^{50}Ti(p,γ) 1973Ro40,1971Pr04,1970Ma36

History

Type	Author	Citation	Cutoff Date
Full Evaluation	Huang Xiaolong	NDS 107, 2131 (2006)	1-May-2005

Others: 1970Kl05, 1961Du03, 1970Ga05, 1973McYP, 1974McZT, 1979Er05, 1988NeZX.
Measured Eγ,Iγ from each level, or σ(E(p),Eγ,θ).
1973McYP: E=1300-2000.
1973Ro40,1970Ga05: E=1360-1380.
1971Pr04: E=3570-3630.
1970Ma36: E=1310-1420.
1970Kl05: E=1280-1480, 2340-2660.
1974McZT: E=1368.
1961Du03: E=800-1400.
1979Er05: E=2100-2500, 2600-3100.
Only levels with γ information and IAR are given for unbound states and resonance levels; see 1961Du03 and 1970Kl05. There are an additional 106 resonance levels observed in energy range 885≤E(p)≤ 6219. For analog resonance states see 1973Ro40, 1970Ga05, 1974McZT, 1970Ma36 and 1970Kl05.
For γ transitions of averaged resonance states see 1979Er05; for secondary γ-ray transitions see 1973Ro40, 1973McYP, 1979Er05.

^{51}V Levels

^{50}Ti(p,γ) E(Levels)@								
1979Er05	1973Ro40	1974McZT	1973McYP	1971Pr04	1970Ma36	1970Kl05	1970Ga05	Adopted a
320.1 2	seen	seen	seen	seen	seen	seen	seen	320.1 2
928.8 2	seen	seen	seen	seen	seen	seen	seen	928.8 2
1608.7 3								1608.7 3
1813.6 2	seen		seen					1813.6 2
2411.7 2	seen	seen	seen	seen	seen	seen	seen	2411.7 2
2546.4 3	seen	seen	seen	seen	seen	seen	seen	2546.4 3
2677.7 3	seen	seen	seen	seen	seen			2677.7 3
3083.9 2	seen	seen	seen	seen	seen	seen	seen	3083.9 2
						3195	3192.1	3198 2 b
3216.4 3	seen	seen	seen	seen	seen			3216.4 3
3266.6 4		seen	seen	seen	seen			3266.6 4
3281.6 3		seen	seen					3281.6 3
	3412 2	3412.7						3413 1 c
3455.1 3			seen					3455.1 3
				3556				3556 d
3565 3					seen			3565 3
3576.5 5	seen	seen	seen			seen	seen	3576.5 5
				3612				3612 d
3624.7 5	seen		seen					3624.7 5
3664 2								3664 2
			3667.8 1	seen				3668 2 f
3681 2			seen	seen				3681 2
3748 2			seen					3748 2
	3765 2							3765 2 e
3782 2								3782 2
3801 2								3801 2
3874 2	seen		seen		seen			3874 2
4030 4			seen					4030 4
4200 3			seen					4200 3
4240 1	4237 2		4237.6 1					4240 1
4265 3			seen			4265g	4258 1	4265 3
			4465.6 *1*	4474				4466 2
			4535.5 *2*	4539				4536 2
	4650 2		4651.3 1		4650 3	4651	seen	4651 2
	4660 2		4660.9 1	4658	4657 3	4661	seen	4661 2
					4689			4689 e
	4769 2		4769.9 1		4765 3	4770	seen	4770 2

				4844				4844 d
	4861 2		4862.5 1	4862 3	4865	seen		4862 2
	4944 2		4945.1 1					4945 2
			5064.1 2					5064 2
			5114.6 2					5115 2
	5138 2			5140 3	g	g		5138 2 f
	5182 2		5183.3 2					5183 2
							5278.7 10	5289 2 b
1979Er05	1973Ro40	1974McZT	1973McYP	1971Pr04	1970Ma36	1970Kl05	1970Ga05	Adopted a
	5311 2		5312.1 2	5303.7 10				5312 2
	5341 2							5341 2 e
	5347 2		5348.7 2					5349 2
			5355.4 1					5355 2
	5507 2		5508.4 2	5498.5 10				5508 2
			5734.4 2					5734 2
			5958.3 1					5958 2
	6046 2							6046 2 e
			6055.4 1					6055 2
			6098.6 2	6085 1				6099 2
	6219 2		6221.3 2					6221 2
			6319.4 2					6319 2
			6650.5 1					6650 2
			6888.3 1					6888 2

@ 1979Er05 studied the E(p) range 2100-3100 and 1971Pr04 studied the rnge 3570-3630. The other authors all studied the range covering the IAR at 1366, 1371 and 1377 and so should have seen the same set of bound levels.

a Values up to 4265 are from 1979Er05, except where noted otherwise. Excitation energies for high-lying levels are from 1973McYP, except where noted otherwise. 1973McYP quote peak-fitting uncertainties only, and estimate that the systematic uncertainties are <0.5 keV at low excitation energies and <1 keV at high excitation energies. A comparison with values of 1979Er05 and 1973Ro40 suggests that an overall uncertainty of 2 keV is reasonable.

b From 1970Ga05. Values from these authors are lower than those of the other authors by 4 keV at 2500 keV to 10 keV above 4800. The evaluator has increased the authors' values accordingly and increased the uncertainty to 2 keV.

c From 1974McZT. The uncertainty has been assigned by the evaluator. 1973Ro40 report 3412 *2*.

d Reported only by 1971Pr04.

e Reported only by 1973Ro40.

f From 1973McYP. See footnote a.

g 1970Kl05 and 1970Ga05 are probably populating the 5138 level rather than the 4265 level.

