

$^{50}\text{Ti}(\text{p,d}),(\text{d,t}),(^3\text{He},\alpha)$ 1978Fo34,1970PI03,1969An04

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	T. W. Burrows ^a	NDS 109, 1879 (2008)	14-Jul-2008

1969An04: E(d)=12.99 MeV. Measured $\sigma(\theta)$. FWHM=15 keV.

1970PI03: E(p)=45.05 MeV. Measured $\sigma(\theta)$; Si telescope. FWHM=50-60 keV. $\theta(\text{C.M.})\approx 5^\circ-60^\circ$. DWBA.

1978Fo34: E(^3He)=25 MeV. Measured $\sigma(\theta)$; magnetic spectrometer, focal-plane position-sensitive Si detectors. $\theta=5^\circ-40^\circ$ In 5° steps. DWBA and and coupled-reaction-channel analyses.

Others: see 1995Bu23.

All information is from 1978Fo34 and is consistent with the work of 1970PI03 and 1969An04, except As noted.

 ^{49}Ti Levels

E(level) [†]	J^π [‡]	L	C ² S [#]	Comments
0.0	7/2 ⁻	3	5.06,6.07	
1381 @ 7	3/2 ⁻	(1)	0.13,0.14	
1587 10	1/2 ⁺	(0),(1)	(0.11,0.13)	L=1 In earlier pickup and stripping work (e.g. 1970PI03); however, $\sigma(\theta)$ May also Be fit by L=0. 1978Fo34 suggest that this is either a 3/2 ⁻ and 1/2 ⁺ doublet or May Be excited by reaction mechanism other than single-step.
1610 10	(9/2 ⁻)&			L: $\sigma(\theta)$ is non-pickup In character.
1762 @ 7	(5/2 ⁻)&			L: $\sigma(\theta)$ is non-pickup In character.
2262 @ 7	7/2 ⁻	3	0.61,0.73	
2469 10	7/2 ⁻	3	0.32,0.38	2.5- and ≈ 2.52 -MeV, 0 and (3,2), doublet (1970PI03) May correspond to 2.47- and 2.50-MeV states. Group of unresolved states also observed by 1969An04.
2500 10	1/2 ⁺	0	1.01,1.23	
2659 10	3/2 ⁺	2	1.52,1.96	
3170 10				
3429 10	3/2 ⁻	1	0.04,0.06	
3607 10	3/2 ⁺	2	0.10,0.13	
3697 10				
3744 10	7/2 ⁻	3	0.03,0.04	
3781 10	7/2 ⁻	3	0.04,0.05	
3840? 25	1/2 ⁺ & 7/2 ⁻	(0)+(3)	(0.03)+0.10	from 1970PI03. Not identified by 1978Fo34.
4082 10	7/2 ⁻	3	0.13,0.16	
4196 10	7/2 ⁻	3	0.04,0.05	
4243 10	7/2 ⁻	3	0.29,0.35	
4331 10	7/2 ⁻	3	0.03,0.03	
4455 10	1/2 ⁺	0	0.06,0.07	
4561 10	1/2 ⁺	0	0.11,0.13	
4770 10	3/2 ⁺	2	0.13,0.17	L: discrepant with $J^\pi=9/2^+$, L=4 In (d,p). See Adopted Levels for discussion.
4906 10				
6012 15	3/2 ⁺	2	0.28,0.36	
7329 15	3/2 ⁺	2	0.18,0.23	
7626 15	3/2 ⁺	2	0.15,0.19	
8724 6	7/2 ⁻	3	0.63,0.52	T=7/2 E(level): from 1978Ko27 (E(d) $\approx$ 8.72 MeV; Q3D, $\alpha(\text{P})$, scin). Others: 8733 15 (1978Fo34) and 8750 15 (1970PI03). IAS(^{49}Sc g.s.). Additional information 1.
8890?	5/2 ⁺	2	0.48	from 1970PI03. Not identified by 1978Fo34.
10972 15	1/2 ⁺	(0)	(0.32,0.29) ^a	T=(7/2) IAS(^{49}Sc 2.23 MeV).
11110 15	3/2 ⁺	(2)	(1.02,0.67) ^a	T=(7/2) IAS(^{49}Sc 2.27 MeV).
11700		(1)	1.0	T=(7/2) (1970PI03)

Continued on next page (footnotes at end of table)

$^{50}\text{Ti}(\text{p,d}),(\text{d,t}),(^3\text{He},\alpha)$ [1978Fo34,1970PI03,1969An04](#) (continued)

^{49}Ti Levels (continued)

[†] [1969An04](#) observed only five states below ≈ 2.5 MeV. [1970PI03](#) observed the states seen by [1978Fo34](#) below ≈ 3.8 MeV and above ≈ 8.7 MeV and some additional states As noted.

[‡] Assumed for DWBA calculations, except As noted.

[#] First entry is from separation-energy calculation; second, isospin-dependent.

[@] Weighted average from [1978Fo34](#), [1970PI03](#), and [1969An04](#).

[&] From coupled-reaction-channel analysis; parentheses added by evaluator. Assumed $((^{50}\text{Ti } 2^+)(\nu 1f_{7/2})^{-1})$. $(^3\text{He}, ^3\text{He}'\alpha)$ and $(^3\text{He}, \alpha'\alpha)$ considered. The $11/2^-$ member of the multiplet May Be the state observed At 1542.

^a From data At 5° only.