^{46}Ti(n,γ),(pol n,γ) E=thermal

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	T. W. Burrows	NDS 108, 923 (2007)	20-Feb-2007

1969Te01: measured γ's and $\gamma\gamma$-coincidences and $\gamma\gamma(\theta)$ (NaI; θ=90°,135°,180°). Serious problem from ^{48}Ti(n,γ) background.
1969TrZX: measured γ's; crystal diffraction spectrometer, Ge(Li). Natural target.
1972Kn07: measured γ's.
1978Ve06: measured circular polarization; Permendur polarimeter.
2003ChZS: measured γ's; HPGe; natural target. Obtained Prompt Gamma-Ray Activation datasets for Ti using their data, ENSDF (1995Bu05), and 1981Lo16.

^{47}Ti Levels

E(level)[†]	J$^\pi$[‡]	E(level)[†]	J$^\pi$[‡]	E(level)[†]	J$^\pi$[‡]
0.0	5/2$^-$	2501.6? *21*	1/2$^{(-)}$,3/2,5/2$^+$[#]	3549.7 *10*	1/2$^-$
159.27 *4*	7/2$^-$	2554 *4*	3/2$^-$	3676.1 *6*	3/2$^-$
1252.6 *20*		2603? *7*		3923 *4*	3/2$^-$
1549.47 *10*	3/2$^-$	2617.1 *2*	7/2$^-$	5356? *9*	1/2$^-$
1793.37 *14*	1/2$^-$	2793 *5*	1/2$^-$	5746? *5*	
1817 *4*	3/2$^+$,5/2$^+$	2865? *3*	1/2$^{(-)}$,3/2,5/2$^+$[#]	(8880.29[&] *29*)	1/2$^+$[*a*]
2413? *7*		3176 *4*	≤5/2$^+$[@]		

[†] From least-squares fit to Eγ's holding capture-state energy fixed (evaluator).
[‡] From the Adopted Levels, except as noted in the footnotes. Circular polarization results for 1554, 1796, 2554, 2794, and 3522 to 3922 states are consistent with these values.
[#] Fed by primary γ; γ to 5/2$^-$ (evaluator).
[@] Fed by primary γ (evaluator).
[&] From 2003Au03. Held fixed In least-squares fit. Other: 8880.58 keV *30* (2006FaZZ. See ^{46}Ti(d,p) for details).
[*a*] Thermal capture on an even-even target (evaluator).

^{46}Ti(n,γ),(pol n,γ) E=thermal (continued)

$\gamma(^{47}Ti)$

Unplaced 887, 1314, and 1437 γ's from 1972Kn07 were not reported by 1969Te01. 1969TrZX assign 889.1 *5*, 1312.1 *3*, and 1437.3 *5* γ's to ^{49}Ti, ^{48}Ti, and ^{48}Ti, respectively. 2003ChZS assign 1312.05 and 1437.48 γ's to ^{48}Ti and ^{49}Ti, respectively.

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	σ_γ^Z(b)[@]	Comments
159.27[&] *4*	30	159.27	7/2$^-$	0.0	5/2$^-$		0.0090 *8*	
242[nao] *3*	1.5[n]	2793	1/2$^-$	2554	3/2$^-$			
244.27[n&] *16*	1.5[n]	1793.37	1/2$^-$	1549.47	3/2$^-$		0.0017 *4*	I$_\gamma$: from Iγ(doublet)=3.0 and adopted Iγ(244γ)/Iγ(1794γ)=0.491 *23*.
[x]838[b]	1.3							
[x]1355[mb]	0.4[m]							
1355[mbo]	0.4[m]	3176	≤5/2$^+$	1817	3/2$^+$,5/2$^+$			
1390.33[&] *10*	15	1549.47	3/2$^-$	159.27	7/2$^-$		0.0076 *7*	I$_\gamma$: from Iγ(1556γ)=8.7 (1972Kn07) and Iγ(1556γ)/Iγ(1396γ)=1/1.75 (1969Te01) (evaluator).
[x]1525[b]	2.8							
1556[c] *3*	8.7	1549.47	3/2$^-$	0.0	5/2$^-$	M1+E2		1556.57γ assigned to ^{48}Ti by 2003ChZS. δ: +0.5 *3* or +3.6 *30*.
[x]1608[b]	1.3							
1633.0[&] *3*	[d]	1793.37	1/2$^-$	159.27	7/2$^-$		0.0021 *5*	
1793.4 *4*	3.2	1793.37	1/2$^-$	0.0	5/2$^-$			E$_\gamma$: from 1969TrZX. Other: 1798 *3* (1969Te01).
1818.4[eo] *10*	2.9	1817	3/2$^+$,5/2$^+$	0.0	5/2$^-$			
2000[fgo]	3.0	3549.7	1/2$^-$	1549.47	3/2$^-$			
2500[ho] *5*	[d]	2501.6?	1/2$^{(-)}$,3/2,5/2$^+$	0.0	5/2$^-$			
2556[f] *4*	12	2554	3/2$^-$	0.0	5/2$^-$			
2617[h] *2*		2617.1	7/2$^-$	0.0	5/2$^-$			
2855[ho] *5*		2865?	1/2$^{(-)}$,3/2,5/2$^+$	0.0	5/2$^-$			
3127[io] *5*	[d]	(8880.29)	1/2$^+$	5746?				
3145[io] *5*	[d]	5746?		2603?				
3189[io] *5*	[d]	5746?		2554	3/2$^-$			
3335[io] *5*	[d]	5746?		2413?				
3530[ho] *10*		(8880.29)	1/2$^+$	5356?	1/2$^-$			
3685[j] *5*	0.9	3676.1	3/2$^-$	0.0	5/2$^-$	E2,M1+E2		
[x]3903[b]	0.6							
3925[c] *5*	3.0	3923	3/2$^-$	0.0	5/2$^-$	E2,M1+E2		
[x]3961[b]	0.6							
[x]4352[e] *5*	0.7							
[x]4625[b]	0.8							
[x]4753[b]	0.3							