^{50}Ti(p,γ) Branching ratios

E(level)i	E(level)f	Eγ @	Iγ(%)				
			1979Er05	1974McZT	1973Ro40	1973McYP	1970Ga05#
320.1							
928.8	320.1	608.7	15	14.9 4	15	15	y
	0	928.8	85	85.1 4	85	85	y
1608.7	0	1608.7	100				
1813.6	320.1	1493.5	42 d		30		
	0	1813.6	58 d		70		
2411.7	928.8	1482.9	10	8.6 8	10	9	y
	320.1	2091.6	68	71.6 21	65	71	y
	0	2411.7	22	19.8 21	25	20	y
2546.4	928.8	1617.6	100	100	100	100	y

2677.7	928.8	1748.9	100	100	100	100	
3083.9	2411.7	672.2	5	6.1 11	5	6	y
	928.8	2155.1	24	30.7 23	30	35	y
	320.1	2763.7	50	40.2 29	45	37	y
	0	3083.8	21	23.0 43	20	22	y
3198 b	928.8	2269					yb
	320.1	2878					yb
	0	3198					yb
3216.4	2411.7	804.7	30	29.5 26	30	30	
	928.8	2287.5	70	54.8 33	70	55	
	320.1	2896.2		15.7 27		15	
3266.6	2411.7	854.9				1	
	928.8	2337.7	?			10	
	320.1	2946.4	?	100	c	89	
3281.6	2411.7	869.9				14	
	928.8	2352.7	33	38 5		31	
	320.1	2961.4	67	62 5		55	
3413	320.1	3093		100		100	
3455.1	320.1	3134.9	100			100	
3565	0	3565	100				
3576.5	1813.6	1762.9			10		
	928.8	2647.6					y
	320.1	3256.3	54?	39.8 44			y
	0	3576.4	46?	60.2 44	70	100	y
	unknown				20		
3624.7	2546.4	1078.3			40		
	928.8	2695.8			40	27	
	320.1	3304.6	100			73	
	unknown				20	20	
3664	0	3664	100				
3668	2411.7	1256				26	
	928.8?	2739				7	
	320.1	3348				67	
3681	3083.9	597				25	
	0	3681	100			75	
3748	320.1	3428	100				
3765	320.1	3445			100		
3801	0	3801	100				
3874	928.8	2945	?		70c	5?	
	320.1	3554	?		15	40	
	0	3874	?		15	55	
4240	2411.7	1828	100		60		
	320.1	3920			40		
4265	320.1						y
	0	4265					y

E(level)i	E(level)f	Eγ @	Iγ(%)				
			1979Er05	1974McZT	1973Ro40	1973McYP	1970Ga05#
4651	3576.5	1074					y
	3198	1453					y
	3083.9	1567					y
	2411.7	2239					y
	928.8	3722			35		y
	320.1	4331			65		y
	0	4651					y
4661	3216.4	1445			5		
	3083.9	1577			5		
	2546.4	2115					y
	928.8	3732			25		y

	320.1	4341	30	y
	0	4661		y
	unknown		35	
4770	3083.9	1686	5	
	2411.7	2358		y
	928.8	3841	15	y
	320.1	4450		y
	0	4770	70	y
	unknown		10	
4862	3216.4	1646	10	
	2411.7	2450	5	
	928.8	3833	45	y
	320.1	4542		y
	0	4862		y
	unknown		40	
4945	3576.5	1368	55 a	
	3216.4	1729	15	
	3083.9	1861	50	
5138	3576.5	1561	5	
	0	5138	85	
	unknown		10	
5183	2411.7	2771	30	
	320.1	4863	50	
	unknown		20	
5289	320.1	4969		y
	0	5289		y
5312	2546.4	2766		y
	928.8	4383	40	y
	320.1	4992	40	y
	0	5312	20	y
5341	3413	1928	40	
	320.1	5021	60	
5349	928.8	4420	20	
	unknown		80	
5508	3083.9	2424	30	y
	2411.7	3096		y
	928.8	4579		y
	320.1	5188	70	y
6046	928.8	5117	100	
6099	2411.7	3687		y
	928.8	5170		y
	320.1	5779		y
6221	3576.5	2644	60	
	unknown		40	

@ From E(level) difference and corrected for recoil.
# Authors give no branchings. An entry of ''y'' indicates a feeding shown on the authors' level scheme. In the text, authors state that the four branches from the 5312 level have roughly equal intensities, and for the 4661 level, the branch to the gs is weak, and the branches to the first three excited levels are roughly equal.
a Possible misprint since the branching is >100. Perhaps it should be 35?
b This level is probably not correct.
c A comparison with branching of 1973McYP suggests that most of this intensity belongs elsewhere. Note that the transition from 3266.6 to 320.1 dominates the decay from the 3266.6 level and has essentially the same energy as that from 3874 to 928.8. It is thus likely that part of Iγ(2945γ) from 1973Ro40 belongs with the 3266.
6
level and that 1973Ro40 are thus populating that level.
d Iγ(1493γ)/Iγ(1814γ)=0.72 is discrepant with the value of 0.43 fr
m
1973Ro40 and also with value from other sources. The adopted value i

