Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 179, 1 (2022)	30-Nov-2021

Q(β^-)=−4014.9 *10*; S(n)=11626.66 *3*; S(p)=11445.1 *19*; Q(α)=−9449.1 *3* 2021Wa16
S(2n)=20507.32 *6*, S(2p)=19931.3 *22* (2021Wa16).
Mass measurements: 2017Ka53, 2014Kw04, 2013Bu12, 2012Na15, 1979Ko10, 1972De39.
Measurements of hyperfine structure: 2004Ga34, 2002Ca47, 1996Fu23, 1996Lu12, 1995Ga44, 1994An35, 1994GaZZ, 1994Lu18, 1992Az03.

^{48}Ti Levels

B(M1)↑, B(E2)↑ and B(M3)↑ under comments are from model-independent PWBA in (e,e′), unless otherwise noted.

Cross Reference (XREF) Flags

A	^{48}Sc β^- decay	M	^{47}Ti(d,p)	Y	^{48}Ti(α,α')
B	^{48}V ε decay	N	^{48}Ca(π^+,π^-)	Z	^{49}Ti(p,d)
C	^{48}Ca 2β^- decay	O	^{48}Ca(^{3}He,3nγ)	Others:	
D	^{9}Be(^{49}V,Xγ)	P	^{48}Ti(γ,γ),(γ,γ')	AA	^{49}Ti(d,t)
E	^{27}Al(^{24}Mg,3pγ)	Q	^{48}Ti(e,e′)	AB	^{49}Ti(^{3}He,α)
F	^{36}S(^{14}C,2nγ)	R	^{48}Ti(π^+,$\pi^{+\prime}$),(π^-,$\pi^{-\prime}$)	AC	^{50}Ti(p,t)
G	^{44}Ca(^{6}Li,d), ^{52}Cr(d,^{6}Li)	S	^{48}Ti(n,n′)	AD	^{50}V(d,α)
H	^{44}Ca(^{7}Li,p2nγ)	T	^{48}Ti(n,n′γ)	AE	^{50}Cr(^{14}C,^{16}O)
I	^{45}Sc(α,p)	U	^{48}Ti(p,p′),(pol p,p′)	AF	^{51}V(p,α)
J	^{45}Sc(α,pγ)	V	^{48}Ti(p,p′γ)	AG	Coulomb excitation
K	^{46}Ti(t,p)	W	^{48}Ti(d,d′),(pol d,d′)	AH	Inelastic scattering:giant res
L	^{47}Ti(n,γ) E=thermal	X	^{48}Ti(^{3}He,^{3}He′)		

E(level)[†]	J$^\pi$	T$_{1/2}$[@]	XREF	Comments
0.0	0$^+$	stable	AB DEFGHIJKLMNOPQR TUVWXYZ	XREF: Others: AA, AB, AC, AD, AE, AF, AG Nuclear rms charge radius=3.5921 fm *17* (2013An02).
983.531 *4*	2$^+$	4.5 ps *4*	AB DEFGHIJKLM OPQRSTUVWXYZ	XREF: Others: AA, AB, AC, AD, AE, AF, AG μ=+0.78 *4* (2000Er06); Q=−0.177 *8* (1972Li12) XREF: AB(1000). J$^\pi$: L(p,t)=L(α,α')=2 from 0$^+$. T$_{1/2}$: weighted average of 4.64 ps *42* (1981Ca10), 4.9 ps *15* (1963Ak03), and 4.2 ps *14* (1958Kn36) from Γ in (γ,γ); 2.9 ps *+21−13* (1973Ba02) from DASM in (p,p′γ); 3.95 ps *61* (2000Er01), 4.16 ps *90* (1973Ba02), 3.67 ps *56* (1972WaYZ), and 5.75 ps *89* (1973Fi15) from DSAM in Coulomb excitation, and 5.0 ps *5* from adopted B(E2)↑=0.061 *6* below. Other: 4.90 ps *+22−21* from B(E2) evaluation by 2016Pr01 using the same data, with its difference from the adopted value here due to the fact that 2016Pr01 does not take into account the additional systematic uncertainty from the stopping power theory in DSAM for values in 1973Fi15 and 2000Er01 in Coulomb excitation (see details in this dataset), which take up most of the weight in their weighted average. μ: from Transient Fields method (2000Er06). Others: +0.9 *4* (1981Sh19, TF). Q: from electron scattering (1972Li12). Others: −0.38 *13* (1971De29), −0.22 *8* (1970Ha24), and −0.135 eb *88* (1972Le19) from Coulomb excitation. See also 2016St14

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Adopted Levels, Gammas (continued)

^{48}Ti Levels (continued)

E(level)†	Jπ	$T_{1/2}$@	XREF	Comments
				compilation. B(E2)↑=0.0613 *56*, unweighted average of 0.0537 *36* in (e,e′), 0.050 *15* in (p,p′), 0.0694 *52* in (π^+,π^-), 0.072 *4* in Coulomb excitation. Other: 0.0069 from (α,α') (1970Br07) is discrepant, lower than other values by one order of magnitude.
2295.648 *7*	4^+	0.87 ps *13*	AB DEFGHIJ LM OP R TUVW YZ	XREF: Others: AA, AB, AC, AD, AF, AG μ=+2.2 *5* (2000Er06) XREF: R(2400)AB(2310). Jπ: L(p,t)=(α,α')=4 from 0^+. $T_{1/2}$: weighted average of 0.97 ps *35* from DSAM in (α,pγ), 1.4 ps *+6−5* from (γ,γ), 1.5 ps *8* from DSAM in (n,n′γ), and 0.76 ps *13* (2000Er01) and 1.66 ps *42* (1973Ba02) from DSAM Coulomb excitation. μ: from Transient Fields method (2000Er06).
2421.053 *10*	2^+	30.4 fs *23*	BCD IJ LM PQR TUVW YZ	XREF: Others: AA, AC, AD, AF, AG Jπ: L(α,α')=L(p,t)=2 from 0^+. $T_{1/2}$: weighted average of 42 fs *14* (1979Gl07) and 30 fs *6* (1978Li13) in (α,pγ), 13.9 fs *28* (1993Ko57), 28 fs *12* (1989Ge05) and 31.9 fs *21* (1993BeZL) in (n,n′γ), 11 fs *+7−11* (1969Ka10), 24 fs *5* (1973Ba02) and 19 fs *+11−9* (1978DeYT) in (p,p′γ), and 51 fs *9* (2000Er06) in Coulomb excitation, all from DSAM. Others: 33 fs *+16−9* from Γ in (γ,γ') and 35 fs *+7−5* from adopted B(E2)↑ below, both depending on the adopted branching ratio of 2421γ. Averaging all values above gives a value of 30.8 fs *21*, with a reduced χ^2=1.5.
2465 *5*			U	
2997.31 *17*	0^+	80 fs *14*	iJkL Q TUVWXy	XREF: Others: AA, AC, AF Jπ: L(t,p)=L(p,t)=0 from 0^+. $T_{1/2}$: weighted average of 64 fs *11*(1989Ge05) in (n,n′γ), 87 fs *21* (1969Ka10), 111 fs *22* (1973Ba02) and 194 fs *+76−49* (1978DeYT) in (p,p′γ), all from DSAM.
3062 *5*	2^+		Q U	XREF: Q(3017). E(level): from (p,p′). Other: 3017 from (e,e′). Jπ: from PWBA analysis of $\sigma(\theta)$ in (e,e′). B(E2)↑=0.00112 *20* (1990Gu09) from (e,e′).
3223.971 *9*	3^+	33 fs *6*	B D iJ LM Q TUV z	XREF: Others: AA, AD, AF XREF: Q(3239)U(3230). Jπ: spin=3 from p$\gamma(\theta)$ in (p,p′γ); 2240.4γ M1+E2 to 2^+. $T_{1/2}$: weighted average of 54 fs *17* (1979Gl07) and 39 fs *6* (1978Li13) in (α,pγ), 29 fs *18* (1993Ko57) in (n,n′γ), 17 fs *+9−11* (1969Ka10), 29 fs *+13−10* (1973Ba02) and 31 fs *+14−12* (1978DeYT) in (p,pγ), all from DSAM. B(M3)↑=0.50 *10* (1990Gu09) in (e,e′).
3239.771 *13*	4^+	46 fs *11*	B D G iJ L R TUVW Yz	XREF: Others: AA, AC, AD, AF XREF: G(3200). Jπ: L(α,α')=L(p,t)=4 from 0^+. $T_{1/2}$: weighted average of 49 fs *14* (1979Gl07) in (α,pγ), 50 fs *11* (1993Ko57) in (n,n′γ), 69 fs *+37−29* (1969Ka10), 30 fs *+14−11* (1973Ba02), and 62 fs *+28−21* (1978DeYT) in (p,p′γ), all from DSAM.
3333.187 *13*	6^+	8.9 ps *8*	A DEFGHIJ LM O T V YZ	XREF: Others: AA, AB, AC, AD, AF XREF: G(3400)V(?). Jπ: L(α,α')=L(p,t)=6 from 0^+.

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Adopted Levels, Gammas (continued)

^{48}Ti Levels (continued)

E(level)†	Jπ	$T_{1/2}$@	XREF	Comments
				$T_{1/2}$: from RDM by 1974Br04 in (α,pγ). Others: >3.5 ps (1979Gl07), >1.3 ps (1978Li13), from DSAM in (α,pγ); >7 ps from DSAM by 1993Ko57 in (n,n′γ); 221 fs *+48−44* from DSAM by 1969Ka10 in (p,p′γ) is strongly discrepant with other values.
3358.823 *17*	3⁻	186 fs *+38−34*	B D IJ L qr TUVW Y	XREF: Others: AA, AD, AF XREF: q(3374). Jπ: L(p,p′)=3 from 0⁺; L(d,t)=0 from 7/2⁻; 2375.2γ D(+Q) to 2⁺. $T_{1/2}$: weighted average of 198 fs *+80−70* (1979Gl07) in (α,pγ), 173 fs *+38−34* (1969Ka10), 243 fs *62* (1973Ba02), and 173 fs *+55−42* (1978DeYT) in (p,p′γ), and 180 fs *56* (1993Ko57) in (n,n′γ), all from DSAM. B(E3)↑=0.0080 *16* from model-dependent analysis in (e,e′).
3370.87 *3*	2⁺	11.2 fs *14*	J LM Pqr TUVW Y	XREF: Others: AA, AC, AD, AF XREF: AC(3363). Jπ: spin=2 from p$\gamma(\theta)$ in (p,p′γ); L(d,p)=1+3 from 5/2⁻. $T_{1/2}$: weighted average of 13.2 fs *14* (1993BeZL) and 9.0 fs *14* (1989Ge05) in (n,n′γ), 15 fs *9* (1969Ka10) and 12 fs *5* (1973Ba02) in (p,p′γ), all from DSAM. Others: 30 fs *+13−9* (1978DeYT) in (p,p′γ) and 29.1 fs *56* (1993Ko57) in (n,n′γ) are discrepant; 12.5 fs *+35−27* from Γ in (γ,γ′) and 12.7 fs *+31−23* from B(E2)↑ in (e,e′), both depending on the adopted branching ratio of 3371γ. Averaging all values above gives 12.0 fs *14*, with a reduced χ^2=2.5.
3508.548 *12*	6⁺	1.9 ps *5*	A DEFgHIJ M O TU YZ	XREF: Others: AA, AC, AD, AF XREF: g(3400). Jπ: L(α,α′)=L(p,t)=6 from 0⁺. $T_{1/2}$: deduced by the evaluator from 1.4 ps<$T_{1/2}$<2.4 ps, with lower limit from DSAM by 1979Gl07 and upper limit from RDM by 1974Br04 in (α,pγ). Other: 0.9 ps *+5−3* from DSAM by 1978Li13 in (α,pγ), but it is inconsistent with $T_{1/2}$>1 ps from RUL of 176γ assuming Mult(176γ)=M1.
3616.812 *21*	2⁺	43 fs *13*	IJKLM QR TUV Y	XREF: Others: AA, AC, AD, AF XREF: AF(3631). Jπ: L(α,α′)=L(p,t)=2 from 0⁺. $T_{1/2}$: weighted average of 38 fs *13* (1979Gl07) from (α,pγ) and 53 fs *+21−14* (1978DeYT) from (p,p′γ), both from DSAM. Others: 8.3 fs *28* (1989Ge05) from DSAM in (n,n′γ) and 10.3 fs *26* (1969Ka10) from DSAM in (p,p′γ) are discrepant.
3699.52 *8*	1(⁻)	11.3 fs *21*	J Lm PQ TuV	XREF: Others: AD, AF Jπ: spin=1 from p$\gamma(\theta)$ in (p,p′γ); 1⁻ from model-dependent analysis of measured form factors by 1989Gu17 in (e,e′); π=− tentatively assigned by 1990De20 based on measured $\gamma(\theta)$ and azimuthal asymmetries; π=− is also supported by the 3703γ feeding from the 5643, 3⁻ level. But π=+ from 2715.8γ M1+E2 to 2⁺ in (p,p′γ) (1968Mo20) is discrepant. Other: 1⁺ assigned by 1993Ko57 in (n,n′γ). $T_{1/2}$: from DSAM in (n,n′γ). Other: 6.1 fs *+16−12* from Γ in (γ,γ′) and adopted branching ratio of 3699γ; 24 fs *4* from DSAM in (p,p′γ) is discrepant.

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Adopted Levels, Gammas (continued)

^{48}Ti Levels (continued)

E(level)†	Jπ	$T_{1/2}$@	XREF	Comments
3711.6? *10*			J m u	XREF: Others: AD, AF
3738.60 *11*	1^+‡	3.1 fs *18*	IJ LM PQ TUV	XREF: Others: AA, AC, AD, AF XREF: I(?). Jπ: 3738.4γ M1 to 0^+. $T_{1/2}$: from DSAM in (n,n′γ). Other: 3.1 fs *+9−7* from Γ in (γ,γ) and the adopted branching ratio of 3738γ; <1.4 fs from DSAM in (α,pγ); 112 fs (1978DeYT) and 11 fs *3* (1969Ka10) from DSAM in (p,p′γ) are discrepant.
3782.459 *18*	3^-,4^-	1.2 ps *+11−6*	D IJ LM TuV	XREF: Others: AA, AD Jπ: L(d,t)=0 from $7/2^-$. $T_{1/2}$: other: 50 fs from DSAM in (p,p′γ) is discrepant.
3802.73 *11*	2^-		L Q	XREF: Others: AD, AF XREF: Q(3787)AF(3797). Jπ: from model-independent PWBA analysis in (e,e′) (1990Gu09).
3850.9? *10*	0^+			XREF: Others: AC Jπ: L(p,t)=0.
3852.24 *4*	3^-	32 fs *6*	D IJ LM QR TUV Y	XREF: Others: AA, AD, AF XREF: I(3842)Q(3871)R(3870)AF(3868). Jπ: L(α,α′)=L(p,p′)=3 from 0^+. $T_{1/2}$: weighted average of 48 fs *14* (1979Gl07) and 27 fs *6* (1978Li13) in (α,pγ), 97 fs *66* in (n,n′γ), 39 fs *+14−11* in (p,p′γ), all from DSAM.
4035.153 *15*	2^+	22 fs *13*	iJKLM r T V Y	XREF: Others: AA, AC, AD XREF: i(4050)r(4050)T(?)Y(4045)AC(4044). Jπ: L(α,α′)=L(p,t)=2 from 0^+. $T_{1/2}$: other: 26 fs *+28−21* from DSAM in (p,p′γ).
4046.6 *3*	$5^{(-)}$	0.37 ps *11*	D iJ U z	XREF: Others: AD XREF: i(4050)z(4060). Jπ: spin=5 from pγ(θ) in (α,pγ) (1979Gl07); π=− proposed by 1989Hi05 in (p,p′), but no σ(θ) or analyzing power data given. $T_{1/2}$: from DSAM in (α,pγ).
4074.511 *21*	2^+	35 fs *11*	J Lm r tu Yz	XREF: Others: AA, AB, AD XREF: r(4050)z(4060)ab(4060). Jπ: L(α,α′)=2 from 0^+.
4077 *3*	4^+		G m tu z	XREF: Others: AA, AB, AC, AD XREF: G(4200)z(4060)ab(4060). E(level): from (p,t). Jπ: from L(p,t)=4 from 0^+.
4102	1^+		Q	XREF: Others: AD Jπ: from model-independent analysis of measured σ(θ) in (e,e′) (1990Gu09). B(M1)↑=0.17 *7* (1990Gu09) in (e,e′).
4157 *5*			g r U	XREF: g(4200)r(4170). E(level): from (p,p′).
4196.90 *3*	(2^+)		J Lm r	XREF: r(4170). Jπ: 4196.6γ to 0^+, possible 346γ to 3^-.
4204.9 *5*	$(1,2^+)$		Lm r U	XREF: Others: AD XREF: r(4170)ad(4212). Jπ: 4204.7γ to 0^+.
4210 *8*	2^-		m Q T	XREF: Others: AD XREF: ad(4212). Jπ: from model-independent analysis of measured σ(θ) in (e,e′) (1990Gu09).

