

$^{46}\text{Ti}(\text{p,d}),(\text{d,t}),(^3\text{He},\alpha)$ 1970PI03,1967Bo39

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	T. W. Burrows	NDS 109, 171 (2008)	30-Oct-2007

1967Bo39,1966BrZY: $E(^3\text{He})=33$ MeV. Measured $\sigma(\theta=8^\circ-57^\circ)$; semi. FWHM ≈ 330 keV. Except for the g.s. and 0.33-MeV state, states below 1.35 MeV could not be identified due to ^{48}Ti contamination. DWBA. L=3 or 4 transitions were found to be greatly enhanced over those involving lower L-values. This is in direct contrast to other neutron-pickup reactions which enhance the lower L-values.

1967Ro11: $E(^3\text{He})=15$ MeV. Measured $\sigma(\theta=25^\circ)$; mag spect, emulsions.

1968Jo05: $E(\text{p})=26.00$ MeV. Measured $\sigma(\theta)$; particle identification. FWHM ≈ 120 keV. DWBA.

1970PI03: $E(\text{p})=34.78$ MeV. Measured $\sigma(\theta)$. FWHM $\approx 50-60$ keV. DWBA. J^π assignments appear to be from known values and sum rules. L-transfers generally determined by comparison with known transitions, aided in some cases by comparison to DWBA.

See 1983Bu21 for a comparison between the results from these three reactions and for a comparison of the results from 1967Le09 and 1968Lu06 to those of 1967Bo39 for $(^3\text{He},\alpha)$. Others: see 1992Bu01.

 ^{45}Ti Levels

All data are from 1967Bo39, except as noted. States at 0.79- and 6.33-MeV, L=0,3 suggested by 1968Jo05 have not been adopted by evaluator due to poor energy resolution ($\Delta E=60$ keV) and lack of confirmation in other (p,d) experiments. States at 3.60 MeV, L=2, $C^2S=0.36$ and 5.10 MeV, L=2, $C^2S=1.53, 3.07$, (1968Jo05) may be unresolved doublets corresponding to the 3.54- and 3.82-MeV and 5.03- and 5.18-MeV states, respectively.

$L(\alpha), S(\beta)$ L=3,1; $S(7/2^-, 3/2^-)=1.2, 0.03$ for doublet (1970PI03).

E(level) [†]	J^π [‡]	L [#]	C^2S	Comments
0.0 (37)	$7/2^-$	3	2.7 11	T=1/2 (1970PI03)
330 20	$3/2^+$	2	1.9 8	J^π : shape of $\sigma(\theta)$ identical to that for ^{39}Ca g.s., $3/2^+$ (1967Bo39).
1350 20		@		
1460 20		@		
1560 20	$1/2^+$	0	0.7 3	
1800 20	$7/2^-$	(1,3)	0.10 6	L, C^2S : 1,0.06 (1968Jo05).
1960 20	$3/2^+$	(2)	(0.22) 9	L, C^2S : parentheses added by evaluator. L=3, $C^2S(7/2^-)=0.07$ (1970PI03).
2260 25	$3/2^+$	2	0.26	E(level), J^π , L: from 1970PI03. C^2S : from 1968Jo05. not observed in $(^3\text{He},\alpha)$.
2500 20	$7/2^-$	3	0.12 5	L, C^2S : L=(0), $C^2S=(0.02)$ (1970PI03).
2890 & 20	$3/2^+$	(2)	(0.25) 10	
3000 & 20	$3/2^+$	(2)	(0.26) 11	
3080 20	$5/2^+$	(2)	(0.26) 11	L, C^2S : L=(0,2), $C^2S(1/2^+, 3/2^+)= (0.05, 0.15)$ (1970PI03).
3200 20		@		
3400 20	$5/2^+$	(2)	(0.29) 12	L, C^2S : L=3, $C^2S(7/2^-)=0.14$ (1970PI03).
3540 20	$3/2^+$	2	0.17 7	
3830 20		0 @		L, C^2S : L from 1970PI03. $C^2S=(0.04)$.
4716 6	$(7/2)^-a$	3	0.9 4	T=3/2 (1967Ro11, 1970PI03) E(level): from 1978Ko27 (Q3D spect).
4810 20	$(3/2)^+a$	2	0.9 4	T=3/2 (1967Ro11, 1970PI03)
5030 20	$5/2^+$	(2)	0.24 10	
5180 20		1 @		T=(3/2) (1970PI03) L, C^2S : L from 1970PI03. $C^2S(3/2^-)=0.04$.
5330 & 20	$3/2^+$	2	0.40 16	
5540 & 20		@		
5760 20	$1/2^+$	0	0.8 3	T=3/2 (1967Ro11, 1970PI03)

Continued on next page (footnotes at end of table)

$^{46}\text{Ti}(\text{p,d}),(\text{d,t}),(^3\text{He},\alpha)$ [1970PI03,1967Bo39](#) (continued)

^{45}Ti Levels (continued)

[†] $\Delta E(\text{level})$ from comparison to high-resolution data.

[‡] Assumed by [1967Bo39](#) for the extraction of C^2S , except As noted.

From comparison to DWBA.

@ State too weakly excited to assign L ([1967Bo39](#)). $\sigma(\theta)(1350)$ approximately isotropic ([1970PI03](#)).

& Not observed In (p,d).

^a IAR's of ^{45}Sc g.s. and 0.1-MeV state ([1967Ro11](#)).