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s
0.333

E(level)[†]	J$^{\pi}$[c]	Comments
0	$7/2^-$	
320.1 *2*	$5/2^-$[i]	
928.8 *2*	$3/2^-$[i]	
1608.7 *3*		
1813.6[@] *2*	$9/2^-$	
2411.7 *2*	$3/2^-$[i]	
2546.4 *3*	$1/2^+$[i]	
2677.7 *3*	$(3/2)^+$	
3083.9 *2*	$5/2^-$[i]	
3216.4 *3*	$3/2^-$	
3266.6 *4*	$(5/2)^-$	J$^{\pi}$: from M1 8330γ from $5/2^-$ (S(p)+3598) to this level.
3281.6 *3*	(5/2)	
3413[‡#] *1*		
3455.1 *3*		
3556[&]		
3565[a] *3*		
3576.5 *5*		
3612[&]		
3624.7 *5*		
3664 *2*		
3668[@] *2*		
3681 *2*	$(3/2^-)$	
3748 *2*		
3765[‡] *2*		
3782 *2*		
3801 *2*		
3874 *2*		
4030 *4*		
4200 *3*		
4240 *1*		
4265 *3*	$(1/2)^-$	
4466[@] *2*	$(3/2^-,5/2^-,7/2^-)$	J$^{\pi}$: from (M1) 7118γ from $5/2^-$ (S(p)+3598) to this level.
4536[@] *2*	$(3/2)^-$	
4651?[@] *2*		
4661[@] *2*		
4689[&]		
4770[@] *2*	$5/2^-$[i]	
4844[&]	$(3/2^-)$[i]	
4862[@] *2*	$3/2^-$[i]	
4945[@] *2*		
5064[@] *2*		
5115[@] *2*		
5138[‡] *2*		
5183[@] *2*		
5289[b] *2*		

Continued on next page (footnotes at end of table)

^{50}Ti(p,γ) 1973Ro40,1971Pr04,1970Ma36 (continued)

^{51}V Levels (continued)

E(level)[†]	J$^{\pi}$[c]	T$_{1/2}$	Comments
5312[@] 2	(3/2$^-$,5/2$^-$)[i]		
5341[‡] 2	1/2$^-$,3/2$^-$		
5349[@] 2			
5355[@] 2			
5508[@] 2			E(level): may be a doublet. J$^{\pi}$: J=1/2$^-$,3/2$^+$ in 1970Ga05.
5734[@] 2			
5958[@] 2			
6046[‡] 2	(1/2$^-$)[i]		
6055[@] 2			
6099[@] 2			
6221[@] 2			
6319[@] 2			
6650[@] 2			
6888[@] 2			
S(p)+1366[d] 2	3/2$^-$	7[j] eV 2	Γ_p=7 eV 2; Γ_γ=0.28 eV 11 (1973Ro40) Others: Γ_p=8 eV 3 (1970Ma36), 10 eV 5 (1973Pr18).
S(p)+1371[d] 2	3/2$^-$	47[j] eV 6	Γ_p=45 eV 5; Γ_γ=1.6 eV 6 (1973Ro40) Others: Γ_p=70 eV 20 (1970Ga05), 50 eV 15 (1970Ma36), 50 eV 10 (1973Pr18).
S(p)+1377[d] 2	3/2$^-$	9[j] eV 2	Γ_p=9 eV 2; Γ_γ=0.36 eV 14 (1973Ro40) Others: Γ_p=10 eV 4 (1970Ma36), 5 eV 3 (1973Pr18).
S(p)+2848[e]	7/2$^-$		
S(p)+2983[f]	5/2$^-$		
S(p)+3598[g]	5/2$^-$	3.9[g] keV 10	Γ_{p0}=3.78 keV 11; $\Gamma_{p'}$=0.12 keV 9 (1971Pr04)
S(p)+3614[h] 5	3/2$^-$	4.1[h] keV 10	Γ_{p0}=0.34 keV 30; $\Gamma_{p'}$=3.8 keV 13 (1971Pr04)

[†] Values up to 4265 keV are from 1979Er05, except where noted otherwise. Excitation energies for high-lying levels are from 1973McYP, except where noted otherwise. For the adopted values, see ^{50}Ti(p,γ) E(level) listing. 3198-keV level (1970Kl05,1970Ga05) is not confirmed by the other more recent authors. See also 1980Ka40 for a discussion of this question. For resonance states, E(level)=S(p)+E(p), S(p)=8063.7 keV 10 (2003Au03), adopted E(p) are taken from 1971Pr04, except as noted.
[‡] From 1973Ro40.
[#] From 1974McZT.
[@] From 1973McYP.
[&] From 1971Pr04.
[a] From 1970Ma36.
[b] From 1970Ga05.
[c] Values (E≤6219) from Adopted Levels. For resonance states, Jπ based on σ(Eγ,θ), Γ and γ multipolarity measurements, and IAR analysis.
[d] From 1970Ma36, 1973Ro40, 1970Ga05 and 1970Kl05; IAR of 3/2$^-$ g.s. in ^{51}Ti.
[e] From 1971Pr04. IAR of 7/2$^-$ 1437 in ^{51}Ti.
[f] From 1971Pr04. IAR of 5/2$^-$ 1567 in ^{51}Ti.
[g] From 1971Pr04; IAR of 5/2$^-$ 2144 in ^{51}Ti.
[h] E(p) from 1971Pr04 and dep from 1972Mo43; IAR of 3/2$^-$ 2198 in ^{51}Ti.
[i] From 1970Kl05 and 1970Ga05, based on primary $\gamma(\theta)$ and transition multipolarities and Γ's from 3/2$^-$ (S(p)+1371) to these levels.
[j] From 1973Ro40.