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Adopted Levels, Gammas (continued)

^{48}Ti Levels (continued)

E(level)†	Jπ	$T_{1/2}$@	XREF	Comments
4254.5 *10*	1^+		JK Q U	Jπ: from model-independent analysis of measured σ(θ) in (e,e′) (1990Gu09). B(M1)↑=0.14 *10* (1990Gu09) in (e,e′).
4311.3 *5*	1^+‡	3.8 fs *+39−17*	J M P TU	XREF: Others: AD XREF: T(?)AD(4328). Jπ: 4310γ M1 to 0^+. $T_{1/2}$: from $\Gamma^2_{\gamma 0}/\Gamma$ in (γ,γ′) and adopted branching ratio of 4310γ.
4346.7 *6*	(2^+)		J M r TU	XREF: Others: AD XREF: r(4390)AD(4358). Jπ: proposed in (pol p,p′) (1989Hi05), but no σ(θ) or analyzing power given.
4381.4 *3*	$(3,4,5^-)$	25 fs *14*	iJk m r T yz	XREF: Others: AA, AB XREF: i(4390)r(4390)aa(4383). Jπ: 1142.3γ to 4^+ can not be pure E2 (ΔJ=2) from comparison with RUL; 1261γ from 3^-. $T_{1/2}$: weighted average of 21 fs *14* from (α,pγ) and 28 fs *14* from (n,n′γ), using DSAM.
4387.691 *20*	4^+	37 fs *14*	iJkLm r TU yz	XREF: Others: AA, AB, AC XREF: i(4390)U(4392)aa(4383)AC(4393). Jπ: L(α,α′)=(p,t)=4 from 0^+. $T_{1/2}$: weighted average of 35 fs *14* from (α,pγ) and 55 fs *+49−28* from (n,n′γ), using DSAM.
4398.7 *4*	6^+	45 fs *14*	iJ	XREF: Others: AA, AD XREF: i(4390)aa(4402)ad(4402). Jπ: spin=6 from pγ(θ) in (α,pγ); 2103γ to 4^+ can not be M2 from comparison with RUL.
4404.8 *4*	$5^{(+)}$	<42 fs	iJ z	XREF: Others: AA, AD XREF: i(4390)aa(4402)ad(4402). Jπ: spin=5 from pγ(θ) in (α,pγ); parity=+ for a group at 4390 in (α,p).
4407	(2^+)		i Y	XREF: Others: AA, AD XREF: i(4390)aa(4402)AD(4417). E(level): from (α,α′). Other: 4417 *12* from (d,α). Jπ: L(α,α′)=(2) from 0^+.
4457.455 *11*	3^+	49 fs *24*	G J LM	XREF: Others: AA, AD XREF: G(4500)ad(4472). Jπ: spin=3 from nuclear orientation and circular polarization in (n,γ) E=thermal; parity=+ from L(d,p)=1 from $5/2^-$.
4472 *5*	3^-		U	XREF: Others: AD XREF: ad(4472). Jπ: L(p,p′)=3 from 0^+.
4530 *15*	$3^-,4^-$		u Z	Jπ: L(p,d)=0 from $7/2^-$.
4535 *3*	0^+		u	XREF: Others: AC Jπ: L(p,t)=0 from 0^+.
4564.8 *3*	$8^{(+)}$	>3.5 ps	DEF H J O	XREF: Others: AD XREF: ad(4578). Jπ: spin=8 from pγ(θ) in (α,pγ); 1056.2γ to 6^+.
4567	$(^-)$		i	XREF: Others: AA, AC, AD XREF: i(4570)ac(4571)ad(4578). Jπ: L(d,t)=(2) from $7/2^-$ gives (1^- to 6^-).
4580.69 *7*	3^-	38 fs *16*	iJ LM QR TU Y	XREF: Others: AA, AC, AD XREF: i(4570)Q(4596)U(4591)ac(4571)ad(4578).

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Adopted Levels, Gammas (continued)

^{48}Ti Levels (continued)

E(level)†	Jπ	$T_{1/2}$@	XREF	Comments
				Jπ: L(α,α′)=L(p,t)=3 from 0+.
				$T_{1/2}$: weighted average of 28 fs *14* from (α,pγ) and 62 fs *21* from (n,n′γ), both using DSAM.
4589 *3*	0+		K m r	XREF: Others: AC, AD
				E(level): from (p,t). Other: 4590 *15* from (t,p).
				Jπ: L(p,t)=L(t,p)=0 from 0+.
4719.137 *22*	4+	66 fs *18*	IJ LM TU Y	XREF: Others: AA, AC, AD
				XREF: U(4726)AC(4725)ad(4729).
				Jπ: L(p,t)=L(p,p′)=4 from 0+.
				$T_{1/2}$: from DSAM in (n,n′γ) (1993Ko57). Other: 66 fs *24* from DSAM in (α,pγ).
4757.73 *10*	(3−)		L Z	E(level),Jπ: L(p,d)=0 from 7/2− gives J^{π}=3−,4− for a group at 4750 *15*, which could be the same level here; 1140.94γ to 2+ favors 3−.
4783.27 *12*	(2+,3,4+)		i kLm r	XREF: i(4791)k(4800)m(4789)r(4790).
				Jπ: 2486.4γ to 4+, 3799.6γ to 2+.
4792.31 *5*	(1−,2,3−)	28 fs *14*	iJkLm r yz	XREF: Others: AA, AC, AD
				XREF: i(4791)k(4800)m(4789)r(4790)ad(4806).
				Jπ: 1092.3γ to 1−, 2371.2γ to 2+, 1572.4γ from 3−. Others: L(d,t)=L(p,d)=0 from 7/2−, L(d,p)=1 from 5/2−, L(t,p)=L(α,α′)=2 from 0+, and L(p,t)=3 from 0+ for a multiplet.
4794.11 *13*	(2+)		kLm r u y	XREF: Others: AD
				XREF: k(4800)m(4789)r(4790)u(4802)ad(4806).
				Jπ: 4793.5γ to 0+, 2498.4γ to 4+; L(t,p)=L(α,α′)=2 from 0+ and L(d,p)=1 from 5/2− for a multiplet.
4795.1 *4*	(3−,4)	70 fs *35*	iJ m u z	XREF: Others: AA, AC, AD
				XREF: i(4791)m(4789)u(4802)ad(4806).
				Jπ: 749γ to 5(−), 942γ to 3−, 1571γ to 3+. Others: L(d,t)=L(p,d)=0 from 7/2−, L(d,p)=1 from 5/2−, and L(p,t)=3 from 0+ for a multiplet.
4861.0 *6*	2+,3+,4+	21 fs *11*	g IJ M	XREF: g(4900)M(4852).
				Jπ: L(d,p)=1 from 5/2−; 1622γ to 4+.
4885.0 *7*	(2+,3+,4+)		g J Z	XREF: Others: AA, AD
				XREF: g(4900)Z(4890)AD(4879).
				Jπ: L(p,d)=(1+3) from 7/2−; 2464γ to 2+, 1526γ to 3−.
4910.57 *5*	(1+,2+)		J Lm qr U	XREF: m(4914)q(4918)r(4910).
				Jπ: 4911.8γ to 0+, 1686.6γ to 3+. Other: 2+ from model-independent PWBA in (e,e′) for a doublet at 4918, with B(E2)↑=0.00138 *21*.
4916.3 *5*	5−	0.19 ps *11*	iJ r Y	XREF: Others: AA, AC, AD
				XREF: i(4927)r(4910)ad(4927).
				Jπ: L(α,α′)=L(p,t)=5 from 0+.
4924.92 *14*	(2,3,4)+	21 fs *11*	iJ Lm qr	XREF: Others: AA, AD
				XREF: i(4927)m(4914)q(4918)r(4910)AA(4930)ad(4927).
				Jπ: L(p,d)=1+3 from 7/2−; 2629.1γ to 4+, 851γ to 2+. Other: see comment for 4911 level.
4939.93 *15*	(2,3,4)+		iJ LM T	XREF: Others: AA, AD
				XREF: i(4927)T(?)ad(4927).
				Jπ: L(d,p)=1 from 5/2−; 3956.2γ to 2+, 2644.5γ to 4+.
4956.6 *4*	(4+,5,6−)	>1.0 ps	iJ	XREF: Others: AD
				Jπ: 1624γ to 6+, 1173γ to J^{π}=3−,4−.
4966	2+		i Y	XREF: Others: AC, AD

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Adopted Levels, Gammas (continued)

^{48}Ti Levels (continued)

E(level)†	Jπ	$T_{1/2}$@	XREF	Comments
				XREF: ac(5000).
				Jπ: L(α,α′)=2 from 0+.
4970.7 *7*	0+		iJK Q U	XREF: Others: AC, AD
				XREF: Q(4997)ac(5000).
				Jπ: L(t,p)=0 from 0+.
4992.0 *5*	5−		J M U Y	XREF: Others: AA, AC, AD
				XREF: M(5000)U(5000)ac(5000)AD(5005).
				Jπ: L(d,t)=2 from 7/2−; 1484γ to 6+, 1139γ to 3−; natural parity from presence in (α,α′) spectra.
5063 *12*				XREF: Others: AD
5145.85 *7*	4+	50 fs *28*	g IJ Lm r T Y	XREF: Others: AA, AC
				XREF: g(5200)m(5151)r(5150)T(?)AA(5150)ac(5160).
				Jπ: L(α,α′)=4 from 0+.
5155.7 *7*	5(+)	<7 fs	J	XREF: Others: AA, AD
				XREF: aa(5158)ad(5169).
				Jπ: spin=5 from pγ(θ) in (α,pγ); 751γ to 5(+) can only be M1 from comparison with RUL.
5158.0 *3*	4+	<25 fs	g J Lm r U	XREF: Others: AA, AC, AD
				XREF: g(5200)m(5151)r(5150)aa(5158)ac(5160)ad(5169).
				Jπ: L(p,p′)=4 from 0+; (2,3) from nuclear orientation and circular polarization in (n,γ) E=thermal is discrepant.
5169.8 *4*	7+	28 fs *12*	J	XREF: Others: AD
				XREF: ad(5169).
				Jπ: spin=7 from pγ(θ) in (α,pγ); 1661γ M1+E2 to 6+.
5170	(2,3,4,5)+			XREF: Others: AA, AD
				XREF: AD(5184).
				Jπ: L(d,t)=3(+1) from 7/2−.
5197.9 *4*	8+	76 fs *24*	EF HIJ	XREF: Others: AA, AD
				XREF: AA(5199)AD(5205).
				Jπ: spin=8 from pγ(θ); 1689γ to 6+ can not be M2 from comparison to RUL. Other: L(d,t)=3(+1) from 7/2−, giving J^{π}=(2 to 5)+ for a group at 5199, is inconsistent.
5241	1+		m Q	XREF: m(5255).
				Jπ: from model-independent analysis of measured σ(θ) in (e,e′).
				B(M1)↑=0.11 *3* from (e,e′).
5251.8 *6*	(2+,3,4,5−)	49 fs *+20−24*	J m	XREF: Others: AD
				XREF: m(5255)ad(5266).
				Jπ: 1399γ to 3−, 2957γ to 4+.
5273.0 *5*	(1−,2)		J U	XREF: Others: AD
				XREF: ad(5266).
				Jπ: 962γ to 1+, 1571γ to 1−, 1915γ to 3−.
5300.9 *6*	(4+,5,6)	<35 fs	J m	XREF: m(5303).
				Jπ: 1792γ to 6+; 896γ to 5(+) can not be E2 or M2.
5312.8 *4*	(5−)	69 fs *28*	IJ m	XREF: Others: AA, AD
				XREF: m(5303)ad(5317).
				spin=5,6,7 from pγ(θ) in (α,pγ); 1266γ M1,E2 to 5(−); 2185γ from (4+).
5313.3 *6*	2+		J m Q T Y	XREF: Others: AD

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Adopted Levels, Gammas (continued)

^{48}Ti Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$[@]	XREF	Comments
				XREF: m(5303)T(?)ad(5317). Jπ: from model-independent analysis of measured σ(θ) in (e,e′). B(E2)↑=0.00164 *28* (1990Gu09) from (e,e′).
5340 *3*	1(−)‡		P U	XREF: U(5329).
5356.23 *13*	(2+,3,4+)		J L r	XREF: Others: AD XREF: r(5360)AD(5371). Jπ: 4372.6γ to 2+, 3062γ to 4+.
5383.8 *7*	(3)−		IJ r Y	XREF: Others: AA, AD XREF: I(5378)r(5360)ad(5395). Jπ: L(α,α′)=(3) from 0+, L(d,t)=2 from 7/2−.
5391 *9*	4+		M U	XREF: Others: AD XREF: M(5382)U(5400)ad(5395). Jπ: L(p,p′)=4 from 0+, L(d,p)=1+3 from 5/2−.
5461	2+,3+,4+,5+			XREF: Others: AA, AC XREF: ac(5510). Jπ: L(d,p)=1+3 from 5/2−.
5490.95 *21*	2+		iJKLm	XREF: Others: AC XREF: i(5497)K(5499)m(5493)ac(5510). Jπ: L(t,p)=2 from 0+.
5500.8 *4*	4+	26 fs *12*	iJ m	XREF: Others: AC, AD XREF: i(5497)m(5493)ac(5510)ad(5509). Jπ: 2168γ to 6+ and 1226γ to 2+ can not be M2 from comparison to RUL.
5521.7 *6*	3−		iJ m Y	XREF: Others: AA, AC, AD XREF: i(5521)m(5520)ac(5510)ad(5509). Jπ: L(α,α′)=3 from 0+.
5526 *3*	1‡		i m P	XREF: Others: AC, AD XREF: i(5521)m(5520)ac(5510)AD(5530).
5545.9 *7*	(4+ to 8+)		iJ m	XREF: Others: AC, AD XREF: i(5547)m(5546)ac(5510)ad(5555). Jπ: 2213γ to 6+.
5545.9 *5*	3−		iJ m R U	XREF: Others: AA, AC, AD XREF: i(5547)m(5546)R(5540)U(5537)ac(5510)ad(5555). Jπ: L(p,p′)=L(π+,π+)=3 from 0+.
5562	(3−)		Q U	XREF: Others: AD XREF: U(5578)ad(5555). Jπ: from σ(θ) and analyzing powers in (p,p′) and also from model-independent analysis of measured σ(θ) in (e,e′).
5567.9 *6*	2+		J Q	XREF: Others: AD XREF: ad(5555). Jπ: from model-dependent PWBA in (e,e′). B(E2)↑=0.00093 *20* (1990Gu09) from (e,e′).
5615.8 *5*	(3)−		J	XREF: Others: AA Jπ: L(d,t)=0 from 7/2−; 4632γ to 2+.
5619.65 *10*	2+		iJ LM QR U Y	XREF: Q(5633)U(5633)Y(5614). Jπ: L(α,α′)=2 from 0+. B(E2)↑=0.0019 *5* (1990Gu09) from (e,e′).
5630.9 *4*	7	24 fs *14*	iJ	XREF: Others: AD Jπ: from pγ(θ) in (α,pγ).
5640.03 *5*	1+‡	<0.96 fs	iJ LM PQ	XREF: Others: AD $T_{1/2}$: from $\Gamma^2_{\gamma 0}/\Gamma$ in (γ,γ′) and adopted branching ratio of 5640γ. B(M1)↑=0.47 *8* (1990Gu09) from (e,e′).

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Adopted Levels, Gammas (continued)

^{48}Ti Levels (continued)

E(level)†	Jπ	$T_{1/2}$@	XREF	Comments
5641.5 *4*	3⁻	24 fs *11*	J	XREF: Others: AA, AD Jπ: L(d,t)=0+2 from 7/2⁻ gives 3⁻,4⁻; 4⁻ ruled out by 1939γ to 1⁻.
5657	1⁺		m Q	XREF: Others: AD XREF: m(5763). Jπ: from model-independent analysis of measured σ(θ) in (e,e′). B(M1)↑=0.25 *4* (1990Gu09) from (e,e′).
5760	(3⁻)		i m Y	XREF: i(5770)m(5763). Jπ: L(α,α′)=(3) from 0⁺.
5762.8 *5*	(4⁺,5,6⁺)		iJ m u	XREF: Others: AD XREF: i(5770)m(5763)u(5777)ad(5775). Jπ: 2254γ to 6⁺, 2523γ to 4⁺.
5764	2⁺		i m Q u	XREF: Others: AD XREF: i(5770)m(5763)u(5777)ad(5775). Jπ: from model-independent analysis of measured σ(θ) in (e,e′). B(E2)↑=0.00031 *10* (1990Gu09) from (e,e′).
5805.2 *7*	3⁻,4⁻	21 fs *12*	J	XREF: Others: AA Jπ: L(d,t)=0+2 from 7/2⁻.
5827.1 *5*	3⁻		iJ Q Y	XREF: Others: AA XREF: i(5840)Q(5835). Jπ: L(α,α′)=3 from 0⁺.
5846.5 *6*	3⁻	<21 fs	iJ r U Y	XREF: i(5840)r(5870). Jπ: L(α,α′)=L(p,p′)=3 from 0⁺.
5884?	(3⁻)		i Qr	XREF: Others: AA XREF: i(5886)r(5870). E(level): see comment for 5888.5 level. Jπ: from model-independent analysis of measured σ(θ) in (e,e′); L(d,t)=2 from 7/2⁻ for a group at 5886.
5885?	2⁺		i m r Y	XREF: i(5886)m(5888)r(5870). E(level): see comment for 5888.5 level. Jπ: L(α,α′)=2 from 0⁺.
5886.7 *7*	(4⁺ to 8⁺)		iJ m	XREF: i(5886)m(5888). Jπ: 2378γ to 6⁺. Other: L(d,p)=1 from 5/2⁻ for a group at 5888 *12* gives 1⁺,2⁺,3⁺,4⁺.
5888.41 *10*	(1,2,3)		i Lm r	XREF: i(5886)m(5888)r(5870). One of the 5884, (3⁻) and 5885, 2⁺ levels could correspond to this level, and the other one is a separate level. Jπ: 2085.7γ to 2⁻, 2517.6γ to 2⁺.
5892.1 *5*	(1⁻,2⁺)		J m	XREF: m(5888). Jπ: 5892γ to 0⁺, 2533γ to 3⁻.
5917.8 *10*	2⁺		J Q U Y	XREF: Q(5940)U(5928). Jπ: L(α,α′)=L(p,p′)=2 from 0⁺.
5974.8 *5*	(4⁺,5,6)		iJ	XREF: i(5990). Jπ: 2466γ to 6⁺, 1570γ to 5(+), 662γ to (5⁻).
5988	1⁺,3⁺		i m Q y	XREF: Others: AA XREF: i(5990)m(5990). Jπ: from model-dependent PWBA in (e,e′). B(M1)↑=0.08 *3*, B(M3)↑=0.236 *59* from (e,e′) (1990Gu09).
5990.8 *6*	(4⁺,5,6⁺)		iJ m	XREF: Others: AA XREF: i(5990)m(5990). Jπ: 2751γ to 4⁺, 1592γ to 6⁺.
5993.6 *6*	(2)⁺		iJ m Q Y	XREF: Others: AA