$^{47}_{22}Ti_{25}$-2

^{46}Ti(n,γ),(pol n,γ) E=thermal (continued)

$\gamma(^{47}Ti)$ (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	σ_γ^Z(b) [@]
4959 [j] *5*	4.6	(8880.29)	1/2$^+$	3923	3/2$^-$	
5204.0 [&] [c] *6*	3.6 [l]	(8880.29)	1/2$^+$	3676.1	3/2$^-$	0.0059 [l] *12*
5328 *5*	2.8	(8880.29)	1/2$^+$	3549.7	1/2$^-$	
5365 [ho] *10*	[k]	5356?	1/2$^-$	0.0	5/2$^-$	
5700 [b]	0.9	(8880.29)	1/2$^+$	3176	≤5/2$^+$	
≈6011 [ho]	[hk]	(8880.29)	1/2$^+$	2865?	1/2$^{(-)}$,3/2,5/2$^+$	
6086 [j] *5*	4.3	(8880.29)	1/2$^+$	2793	1/2$^-$	
6328 [j] *5*	4.9	(8880.29)	1/2$^+$	2554	3/2$^-$	
6378 [ho] *2*	[d]	(8880.29)	1/2$^+$	2501.6?	1/2$^{(-)}$,3/2,5/2$^+$	
7063 [h] *4*		(8880.29)	1/2$^+$	1817	3/2$^+$,5/2$^+$	
7086.8 [&] *4*	12 [l]	(8880.29)	1/2$^+$	1793.37	1/2$^-$	0.0060 [l] *8*
7330.28 [&] *23*	9.5 [l]	(8880.29)	1/2$^+$	1549.47	3/2$^-$	0.0078 [l] *8*
7627 [h] *2*		(8880.29)	1/2$^+$	1252.6		

[†] From 1969Te01, except as noted.
[‡] Relative photon intensity from 1972Kn07, except As noted.
[#] From $\gamma\gamma(\theta)$ assuming primary γ is E1.
[@] From 2003ChZS. Elemental σ_γ^Z assuming abundance=8.25% 2 (2005TuZX).
[&] From 2003ChZS. Others: 158.6 *4*, 242 *3*, 1391.5 *5*, 1632 *3*, 7083 and 7334 *2* (1969TrZX); 5205 *5* (1969Te01).
[a] No evidence for this placement In other γ studies; placement of 244.27γ deexciting this state instead of 1793 by 2003ChZS seems incorrect (evaluator).
[b] From 1972Kn07. Not reported by 1969Te01, 1969TrZX, or 2003ChZS.
[c] 1553.4 *2*, 3921.7 *20*, and 5214 *10* γ's assigned to ^{49}Ti(n,γ), ^{48}Ti(n,γ), and ^{50}Ti(n,γ) by 1969TrZX, respectively. Not reported by 2003ChZS.
[d] Weak transition.
[e] From 1969TrZX. Others: 1821 and 4359 (1972Kn07), respectively. Not reported by 1969Te01. 2003ChZS assign 4354.47 γ to ^{49}Ti.
[f] Seen only In $\gamma\gamma$-coincidence (1969Te01); not reported by 1972Kn07, 1969TrZX, or 2003ChZS.
[g] No evidence for this placement In other γ studies; not the same As 2003γ from 2163 since 2163γ not observed (evaluator).
[h] From 1969TrZX. Not reported by 1969Te01, 1972Kn07, or 2003ChZS. 2500, 2617, 2855, and 6378 also assigned to ^{48}Ti(n,γ)?, ^{50}Ti(n,γ), ^{49}Ti(n,γ), and ^{50}Ti(n,γ), respectively, by 1969TrZX. Existence and placement of 2617γ supported In (p,p$'\gamma$) study.
[i] Very weak In singles spectrum of 1969Te01; not reported by 1972Kn07, 1969TrZX, or 2003ChZS.
[j] Not reported by 1969TrZX or 2003ChZS.
[k] Very weak transition.
[l] Branching ratios deduced from Iγ and σ_γ^Z differ.
[m] Multiply placed with undivided intensity.
[n] Multiply placed with intensity suitably divided.
[o] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