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^{50}Ti(p,γ) 1973Ro40,1971Pr04,1970Ma36 (continued)

$\gamma(^{51}V)$

E_i(level)	J_i^π	E_γ[†]	I_γ[†‡]	E_f	J_f^π
320.1	$5/2^-$	320.1	100	0	$7/2^-$
928.8	$3/2^-$	608.7	14.9 *4*	320.1	$5/2^-$
		928.8	85.1 *4*	0	$7/2^-$
1608.7		1608.7	100	0	$7/2^-$
1813.6	$9/2^-$	1493.5	30[§]	320.1	$5/2^-$
		1813.6	70[§]	0	$7/2^-$
2411.7	$3/2^-$	1482.9	8.6 *8*	928.8	$3/2^-$
		2091.6	71.6 *21*	320.1	$5/2^-$
		2411.7	19.8 *21*	0	$7/2^-$
2546.4	$1/2^+$	1617.6	100	928.8	$3/2^-$
2677.7	$(3/2)^+$	1748.9	100	928.8	$3/2^-$
3083.9	$5/2^-$	672.2	6.1 *11*	2411.7	$3/2^-$
		2155.1	30.7 *23*	928.8	$3/2^-$
		2763.7	40 *3*	320.1	$5/2^-$
		3083.8	23 *4*	0	$7/2^-$
3216.4	$3/2^-$	804.7	30 *3*	2411.7	$3/2^-$
		2287.5	55 *3*	928.8	$3/2^-$
		2896.2	16 *3*	320.1	$5/2^-$
3266.6	$(5/2)^-$	854.9	1[&]	2411.7	$3/2^-$
		2337.7	10[&]	928.8	$3/2^-$
		2946.4	89[&]	320.1	$5/2^-$
3281.6	(5/2)	869.9	14[&]	2411.7	$3/2^-$
		2352.7	31[&]	928.8	$3/2^-$
		2961.4	55[&]	320.1	$5/2^-$
3413		3093	100	320.1	$5/2^-$
3455.1		3134.9	100	320.1	$5/2^-$
3565		3565	100	0	$7/2^-$
3576.5		1762.9[b]		1813.6	$9/2^-$
		2647.6[b]		928.8	$3/2^-$
		3256.3	40 *4*	320.1	$5/2^-$
		3576.4	60 *4*	0	$7/2^-$
3624.7		1078.3[b]		2546.4	$1/2^+$
		2695.8	27[&]	928.8	$3/2^-$
		3304.6	73[&]	320.1	$5/2^-$
3664		3664	100[@]	0	$7/2^-$
3668		1256	26[&]	2411.7	$3/2^-$
		2739	7[&]	928.8	$3/2^-$
		3348	67[&]	320.1	$5/2^-$
3681	$(3/2^-)$	597	25[&]	3083.9	$5/2^-$
		3681	75[&]	0	$7/2^-$
3748		3428	100[@]	320.1	$5/2^-$
3765		3445	100[§]	320.1	$5/2^-$
3801		3801	100	0	$7/2^-$
3874		2945[b]	5[&]	928.8	$3/2^-$
		3554	40[&]	320.1	$5/2^-$
		3874	55[&]	0	$7/2^-$
4240		1828	60[§]	2411.7	$3/2^-$
4265	$(1/2)^-$	3945[b]		320.1	$5/2^-$
		4265[b]		0	$7/2^-$
4651?		1074[b]		3576.5	
		1453[b]		3216.4	$3/2^-$
		1567[b]		3083.9	$5/2^-$
		2239[b]		2411.7	$3/2^-$
		3722	35[§]	928.8	$3/2^-$
		4331	65[§]	320.1	$5/2^-$
		4651[b]		0	$7/2^-$
4661		1445	5[§]	3216.4	$3/2^-$
		1577	5[§]	3083.9	$5/2^-$
		2115[b]		2546.4	$1/2^+$
		3732	25[§]	928.8	$3/2^-$
		4341	30[§]	320.1	$5/2^-$
		4661		0	$7/2^-$
4770	$5/2^-$	1686	5[§]	3083.9	$5/2^-$
		2358[b]		2411.7	$3/2^-$
		3841	15[§]	928.8	$3/2^-$
		4450[b]		320.1	$5/2^-$
		4770	70[§]	0	$7/2^-$
4862	$3/2^-$	1646	10[§]	3216.4	$3/2^-$
		2450	5[§]	2411.7	$3/2^-$
		3933	45[§]	928.8	$3/2^-$
		4542[b]		320.1	$5/2^-$
		4862[b]		0	$7/2^-$
4945		1368	55[a§]	3576.5	
		1729	15[§]	3216.4	$3/2^-$
		1861	50[§]	3083.9	$5/2^-$
5138		1561	5[§]	3576.5	
		5138	85[§]	0	$7/2^-$
5183		2771	30[§]	2411.7	$3/2^-$
		4863	50[§]	320.1	$5/2^-$
5289		4969[b]		320.1	$5/2^-$
		5289[b]		0	$7/2^-$
5312	$(3/2^-,5/2^-)$	2766[b]		2546.4	$1/2^+$
		4383	40[§]	928.8	$3/2^-$
		4992	40[§]	320.1	$5/2^-$
		5312	20[§]	0	$7/2^-$
5341	$1/2^-,3/2^-$	1928	40[§]	3413	
		5021	60[§]	320.1	$5/2^-$
5349		4420	20[§]	928.8	$3/2^-$
5508		2424	30[§]	3083.9	$5/2^-$
		3096[b]		2411.7	$3/2^-$
		4579[b]		928.8	$3/2^-$
		5188[b]	70[§]	320.1	$5/2^-$
6046	$(1/2^-)$	5117	100[§]	928.8	$3/2^-$
6099		3687[b]		2411.7	$3/2^-$

