^{50}Ti(^{3}He,d) 1967Ob04,1969Pu02,1976Ga04

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Wang Jimin and Huang Xiaolong	NDS 144, 1 (2017)	1-Mar-2016

Others: 1967St20, 1971Ma14.
For ^{50}Ti(^{3}He,dp): 1976Ga04: E=25.5 MeV, measured σ(E(d),E(p),θ).

For ^{50}Ti(^{3}He,d):
measured σ(E;E(d),θ), analyzed with DWBA.
1967Ob04: E=10 MeV, FWHM≈20 keV.
1967St20: E=10 MeV, FWHM≈100 keV estimated by the evaluator.
1969Pu02: E=16.4 MeV, FWHM≈20 keV.
1971Ma14: E=10 MeV, FWHM≈100 keV estimated by the evaluator.
1976Ga04: E=25 MeV, FWHM=18 keV.

^{51}V Levels

^{50}Ti(^{3}He,d) E(Level) Comparison @

E(level)			E(level)(Exp - Adopted)	
Adopted	1967Ob04	1969Pu02	1967Ob04	1969Pu02
320.1	320 10	321 15	0	+1
928.7	930 10	933 15	+1	+4
1609.2		1601 15		+8
2410.8	2406 10	2424 15	-5	+13
2547.4	2541 10	2560 15	-6	+13
2677.4	2667 10	2685 15	-10	+8
3083.6	3075 10	3092 20	-9	+8
3214.8	3208 10	3227 20	-7	+12
3383 #	3372 10	3398 20	-11	+15
3663.1	3660 10	3693 20	-3	+31
4237.4	4226 15		-11	
4265.2	4252 15	4304 20	-13	+49
	4445 15	4506 20		
	4521 15	4584 20		
	4633 15	4702 20		
	4755 15	4817 20		
4844.8 #	4849 15	4910 20	+4	+65
	4946 15	5023 20		
	5104 15	5184 20		
	5127 15			
5181.8 #	5170 15	5237 20		
5341.3 #	5340 15	5407 20	-1	+66
	5440 15	5503 20		
5506.8 #	5497 15	5564 20	-10	+57
	5585 15	5654 20		
		5703 20		
	5702 15	5785 20		
		5907 20		
9390		9433 30		+43

@ The energies of 1967Ob04 appear to be about 5 keV low compared with the adopted values for values above 2000. The values of 1969Pu02 between 4000 and 6000 appear to be about 60 keV high. If the association with the IAR at 9390 is correct, then the values of 1969Pu02 appear to be about 60 keV high from 4000 to 9000. In the case of 1967Ob04, the quoted uncertainties are larger than the observed deviation, but the shift seems to be definite. For 1969Pu02, there is consistent deviation of about 65 keV with

values of 1967Ob04 above 4000, and since the average deviation of 1967Ob04 from adopted values is about -5 keV, this also suggests a shift of 60 keV in the values of 1969Pu02. The authors point this out. The evaluator has explicitly decreased all the values of 1969Pu02 by 60 kev if adopted. There is perhaps a slight decrease in the deviation of 1969Pu02 from 5000 to 9300, but this is not definite and a constant overall shift is probably the best one can do. The 30 keV uncertainties assigned by 1969Pu02 to their values certainly covers the variation in the individual deviations. In adopted levels, the 5703 *20* peak of 1969Pu02 is thus adopted as 5643 *20*, and 5907 *20* peak as 5847 *20*, etc. There is a 5849.8 level seen in (p,γ) but is probably different from (^{3}He,d) peak since the J^π is such that L=5 transfer would be required. This is unlikely, so the (^{3}He,d) peak probably represents a separate level.
The association of the (^{3}He,d) levels with the 3383 level seen in (p,γ) is not definite, but the deviation is consistent with other deviations in this energy region. Similarly, the associations with the 4844.8, 5181.8, 5341.3, and 5506.8 levels are not definite.