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Adopted Levels, Gammas (continued)

^{48}Ti Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$[@]	XREF	Comments
				XREF: i(5990)m(5990)Q(6011). Jπ: L(α,α′)=(2) from 0+. Other: 2+,3+ from model-dependent PWBA for a group at 6011 in (e,e′). B(E2)=0.00051 *12* (1990Gu09) from (e,e′).
6022 *10*	(3−)		K Q U	E(level): weighted average of 6014 *15* from (t,p) and 6025 *10* from (p,p′). Other: 6029 from (e,e′). Jπ: from model-independent analysis of measured σ(θ) in (e,e′);
6034.9 *6*	9+,7+[#]	<21 fs	F iJ	XREF: i(6050). Jπ: spin from pγ(θ) in (α,pγ); M1+E2 γ to 8+.
6036.8 *10*	4+		iJ m Y	XREF: Others: AA, AC XREF: i(6050)m(6043)ac(6050). Jπ: L(α,α′)=4 from 0+.
6039.7 *5*	6	25 fs *17*	iJ	XREF: i(6050). Jπ: from pγ(θ) in (α,pγ).
6040.4 *10*	(1,2)		iJ m	XREF: Others: AA XREF: i(6050)m(6043). Jπ: 6040γ to 0+.
6042.40 *11*	(2,3)		iJ Lm	XREF: Others: AA XREF: i(6050)m(6043). Jπ: from nuclear orientation and circular polarization in (n,γ) E=thermal.
6050.5 *10*			iJ m q	XREF: Others: AC XREF: i(6050)m(6043)q(6061)ac(6050). Jπ: see comment for 6055 level.
6054.47 *22*	(0+ to 4+)		iJ L q	XREF: Others: AC XREF: i(6050)q(6061)ac(6050). Jπ: 3633.4γ to 2+. Other: 1+,3+ from model-dependent PWBA in (e,e′) for a doublet, with B(M1)↑=0.10 *3* and B(M3)↑=0.15 *4* (1990Gu09).
6065	3−		Qr U Y	XREF: Others: AA XREF: Q(6077)r(6090)U(6083). Jπ: L(α,α′)=3 from 0+.
6084.3 *6*	(4+,5,6−)		J	XREF: Others: AC XREF: ac(6050). Jπ: 2576γ to 6+, 2301γ to 3−,4−.
6086 *4*	1[‡]		P	
6103.2 *7*	10(+),8[#]	>1.4 ps	EF HIJ	Jπ: spin from pγ(θ) in (α,pγ), 1538.8γ to 8+.
6115	2+		m Y	XREF: m(6118). Jπ: L(α,α′)=2 from 0+.
6119.6 *5*	(4+,5)		J m	XREF: m(6118). Jπ: 2611γ to 6+, 2336γ to 3−,4−, 3824γ to 4+.
6122	0+		m Q	XREF: m(6118). Jπ: from model-independent analysis of measured σ(θ) in (e,e′).
6126 *3*	1[‡]		J m P	XREF: m(6118).
6138 *4*	1(+)[‡]		m P U	XREF: m(6144).
6147.8 *11*	(4+ to 8+)		J m	XREF: m(6144). Jπ: 1749γ to 6+.
6153.8 *6*	(4+ to 7−)		J	Jπ: 2821γ to 6+, 2107γ to 5(−).
6168?	3−,4−			XREF: Others: AA Jπ: L(d,t)=0 from 7/2−.
6172.9 *6*	8+,6+	35 fs *28*	J	Jπ: spin from pγ(θ) in (α,pγ), 1003γ M1+E2 to 7+.
6176.4 *7*	(2+,3,4,5−)		J T y	XREF: T(?)y(6178).

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Adopted Levels, Gammas (continued)

^{48}Ti Levels (continued)

E(level)†	Jπ	XREF	Comments
			Jπ: 2817γ to 3⁻, 3881γ to 4⁺. Other: L(α,α′)=2 from 0⁺ for a group at 6178.
6183.8 *7*	(2⁺ to 6⁺)	J u y	XREF: u(6200)y(6178). Jπ: 2944γ to 4⁺. Other: L(α,α′)=2 from 0⁺ for a group at 6178.
6203	2⁻	Q	Jπ: from model-independent analysis of measured σ(θ) in (e,e′).
6223.8 *10*	(0⁺ to 4⁺)	J u	XREF: Others: AC XREF: u(6200)ac(6230). Jπ: 5240γ to 2⁺.
6233.6 *6*	3⁻	J Y	XREF: Others: AC XREF: ac(6230). Jπ: L(α,α′)=3 from 0⁺.
6236 *3*	2⁺‡	P	XREF: Others: AC XREF: ac(6230).
6241.0 *4*	(4⁺,5⁻)	L	XREF: Others: AA XREF: aa(6248). Jπ: 2907.7γ to 6⁺; primary 5387.3γ from 2⁻,3⁻.
6243.8 *7*	(0⁺ to 3⁺)	J	XREF: Others: AA XREF: aa(6248). Jπ: 2505γ to 1⁺, 2873γ to 2⁺. Other: L(d,t)=3(+1) from 7/2⁻ for a group at 6248.
6253.7 *6*	3⁻	J Q u	XREF: Q(6248)u(6258). Jπ: from model-dependent PWBA in (e,e′); also L(p,p′)=3 from 0⁺ for a group at 6258 *10*. B(E3)↑=0.0035 *4* from (e,e′).
6267.8 *10*	(3⁻)	J Q u	XREF: u(6258). Jπ: from model-independent PWBA in (e,e′).
6313.7 *3*	(4⁺,5⁻)	Lm	Jπ: 2980.4γ to 6⁺; primary 5312.6γ from 2⁻,3⁻.
6315.4 *5*	(2⁺,3,4⁺)	J m	Jπ: 2698γ to 2⁺, 4021γ to 4⁺.
6322.0 *7*	(2,3,4)	J m u	XREF: Others: AA XREF: aa(6327). Jπ: 2963γ to 3⁻, 3098γ to 3⁺.
6331.1 *10*	(1⁺ to 5⁺)	J u	XREF: Others: AA XREF: aa(6327). Jπ: 3107γ to 3⁺.
6336.5 *10*	3⁻	J u Y	XREF: Others: AA XREF: Y(6342)aa(6327). Jπ: L(p,p′)=3 from 0⁺.
6363.8 *7*	(3,4)⁺	J M	Jπ: 1959γ to 5(+), 3124γ to 4⁺; L(d,p)=1 from 5/2⁻.
6365.16 *9*	3⁻	L R U	XREF: R(6360). Jπ: L(p,p′)=L(π⁺,π⁺′)=3 from 0⁺.
6394.8 *6*	(6⁺,7⁻)	IJ	Jπ: 1197γ to 8⁺, 1082γ to (5⁻).
6400.9 *6*	(4⁺ to 8⁺)	J	Jπ: 2002γ to 6⁺.
6406.0 *3*	(1⁻ to 5⁻)	L	XREF: Others: AA XREF: aa(6407). Jπ: 2553.7γ to 3⁻. Other: L(d,t)=0 from 7/2⁻ gives 3⁻,4⁻ for a group at 6407.
6414.8 *10*	(2⁺ to 6⁺)	J q	XREF: Others: AA XREF: q(6424)aa(6407). Jπ: 4119γ to 4⁺. Other: L(d,t)=0 from 7/2⁻ gives 3⁻,4⁻ for a group at 6407; 3⁻ from model-dependent PWBA in (e,e′) for a group at 6424, with B(E3)↑=0.0056 *29*.
6434.6 *10*	(3⁻ to 7⁻)	J q	XREF: q(6424). Jπ: 2388γ to 5(−). Others: see comment for 6414 level.
6451.1 *6*	(2⁺,3,4)	J r	XREF: r(6500). Jπ: 2598γ to 3⁻, 3227γ to 3⁺, 3212γ to 4⁺.
6461.3 *10*	(4⁺ to 8⁺)	J	Jπ: 3128γ to 6⁺.

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Adopted Levels, Gammas (continued)

^{48}Ti Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$[@]	XREF	Comments
6475.3 *10*	3^-		J r U Y	XREF: r(6500)U(6484)Y(6462). Jπ: L(α,α′)=L(p,p′)=3 from 0^+.
6490.36 *15*	$(2^+,3)$		i Lm r	Jπ: 2687.5γ to 2^-, 5506.4γ to 2^+, 3252.4γ to 4^+.
6491.6 *7*	$(0^+$ to $4^+)$		iJ m r u	XREF: u(6503). Jπ: 4070γ to 2^+.
6493.5 *6*	$(4^+,5,6,7^-)$		iJ m u	XREF: u(6503). Jπ: 2985γ to 6^+, 1577γ to 5^-.
6507.8 *5*	$(6^+,7^-)$		J	Jπ: 1943γ to 8^+, 2461γ to $5^{(-)}$.
6518.5 *7*	4^+		J u Y	XREF: u(6503)Y(6509). Jπ: L(α,α′)=4 from 0^+.
6524.6 *10*	$(4^+$ to $8^+)$		J	Jπ: 3016γ to 6^+.
6529.5 *10*	$(1^-$ to $6^-)$		J	Jπ: 2747γ to 3^-,4^-.
6537.0 *7*	$(4^+$ to $7^-)$		J u	XREF: u(6542). Jπ: 2490γ to $5^{(-)}$, 3204γ to 6^+.
6538.9 *10*			J u	XREF: u(6542).
6542.0 *3*	$(0^+$ to $4^+)$		L u	XREF: u(6542). Jπ: 5558.1γ to 2^+.
6544.8 *10*	$(2^+$ to $6^+)$		J u	XREF: u(6542). Jπ: 4249γ to 4^+.
6573.9 *5*	$(5,6,7^+)$		J	Jπ: 943γ to J=7, 2169γ to $5^{(+)}$.
6584.4 *7*	(3^-)		J Y	Jπ: L(α,α′)=(3) from 0^+.
6604.3 *24*	1^-	0.86 eV *20*	J P U	$T_{1/2}$: from resonance σ versus temperature in (γ,γ′) (1983Mo06).
6617.7 *10*	$(4^+$ to $8^+)$		J	XREF: Others: AA, AC XREF: aa(6623)ac(6650). Jπ: 3109γ to 6^+.
6627.6 *4*	$(0^-,1,2,3)$		Lm	XREF: Others: AA XREF: aa(6623). Jπ: 2888.9γ to 1^+, primary 4999.97γ from 2^-,3^-. Other: L(d,t)=(0+2) from $7/2^-$ gives 3^-,4^- for a group at 6623.
6634.3 *6*	$(3^-,4,5^-)$		J m u	XREF: Others: AA, AC XREF: u(6641)aa(6623)ac(6650). Jπ: 2781γ to 3^-, 2588γ to $5^{(-)}$.
6652.6 *10*	$(1^-$ to $6^-)$		J q u	XREF: Others: AC XREF: q(6648)u(6641)ac(6650). Jπ: 2870γ to 3^-,4^-. Other: 3^+ from model-dependent PWBA in (e,e′) with B(M3)↑=0.157 *41*.
6661.6 *10*	$(3^-$ to $7^-)$		IJ q	XREF: Others: AC XREF: q(6648)ac(6650). Jπ: 2615γ to $5^{(-)}$. Other: see comment for 6653 level.
6672.6 *10*	$(2,3,4)^+$		J M U	XREF: M(6681)U(6687). Jπ: L(d,p)=1+3 from $5/2^-$; 2890γ to 3^-,4^-.
6707.29 *21*	$(2^+,3,4)$		i L qr y	XREF: Others: AA XREF: r(6700)y(6701)aa(6713). Jπ: 3483.5γ to 3^+, 4411.1γ to 4^+; primary 4917.6γ from 2^-,3^-. Other: see comment for 6707 level.
6707.4 *6*	$(2^+,3,4^+)$		iJ qr Y	XREF: Others: AA XREF: r(6700)Y(6701)aa(6713). Jπ: 5724γ to 2^+, 4412γ to 4^+. Other: L(α,α′)=4 from 0^+ for a group at 6701 and L(π+,π+′) from 0^+ for a group at 6700 gives 4^+, L(d,t)=(3) from

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Adopted Levels, Gammas (continued)

^{48}Ti Levels (continued)

E(level)†	Jπ	$T_{1/2}$@	XREF	Comments
				7/2⁻ for a group at 6713; 1⁺,3⁺ from model-dependent PWBA in (e,e′) for a doublet, with B(M1)↑=0.21 *7*, B(M3)↑=0.206 *41*.
6711.6 *6*	(4⁺,5,6,7⁻)		iJ qr y	XREF: r(6700)y(6701). Jπ: 3203γ to 6⁺, 1795γ to 5⁻. Other: see comment for 6707 level.
6722	3⁻		U	Jπ: L(p,p′)=3 from 0⁺.
6740 *5*	(2⁺,3⁻)		m Y	XREF: m(6747). Jπ: L(α,α′)=(2,3) from 0⁺.
6744.9 *5*	(4⁺,5,6⁺)		J m	XREF: m(6747). Jπ: 3236γ to 6⁺, 4449γ to 4⁺. Other: L(d,p)=1+3 from 5/2⁻ for a group at 6747 *12*.
6755	3⁺		m Q	XREF: m(6747). Jπ: from model-dependent PWBA in (e,e′). B(M3)↑=0.327 *69* from in (e,e′).
6757.9 *6*	(6⁺,7,8,9)		IJ U	Jπ: 1560γ to 8⁺, 1127γ to J=7.
6771.3 *10*	(4⁺ to 8⁺)		J	Jπ: 3438γ to 6⁺.
6798.0 *6*	(1⁺,2,3,4)		L y	XREF: Others: AA Jπ: 3573.9γ to 3⁺; primary 4829.7γ from 2⁻,3⁻. Others: L(α,α′)=(5,4) from 0⁺ for a group at 6797 is inconsistent with L(d,t)=(0+2) from 7/2⁻ for a group at 6797.
6808.5 *11*			J r u y	XREF: Others: AA XREF: u(6816)y(6797)aa(6797).
6814.9 *10*	(3⁻)		J u	XREF: u(6816). Jπ: from DWBA analysis and analyzing power in (p,p′) for a group at 6816 *10*.
6825.7 *7*	(4⁺ to 8⁺)		J r	XREF: r(6830). Jπ: 2427γ to 6⁺.
6827.8 *3*	(2⁺,3,4⁺)		L r	XREF: r(6830). Jπ: 5843.7γ to 2⁺, 2108.7γ to 4⁺; primary 4799.8γ from 2⁻,3⁻.
6831.6 *7*	(0⁺ to 4⁺)		J r	XREF: r(6830). Jπ: 4410γ to 2⁺.
6841.9 *7*	3⁻		J r U Y	XREF: r(6830)U(6839)Y(6831). Jπ: L(p,p′)=L(α,α′)=3 from 0⁺.
6869.0 *10*	(1⁻ to 5⁻)		iJ	Jπ: 3510γ to 3⁻.
6878.3 *10*	(0⁺ to 4⁺)		iJ	Jπ: 4457γ to 2⁺.
6880.9 *8*	(6⁺,7⁻)	125 fs *+69–56*	iJ	Jπ: 2316γ to 8⁺, 1568γ to Jπ=(5⁻).
6886.0 *7*	(4⁺ to 8⁺)		iJ	Jπ: 3377γ to 6⁺.
6898.0 *6*	(1,2⁺)		L	Jπ: 3901γ to 0⁺.
6907.0 *8*	10,8,6#	97 fs *+76–63*	F J	Jπ: from γ(θ) in (α,pγ).
6916.7 *10*	(3⁻ to 7⁻)		J	XREF: Others: AC XREF: ac(6950). Jπ: 2870γ to 5(−).
6944.7 *7*	(4⁺,5,6,7⁻)		J	XREF: Others: AC XREF: ac(6950). Jπ: 2898γ to 5(−), 3436γ to 6⁺.
6955.8 *7*	(5⁺ to 8⁺)		J	XREF: Others: AC XREF: ac(6950). Jπ: 1786γ to 7⁺, 3447γ to 6⁺.
6957.0 *3*	(1⁻,2,3,4⁺)		L r u y	XREF: Others: AC XREF: r(6960)u(6963)y(6957)ac(6950). Jπ: 3104.4γ to 3⁻, 4536.0γ to 2⁺. Others: L(α,α′)=3, L(p,p′)=3, and L(π⁺,π⁺′)=3 from 0⁺ for a group at 6957, 6963 *10* and 6960, respectively.