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3920	40[§]	320.1	$5/2^-$	5170[b]	928.8	$3/2^-$	

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$^{51}_{23}V_{28}$-9

^{50}Ti(p,γ) 1973Ro40,1971Pr04,1970Ma36 (continued)

$\gamma(^{51}V)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†‡]	E_f	J_f^π	Mult.[#]	Comments
6099		5779[b]		320.1	5/2$^-$		
6221		2644	60[§]	3576.5			
S(p)+1366	3/2$^-$	4261	22				
		4629	31				
		5527	25				
		5823	22				
		6314	22				
		6724	9				
		6987	12				
		8470	22				
		9079	100				
		9399	16				
S(p)+1371	3/2$^-$	3184	3.6				
		3359	3.6				δ: see 1970Ga05.
		3897	11				
		4056	7				
		4064	3.6				
		4093	7			(M1+E2)	δ: see 1970Ga05.
		4222	3.6				
		4267	21				
		4460	7				
		4543	25			M1+E2	δ: −0.09 *1* or +5.9 *5* (1970Kl05). $\gamma(\theta)$: A_2=+0.27 *2*; A_4=+0.02 *3* (1970Kl05).
		4635	14			M1+E2	δ: +0.01 *3* or −5.0 *10* (1970Kl05). $\gamma(\theta)$: A_2=−0.11 *4*; A_4=+0.03 *4* (1970Kl05).
		4744	25				
		4754	21				
		5140[b]				M1+E2	Mult.: from 1970Ga05. E_γ: reported as a primary transition by 1970Kl05 and 1970Ga05 but not seen by 1970Ma36 or 1973Ro40. This is probably a secondary transition depopulating the well-known 5138 level. δ: 0.26 +*8*−*10* or >15 (1970Ga05). Sign of δ not determined.
		5165	3.6				
		5640	7				
		5788	3.6				
		5829	3.6				
		5992	3.6				
		6321	11			M1+E2	δ: +0.00 *2* or −4.7 *4* (1970Kl05). $\gamma(\theta)$: A_2=−0.095 *22*; A_4=−0.003 *28* (1970Kl05).
		6858	14			E1(+M2)	δ: +0.014 *17* or −1.79 *8* (1970Kl05). $\gamma(\theta)$: A_2=−0.48 *3*; A_4=−0.01 *3* (1970Kl05).
		6992	7			M1+E2	δ: −0.25 *3* or >23 (1970Kl05). $\gamma(\theta)$: A_2=+0.02 *4*; A_4=+0.05 *5* (1970Kl05).
		8475	46			M1+E2	δ: −0.077 *6* or +5.5 *2* (1970Kl05). Larger value favored by 1970Ga05. $\gamma(\theta)$: A_2=+0.286 *9*; A_4=+0.003 *10* (1970Kl05).
		9084	100			M1+E2	δ: −0.080 *4* or −3.32 *5* (1970Kl05). Smaller value favored by 1970Ga05. $\gamma(\theta)$: A_2=−0.004 *5*; A_4=−0.006 *7* (1970Kl05).
		9404	3.6			E2(+M3)	δ: +0.09 *9* or −1.8 *4* (1970Kl05). $\gamma(\theta)$: A_2=+0.05 *9*; A_4=−0.04 *10* (1970Kl05).
S(p)+1377	3/2$^-$	4273	45				
		4641	32				
		4755	100				E_γ: transitions to 4651 and 4661 are not resolved, but both levels are fed.

Continued on next page (footnotes at end of table)

^{50}Ti(p,γ) 1973Ro40,1971Pr04,1970Ma36 (continued)