E(level)[†]	J$^\pi$[‡]	L[c]	C^{2}S′[d]	Comments
0	7/2$^-$[b]	3	7.2	
320 *10*	5/2$^-$[b]			
930 *10*	3/2$^-$	1	0.05	
1601[e] *15*	11/2$^-$[b]			
2406 *10*	(3/2)$^-$#@	1	2.6	
2541 *10*	1/2$^+$	0	0.17	
2667 *10*	(3/2)$^+$&	2	0.21	
3075 *10*	5/2$^-$,7/2$^-$	3	1.0	
3208 *10*	(3/2)$^-$#	1	0.7	
3372 *10*	1/2$^-$,3/2$^-$	1	0.02	
3660 *10*	1/2$^-$,3/2$^-$	1	0.05	
4226 *15*	1/2$^-$,3/2$^-$	1	0.03[f]	
4252 *15*	(1/2)$^-$#	1	0.5	
4445 *15*	5/2$^-$,7/2$^-$	3	0.14[f]	L: L=1 in 1971Ma14, L=(2) in 1969Pu02. L=3 in 1967Ob04.
4521 *15*	5/2$^-$,7/2$^-$	3	0.3	
4633 *15*	5/2$^-$,7/2$^-$	3	0.4	
4755 *15*	5/2$^-$,7/2$^-$	3	0.89[f]	
4849 *15*	1/2$^-$,3/2$^-$	1	0.3	
4964 *15*	1/2$^-$,3/2$^-$	1	0.5	
5104 *15*	1/2$^+$	0	0.01[f]	
5127 *15*	3/2$^+$,5/2$^+$	2	0.2	
5170 *15*	3/2$^+$,5/2$^+$	2	0.04[f]	
5340 *15*	1/2$^-$,3/2$^-$	1	0.04	
5440 *15*	1/2$^-$,3/2$^-$	1	0.2	
5497 *15*	1/2$^-$,3/2$^-$	1	0.3	
5585 *15*	1/2$^-$,3/2$^-$	1	0.2	
5703[e] *20*				
5720 *15*	1/2$^-$,3/2$^-$	1	0.1	
5907 *20*				
5961 *20*				
6165 *30*	1/2$^-$,3/2$^-$	1	0.1	
6278 *30*	1/2$^-$,3/2$^-$	1	0.1	
6355 *30*				
6413 *30*				

Continued on next page (footnotes at end of table)

^{50}Ti(^{3}He,d) 1967Ob04,1969Pu02,1976Ga04 (continued)

^{51}V Levels (continued)

E(level)[†]	Jπ[‡]	L[c]	C^{2}S′[d]	Comments
6444 *30*				
6506 *30*				
6694 *30*	(1/2$^-$,3/2$^-$)	(1)	0.08	
6747 *30*				
6806 *30*				
6866 *30*				
6939 *30*				
6989 *30*				
7047 *30*				
7152 *30*				
7272 *30*	1/2$^-$,3/2$^-$	1	0.2	
7348 *30*				
7393 *30*				
7442 *30*				
7540 *30*				
7590 *30*				
7633 *30*				
7682 *30*				
7710 *30*				
7940 *30*				
8171 *30*				
8218 *30*				
8305 *30*				
8501 *30*				
9390[g] *7*	(3/2)$^-$[a]	1	0.49	Γ_{p0}/Γ=0.96 *5*.
10545[h] *10*	(1/2)$^-$[a]	1	0.19	Γ_{p0}/Γ=1.02 *4*.
11570[i] *7*	(5/2)$^-$[a]	3	0.46	Γ_{p0}/Γ=0.46 *2*, Γ_{p1}/Γ=0.22 *4*.
13200[j] *7*	(9/2)$^+$[a]	4	0.53	Γ_{p0}/Γ=0.15 *1*, Γ_{p1}/Γ=0.14 *2*, $\Gamma_{p2}/\Gamma\leq$0.05.

[†] From 1967Ob04 (E<5800), 1969Pu02 (5800<E<9000), 1976Ga04 (E>9000), except as noted.
[‡] Based on L value and angular distribution data from indicated authors, except as noted.
[#] From 1967St20, based on σ(E(d),θ) DWBA analysis.
[@] From 1969Pu02, based on σ(E(d),θ) DWBA analysis.
[&] From 1967Ob04, based on σ(E(d),θ) DWBA analysis.
[a] From 1976Ga04, based on σ(E(d); E(p),θ) measurements and dp(θ) angular correlation analysis.
[b] From Adopted Levels.
[c] From DWBA analysis of measured $\sigma(\theta)$. The values up to 9300 are from 1967Ob04, except for the 3372 level, 6165, 6278, 6694, and 7272 levels, which come from 1969Pu02. Values for E(level)>9300 are from 1976Ga04.
[d] From 1969Pu02, except as noted. Values reported by 1967Ob04 are significantly smaller than those reported by 1969Pu02.
[e] From 1969Pu02.
[f] From 1967Ob04.
[g] IAS of 3/2$^-$ g.s. in ^{51}Ti (1976Ga04).
[h] IAS of 1/2$^-$ 1166 in ^{51}Ti (1976Ga04).
[i] IAS of 5/2$^-$ 2136 in ^{51}Ti (1976Ga04).
[j] IAS of 9/2$^+$ 3759 in ^{51}Ti (1976Ga04).