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Adopted Levels, Gammas (continued)

^{48}Ti Levels (continued)

E(level)†	Jπ	XREF	Comments
6966.9 *10*	(2$^+$ to 6$^+$)	J r u y	XREF: Others: AC XREF: r(6960)u(6963)y(6957)ac(6950). Jπ: 4671γ to 4$^+$. Others: see comment for 6957 level.
6971.9 *10*	(0$^+$ to 4$^+$)	J	XREF: Others: AC XREF: ac(6950). Jπ: 5988γ to 2$^+$.
6975.4 *8*	(3$^-$ to 7$^-$)	J	XREF: Others: AC XREF: ac(6950). Jπ: 1983γ to 5$^-$.
6976.30 *20*	(1,2,3,4$^+$)	L	XREF: Others: AC XREF: ac(6950). Jπ: 2941.0γ to 2$^+$; primary 4649.9γ from 2$^-$,3$^-$.
6979 *3*	1$^-$‡	P	XREF: Others: AC XREF: ac(6950).
6983.4 *10*	(1$^-$ to 5$^-$)	J	XREF: Others: AC XREF: ac(6950). Jπ: 3131γ to 3$^-$.
6985.8 *5*	(6$^+$,7)	J	XREF: Others: AC XREF: ac(6950). Jπ: 2421γ to 8$^+$, 3477γ to 6$^+$, 2029γ to (4$^+$,5,6$^-$).
7033.5 *11*	(4$^+$)	J U	XREF: U(7036). Jπ: from DWBA analysis and analyzing power in (p,p′) for a group at 7036 *10*.
7040.9 *8*	(6$^+$,7,8,9$^+$)	iJ	Jπ: 2476γ to 8$^+$, 467γ to (5,6,7$^+$).
7041 *4*	1,2‡	i P	
7054.0 *10*	(3$^-$)	J y	XREF: Others: AA XREF: y(7058)AA(7042). Jπ: L(α,α′)=(3) for a group at 7058 and L(d,t)=(0+2) from 9/2$^-$ for a group at 7042.
7060.80 *22*	(0$^-$,1,2,3$^-$)	L	Jπ: 3361.2γ to 1$^-$; primary 4566.3γ from 2$^-$,3$^-$.
7067.0 *10*	(3$^-$,4$^+$)	J U	XREF: U(7082). Jπ: from DWBA analysis and analyzing power in (p,p′) for a group at 7082 *10*.
7071? *4*	1$^+$‡	P Q	Jπ: also 1$^+$,3$^+$ from model-dependent PWBA analysis in (e,e′). B(M1)↑=0.18 *7*, B(M3)↑=0.186 *99* from (e,e′) (1990Gu09).
7076.0 *6*	(6$^+$ to 10$^+$)	J	Jπ: 1878γ to 8$^+$.
7094.1 *7*	(5$^+$ to 8$^+$)	J	Jπ: 1924γ to 7$^+$, 3761γ to 6$^+$.
7100.9 *10*	(2$^+$ to 6$^+$)	J	Jπ: 4805γ to 4$^+$.
7110 *5*	1‡	P u	
7111.9 *11*	(5 to 9)	J u	Jπ: 1481γ to 7.
7118.9 *4*	(6$^+$,7$^-$)	J u	Jπ: 1921γ to 8$^+$, 1806γ to (5$^-$).
7124 *3*	1$^-$‡	P u	
7129? *10*	(2$^+$)	U	Jπ: L(p,p′)=(2) from 0$^+$.
7149.8 *11*	(4$^+$ to 8$^+$)	J u	Jπ: 2751γ to 6$^+$.
7162.7 *10*	(4$^+$ to 8$^+$)	J u	Jπ: 3654γ to 6$^+$.
7183.6 *7*	(0$^+$ to 4$^+$)	J	Jπ: 4762γ to 2$^+$.
7199.3 *10*	(0$^+$ to 4$^+$)	J u	Jπ: 4778γ to 2$^+$. Other: L(p,p′)=(3) from 0$^+$ gives (3$^-$) for a group at 7221 *10*.
7221.6 *7*	(1,2,3,4$^+$)	J u	Jπ: 3147γ to 2$^+$, 2840γ to (3,4,5$^-$). Other: L(p,p′)=(3) from 0$^+$ gives (3$^-$) for a group at 7221 *10*.
7221.6 *20*	1$^+$	M P Q	XREF: M(7228). Jπ: also from model-dependent PWBA analysis in (e,e′). B(M1)↑=1.01 *6* from (e,e′) (1990Gu09).
7256.8 *7*	(4)$^+$	J M U	Jπ: 3210γ to 5$^{(-)}$, 4017γ to 4$^+$; L(d,p)=1+3 from 5/2$^-$.
7275.1 *6*	(4$^+$)	J	Jπ: 1962γ to 2$^+$, 3766γ to 6$^+$.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{48}Ti Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$[@]	XREF	Comments
7290.0 *10*	3^+		J Q	XREF: Q(7296). Jπ: from model-dependent PWBA in (e,e′). B(M3)↑=0.41 *16* from (e,e′) (1990Gu09).
7323.0 *10*	3^-		J U	Jπ: L(p,p′)=3 from 0^+.
7326.9 *8*	(6^+ to 10^+)		J	Jπ: 2129γ to 8^+.
7344.8 *11*	(4^+ to 8^+)		J m	XREF: m(7355). Jπ: 2946γ to 6^+.
7353.9 *11*	(5 to 9)		iJ u	Jπ: 1723γ to 7.
7358.98 *16*	2^+		i Lm Q u	XREF: m(7355)Q(7346). Jπ: from model-dependent PWBA in (e,e′); L(d,p)=1 from $5/2^-$. B(E2)↑=0.00085 *19* from (e,e′) (1990Gu09).
7375.1 *10*	11,9,7[#]	28 fs *+42−28*	F J	Jπ: from pγ(θ) in (α,pγ). $T_{1/2}$: from DSAM in (^{14}C,2nγ) (1986Wa19).
7387.9 *11*			J U	XREF: U(7400).
7427.9 *7*	9,7[#]	>0.7 ps	iJ	Jπ: from pγ(θ) in (α,pγ).
7431.9 *10*	$(2,3,4)^+$		iJ M	XREF: M(7428). Jπ: 5136γ to 4^+; L(d,p)=1 from $5/2^-$.
7442.9 *7*	(4^+,5,6^+)		J	Jπ: 3044γ to 6^+, 5147γ to 4^+.
7450 *3*	1^-[‡]		P	
7476.8 *8*	(3^+ to 7^+)		J m	Jπ: 3072γ to $5^{(+)}$.
7484.0 *10*	(0^+ to 4^+)		J m	Jπ: 6500γ to 2^+.
7484 *4*	1[‡]		m P	
7497.9 *11*	(4^+)		J U	Jπ: L(p,p′)=(4) from 0^+.
7531.9 *6*	(6^+,7,8^+)		iJ	XREF: Others: AC XREF: ac(7550). Jπ: 2334γ to 8^+, 3133γ to 6^+.
7536.0 *7*			iJ	XREF: Others: AC XREF: ac(7550).
7541.71 *9*	(2^+,3,4^+)		L u	XREF: Others: AC XREF: u(7551)ac(7550). Jπ: 4302.6γ to 4^+, 3344.7γ to (2^+). Other: L(p,p′)=3 from 0^+ gives 3^- for a group at 7551.
7557.0 *10*	(2^+ to 6^+)		J M u	XREF: Others: AC XREF: u(7551)ac(7550). Jπ: 5261γ to 4^+. Other: see comment for 7542 level.
7572.4 *10*	(4^+ to 8^+)		J	XREF: Others: AC XREF: ac(7550). Jπ: 4239γ to 6^+.
7574.15 *22*	(2^+,3,4,5^-)		L	XREF: Others: AC XREF: ac(7550). Jπ: 3186.4γ to 4^+; primary 4052.5γ from 2^-,3^-.
7586 *4*	$1^{(-)}$[‡]		P	XREF: Others: AC XREF: ac(7550).
7588.1 *6*	(5,6,7,8^+)		J	XREF: Others: AC XREF: ac(7550). Jπ: 4255γ to 6^+, 1957γ to 7.
7616.13 *17*	(1^-,2)		i L U	XREF: U(?). Jπ: 3852.3γ to 3^-, 3876.8γ to 1^+, 3916.8γ to 1^-. Other: (4^+) from DWBA analysis and analyzing power in (p,p′) for a group at 7618 *10* is inconsistent, which could indicate a different level.
7623.9 *8*	(6^+,7^-)		iJ	Jπ: 2311γ to (5^-), 3059γ to 8^+.

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Adopted Levels, Gammas (continued)

^{48}Ti Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$[@]	XREF	Comments
7656.9 *11*	(6^+ to 10^+)		J	Jπ: 3092γ to 8^+.
7669.2 *12*	10,8[#]		J	Jπ: from pγ(θ) in (α,pγ).
7683 *10*	(2^+,3^-)		U	Jπ: from DWBA analysis and analyzing power in (p,p′).
7692 *10*			m U	XREF: m(7707).
7709.7 *10*	(3^- to 7^-)		J m	XREF: Others: AC XREF: m(7707)ac(7750). Jπ: 3663γ to$5^{(-)}$.
7728 *10*	(3^-)		U	Jπ: L(p,p′)=(3) from 0^+.
7765 *10*	1^+,2^+,3^+,4^+		M U	XREF: Others: AC XREF: ac(7750). E(level): weighted average of 7757 *12* from (d,p) and 7771 *10* from (p,p′). Jπ: L(d,p)=1+3 from $5/2^-$.
7845 *10*	1^+,3^+		M Q U	XREF: Others: AC XREF: Q(7826)ac(7880). E(level): weighted average of 7836 *12* from (d,p) and 7853 *10* from (p,p′). Jπ: 1^+,2^+,3^+,4^+ from L(d,p)=1+3; 1^+,3^+ from model-dependent PWBA in (e,e′). Other: (4^+) from σ(θ) and analyzing powers in (p,p′) is discrepant. B(M3)↑=0.038 *11* from (e,e′) (1990Gu09).
7876 *10*	3^+		Q U	XREF: Others: AC XREF: Q(7872)ac(7880). E(level): from (p,p′). Jπ: from model-dependent PWBA in (e,e′). B(M3)↑=0.30 *9* from (e,e′) (1990Gu09).
7905 *10*	1^+		Q U	XREF: Others: AC XREF: Q(7911)ac(7880). E(level): from (p,p′). Jπ: from model-dependent PWBA in (e,e′). B(M1)↑=0.08 *3* from (e,e′) (1990Gu09).
7969 *4*	1[‡]		P	
7986	2^+		M Y	XREF: M(7996)Y(7986). E(level): from (α,α′). Jπ: L(α,α′)=2 from 0^+; L(d,p)=1+3 from $5/2^-$.
7999 *10*	3^-		U	Jπ: L(p,p′)=3 from 0^+.
8010 *4*	1[‡]		m P	
8052 *10*	1^+,3^+		M Q U	XREF: Q(8059). E(level): weighted average of 8046 *12* from (d,p) and 8057 *10* from (p,p′). Jπ: from model-dependent PWBA in (e,e′). B(M1)↑=0.09 *3*, B(M3)↑=0.084 *19* from (e,e′).
8090? *10*			M U	E(level): weighted average of 8086 *12* from (d,p) and 8093 *10* from (p,p′) This level could be a different level from the 8091 level from (α,pγ). See comment for 8091 level.
8092.1 *14*	12,10,8,6	0.21 ps *7*	F J m u	Jπ: from pγ(θ) in (α,pγ). Excitation in (α,pγ) is consistent with prediction (1978Ku16) of a single 12^+ state near 8 MeV, which could indicate 8093 *10* from (p,p′) and 8086 *12* from (d,p) are different levels from this one. $T_{1/2}$: from DSAM in (^{14}C,2nγ).
8199 *4*	1^+		P Q U	XREF: Q(8197)U(8178). Jπ: 1,2 from γ(θ) and azimuthal asymmetries in

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Adopted Levels, Gammas (continued)

^{48}Ti Levels (continued)

E(level)†	Jπ	$T_{1/2}$@	XREF	Comments
				(γ,γ); 1^+,3^+ from model-dependent PWBA in (e,e′).
				B(M1)↑=0.24 *9* from model-dependent PWBA in (e,e′) (1990Gu09).
8212 *10*	3^-		U	Jπ: L(p,p′)=3 from 0^+.
8246 *10*	(2^+)		U	Jπ: L(p,p′)=(2) from 0^+.
8255 *4*	$1^{\ddagger}$		P U	
8323.9 *12*	10,8,6		IJ	Jπ: from pγ(θ) in (α,pγ).
8572 *4*	$1^{(-)\ddagger}$		P	
8592 *4*	$1^{\ddagger}$		P	
8672 *5*	$1^{\ddagger}$		P	
8933 *5*	$1^{\ddagger}$		P	
8996 *5*	$1^{(+)\ddagger}$		P	
9025 *5*	$1^{\ddagger}$		P	
9260			U	
9910			U	
9977 *6*	$1^{-\ddagger}$		P	
10460			U	
1.060×10^4 *5*				XREF: Others: AC
10726? *6*	(6^+)			XREF: Others: AC T=(3) Jπ,T: suggested analog state in (p,t).
10982 *6*	(4^+)			XREF: Others: AC T=(3) Jπ,T: suggested analog state in (p,t).
1.68×10^4 *3*	(1^-)	7.27 MeV *+22−24*		XREF: Others: AH $T_{1/2}$: width for giant dipole resonance.
16.96×10^3 *16*	(2^+)	3.72 MeV *+60−46*		XREF: Others: AH $T_{1/2}$: width for giant quadrupole resonance.
17379 *12*	(0^+)		N	XREF: Others: AC T=(4) E(level): from (p,t). Jπ,T: suggested analog state in (p,t).
1.89×10^4 *3*	(0^+)	4.5 MeV *+13−2*		XREF: Others: AH $T_{1/2}$: width for giant monopole resonance.
2.48×10^4 *3*	(3^-)	7.25 MeV *20*		XREF: Others: AH $T_{1/2}$: width for giant octupole resonance.
28.9×10^3 *8*	(1^-)	12.44 MeV *+56−68*		XREF: Others: AH $T_{1/2}$: width for giant dipole resonance.

† From a least-squares fit to γ-ray energies for levels connected with γ transitions, assuming ΔEγ=0.5 keV and 1.0 keV for Eγ values quoted to nearest tenth keV and keV, respectively, where ΔEγ not given, and from transfer reactions in other cases, unless otherwise noted.

‡ From γ(θ) and azimuthal asymmetries in (γ,γ′).

If J(8091)=12 then J(7374)=11, J(7668,6906,6102)=10, and J(7427,6034)=9.

@ From DSAM in (α,pγ) (1979Gl07), unless otherwise noted..

Adopted Levels, Gammas (continued)

$\gamma(^{48}Ti)$

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.	δ	α[†]	Comments
983.531	2^+	983.521 *4*	100	0.0	0^+	E2		0.0001261 *18*	B(E2)(W.u.)=13.2 *+13−11* α=0.0001261 *18*; α(K)=0.0001145 *16*; α(L)=1.025×10^{-5} *14*; α(M)=1.311×10^{-6} *18* α(N)=7.10×10^{-8} *10* E_γ: weighted average of 983.526 *12* from ^{48}Sc β^- decay, 983.525 *4* from ^{48}V ε decay, and 983.517 *4* from (n,γ) E=thermal. Others: 983.4 *3* from (^{14}C,2nγ), 983.7 *5* from (^{7}Li,p2nγ), 983.1 *3* from (α,pγ), 983.50 *15* from (p,p′γ), and 983.1 *15* from Coulomb excitation. Mult.: from ce data in ε and β^- decay, $\gamma(\theta$,pol) in (p,p′γ), and $\gamma\gamma(\theta)$ in (n,γ) E=thermal.
2295.648	4^+	1312.104 *6*	100	983.531	2^+	E2		9.66×10^{-5} *14*	B(E2)(W.u.)=16.1 *+28−21* α=9.66×10^{-5} *14*; α(K)=5.89×10^{-5} *8*; α(L)=5.26×10^{-6} *7*; α(M)=6.73×10^{-7} *9* α(N)=3.65×10^{-8} *5*; α(IPF)=3.17×10^{-5} *4* E_γ: weighted average of 1312.120 *12* from ^{48}Sc β^- decay, 1312.105 *6* from ^{48}V ε decay, and 1312.096 *7* from (n,γ) E=thermal. Others: 1312.1 *6* from (^{14}C,2nγ), 1312.5 *7* from (^{7}Li,p2nγ), 1311.7 *3* from (α,pγ), and 1312.20 *10* from (p,p′γ). Mult.: from ce data in ε and β^- decay, $\gamma(\theta)$ in (p,p′γ), and $\gamma\gamma(\theta)$ in (n,γ) E=thermal.
2421.053	2^+	1437.493 *13*	100.0 *10*	983.531	2^+	M1+E2	+0.15 *3*	9.50×10^{-5} *14*	B(M1)(W.u.)=0.226 *+19−16*; B(E2)(W.u.)=6.1 *+27−22* α=9.50×10^{-5} *14*; α(K)=4.22×10^{-5} *6*; α(L)=3.76×10^{-6} *5*; α(M)=4.82×10^{-7} *7* α(N)=2.62×10^{-8} *4*; α(IPF)=4.85×10^{-5} *7* E_γ: weighted average of 1437.521 *21* from ^{48}V ε decay and 1437.487 *10* from (n,γ) E=thermal. Others: 1436.9 *5* from (α,pγ) and 1436.80 *10* from (p,p′γ). I_γ: from (p,p′γ). Others: 100.0 *25* from ^{48}V ε decay, 100 *6* from (n,γ) E=thermal, 100 *5* from (n,n′γ), and 100.0 *2* from (α,pγ). Mult.: D+Q from $\gamma\gamma(\theta)$ in (p,p′γ) and (n,γ) E=thermal, and $\gamma(\theta)$ in (n,n′γ); E1+M2 ruled out by RUL. δ: weighted average of +0.18 *3* in (n,n′γ), +0.10 *4* in (n,γ) E=thermal, and +0.18 *9* from (p,p′γ).
		2420.91 *4*	5.43 *25*	0.0	0^+	E2		0.000539 *8*	B(E2)(W.u.)=1.12 *10* α=0.000539 *8*; α(K)=1.821×10^{-5} *25*; α(L)=1.620×10^{-6} *23*; α(M)=2.073×10^{-7} *29* α(N)=1.130×10^{-8} *16*; α(IPF)=0.000519 *7* E_γ: weighted average of 2420.94 *5* from ^{48}V ε decay,