$\gamma(^{51}V)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†‡]	Mult.[#]	δ[#]	Comments
S(p)+1377	3/2$^-$	6144	45			
		6327	14			
		6733	73			
		6999	18			
		9091	77			
		9410	5			
S(p)+3598	5/2$^-$	6744	16	M1+E2	−0.05 *11*	B(M1)(W.u.)=0.0078; B(E2)(W.u.)=0.0009 (1971Pr04) $\gamma(\theta)$: A_2=−0.30 *22*; A_4=+0.08 *27* (1971Pr04).
		7052	7.7	M1+E2	0.2	B(M1)(W.u.)=0.0041; B(E2)(W.u.)=0.0075 (1971Pr04) $\gamma(\theta)$: A_2=+0.00 *21*; A_4=0.40 *28* (1971Pr04).
		7122	4.8	(M1)		B(M1)(W.u.)=0.0026 (1971Pr04)
		7920	9.3	M1+E2	4.1	B(M1)(W.u.)=0.0002; B(E2)(W.u.)=0.1 (1971Pr04) $\gamma(\theta)$: A_2=−0.30 *10*; A_4=+0.80 *20* (1971Pr04).
		8321	3.2	M1		B(M1)(W.u.)=0.0008 (1971Pr04)
		8372	6.1	M1+E2	0.05	B(M1)(W.u.)=0.0016; B(E2)(W.u.)=0.0001 (1971Pr04) $\gamma(\theta)$: A_2=−0.51 *20*; A_4=+0.36 *28* (1971Pr04).
		8504	11	M1+E2		δ: −0.3 *4* or 3.8. B(M1)(W.u.),B(E2)(W.u.): BM1W=0.0029, BE2W=0.0075 FOR δ=−0.3 4; BM1W=0.0001, BE2W=0.040 FOR δ=3.8. $\gamma(\theta)$: A_2=+0.70 *20*; A_4=−0.07 *25* (1971Pr04).
		9176	41	M1+E2	−0.22 *3*	B(M1)(W.u.)=0.0082; B(E2)(W.u.)=0.0116 (1971Pr04) $\gamma(\theta)$: A_2=+0.05 *07*; A_4=−0.11 *10* (1971Pr04).
		10658	20	M1+E2	−0.16 *12*	B(M1)(W.u.)=0.0027; B(E2)(W.u.)=0.0015 (1971Pr04) $\gamma(\theta)$: A_2=−0.07 *20*; A_4=+0.17 *20* (1971Pr04).
		11267	100	M1+E2	+0.05 *5*	B(M1)(W.u.)=0.0117; B(E2)(W.u.)=0.0006 (1971Pr04) $\gamma(\theta)$: A_2=+0.40 *6*; A_4=0.03 *8* (1971Pr04).
		11587	99	M1+E2	−0.03 *4*	B(M1)(W.u.)=0.0108; B(E2)(W.u.)=0.0001 (1971Pr04) $\gamma(\theta)$: A_2=−0.18 *4*; A_4=+0.08 *5* (1971Pr04).
S(p)+3614	3/2$^-$	6914	18			
		6952	30			
		7991	30			
		8047	19			
		8336	69			
		8925	100			
		9057	22			
		9191	68			
		10674	44			
		11283	58			

[†] All data from 1973Ro40, except as follows: for resonance states, whose transition Eγ are from difference of E(level)=S(p)+E(p)(c.m.) and E(final level) with recoil correction; (1) levels S(p)+1366 and S(p)+1377, whose transition Eγ and Iγ are from 1970Ma36; (2) levels S(p)+3598 and S(p)+3614, whose transition Eγ and Iγ are from 1971Pr04; (3) others as noted. The E(p) energies in the E(level) field are in lab units.

[‡] For bound levels, values are % photon branching from each level (1974McZT), except where noted otherwise. $\Sigma I\gamma$<100% for a level indicates additional feeding to unknown levels. For resonance levels, values are relative photon branching from each level.

[§] From 1973Ro40.

[&] From 1973McYP.

[@] From 1979Er05.

[#] Based on $\gamma(\theta)$ and Γ_γ. All data from 1970Kl05 and 1970Ga05, except as follows: level S(p)+3598, whose transition mult and δ are from 1971Pr04, and others as noted.

[a] Possible misprint since the branching is >100. Perhaps it should be 35?

