^{48}Ti(α,npγ) 1978GiZZ,1977Gi18

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 157, 1 (2019)	15-Apr-2019

1978GiZZ, 1977Gi18: E(α)=21-40 MeV beam from the energy-variable cyclotron at Grenoble. Measured Eγ, Iγ, $\gamma\gamma$-coin, $\gamma(\theta)$, excitation functions, and level lifetimes by DSAM, with a Ge(Li) detector.

^{50}V Levels

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$[@]	E(level)[†]	J$^\pi$[‡]	$T_{1/2}$[@]
0.0	6^+		1677	3^+	
226.2 *5*	5^+		1724.0 *10*		
320.1 *6*	4^+		1724.5 *4*	$(8)^+$	0.37 ps *+42−14*
355	3^+		1762		
388	2^+		2312	$2^+,3^+,4^+,5^+$	
836.1 *8*	5^+		2478.2 *7*	(9^+)[#]	0.24 ps *+28−14*
909.9 *4*	$(7)^+$	0.08 ps *+8−4*	2842?	$(5^+,6^+,7^+)$	
910.2 *7*	4^+		3729.4 *9*	(10^+)[#]	0.028 ps *+56−28*
1301	2^+		4292.3 *10*	(11^+)[#]	0.24 ps *7*
1401	3^+				

[†] From a least-squares fit to γ-ray energies, assuming $\Delta E\gamma$=1 keV if not given.
[‡] From the Adopted Levels, unless otherwise noted. Spin assignments are supported by $\gamma(\theta)$ in 1977Gi18 where available.
[#] D(+Q) γ cascade, $\gamma\gamma$-coincidences, $\gamma(\theta)$, γ excitation functions, and lack of other deexciting gammas (5% limit).
[@] From DSAM in 1977Gi18.

$\gamma(^{50}V)$

All data are from 1977Gi18, except as noted.

E$_\gamma$	I$_\gamma$[†]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[‡]	δ[‡]	α[#]	Comments
94.0 *5*	52 *1*	320.1	4^+	226.2	5^+	D(+Q)	+0.08 *+28−8*	0.0272 *2*	α(K)=0.0224 *7*; α(L)=0.00232 *7* A$_2$=−0.23 *1*, A$_4$=−0.06 *2*.
226.2 *5*	65 *1*	226.2	5^+	0.0	6^+	D(+Q)	+0.07 *+14−7*		I$_\gamma$: 4.0 *15* in ^{48}Ti(^{16}O,^{12}Cpnγ), isotropic. A$_2$=−0.21 *1*, A$_4$=−0.06 *2*.
276[@]		1677	3^+	1401	3^+				
320	4 *1*	320.1	4^+	0.0	6^+				I$_\gamma$: from Iγ(94γ)=52 *1* and Iγ(94γ)/Iγ(320γ)=93/7 (1978GiZZ) assuming a minimum ΔIγ=1.
376		1677	3^+	1301	2^+				
516		836.1	5^+	320.1	4^+				I$_\gamma$: Iγ(516γ)/Iγ(836γ)=45/55.
562.9 *5*	15.3 *10*	4292.3	(11^+)	3729.4	(10^+)	D(+Q)	−0.06 *+6−1*		A$_2$=−0.29 *5*, A$_4$=−0.01 *6*.
588		2312	$2^+,3^+,4^+,5^+$	1724.0					
684.0 *5*	13.4 *10*	910.2	4^+	226.2	5^+	D+Q	+0.21 *+30−10*		A$_2$=−0.37 *4*, A$_4$=+0.02 *4*.
753.7 *5*	59.8 *10*	2478.2	(9^+)	1724.5	$(8)^+$	D+Q	−0.13 *+9−5*		A$_2$=−0.38 *2*, A$_4$=−0.02 *2*.
814.6 *5*	73.2 *10*	1724.5	$(8)^+$	909.9	$(7)^+$	D+Q	−0.17 *+14−15*		A$_2$=−0.42 *2*, A$_4$=−0.01 *2*.
836		836.1	5^+	0.0	6^+				
909.9 *5*	100	909.9	$(7)^+$	0.0	6^+	D+Q	−0.21 *+10−16*		I$_\gamma$: 12 *5* in