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Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ ‡	I_γ ‡	E_f	J_f^π	Mult.	δ	α †	Comments
									2420.90 *4* from (n,γ) E=thermal, and 2420.70 *20* from (p,p′γ).
									I_γ: weighted average of 5.58 *25* from ^{48}V ε decay, 5.42 *36* from (n,γ) E=thermal, 5.0 *12* from (n,n′γ), and 3.5 *10* from (p,p′γ). Other: 1.0 *2* from (α,pγ) is discrepant.
									Mult.: Q from pγ(θ) and γ(θ) in (p,p′γ); M2 ruled out by RUL.
2997.31	0^+	2013.79 *17*	100	983.531	2^+	(E2)		0.000348 *5*	B(E2)(W.u.)=20.6 *+44−32*
									α=0.000348 *5*; α(K)=2.519×10^{-5} *35*; α(L)=2.244×10^{-6} *31*; α(M)=2.87×10^{-7} *4*
									α(N)=1.563×10^{-8} *22*; α(IPF)=0.000320 *4*
									E_γ: weighted average of 2013.66 *16* from (n,γ) E=thermal and 2014.00 *20* from (p,p′γ).
									Mult.: isotropic pγ(θ) in (p,p′γ); M2 ruled out by RUL.
3223.971	3^+	802.88 *6*	5.0 *3*	2421.053	2^+	[M1,E2]		0.000177 *35*	B(M1)(W.u.)=0.047 *+11−8* (if pure M1); B(E2)(W.u.)=179 *+41−29* (if pure E2)
									α=0.000177 *35*; α(K)=0.000161 *32*; α(L)=1.44×10^{-5} *29*; α(M)=1.8×10^{-6} *4*
									α(N)=1.00×10^{-7} *20*
									E_γ: weighted average of 803.05 *25* from ^{48}V ε decay, 802.87 *6* from (n,γ) E=thermal, and 804.0 *12* from (p,p′γ).
									I_γ: weighted average of 5.83 *52* from ^{48}V ε decay, 5.5 *14* from (α,pγ), 4.55 *33* from (n,γ) E=thermal, and 5.1 *11* from (p,p′γ). Other: 9.0 *50* from (n,n′γ).
		928.316 *16*	33.56 *13*	2295.648	4^+	(M1(+E2))	−0.02 *2*	0.0001061 *15*	B(M1)(W.u.)=0.202 *+47−33*; B(E2)(W.u.)<1.2
									α=0.0001061 *15*; α(K)=9.64×10^{-5} *13*; α(L)=8.61×10^{-6} *12*; α(M)=1.102×10^{-6} *15*
									α(N)=5.99×10^{-8} *8*
									E_γ: unweighted average of 928.326 *6* from ^{48}V ε decay and 928.290 *10* from (n,γ) E=thermal. Others: 928.4 *6* from (p,p′γ); 927.4 *7* from (α,pγ) is discrepant.
									I_γ: from ^{48}V ε decay. Others: 31.5 *41* from (α,pγ), 31.8 *17* from (n,γ) E=thermal, 35.0 *60* from (n,n′γ), and 33.8 *24* from (p,p′γ).
									Mult.,δ: D(+Q) from γ(θ) in (p,p′γ); Δπ=no from level scheme.
		2240.391 *10*	100.0 *6*	983.531	2^+	M1+E2	+0.26 *3*	0.000379 *5*	B(M1)(W.u.)=0.040 *+9−6*; B(E2)(W.u.)=1.34 *+46−33*
									α=0.000379 *5*; α(K)=1.961×10^{-5} *28*; α(L)=1.745×10^{-6} *24*; α(M)=2.232×10^{-7} *31*
									α(N)=1.217×10^{-8} *17*; α(IPF)=0.000357 *5*
									E_γ: weighted average of 2240.396 *10* from ^{48}V ε decay and 2240.375 *19* from (n,γ) E=thermal. Others: 2240.2 *7* from

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Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ ‡	I_γ ‡	E_f	J_f^π	Mult.	δ	α †	Comments
									(α,pγ) and 2240.0 *3* from (p,p′γ). I_γ: from ^{48}V ε decay. Others: 100 *6* from (α,pγ), 100 *6* from (n,γ) E=thermal, 100 *15* from (n,n′γ), and 100 *3* from (p,p′γ). Mult.: D+Q from γ(θ) in (n,n′γ) and pγ(θ) in (p,p′γ); E1+M2 ruled out by RUL. δ: from γ(θ) in (n,n′γ). Other: +0.26 *5* from pγ(θ) in (p,p′γ).
3239.771	4$^+$	944.118 *12*	100	2295.648	4$^+$	M1+E2	−0.30 *5*	0.0001057 *18*	B(M1)(W.u.)=0.52 *+17−10*; B(E2)(W.u.)=131 *+64−43* α=0.0001057 *18*; α(K)=9.60×10^{-5} *16*; α(L)=8.58×10^{-6} *14*; α(M)=1.097×10^{-6} *18* α(N)=5.97×10^{-8} *10* E_γ: unweighted average of 944.129 *6* from ^{48}V ε decay and 944.104 *7* from (n,γ) E=thermal. Others: 943.6 *5* from (α,pγ) and 945.1 *5* from (p,p′γ) are discrepant. Mult.: D+Q from γ(θ) in (n,n′γ); E1+M2 ruled out by RUL. δ: from γ(θ) in (n,n′γ).
3333.187	6$^+$	1037.536 *18*	100	2295.648	4$^+$	E2		0.0001108 *16*	B(E2)(W.u.)=5.1 *+5−4* α=0.0001108 *16*; α(K)=0.0001006 *14*; α(L)=9.00×10^{-6} *13*; α(M)=1.151×10^{-6} *16* α(N)=6.23×10^{-8} *9* E_γ: weighted average of 1037.522 *12* from ^{48}Sc β^- decay, 1037.0 *5* from (^{14}C,2nγ), 1037.9 *5* from (^{7}Li,p2nγ), 1037.1 *4* from (α,pγ), and 1037.599 *25* from (n,γ) E=thermal. Mult.: Q from pγ(θ) in (α,pγ); M2 ruled out by RUL.
3358.823	3$^-$	938.0	1.7 *6*	2421.053	2$^+$	[E1]		5.98×10^{-5} *8*	B(E1)(W.u.)=4.8×10^{-5} *+21−18* α=5.98×10^{-5} *8*; α(K)=5.43×10^{-5} *8*; α(L)=4.84×10^{-6} *7*; α(M)=6.19×10^{-7} *9* α(N)=3.36×10^{-8} *5* E_γ: from (n,n′γ) and (α,pγ). I_γ: from (α,pγ). Other: 8 *3* from (n,n′γ) is discrepant. Note that this transition is not seen in ε decay, (p,p′γ) and (n,γ) E=thermal, indicating a weak intensity.
		1063.7 *3*	15.2 *4*	2295.648	4$^+$	[E1]		4.69×10^{-5} *7*	B(E1)(W.u.)=3.0×10^{-4} *+7−5* α=4.69×10^{-5} *7*; α(K)=4.26×10^{-5} *6*; α(L)=3.80×10^{-6} *5*; α(M)=4.85×10^{-7} *7* α(N)=2.64×10^{-8} *4* E_γ: unweighted average of 1063.9 *1* from ^{48}V ε decay, 1063.19 *5* from (n,γ) E=thermal, and 1064.0 *10* from (p,p′γ). I_γ: unweighted average of 8.2 *17* from (α,pγ), 10.3 *8* from

$^{48}_{22}Ti_{26}$-20

Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ ‡	I_γ ‡	E_f	J_f^π	Mult.	δ	α †	Comments
									(n,γ) E=thermal, 23 *8* from (n,n′γ), and 17.4 *8* from (p,p′γ). Other: 57 *12* from ^{48}V ε decay is strongly discrepant with other values.
3358.823	3$^-$	2375.209 *19*	100.0 *8*	983.531	2$^+$	(E1(+M2))	0.00 *3*	0.000902 *13*	B(E1)(W.u.)=1.76×10^{-4} *+40−30*; B(M2)(W.u.)<0.26 α=0.000902 *13*; α(K)=1.174×10^{-5} *16*; α(L)=1.043×10^{-6} *15*; α(M)=1.334×10^{-7} *19* α(N)=7.27×10^{-9} *10*; α(IPF)=0.000889 *12* E_γ: weighted average of 2375.20 *4* from ^{48}V ε decay and 2375.211 *19* from (n,γ) E=thermal. Others: 2374.7 *4* from (α,pγ) and 2374.8 *8* from (p,p′γ). I_γ: from (p,p′γ). Others: 100.0 *35* from ^{48}V ε decay, 100.0 *22* from (α,pγ), 100 *6* from (n,γ) E=thermal, and 100 *23* from (n,n′γ). Mult.,δ: D(+Q) from γ(θ) in (n,n′γ) with δ=0.00 *3* and pγ(θ) in (p,p′γ) with δ=0.00 *4*; Δπ=yes from level scheme.
3370.87	2$^+$	2387.25 *3*	100.0 *12*	983.531	2$^+$	(M1+E2)	−0.2 *1*	0.000438 *7*	B(M1)(W.u.)=0.120 *16*; B(E2)(W.u.)=2.1 *+26−15* α=0.000438 *7*; α(K)=1.764×10^{-5} *25*; α(L)=1.569×10^{-6} *22*; α(M)=2.008×10^{-7} *29* α(N)=1.095×10^{-8} *16*; α(IPF)=0.000418 *7* E_γ: from (n,γ) E=thermal. Others: 2387.6 *5* from (α,pγ) and 2387.3 *3* from (p,p′γ). I_γ: from (p,p′γ). Others: 100.0 *34* from (α,pγ), 100 *6* from (n,γ) E=thermal, and 100 *15* from (n,n′γ). Mult.: D+Q from γγ(θ) in (n,γ) E=thermal, γ(θ) in (γ,γ′) and pγ(θ) in (p,p′γ); Δπ=no from level scheme. δ: from combination of −0.2 *1* or 4 *1* from (p,p′γ), <0.5 from (n,γ) E=thermal, and 0.1<δ<0.8 from (γ,γ′).
		3370.96 *13*	16.6 *11*	0.0	0$^+$	[E2]		0.000950 *13*	B(E2)(W.u.)=1.59 *+24−20* α=0.000950 *13*; α(K)=1.064×10^{-5} *15*; α(L)=9.46×10^{-7} *13*; α(M)=1.210×10^{-7} *17* α(N)=6.60×10^{-9} *9*; α(IPF)=0.000938 *13* E_γ: from (n,γ) E=thermal. Others: 3369.6 *14* from (α,pγ) and 3371.5 *12* from (p,p′γ). I_γ: weighted average of 12.4 *34* from (α,pγ), 19.0 *15* from (n,γ) E=thermal, 20 *5* from (n,n′γ), and 15.6 *11* from (p,p′γ).
3508.548	6$^+$	175.361 *5*	100.0 *12*	3333.187	6$^+$	[M1]		0.00449 *6*	B(M1)(W.u.)=1.6 *+6−4* α(K)=0.00407 *6*; α(L)=0.000371 *5*; α(M)=4.74×10^{-5} *7* α(N)=2.54×10^{-6} *4* E_γ: from ^{48}Sc β$^-$ decay. Others: 175.3 *3* from (^{14}C,2nγ) and 175.9 *5* from (^{7}Li,p2nγ). I_γ: from ^{48}Sc β$^-$ decay. Others: 100 *11* from (^{24}Mg,3pγ), 100 *4* from (α,pγ), and 100 *5* from (^{3}He,3nγ). Mult.: assumed based on comparions with RUL.

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Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.	δ	α[†]	Comments
3508.548	6^+	1212.880 *12*	31.8 *6*	2295.648	4^+	E2		8.83×10^{-5} *12*	B(E2)(W.u.)=2.6 *+9−6* α=8.83×10^{-5} *12*; α(K)=7.00×10^{-5} *10*; α(L)=6.26×10^{-6} *9*; α(M)=8.00×10^{-7} *11* α(N)=4.34×10^{-8} *6*; α(IPF)=1.120×10^{-5} *16* E_γ: from ^{48}Sc β^- decay. Others: 1212.4 *10* from (^{7}Li,p2nγ) and 1212.3 *6* from (α,pγ). I_γ: weighted average of 31.86 *54* from ^{48}Sc β^- decay, 29.9 *39* from (α,pγ), and 27 *10* from (^{3}He,3nγ). Others: 20.1 *30* from (^{24}Mg,3pγ) is discrepant. Mult.: Q from pγ(θ) in (α,pγ); M2 ruled out by RUL.
3616.812	2^+	1195.83 *6*	8.1 *6*	2421.053	2^+	[M1,E2]		8.0×10^{-5} *9*	B(M1)(W.u.)=0.022 *+9−5* (if pure M1); B(E2)(W.u.)=38 *+16−9* (if pure E2) α=8.0×10^{-5} *9*; α(K)=6.6×10^{-5} *7*; α(L)=5.9×10^{-6} *6*; α(M)=7.5×10^{-7} *8* α(N)=4.1×10^{-8} *4*; α(IPF)=7.2×10^{-6} *14* E_γ: from (n,γ) E=thermal. I_γ: weighted average of 10.2 *23* from (α,pγ) and 7.96 *54* from (n,γ) E=thermal.
		2633.20 *3*	100 *4*	983.531	2^+	M1+E2	−0.15 *4*	0.000540 *8*	B(M1)(W.u.)=0.025 *+11−6*; B(E2)(W.u.)=0.20 *+16−10* α=0.000540 *8*; α(K)=1.505×10^{-5} *21*; α(L)=1.339×10^{-6} *19*; α(M)=1.713×10^{-7} *24* α(N)=9.34×10^{-9} *13*; α(IPF)=0.000523 *7* E_γ: from (n,γ) E=thermal. Other: 2632.5 *8* from (α,pγ). I_γ: from (α,pγ). Other: 100 *7* from (n,γ) E=thermal. Mult.: D+Q from γγ(θ) in (n,γ) E=thermal and pγ(θ) in (p,p′γ); E1+M2 ruled out by RUL. δ: weighted average of −0.10 *5* from γγ(θ) in (n,γ) E=thermal and −0.18 *4* from pγ(θ) in (p,p′γ).
		3616.8 *8*	2.2 *12*	0.0	0^+	[E2]		1.04×10^{-3} *2*	B(E2)(W.u.)=0.041 *+32−20* α(K)=9.55×10^{-6} *13*; α(L)=8.49×10^{-7} *12*; α(M)=1.086×10^{-7} *15* α(N)=5.93×10^{-9} *8*; α(IPF)=0.001034 *14* E_γ: from (n,γ) E=thermal. I_γ: unweighted average of 3.4 *11* from (α,pγ) and 1.08 *43* from (n,γ) E=thermal.
3699.52	$1^{(-)}$	2715.81 *13*	100 *3*	983.531	2^+	(E1)[&]		1.10×10^{-3} *2*	B(E1)(W.u.)=0.00143 *+33−23* α(K)=9.78×10^{-6} *14*; α(L)=8.69×10^{-7} *12*; α(M)=1.111×10^{-7} *16* α(N)=6.06×10^{-9} *8*; α(IPF)=0.001090 *15* E_γ: from (n,γ) E=thermal. Other: 2716 *1* from (γ,γ), 2714.9 from (p,p′γ). I_γ: from (p,p′γ). Others: 100 *13* from (α,pγ), 100 *8* from

$^{48}_{22}Ti_{26}$-22

Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.	δ	α[†]	Comments
									(n,γ) E=thermal, 100 *6* from (γ,γ), and 100 *15* from (n,n′γ). Mult.: from γ(θ) and azimuthal asymmetries in (γ,γ′). Other: M1+E2 with δ=+0.9 *+14−5* from pγ(θ) and comparison to RUL in (p,p′γ) is discrepant.
3699.52	1(−)	3699.11 *12*	58 *4*	0.0	0+	(E1)[&]		1.57×10^{-3} *2*	B(E1)(W.u.)=3.3×10^{-4} *+8−6* α(K)=6.57×10^{-6} *9*; α(L)=5.83×10^{-7} *8*; α(M)=7.46×10^{-8} *10* α(N)=4.07×10^{-9} *6*; α(IPF)=0.001559 *22* E_γ: from (n,γ) E=thermal. Other: 3700 *1* from (γ,γ), 3698.3 from (p,p′γ). I_γ: weighted average of 61 *13* from (α,pγ), 67 *5* from (n,γ) E=thermal, 54 *8* from (n,n′γ), and 53.8 *31* from (p,p′γ). Other: 92 *6* from (γ,γ′) is discrepant.
3711.6?		2728[a]	100	983.531	2+				E_γ: from (α,pγ) only. 1993Ko57 in (n,n′γ) suggest that this γ is the same as the 2726γ from the 5146 state in their work.
3738.60	1+	1317.2[a]	12 *3*	2421.053	2+				E_γ,I_γ: reported in (p,p′γ) (1968Mo20) only; energy from level-energy difference.
		2756.0 *7*	45 *8*	983.531	2+	(M1(+E2))	−0.4 *+5−17*	0.00060 *7*	B(M1)(W.u.)=0.08 *+20−8*; B(E2)(W.u.)<74 α=0.00060 *7*; α(K)=1.41×10^{-5} *5*; α(L)=1.25×10^{-6} *4*; α(M)=1.60×10^{-7} *6* α(N)=8.74×10^{-9} *30*; α(IPF)=0.00059 *7* E_γ: weighted average of 2756.5 *7* from (n,γ) E=thermal and 2755 *1* from (γ,γ). Other: 2757.2 from (p,p′γ). I_γ: weighted average of 63 *15* from (n,γ) E=thermal, 42 *10* from (n,n′γ), and 42 *8* from (p,p′γ). Other: I(2756γ)/3738γ)=257 *22*/100 *22* is discrepant. Mult.,δ: D(+Q) and δ from pγ(θ) in (p,p′γ) and (M1) from azimuthal asymmetries in (γ,γ′).
		3738.35 *24*	100 *8*	0.0	0+	M1[&]		0.000961 *13*	B(M1)(W.u.)=0.09 *+9−3* α=0.000961 *13*; α(K)=8.80×10^{-6} *12*; α(L)=7.82×10^{-7} *11*; α(M)=1.000×10^{-7} *14* α(N)=5.46×10^{-9} *8*; α(IPF)=0.000951 *13* E_γ: from (n,γ) E=thermal. Others: 3737.8 *13* from (α,pγ), 3739 *1* from (γ,γ), 3740.5 from (p,p′γ). I_γ: from (p,p′γ). Others: 100 *12* from (n,γ) E=thermal, 100 *16* from (n,n′γ).
3782.459	3−,4−	423.629 *10*	100 *5*	3358.823	3−	[M1+E2]		1.0×10^{-3} *5*	B(M1)(W.u.)=0.17 *+16−8* (if pure M1) α(K)=9.E−4 *4*; α(L)=8.E−5 *4*; α(M)=1.1×10^{-5} *5* α(N)=5.8×10^{-7} *26* E_γ: weighted average of 423.2 *4* from (α,pγ) and

