404.8 [†] 10			1034.0 20	3	1952 [#] 3
443.9 10		5,(6)	1079 [‡] 7		2001 [‡] 7
495.6 15		(1)	1110 [#] 10		2024 [‡] 5
506.9@ 15		1	1155 [#] 6		2040 [‡] 7
532.6 [†] 15		(3)	1220 [#] 4		2080 [‡] 4
542.3 15		(3)	1380 [‡] 4		2129 [‡] 5
581.1 15			1410 [#] 6		2160 [‡] 5
596.4 [†] 15			1432 [#] 5		2182 [‡] 8
624.1 15		3	1474 [‡] 6		2205 [‡] 6
634.8 15		3	1519 [‡] 7		2235 [‡] 6
703 [‡] 5			1559 [#] 7		
725 [‡] 5			1616 [‡] 8		

[†] Not reported by 1967Ne08 but peak present in spectra of 1984BuZK.

[‡] Reported only by 1967Ne08.

[#] Reported only by 1967Ne08. The $^{150}\text{Nd}(\text{n},\gamma)$ data allow a transition from the 1/2⁺ capture state to this level.

@ 495-506 doublet not resolved by 1967Ne08.

& 942-951 doublet not resolved by 1967Ne08.

^a The presence of peaks from other reactions makes identification difficult. Distributions do not uniquely define L-value.

^b Based on a very weak peak which may be from another reaction.

^c About as intense as the 22-keV peak.