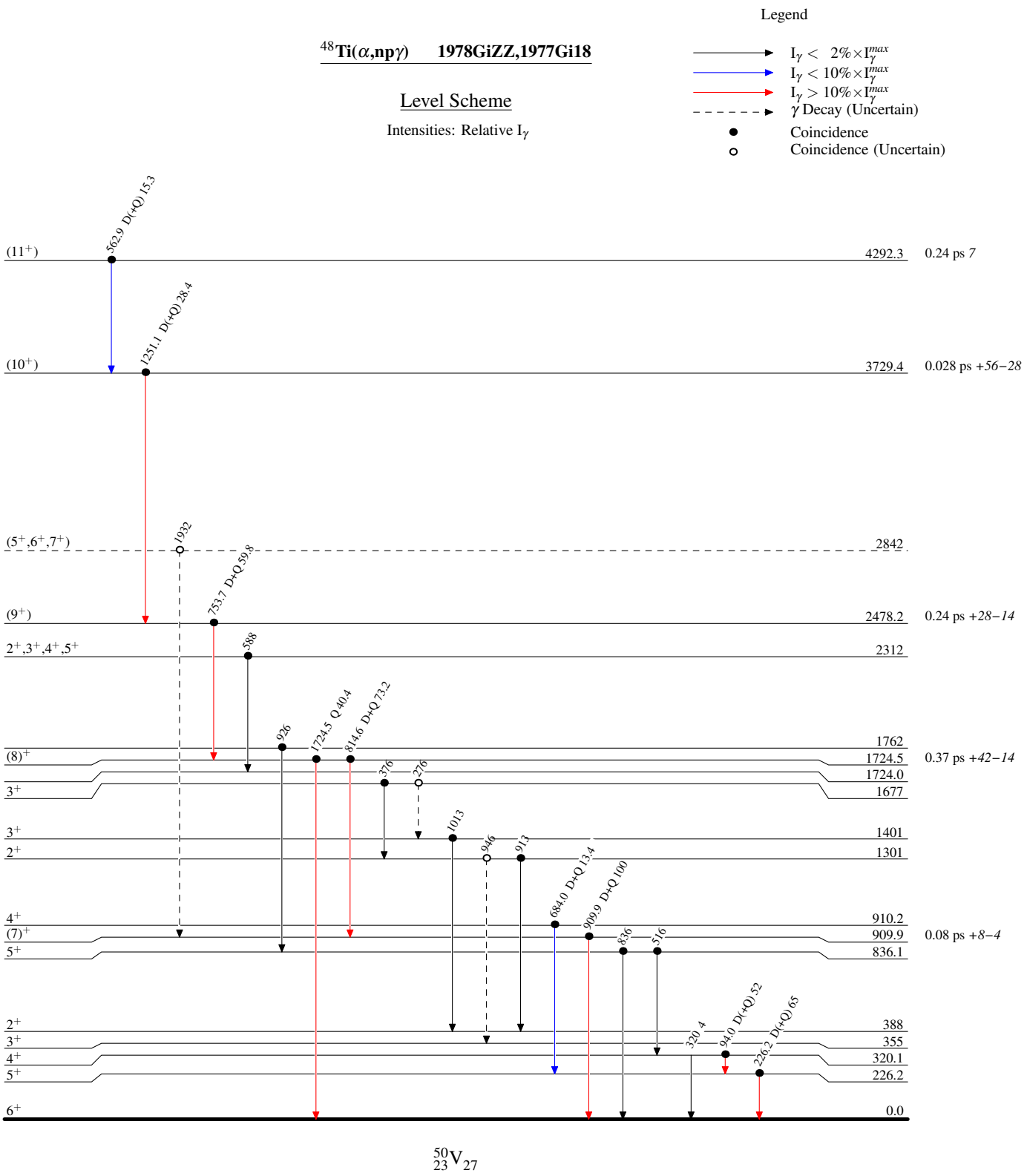
Continued on next page (footnotes at end of table)

^{48}Ti(α,npγ) 1978GiZZ,1977Gi18 (continued)

$\gamma(^{50}V)$ (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡]	Comments
								^{48}Ti(^{16}O,^{12}Cpnγ), isotropic. A_2=−0.47 *1*, A_4=−0.05 *1*.
913		1301	2^+	388	2^+			
926		1762		836.1	5^+			
946[@]		1301	2^+	355	3^+			
1013		1401	3^+	388	2^+			
1251.1 *5*	28.4 *10*	3729.4	(10^+)	2478.2	(9^+)	D(+Q)	0.00 +*7*−*4*	A_2=−0.21 *5*, A_4=−0.06 *6*.
1724.5 *5*	40.4 *10*	1724.5	$(8)^+$	0.0	6^+	Q		δ(M3/E2)=+0.06 *10*. A_2=+0.27 *4*, A_4=−0.02 *8*.
1932[@]		2842?	$(5^+,6^+,7^+)$	909.9	$(7)^+$			

[†] Corrected for $\gamma(\theta)$.
[‡] From $\gamma(\theta)$ in 1977Gi18, with $\Delta J=1$ for D+Q and $\Delta J=2$ for Q.
[#] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
[@] Placement of transition in the level scheme is uncertain.


^{48}Ti(α,npγ) 1978GiZZ,1977Gi18
Level Scheme
Intensities: Relative I_γ
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)
(11+) 4292.3 0.24 ps 7
(10+) 3729.4 0.028 ps +56−28
(5+,6+,7+) 2842
(9+) 2478.2 0.24 ps +28−14
2+,3+,4+,5+ 2312
(8)+ 1762
1724.5
3+ 1724.0
1677
3+ 1401
2+ 1301
4+ 910.2
(7)+ 909.9 0.08 ps +8−4
5+ 836.1
2+ 388
3+ 355
4+ 320.1
5+ 226.2
6+ 0.0
562.9 D(+Q) 15.3
1251.1 D(+Q) 28.4
1932
753.7 D+Q 59.8
588
926
1724.5 Q 40.4
814.6 D+Q 73.2
376
276
1013
946
913
684.0 D+Q 13.4
909.9 D+Q 100
836
316
320.4
94.0 D(+Q) 52
226.2 D(+Q) 65

$^{50}_{23}V_{27}$