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Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.	δ	α[†]	Comments
									423.629 *9* from (n,γ) E=thermal. I_γ: from (n,γ) E=thermal. Other: 100 *6* from (α,pγ); I(424γ)/I(1487γ)=≈50/100 *25* in (n,n′γ) and 23 *5*/100 *5* in (p,p′γ) are discrepant. Mult.,δ: D+Q, −0.24 *14* or <−3.7, if J=4 from γγ(θ) in (n,γ) E=thermal. Pure E2 ruled out by RUL.
3782.459	3⁻,4⁻	558.6	4.1 *14*	3223.971	3⁺	[E1]		0.0001887 *26*	B(E1)(W.u.)=7×10^{-5} *+8−4* α=0.0001887 *26*; α(K)=0.0001713 *24*; α(L)=1.532×10^{-5} *21*; α(M)=1.958×10^{-6} *27* α(N)=1.059×10^{-7} *15* E_γ: from (n,n′γ). I_γ: from (α,pγ). Other: I(559γ)/I(1487γ)=50 *15*/100 *25* in (n,n′γ) is discrepant.
		1486.82 *3*	40 *3*	2295.648	4⁺	[E1]		0.000278 *4*	B(E1)(W.u.)=3.6×10^{-5} *+36−17* α=0.000278 *4*; α(K)=2.369×10^{-5} *33*; α(L)=2.109×10^{-6} *30*; α(M)=2.70×10^{-7} *4* α(N)=1.467×10^{-8} *21*; α(IPF)=0.0002520 *35* E_γ: from (n,γ) E=thermal. Other: 1486.8 *17* from (α,pγ). I_γ: weighted average of 33 *6* from (α,pγ) and 41.5 *24* from (n,γ) E=thermal.
3802.73	2⁻	2819.08 *13*	100	983.531	2⁺				E_γ: from (n,γ) E=thermal only.
3852.24	3⁻	1432[#]	6.7 *13*	2421.053	2⁺	[E1]		0.0002389 *33*	B(E1)(W.u.)=2.8×10^{-4} *+9−7* α=0.0002389 *33*; α(K)=2.520×10^{-5} *35*; α(L)=2.244×10^{-6} *31*; α(M)=2.87×10^{-7} *4* α(N)=1.561×10^{-8} *22*; α(IPF)=0.0002112 *30* E_γ: from (α,pγ) and (n,n′γ). I_γ: from (α,pγ). Other: ≈2.5 from (n,n′γ).
		1556.57 *5*	24.8 *19*	2295.648	4⁺	[E1]		0.000331 *5*	B(E1)(W.u.)=0.00080 *+19−14* α=0.000331 *5*; α(K)=2.200×10^{-5} *31*; α(L)=1.958×10^{-6} *27*; α(M)=2.504×10^{-7} *35* α(N)=1.363×10^{-8} *19*; α(IPF)=0.000307 *4* E_γ: from (n,γ) E=thermal. Other: 1556.6 in (n,n′γ), 1556.3 in (p,p′γ). I_γ: weighted average of 26.7 *40* from (α,pγ), 24.0 *15* from (n,γ) E=thermal, and 37.0 *69* from (p,p′γ).
		2868.59 *6*	100 *4*	983.531	2⁺	(E1(+M2))	0.00 *2*	1.18×10^{-3} *2*	B(E1)(W.u.)=0.00052 *+12−8*; B(M2)(W.u.)<0.23 α(K)=9.10×10^{-6} *13*; α(L)=8.08×10^{-7} *11*; α(M)=1.033×10^{-7} *14* α(N)=5.63×10^{-9} *8*; α(IPF)=0.001175 *16* E_γ: weighted average of 2866.7 *13* from (α,pγ) and 2868.59 *4* from (n,γ) E=thermal. I_γ: from (α,pγ). Others: 100 *6* from (n,γ) E=thermal

$^{48}_{22}Ti_{26}$-24

Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.	δ	α[†]	Comments
									and 100 *7* from (p,p′γ). Mult.,δ: D(+Q) and δ from pγ(θ) in (p,p′γ); Δπ=yes from level scheme.
4035.153	2^+	811.198 *17*	44.7 *25*	3223.971	3^+	[M1+E2]		0.000173 *34*	α=0.000173 *34*; α(K)=0.000157 *31*; α(L)=1.41×10^{-5} *28*; α(M)=1.8×10^{-6} *4* α(N)=9.7×10^{-8} *19* B(M1)(W.u.)=0.58 *+56−23* (if pure M1) E_γ: from (n,γ) E=thermal. Other: 811 *3* from (n,n′γ). I_γ: weighted average of 56.3 *94* from (α,pγ), 44.2 *25* from (n,γ) E=thermal, and 41.0 *90* from (n,n′γ). Mult.: pure E2 ruled out by RUL.
		1614.041 *19*	100 *6*	2421.053	2^+	[M1,E2]		0.000158 *19*	B(M1)(W.u.)=0.16 *+16−6* (if pure M1); B(E2)(W.u.)=1.6×10^2 *+15−6* (if pure E2) α=0.000158 *19*; α(K)=3.63×10^{-5} *21*; α(L)=3.23×10^{-6} *19*; α(M)=4.14×10^{-7} *25* α(N)=2.25×10^{-8} *13*; α(IPF)=0.000118 *17* E_γ: from (n,γ) E=thermal. Others: 1614.3 *13* from (α,pγ), 1614 *4* from (n,n′γ), and 1615.1 *11* from (p,p′γ). I_γ: from (n,γ) E=thermal. Others: 100 *10* from (α,pγ) and 100 *15* from (n,n′γ).
4046.6	$5^{(-)}$	714	7.1 *12*	3333.187	6^+	[E1]		0.0001062 *15*	B(E1)(W.u.)=0.00023 *+11−6* α=0.0001062 *15*; α(K)=9.65×10^{-5} *14*; α(L)=8.61×10^{-6} *12*; α(M)=1.101×10^{-6} *15* α(N)=5.97×10^{-8} *8*
		807	10.6 *24*	3239.771	4^+	[E1]		8.14×10^{-5} *11*	B(E1)(W.u.)=0.00024 *+11−7* α=8.14×10^{-5} *11*; α(K)=7.39×10^{-5} *10*; α(L)=6.60×10^{-6} *9*; α(M)=8.43×10^{-7} *12* α(N)=4.57×10^{-8} *6*
		1750.1 *12*	100 *4*	2295.648	4^+	(E1(+M2))	−0.04 *7*	0.000477 *8*	B(E1)(W.u.)=0.00022 *+11−6* α=0.000477 *8*; α(K)=1.84×10^{-5} *4*; α(L)=1.63×10^{-6} *4*; α(M)=2.09×10^{-7} *5* α(N)=1.138×10^{-8} *27*; α(IPF)=0.000457 *8* E_γ,I_γ: from (α,pγ). Mult.,δ: D(+Q) and δ from pγ(θ) in (α,pγ); Δπ=(yes) from level scheme. Other: δ(4→4)=−0.32 *+16−25* in (α,pγ) excluded by comparison to RUL assuming Δπ=yes.
4074.511	2^+	834.736 *17*	69 *4*	3239.771	4^+	[E2]		0.0001917 *27*	α=0.0001917 *27*; α(K)=0.0001740 *24*; α(L)=1.561×10^{-5} *22*; α(M)=1.995×10^{-6} *28*

$^{48}_{22}Ti_{26}$-25

Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.	α[†]	Comments
								α(N)=1.077×10^{-7} *15* E_γ: from (n,γ) E=thermal. Other: 834.0 *8* from (α,pγ). I_γ: weighted average of 73.1 *96* from (α,pγ) and 68.2 *39* from (n,γ) E=thermal. B(E2)(W.u.)=1.3×10^{3} *+6−3* exceeds RUL=300.
4074.511	2$^+$	1779[#a]	19 *4*	2295.648	4$^+$	[E2]	0.0002431 *34*	B(E2)(W.u.)=8.2 *+42−24* α=0.0002431 *34*; α(K)=3.17×10^{-5} *4*; α(L)=2.83×10^{-6} *4*; α(M)=3.62×10^{-7} *5* α(N)=1.969×10^{-8} *28*; α(IPF)=0.0002081 *29*
		3090.82 *6*	100 *6*	983.531	2$^+$	[M1,E2]	0.00078 *6*	B(M1)(W.u.)=0.0104 *+48−25* (if pure M1); B(E2)(W.u.)=2.7 *+13−7* (if pure E2) α=0.00078 *6*; α(K)=1.195×10^{-5} *29*; α(L)=1.062×10^{-6} *26*; α(M)=1.359×10^{-7} *33* α(N)=7.41×10^{-9} *18*; α(IPF)=0.00076 *6* E_γ: from (n,γ) E=thermal. Others: 3090.1 *11* from (α,pγ) and 3088 *7* from (n,n′γ). I_γ: from (n,γ) E=thermal. Other: 100 *12* from (α,pγ).
		4075.1 *5*	16 *4*	0.0	0$^+$	[E2]	1.21×10^{-3} *2*	B(E2)(W.u.)=0.11 *+6−4* α(K)=8.00×10^{-6} *11*; α(L)=7.11×10^{-7} *10*; α(M)=9.09×10^{-8} *13* α(N)=4.96×10^{-9} *7*; α(IPF)=0.001197 *17* E_γ,I_γ: from (n,γ) E=thermal only.
4196.90	(2$^+$)	346[#]	22 *5*	3852.24	3$^-$			
		458.45 *16*	24 *5*	3738.60	1$^+$			E_γ: from (n,γ) E=thermal. I_γ: weighted average of 22 *5* from (α,pγ) and 27 *5* from (n,γ) E=thermal.
		496[#]	13 *3*	3699.52	1$^{(-)}$			
		972.91 *3*	100 *7*	3223.971	3$^+$			E_γ: from (n,γ) E=thermal. I_γ: from (n,γ) E=thermal. Other: 100 *10* from (α,pγ).
		4196.63 *13*	63 *5*	0.0	0$^+$			E_γ,I_γ: from (n,γ) E=thermal only.
4204.9	(1,2$^+$)	4204.7 *5*	100	0.0	0$^+$			
4210	2$^-$	3226 *8*	100	983.531	2$^+$	[E1]	1.36×10^{-3} *2*	α(K)=7.81×10^{-6} *11*; α(L)=6.93×10^{-7} *10*; α(M)=8.87×10^{-8} *13* α(N)=4.84×10^{-9} *7*; α(IPF)=0.001351 *19* E_γ: from (n,n′γ).
4254.5	1$^+$	555	100	3699.52	1$^{(-)}$	[E1]	0.0001917 *27*	α=0.0001917 *27*; α(K)=0.0001741 *24*; α(L)=1.556×10^{-5} *22*; α(M)=1.989×10^{-6} *28* α(N)=1.076×10^{-7} *15*
4311.3	1$^+$	1891	19 *4*	2421.053	2$^+$			E_γ,I_γ: from (α,pγ) only.
		3328	52 *10*	983.531	2$^+$			E_γ: other: 3332 *8* from (n,n′γ). I_γ: weighted average of 53 *10* from (α,pγ) and 45 *22* from (n,n′γ).
		4310[@] *2*	100 *12*	0.0	0$^+$	M1[&]	1.15×10^{-3} *2*	B(M1)(W.u.)=0.042 *+35−21* α(K)=7.16×10^{-6} *10*; α(L)=6.36×10^{-7} *9*; α(M)=8.14×10^{-8} *11* α(N)=4.44×10^{-9} *6*; α(IPF)=0.001143 *16*

$^{48}_{22}Ti_{26}$-26

Adopted Levels, Gammas (continued)

$\gamma(^{48}Ti)$ (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.	δ	α[†]	Comments
									E_γ: from (γ,γ). Other: 4314 *9* from (n,n′γ), 4312 from (α,pγ). I_γ: from (α,pγ). Other: 100 *22* from (n,n′γ).
4346.7	(2$^+$)	645	53 *9*	3699.52	1$^{(-)}$				
		989	79 *23*	3358.823	3$^-$				
		3364	100 *19*	983.531	2$^+$				E_γ: other: 3372 *8* from (n,n′γ).
4381.4	(3,4,5$^-$)	1142.3	45 *7*	3239.771	4$^+$				E_γ: from (n,n′γ). I_γ: from (α,pγ). Mult.: not pure E2 from comparison with RUL.
		2086	100 *7*	2295.648	4$^+$				
4387.691	4$^+$	1164.9[#]	98 *15*	3223.971	3$^+$	[M1,E2]		8.0×10^{-5} *9*	B(M1)(W.u.)=0.13 *+8–4* (if pure M1); B(E2)(W.u.)=2.4×10^2 *+14–7* (if pure E2) α=8.0×10^{-5} *9*; α(K)=6.9×10^{-5} *7*; α(L)=6.2×10^{-6} *7*; α(M)=7.9×10^{-7} *8* α(N)=4.3×10^{-8} *5*; α(IPF)=4.0×10^{-6} *8* E_γ: from (n,n′γ). Other: 1165 from (α,pγ); not seen in (n,γ) E=thermal. I_γ: from (α,pγ) only.
		2092.007 *19*	85 *5*	2295.648	4$^+$	[M1,E2]		0.00035 *4*	B(M1)(W.u.)=0.020 *+12–6* (if pure M1); B(E2)(W.u.)=11 *+7–3* (if pure E2) α=0.00035 *4*; α(K)=2.27×10^{-5} *9*; α(L)=2.02×10^{-6} *8*; α(M)=2.59×10^{-7} *10* α(N)=1.41×10^{-8} *5*; α(IPF)=0.000324 *35* E_γ: from (n,γ) E=thermal. Other: 2094 from (α,pγ); not seen in (n,n′γ). I_γ: from (n,γ) E=thermal. Other: 20 *4* from (α,pγ) is discrepant.
		3403.83 *7*	100 *6*	983.531	2$^+$	[E2]		0.000963 *13*	B(E2)(W.u.)=1.1 *+7–3* α=0.000963 *13*; α(K)=1.048×10^{-5} *15*; α(L)=9.32×10^{-7} *13*; α(M)=1.192×10^{-7} *17* α(N)=6.50×10^{-9} *9*; α(IPF)=0.000951 *13* E_γ: from (n,γ) E=thermal. Other: 3401 *8* from (n,n′γ), 3406 from (α,pγ). I_γ: from (n,γ) E=thermal. Other: 100 *13* from (α,pγ).
4398.7	6$^+$	890	100 *7*	3508.548	6$^+$	(M1(+E2))	−0.1 *3*	0.000116 *6*	B(M1)(W.u.)=0.52 *+30–20* α=0.000116 *6*; α(K)=0.000105 *6*; α(L)=9.4×10^{-6} *5*; α(M)=1.20×10^{-6} *6* α(N)=6.54×10^{-8} *35* Mult.,δ: D+Q and δ from p$\gamma(\theta)$ in (α,pγ); $\Delta\pi$=no from level scheme.
		2103	33 *7*	2295.648	4$^+$	[E2]		0.000390 *5*	B(E2)(W.u.)=7.3 *+35–21* α=0.000390 *5*; α(K)=2.329×10^{-5} *33*; α(L)=2.075×10^{-6}

$^{48}_{22}Ti_{26}$-27

Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.	δ	α[†]	Comments
									29; α(M)=2.65×10^{-7} *4* α(N)=1.445×10^{-8} *20*; α(IPF)=0.000364 *5*
4404.8	5$^{(+)}$	1072	89 *15*	3333.187	6$^+$	(M1(+E2))	−0.04 *8*	8.02×10^{-5} *12*	B(M1)(W.u.)>0.16 α=8.02×10^{-5} *12*; α(K)=7.28×10^{-5} *11*; α(L)=6.50×10^{-6} *9*; α(M)=8.32×10^{-7} *12* α(N)=4.53×10^{-8} *7* Mult.,δ: D(+Q) and δ from pγ(θ) in (α,pγ); Δπ=no from level scheme.
		2109	100 *15*	2295.648	4$^+$	[M1,E2]		0.00036 *4*	α=0.00036 *4*; α(K)=2.24×10^{-5} *9*; α(L)=1.99×10^{-6} *8*; α(M)=2.55×10^{-7} *10* α(N)=1.39×10^{-8} *5*; α(IPF)=0.00033 *4*
4457.455	3$^+$	840.66 *3*	8.0 *5*	3616.812	2$^+$				
		1086.51 *8*	4.9 *4*	3370.87	2$^+$				
		1233.33 *12*	2.61 *25*	3223.971	3$^+$				
		2036.349 *13*	86 *5*	2421.053	2$^+$				I_γ: weighted average of 100 *15* from (α,pγ) and 84 *5* from (n,γ) E=thermal.
		2161.759 *14*	100 *7*	2295.648	4$^+$				I_γ: from (n,γ) E=thermal. Other: 100 *15* from (α,pγ).
		3473.90 *9*	55 *5*	983.531	2$^+$	(M1+E2)	0.12 *2*	0.000868 *12*	B(M1)(W.u.)=0.0023 *+19−8*; B(E2)(W.u.)=0.007 *+7−3* α=0.000868 *12*; α(K)=9.81×10^{-6} *14*; α(L)=8.72×10^{-7} *12*; α(M)=1.116×10^{-7} *16* α(N)=6.09×10^{-9} *9*; α(IPF)=0.000857 *12* I_γ: weighted average of 50 *10* from (α,pγ) and 56 *5* from (n,γ) E=thermal. Mult.: D+Q from γγ(θ) in (n,γ) E=thermal; Δπ=no from level scheme. δ: from −0.13≤δ<−0.10 from 3473.9γ-983.5γ(θ) and +0.10≤δ<+0.13 from 7168.7γ-3473.9γ(θ) in (n,γ) E=thermal.
4564.8	8$^{(+)}$	1056.2 *10*	11.1 *22*	3508.548	6$^+$	[E2]		0.0001061 *15*	B(E2)(W.u.)<1.4 α=0.0001061 *15*; α(K)=9.64×10^{-5} *14*; α(L)=8.62×10^{-6} *12*; α(M)=1.103×10^{-6} *16* α(N)=5.97×10^{-8} *8* E_γ: from ^{44}Ca(^{7}Li,p2nγ). I_γ: from (α,pγ).
		1231.6 *5*	100.0 *22*	3333.187	6$^+$	(E2)		8.90×10^{-5} *12*	B(E2)(W.u.)<5 α=8.90×10^{-5} *12*; α(K)=6.77×10^{-5} *9*; α(L)=6.05×10^{-6} *8*; α(M)=7.73×10^{-7} *11* α(N)=4.20×10^{-8} *6*; α(IPF)=1.447×10^{-5} *22* E_γ: weighted average of 1231.4 *6* from (^{14}C,2nγ) and 1231.8 *5* from (^{7}Li,p2nγ). I_γ: from (α,pγ). Others: 100 *20* from (^{24}Mg,3pγ) and