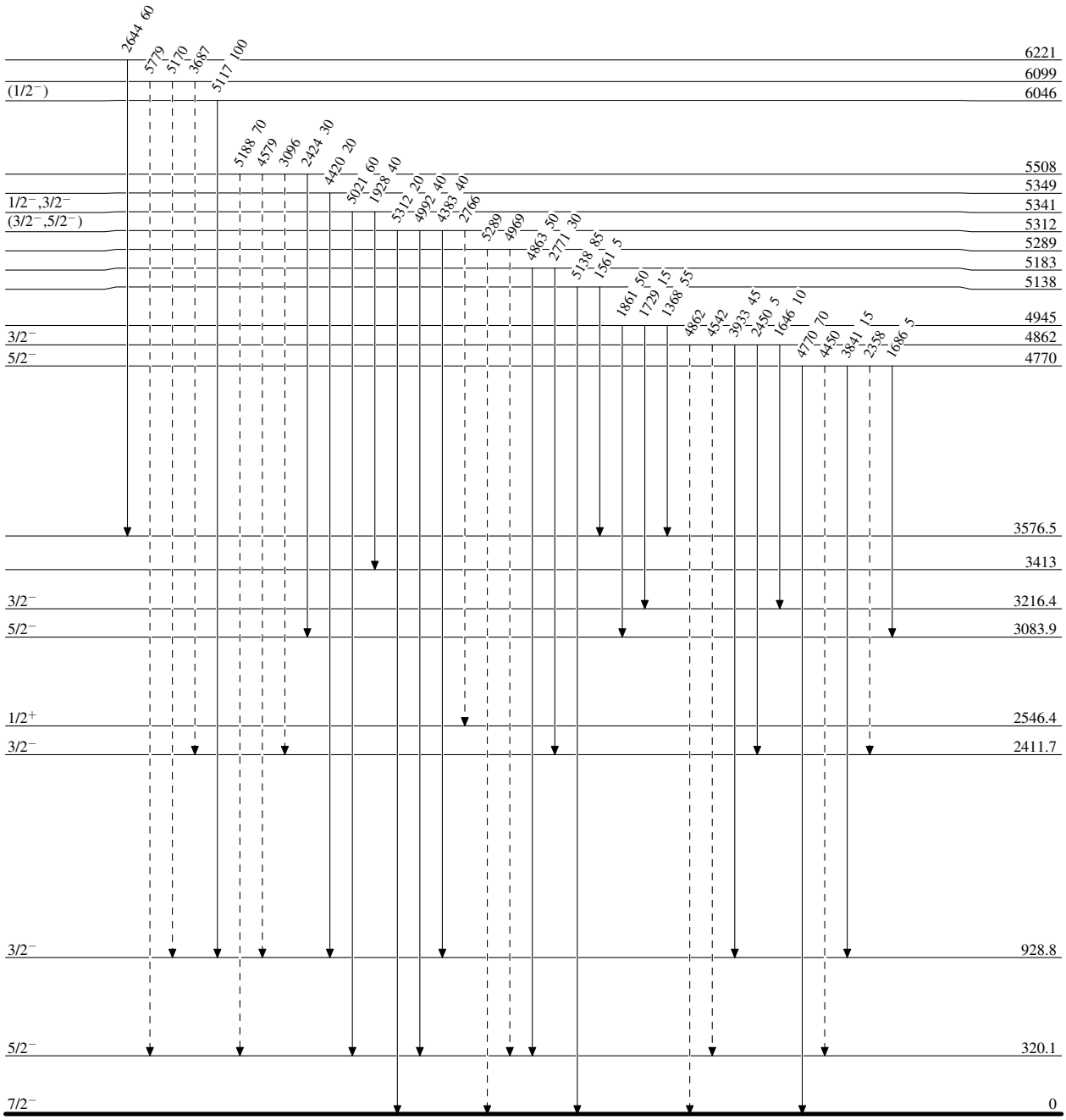
[b] Placement of transition in the level scheme is uncertain.