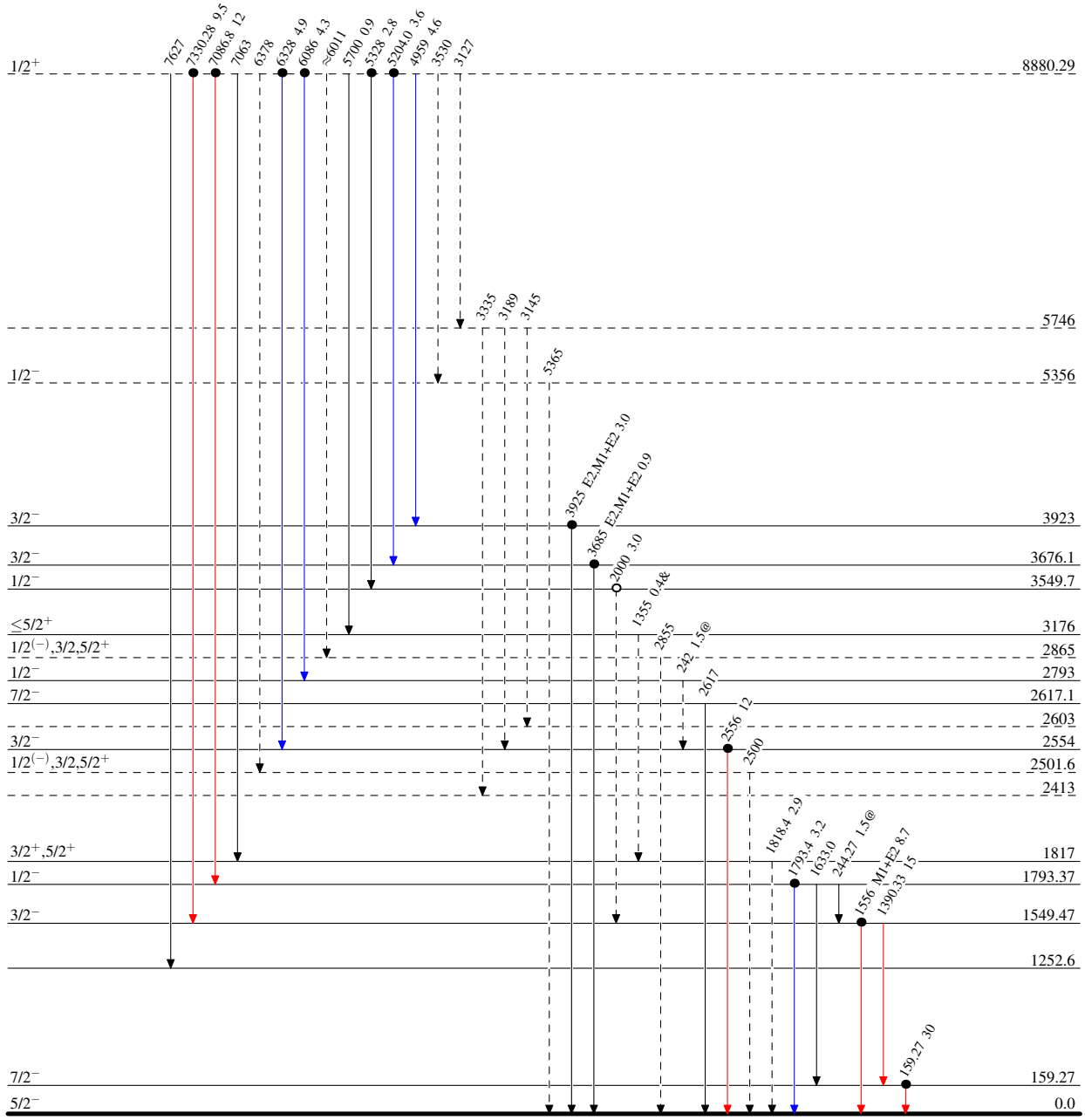
$^{47}_{22}Ti_{25}$-3

^{46}Ti(n,γ),(pol n,γ) E=thermal

Level Scheme

Intensities: Relative I_γ
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)
Coincidence
Coincidence (Uncertain)



$^{47}_{22}Ti_{25}$