$^{48}_{22}Ti_{26}$-28

Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.	α[†]	Comments
								100 *8* from (^{7}Li,p2nγ).
								Mult.: Q from pγ(θ) in (α,pγ). ΔJ^π=2,no from the level scheme.
4580.69	3$^-$	1221.81 *8*	76 *6*	3358.823	3$^-$	[M1,E2]	8.0×10^{-5} *9*	B(M1)(W.u.)=0.09 *+7−3* (if pure M1); B(E2)(W.u.)=1.5×10^2 *+11−5* (if pure E2)
								α=8.0×10^{-5} *9*; α(K)=6.3×10^{-5} *6*; α(L)=5.6×10^{-6} *6*; α(M)=7.2×10^{-7} *7*
								α(N)=3.9×10^{-8} *4*; α(IPF)=1.07×10^{-5} *20*
								I_γ: weighted average of 67 *14* from (α,pγ) and 77.1 *56* from (n,γ) E=thermal.
		2162[#]	21 *5*	2421.053	2$^+$	[E1]	0.000766 *11*	B(E1)(W.u.)=1.1×10^{-4} *+8−4*
								α=0.000766 *11*; α(K)=1.339×10^{-5} *19*; α(L)=1.191×10^{-6} *17*; α(M)=1.523×10^{-7} *21*
								α(N)=8.30×10^{-9} *12*; α(IPF)=0.000752 *11*
								E_γ: other: 2162 *5* from (n,n′γ).
		2285.41 *19*	65 *21*	2295.648	4$^+$	[E1]	0.000846 *12*	B(E1)(W.u.)=0.00028 *+20−11*
								α=0.000846 *12*; α(K)=1.238×10^{-5} *17*; α(L)=1.101×10^{-6} *15*; α(M)=1.408×10^{-7} *20*
								α(N)=7.67×10^{-9} *11*; α(IPF)=0.000833 *12*
								I_γ: unweighted average of 44 *9* from (α,pγ) and 85 *10* from (n,γ) E=thermal.
		3596.76 *17*	100 *10*	983.531	2$^+$	[E1]	1.52×10^{-3} *2*	B(E1)(W.u.)=1.1×10^{-4} *+8−4*
								α(K)=6.81×10^{-6} *10*; α(L)=6.04×10^{-7} *8*; α(M)=7.73×10^{-8} *11*
								α(N)=4.21×10^{-9} *6*; α(IPF)=0.001517 *21*
								E_γ: from (n,γ) E=thermal. Other: 3600 *8* from (n,n′γ).
								I_γ: from (n,γ) E=thermal. Other: 100 *19* from (α,pγ).
4719.137	4$^+$	1479.339 *18*	100 *6*	3239.771	4$^+$	[M1,E2]	0.000117 *14*	B(M1)(W.u.)=0.071 *+26−16* (if pure M1); B(E2)(W.u.)=81 *+30−18* (if pure E2)
								α=0.000117 *14*; α(K)=4.28×10^{-5} *30*; α(L)=3.82×10^{-6} *27*; α(M)=4.89×10^{-7} *34*
								α(N)=2.66×10^{-8} *18*; α(IPF)=7.0×10^{-5} *11*
								I_γ: from (α,pγ). Other: 100.0 *58* from (n,γ) E=thermal.
		1495.53 *21*	45 *3*	3223.971	3$^+$	[M1,E2]	0.000121 *14*	B(M1)(W.u.)=0.031 *+12−7* (if pure M1); B(E2)(W.u.)=34 *+13−8* (if pure E2)
								α=0.000121 *14*; α(K)=4.20×10^{-5} *28*; α(L)=3.74×10^{-6} *26*; α(M)=4.79×10^{-7} *33*
								α(N)=2.60×10^{-8} *17*; α(IPF)=7.5×10^{-5} *11*
								I_γ: weighted average of 43 *6* from (α,pγ) and 45.8 *26* from (n,γ) E=thermal.
4757.73	(3$^-$)	1140.94 *10*	100 *12*	3616.812	2$^+$			
		3774.8 *6*	20 *5*	983.531	2$^+$			
4783.27	(2$^+$,3,4$^+$)	2486.4 *5*	50 *13*	2295.648	4$^+$			
		3799.64 *12*	100 *7*	983.531	2$^+$			

$^{48}_{22}Ti_{26}$-29

Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.	α[†]	Comments
4792.31	(1⁻,2,3⁻)	1092.3 *3*	9.5 *16*	3699.52	1(−)			E_γ,I_γ: from (n,γ) E=thermal only; not seen in (α,pγ).
		1421[#]	12.5 *25*	3370.87	2⁺			
		2371.18 *8*	82 *6*	2421.053	2⁺			I_γ: from (n,γ) E=thermal. Other: 137 *18* from (α,pγ) is discrepant.
		3808.58 *7*	100 *6*	983.531	2⁺			I_γ: from (n,γ) E=thermal. Other: 100 *15* from (α,pγ).
4794.11	(2⁺)	2498.44 *14*	100 *10*	2295.648	4⁺			
		4793.5 *4*	14.7 *25*	0.0	0⁺			
4795.1	(3⁻,4)	749	41 *7*	4046.6	5(−)			
		942	62 *17*	3852.24	3⁻			
		1012	34 *7*	3782.459	3⁻,4⁻			
		1556	100 *17*	3239.771	4⁺			
		1571	38 *7*	3223.971	3⁺			
		2500	69 *14*	2295.648	4⁺			
4861.0	2⁺,3⁺,4⁺	1622	100 *15*	3239.771	4⁺			
		2566	92 *15*	2295.648	4⁺			
4885.0	(2⁺,3⁺,4⁺)	1526	75 *18*	3358.823	3⁻			
		2464	100 *18*	2421.053	2⁺			
4910.57	(1⁺,2⁺)	1293.71 *6*	100 *6*	3616.812	2⁺			I_γ: from (n,γ) E=thermal. Other: 100 *18* from (α,pγ).
		1539.63 *18*	53 *7*	3370.87	2⁺			I_γ: weighted average of 70 *14* from (α,pγ) and 50 *6* from (n,γ) E=thermal.
		1686.63 *9*	67 *5*	3223.971	3⁺			E_γ,I_γ: from (n,γ) E=thermal only; not seen in (α,pγ).
		2489.7 *4*	57 *11*	2421.053	2⁺			I_γ: from (α,pγ). Other: 60 *14* from (n,γ) E=thermal.
		4911.8 *8*	14 *4*	0.0	0⁺			
4916.3	5⁻	870	56 *8*	4046.6	5(−)	[M1,E2]	0.000146 *26*	α=0.000146 *26*; α(K)=0.000133 *23*; α(L)=1.19×10^{-5} *21*; α(M)=1.52×10^{-6} *27* α(N)=8.2×10^{-8} *14* B(M1)(W.u.)=0.049 *+49−20* (if pure M1); B(E2)(W.u.)=1.6×10^{2} *+16−6* (if pure E2)
		1133	100 *14*	3782.459	3⁻,4⁻	[M1,E2]	8.3×10^{-5} *9*	B(M1)(W.u.)=0.040 *+39−16* (if pure M1); B(E2)(W.u.)=8×10^{1} *+8−3* (if pure E2) α=8.3×10^{-5} *9*; α(K)=7.4×10^{-5} *8*; α(L)=6.6×10^{-6} *7*; α(M)=8.4×10^{-7} *9* α(N)=4.6×10^{-8} *5*; α(IPF)=1.9×10^{-6} *4*
		1408	44 *8*	3508.548	6⁺	[E1]	0.0002227 *31*	B(E1)(W.u.)=0.00021 *+23−9* α=0.0002227 *31*; α(K)=2.59×10^{-5} *4*; α(L)=2.308×10^{-6} *32*; α(M)=2.95×10^{-7} *4* α(N)=1.605×10^{-8} *22*; α(IPF)=0.0001942 *27*
4924.92	(2,3,4)⁺	544[#]	6.8 *17*	4381.4	(3,4,5⁻)			
		851[#]	8.5 *17*	4074.511	2⁺	[M1,E2]	0.000154 *28*	B(M1)(W.u.)=0.08 *+7−3* (if pure M1); B(E2)(W.u.)=2.7×10^{2} *+25−11* (if pure E2)

$^{48}_{22}Ti_{26}$-30

Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.	α[†]	Comments
								α=0.000154 *28*; α(K)=0.000140 *25*; α(L)=1.25×10^{-5} *23*; α(M)=1.60×10^{-6} *29* α(N)=8.7×10^{-8} *16*
4924.92	(2,3,4)$^+$	1686[#]	32 *5*	3239.771	4$^+$	[M1,E2]	0.000183 *22*	B(M1)(W.u.)=0.038 *+35−14* (if pure M1); B(E2)(W.u.)=33 *+30−12* (if pure E2) α=0.000183 *22*; α(K)=3.34×10^{-5} *18*; α(L)=2.98×10^{-6} *16*; α(M)=3.81×10^{-7} *21* α(N)=2.08×10^{-8} *11*; α(IPF)=0.000147 *20*
		1700.89 *16*	39 *17*	3223.971	3$^+$	[M1,E2]	0.000189 *22*	B(M1)(W.u.)=0.045 *+43−21* (if pure M1); B(E2)(W.u.)=38 *+37−18* (if pure E2) α=0.000189 *22*; α(K)=3.29×10^{-5} *18*; α(L)=2.93×10^{-6} *16*; α(M)=3.75×10^{-7} *20* α(N)=2.04×10^{-8} *11*; α(IPF)=0.000153 *20* I_γ: unweighted average of 22.0 *51* from (α,pγ) and 55.6 *56* from (n,γ) E=thermal.
		2629.1 *3*	100 *12*	2295.648	4$^+$	[M1,E2]	0.00059 *5*	B(M1)(W.u.)=0.031 *+28−11* (if pure M1); B(E2)(W.u.)=11 *+10−4* (if pure E2) α=0.00059 *5*; α(K)=1.55×10^{-5} *4*; α(L)=1.37×10^{-6} *4*; α(M)=1.76×10^{-7} *5* α(N)=9.59×10^{-9} *27*; α(IPF)=0.00057 *5* I_γ: from (α,pγ). Other: 100 *17* from (n,γ) E=thermal.
4939.93	(2,3,4)$^+$	1157[#]	12. *4*	3782.459	3$^-$,4$^-$			
		1701[#]	43 *8*	3239.771	4$^+$			
		2644.5 *4*	47 *11*	2295.648	4$^+$			I_γ: weighted average of 41 *8* from (α,pγ) and 68 *15* from (n,γ) E=thermal.
		3956.17 *16*	100 *9*	983.531	2$^+$			E_γ,I_γ: from (n,γ) E=thermal. Other: 3963 *9* from (n,n′γ). I_γ: from (n,γ) E=thermal. Other: 100 *18* from (α,pγ).
4956.6	(4$^+$,5,6$^-$)	910	36 *7*	4046.6	5$^{(-)}$			
		1173	100 *16*	3782.459	3$^-$,4$^-$			
		1448	45 *7*	3508.548	6$^+$			
		1624	45 *7*	3333.187	6$^+$			
4970.7	0$^+$	1231	100 *18*	3738.60	1$^+$			
		3988	82 *18*	983.531	2$^+$			
4992.0	5$^-$	946	100 *10*	4046.6	5$^{(-)}$			
		1139	18 *3*	3852.24	3$^-$			
		1209	21 *3*	3782.459	3$^-$,4$^-$			
		1484	23 *5*	3508.548	6$^+$			
5145.85	4$^+$	1073[#]	88 *25*	4074.511	2$^+$	[E2]	0.0001022 *14*	B(E2)(W.u.)=1.9×10^2 *+19−8* α=0.0001022 *14*; α(K)=9.28×10^{-5} *13*; α(L)=8.31×10^{-6} *12*; α(M)=1.062×10^{-6} *15* α(N)=5.75×10^{-8} *8*

$^{48}_{22}Ti_{26}$-31

Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ ‡	I_γ ‡	E_f	J_f^π	Mult.	δ	α †	Comments
5145.85	4+	1906.08 *9*	52 *4*	3239.771	4+	[M1,E2]		0.000269 *30*	B(M1)(W.u.)=0.010 *+9−4* (if pure M1); B(E2)(W.u.)=6.5 *+64−24* (if pure E2) α=0.000269 *30*; α(K)=2.67×10^{-5} *12*; α(L)=2.38×10^{-6} *11*; α(M)=3.05×10^{-7} *14* α(N)=1.66×10^{-8} *7*; α(IPF)=0.000240 *28* E_γ,I_γ: from (n,γ) E=thermal. Other: Iγ=104 *16* from (α,pγ) is discrepant.
		1921.63 *22*	100 *18*	3223.971	3+	[M1,E2]		0.000276 *30*	B(M1)(W.u.)=0.018 *+17−7* (if pure M1); B(E2)(W.u.)=12 *+12−5* (if pure E2) α=0.000276 *30*; α(K)=2.64×10^{-5} *12*; α(L)=2.35×10^{-6} *10*; α(M)=3.00×10^{-7} *13* α(N)=1.64×10^{-8} *7*; α(IPF)=0.000247 *29* I_γ: from (n,γ) E=thermal. Other: 100 *16* from (α,pγ).
		2725.7 *5*	22 *5*	2421.053	2+	[E2]		0.000678 *9*	B(E2)(W.u.)=0.46 *+46−19* α=0.000678 *9*; α(K)=1.493×10^{-5} *21*; α(L)=1.328×10^{-6} *19*; α(M)=1.699×10^{-7} *24* α(N)=9.26×10^{-9} *13*; α(IPF)=0.000661 *9*
		2850.01 *12*	87 *7*	2295.648	4+	[M1,E2]		0.00068 *5*	B(M1)(W.u.)=0.0047 *+45−18* (if pure M1); B(E2)(W.u.)=1.5 *+14−6* (if pure E2) α=0.00068 *5*; α(K)=1.36×10^{-5} *4*; α(L)=1.207×10^{-6} *32*; α(M)=1.54×10^{-7} *4* α(N)=8.42×10^{-9} *22*; α(IPF)=0.00066 *5* I_γ: from (n,γ) E=thermal. Other: 125 *21* from (α,pγ).
5155.7	5(+)	751	32 *5*	4404.8	5(+)	[M1]		0.0001626 *23*	B(M1)(W.u.)>1.5 α=0.0001626 *23*; α(K)=0.0001476 *21*; α(L)=1.321×10^{-5} *18*; α(M)=1.690×10^{-6} *24* α(N)=9.18×10^{-8} *13* Mult.: M1 from comparison with RUL for $T_{1/2}$<7 fs.
		1647	100 *5*	3508.548	6+	(M1(+E2))	−0.04 *8*	0.0001494 *22*	B(M1)(W.u.)>0.5 α=0.0001494 *22*; α(K)=3.30×10^{-5} *5*; α(L)=2.94×10^{-6} *4*; α(M)=3.76×10^{-7} *5* α(N)=2.050×10^{-8} *29*; α(IPF)=0.0001130 *16* Mult.,δ: D(+Q) and δ from pγ(θ) in (α,pγ); Δπ=no from level scheme.
5158.0	4+	1919#	70 *12*	3239.771	4+	[M1,E2]		0.000275 *30*	α=0.000275 *30*; α(K)=2.64×10^{-5} *12*; α(L)=2.35×10^{-6} *10*; α(M)=3.01×10^{-7} *13* α(N)=1.64×10^{-8} *7*; α(IPF)=0.000245 *29*
		1933.9 *3*	100 *18*	3223.971	3+	[M1,E2]		0.000281 *31*	α=0.000281 *31*; α(K)=2.61×10^{-5} *11*; α(L)=2.32×10^{-6} *10*; α(M)=2.97×10^{-7} *13* α(N)=1.62×10^{-8} *7*; α(IPF)=0.000252 *29*
		2863#	100 *18*	2295.648	4+	[M1,E2]		0.00068 *5*	α=0.00068 *5*; α(K)=1.348×10^{-5} *35*; α(L)=1.199×10^{-6} *32*;