$^{51}_{23}V_{28}$-11

^{50}Ti(p,γ) 1973Ro40,1971Pr04,1970Ma36

Level Scheme

Intensities: Relative photon branching from each level



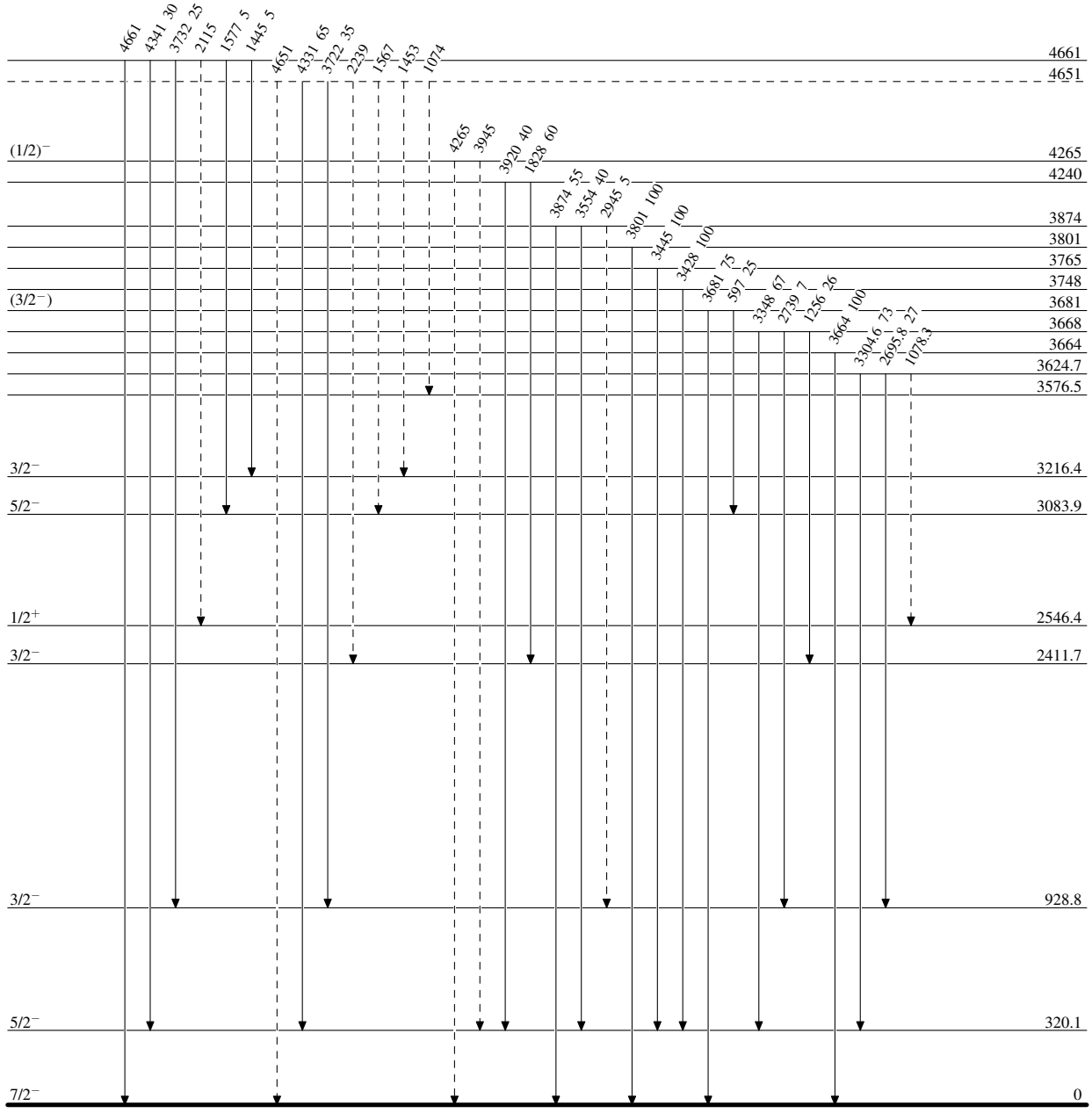
$^{51}_{23}V_{28}$

$^{51}_{23}V_{28}$-12

^{50}Ti(p,γ) 1973Ro40,1971Pr04,1970Ma36

Level Scheme (continued)

Intensities: Relative photon branching from each level



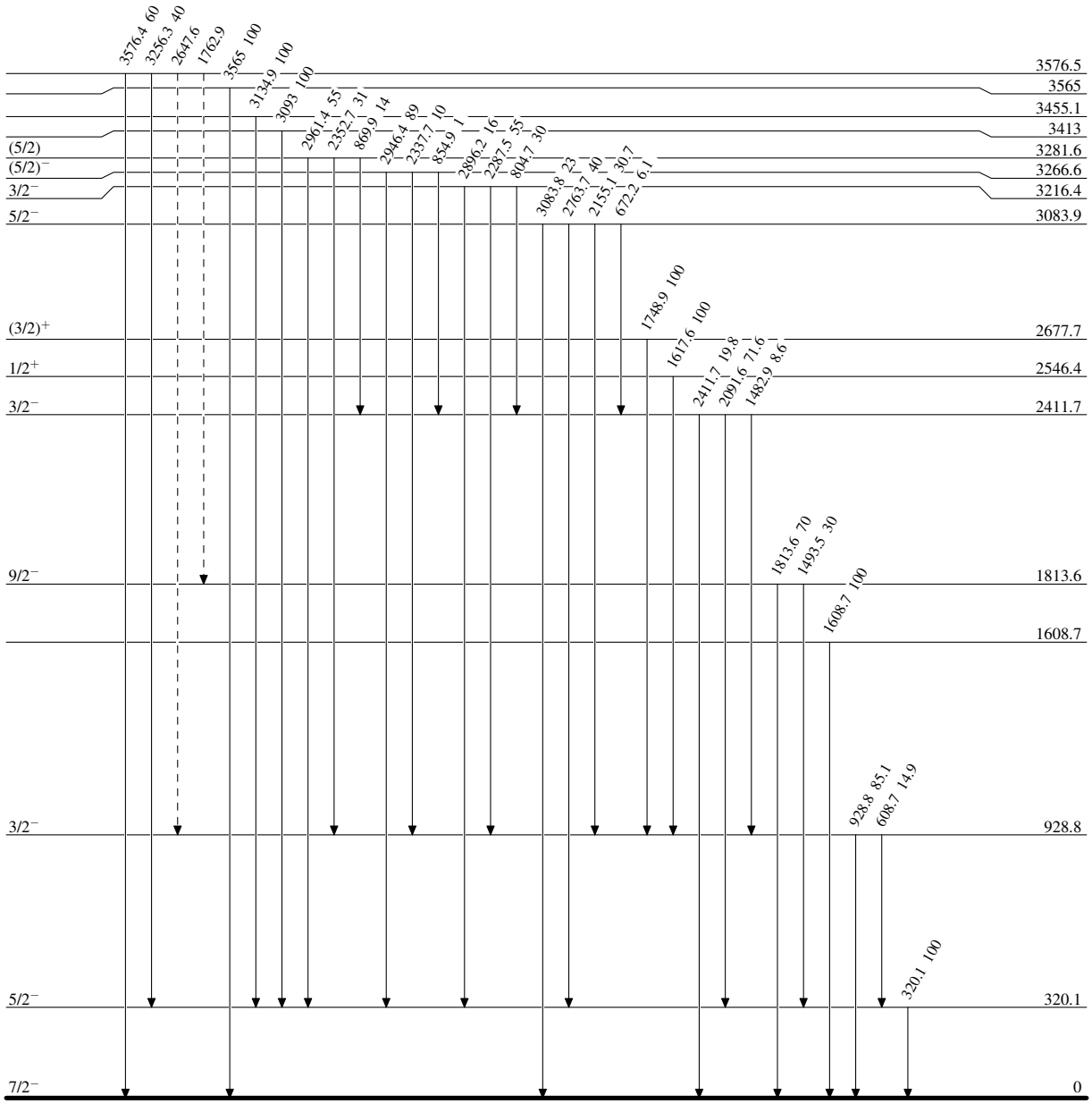
$^{51}_{23}V_{28}$

$^{51}_{23}V_{28}$-13

^{50}Ti(p,γ) 1973Ro40,1971Pr04,1970Ma36

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{51}_{23}V_{28}$