$^{48}_{22}Ti_{26}$-32

Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.	δ	α[†]	Comments
									α(M)=1.53×10^{-7} *4* α(N)=8.36×10^{-9} *22*; α(IPF)=0.00067 *5*
5158.0	4$^+$	4174[#]	33 *9*	983.531	2$^+$	[E2]		1.24×10^{-3} *2*	B(E2)(W.u.)>0.12 α(K)=7.72×10^{-6} *11*; α(L)=6.86×10^{-7} *10*; α(M)=8.78×10^{-8} *12* α(N)=4.79×10^{-9} *7*; α(IPF)=0.001232 *17*
5169.8	7$^+$	605	7.7 *15*	4564.8	8$^{(+)}$	[M1+E2]		3.7×10^{-4} *11*	B(M1)(W.u.)=0.18 *+13−6* (if pure M1); B(E2)(W.u.)=1.2×10^3 *+9−4* (if pure E2) α=3.7×10^{-4} *11*; α(K)=3.3×10^{-4} *10*; α(L)=3.0×10^{-5} *9*; α(M)=3.8×10^{-6} *12* α(N)=2.1×10^{-7} *6* Mult.: pure E2 ruled out by RUL.
		1661	46 *6*	3508.548	6$^+$	M1+E2	+0.11 *+9−4*	0.0001542 *24*	B(M1)(W.u.)=0.051 *+34−17*; B(E2)(W.u.)=0.6 *+17−4* α=0.0001542 *24*; α(K)=3.26×10^{-5} *5*; α(L)=2.90×10^{-6} *4*; α(M)=3.71×10^{-7} *5* α(N)=2.022×10^{-8} *29*; α(IPF)=0.0001183 *19* Mult.: D+Q from pγ(θ) in (α,pγ); E1+M2 ruled out by RUL.
		1837	100 *8*	3333.187	6$^+$	M1+E2	+0.09 *7*	0.0002139 *31*	B(M1)(W.u.)=0.08 *+6−3*; B(E2)(W.u.)=0.5 *+14−4* α=0.0002139 *31*; α(K)=2.73×10^{-5} *4*; α(L)=2.431×10^{-6} *34*; α(M)=3.11×10^{-7} *4* α(N)=1.696×10^{-8} *24*; α(IPF)=0.0001839 *27* Mult.: D+Q from pγ(θ) in (α,pγ); E1+M2 ruled out by RUL.
5197.9	8$^+$	632.7 *10*	100 *4*	4564.8	8$^{(+)}$	(M1(+E2))	−0.03 *+25−35*	0.000232 *23*	B(M1)(W.u.)=0.95 *+50−35* α=0.000232 *23*; α(K)=0.000211 *21*; α(L)=1.89×10^{-5} *19*; α(M)=2.42×10^{-6} *24* α(N)=1.31×10^{-7} *13* E_γ: from (^{7}Li,p2nγ). I_γ: from (α,pγ). Mult.: D(+Q) from pγ(θ) in (α,pγ); Δπ=no from level scheme .
		1689	16.9 *24*	3508.548	6$^+$	[E2]		0.0002062 *29*	B(E2)(W.u.)=7.3 *+35−20* α=0.0002062 *29*; α(K)=3.51×10^{-5} *5*; α(L)=3.13×10^{-6} *4*; α(M)=4.00×10^{-7} *6* α(N)=2.176×10^{-8} *30*; α(IPF)=0.0001676 *23*
		1865	3.6 *12*	3333.187	6$^+$	[E2]		0.000280 *4*	B(E2)(W.u.)=1.0 *+6−4* α=0.000280 *4*; α(K)=2.90×10^{-5} *4*; α(L)=2.59×10^{-6} *4*; α(M)=3.31×10^{-7} *5* α(N)=1.801×10^{-8} *25*; α(IPF)=0.0002483 *35*

$^{48}_{22}Ti_{26}$-33

Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.	δ	α[†]	Comments
5251.8	(2$^+$,3,4,5$^-$)	1399	100 *8*	3852.24	3$^-$				
		1469	13 *4*	3782.459	3$^-$,4$^-$				
		2957	13 *4*	2295.648	4$^+$				
5273.0	(1$^-$,2)	962	26 *7*	4311.3	1$^+$				
		1571	20 *5*	3699.52	1$^{(-)}$				
		1915	100 *20*	3358.823	3$^-$				
		2853	72 *13*	2421.053	2$^+$				
5300.9	(4$^+$,5,6)	896	68 *10*	4404.8	5$^{(+)}$				Mult.: not pure M2 or E2 from RUL.
		1792	100 *15*	3508.548	6$^+$				
		1968	83 *15*	3333.187	6$^+$				
5312.8	(5$^-$)	1266	42 *5*	4046.6	5$^{(-)}$	M1,E2		8.2×10^{-5} *9*	B(M1)(W.u.)=0.040 *+26−12* (if pure M1); B(E2)(W.u.)=61 *+41−19* (if pure E2) α=8.2×10^{-5} *9*; α(K)=5.8×10^{-5} *5*; α(L)=5.2×10^{-6} *5*; α(M)=6.7×10^{-7} *6* α(N)=3.63×10^{-8} *33*; α(IPF)=1.81×10^{-5} *32* Mult.,δ: E2 if J=7, M1+E2, δ=−1.25 *25* if J=5, or M1+E2, δ=−1.7 *+9−12* if J=6, from pγ(θ) in (α,pγ) and comparison to RUL.
		1804	25 *4*	3508.548	6$^+$	[E1]		0.000517 *7*	B(E1)(W.u.)=0.00019 *+13−6* α=0.000517 *7*; α(K)=1.748×10^{-5} *24*; α(L)=1.555×10^{-6} *22*; α(M)=1.989×10^{-7} *28* α(N)=1.083×10^{-8} *15*; α(IPF)=0.000498 *7*
		1980	100 *7*	3333.187	6$^+$	(E1(+M2))	−0.07 *+7−9*	0.000640 *13*	B(E1)(W.u.)=0.00057 *+48−21* α=0.000640 *13*; α(K)=1.53×10^{-5} *6*; α(L)=1.36×10^{-6} *5*; α(M)=1.74×10^{-7} *6* α(N)=9.50×10^{-9} *34*; α(IPF)=0.000623 *13* Mult.,δ: D+Q, δ=−0.02 *+7−3* if J=7, or δ=−0.07 *+7−9* if J=5, or M1+E2, δ=+1.5 *3* if J=6, from pγ(θ) in (α,pγ) and comparison to RUL.
5313.3	2$^+$	2892	41 *10*	2421.053	2$^+$				Eγ: other: 2890 *5* from (n,n′γ). Iγ: other: I(2890γ)/I(4332γ)=100 *28*/12 *6* is discrepant.
		4330	100 *10*	983.531	2$^+$				Eγ: other: 4332 *9* from (n,n′γ).
5340	1$^{(-)}$	5340[@] *3*		0.0	0$^+$	(E1)[&]		2.13×10^{-3} *3*	α(K)=4.23×10^{-6} *6*; α(L)=3.75×10^{-7} *5*; α(M)=4.80×10^{-8} *7* α(N)=2.62×10^{-9} *4*; α(IPF)=0.002121 *30*
5356.23	(2$^+$,3,4$^+$)	1158.7 *3*	62 *12*	4196.90	(2$^+$)				Iγ: weighted average of 57 *14* from (α,pγ) and 65 *12* from (n,γ) E=thermal.
		1504[#]	32 *6*	3852.24	3$^-$				
		1998[#]	43 *9*	3358.823	3$^-$				
		2118[#]	23 *6*	3239.771	4$^+$				

$^{48}_{22}Ti_{26}$-34

Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.	α[†]	Comments
5356.23	(2$^+$,3,4$^+$)	3062[#]	31 *9*	2295.648	4$^+$			
		4372.56 *15*	100 *9*	983.531	2$^+$			I_γ: from (n,γ) E=thermal. Other: 100 *20* from (α,pγ).
5383.8	(3)$^-$	2144	79 *13*	3239.771	4$^+$			
		3088	100 *13*	2295.648	4$^+$			
5490.95	2$^+$	1790.7 *3*	68 *14*	3699.52	1$^{(-)}$			
		2267[#]	64 *12*	3223.971	3$^+$			
		3070.4 *3*	100 *18*	2421.053	2$^+$			
		4508[#]	36 *10*	983.531	2$^+$			
5500.8	4$^+$	1096	14 *4*	4404.8	5$^{(+)}$	[M1,E2]	8.7×10^{-5} *10*	B(M1)(W.u.)=0.046 *+38−18* (if pure M1); B(E2)(W.u.)=1.0×10^2 *+8−4* (if pure E2) α=8.7×10^{-5} *10*; α(K)=7.9×10^{-5} *9*; α(L)=7.1×10^{-6} *8*; α(M)=9.0×10^{-7} *11* α(N)=4.9×10^{-8} *6*
		1102	41 *6*	4398.7	6$^+$	[E2]	9.70×10^{-5} *14*	B(E2)(W.u.)=2.7×10^2 *+22−9* α=9.70×10^{-5} *14*; α(K)=8.72×10^{-5} *12*; α(L)=7.80×10^{-6} *11*; α(M)=9.97×10^{-7} *14* α(N)=5.41×10^{-8} *8*; α(IPF)=1.003×10^{-6} *14*
		1426	7.8 *20*	4074.511	2$^+$	[E2]	0.0001167 *16*	B(E2)(W.u.)=14 *+12−6* α=0.0001167 *16*; α(K)=4.93×10^{-5} *7*; α(L)=4.41×10^{-6} *6*; α(M)=5.63×10^{-7} *8* α(N)=3.06×10^{-8} *4*; α(IPF)=6.24×10^{-5} *9*
		1454	5.9 *20*	4046.6	5$^{(-)}$	[E1]	0.000254 *4*	B(E1)(W.u.)=0.00019 *+17−9* α=0.000254 *4*; α(K)=2.457×10^{-5} *34*; α(L)=2.188×10^{-6} *31*; α(M)=2.80×10^{-7} *4* α(N)=1.522×10^{-8} *21*; α(IPF)=0.0002272 *32*
		2168	27 *8*	3333.187	6$^+$	[E2]	0.000420 *6*	B(E2)(W.u.)=6.0 *+50−24* α=0.000420 *6*; α(K)=2.206×10^{-5} *31*; α(L)=1.965×10^{-6} *28*; α(M)=2.513×10^{-7} *35* α(N)=1.369×10^{-8} *19*; α(IPF)=0.000396 *6*
		3205	100 *18*	2295.648	4$^+$	[M1,E2]	0.00082 *6*	B(M1)(W.u.)=0.013 *+10−4* (if pure M1); B(E2)(W.u.)=3.2 *+24−10* (if pure E2) α=0.00082 *6*; α(K)=1.129×10^{-5} *27*; α(L)=1.004×10^{-6} *24*; α(M)=1.284×10^{-7} *31* α(N)=7.01×10^{-9} *17*; α(IPF)=0.00081 *6*
5521.7	3$^-$	1739	100 *14*	3782.459	3$^-$,4$^-$			
		2163	92 *25*	3358.823	3$^-$			
		4538	86 *14*	983.531	2$^+$			
5526	1	5526[@] *3*		0.0	0$^+$	D[&]		E_γ: from (γ,γ′).
5545.9	(4$^+$ to 8$^+$)	2037	28 *5*	3508.548	6$^+$			

$^{48}_{22}Ti_{26}$-35

Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.	δ	α[†]	Comments
5545.9	(4$^+$ to 8$^+$)	2213	100 *5*	3333.187	6$^+$				
5545.9	3$^-$	1165	100 *22*	4381.4	(3,4,5$^-$)				
		1693	38 *9*	3852.24	3$^-$				
		2322	47 *13*	3223.971	3$^+$				
		4562	88 *19*	983.531	2$^+$				
5567.9	2$^+$	1257	36 *9*	4311.3	1$^+$				
		1866	100 *22*	3699.52	1$^{(-)}$				
		4586	87 *20*	983.531	2$^+$				
5615.8	(3)$^-$	821[a]	20 *4*	4795.1	(3$^-$,4)				
		1833	100 *16*	3782.459	3$^-$,4$^-$				
		2257	20 *8*	3358.823	3$^-$				
		4632	60 *12*	983.531	2$^+$				
5619.65	2$^+$	2381[#]	100 *24*	3239.771	4$^+$				E_γ,I_γ: not seen in (n,γ) E=thermal.
		2395.62 *11*	78 *14*	3223.971	3$^+$				E_γ: from (n,γ) E=thermal.
									I_γ: from (α,pγ). Other: I(2396γ)/I(3198γ)=100 *8*/97 *3* from (n,γ) E=thermal is discrepant.
		3198.44 *20*	92 *19*	2421.053	2$^+$				I_γ: other: see comment for 2396γ.
5630.9	7	1066	78 *10*	4564.8	8$^{(+)}$	D(+Q)	−0.03 *5*		Mult.,δ: from pγ(θ) in (α,pγ).
		2122	22 *4*	3508.548	6$^+$				
		2298	100 *12*	3333.187	6$^+$	D+Q	+0.06 *4*		Mult.,δ: from pγ(θ) in (α,pγ).
5640.03	1$^+$	1182.56 *5*	100 *6*	4457.455	3$^+$	[E2]		8.84×10^{-5} *12*	α=8.84×10^{-5} *12*; α(K)=7.41×10^{-5} *10*; α(L)=6.63×10^{-6} *9*; α(M)=8.47×10^{-7} *12* α(N)=4.60×10^{-8} *6*; α(IPF)=6.80×10^{-6} *10* B(E2)(W.u.)≥7200 exceeds RUL.
		4655.8 *6*	35 *8*	983.531	2$^+$	M1[&]		1.26×10^{-3} *2*	B(M1)(W.u.)>0.02 α(K)=6.42×10^{-6} *9*; α(L)=5.70×10^{-7} *8*; α(M)=7.30×10^{-8} *10* α(N)=3.98×10^{-9} *6*; α(IPF)=0.001252 *18* E_γ: from (n,γ) E=thermal. Other: 4655 *3* from (γ,γ).
		5639.9 *10*	8×10^1 *10*	0.0	0$^+$	M1[&]		1.52×10^{-3} *2*	α(K)=4.93×10^{-6} *7*; α(L)=4.38×10^{-7} *6*; α(M)=5.60×10^{-8} *8* α(N)=3.06×10^{-9} *4*; α(IPF)=0.001517 *21* E_γ: from (n,γ) E=thermal. Other: 5640 *2* from (γ,γ). I_γ: from 82 *+103−82* in (n,γ) E=thermal.
5641.5	3$^-$	923	24 *4*	4719.137	4$^+$	[E1]		6.17×10^{-5} *9*	B(E1)(W.u.)=0.0032 *+25−11* α=6.17×10^{-5} *9*; α(K)=5.61×10^{-5} *8*; α(L)=5.00×10^{-6} *7*; α(M)=6.39×10^{-7} *9* α(N)=3.47×10^{-8} *5*
		1261	22 *4*	4381.4	(3,4,5$^-$)				
		1789	14 *4*	3852.24	3$^-$	[M1,E2]		0.000222 *26*	B(M1)(W.u.)=0.011 *+10−5* (if pure M1);

$^{48}_{22}Ti_{26}$-36

Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.	α[†]	Comments
								B(E2)(W.u.)=9 *+7−4* (if pure E2) α=0.000222 *26*; α(K)=3.00×10^{-5} *15*; α(L)=2.67×10^{-6} *13*; α(M)=3.42×10^{-7} *17* α(N)=1.86×10^{-8} *9*; α(IPF)=0.000189 *24*
5641.5	3$^-$	1939	22 *4*	3699.52	1$^{(-)}$	[E2]	0.000314 *4*	B(E2)(W.u.)=9 *+7−3* α=0.000314 *4*; α(K)=2.70×10^{-5} *4*; α(L)=2.406×10^{-6} *34*; α(M)=3.08×10^{-7} *4* α(N)=1.675×10^{-8} *23*; α(IPF)=0.000284 *4*
		2418	20 *4*	3223.971	3$^+$	[E1]	0.000927 *13*	B(E1)(W.u.)=0.00015 *+12−5* α=0.000927 *13*; α(K)=1.145×10^{-5} *16*; α(L)=1.018×10^{-6} *14*; α(M)=1.301×10^{-7} *18* α(N)=7.09×10^{-9} *10*; α(IPF)=0.000915 *13*
		3347	100 *16*	2295.648	4$^+$	[E1]	1.41×10^{-3} *2*	B(E1)(W.u.)=0.00028 *+20−10* α(K)=7.45×10^{-6} *10*; α(L)=6.62×10^{-7} *9*; α(M)=8.46×10^{-8} *12* α(N)=4.61×10^{-9} *6*; α(IPF)=0.001406 *20*
5762.8	(4$^+$,5,6$^+$)	1716	15 *3*	4046.6	5$^{(-)}$			
		2254	100 *21*	3508.548	6$^+$			
		2430	41 *9*	3333.187	6$^+$			
		2523	91 *18*	3239.771	4$^+$			
		3467	47 *12*	2295.648	4$^+$			
5805.2	3$^-$,4$^-$	1759	4.2 *21*	4046.6	5$^{(-)}$	[M1,E2]	0.000210 *25*	B(M1)(W.u.)=0.008 *+10−4* (if pure M1); B(E2)(W.u.)=6 *+8−3* (if pure E2) α=0.000210 *25*; α(K)=3.09×10^{-5} *16*; α(L)=2.76×10^{-6} *14*; α(M)=3.52×10^{-7} *18* α(N)=1.92×10^{-8} *10*; α(IPF)=0.000176 *23*
		2446	100.0 *21*	3358.823	3$^-$	[M1,E2]	0.00050 *5*	B(M1)(W.u.)=0.07 *+7−3* (if pure M1); B(E2)(W.u.)=29 *+30−11* (if pure E2) α=0.00050 *5*; α(K)=1.74×10^{-5} *5*; α(L)=1.55×10^{-6} *5*; α(M)=1.98×10^{-7} *6* α(N)=1.080×10^{-8} *33*; α(IPF)=0.00049 *5*
5827.1	3$^-$	2044	57 *11*	3782.459	3$^-$,4$^-$			
		2468	100 *19*	3358.823	3$^-$			
		3406	84 *14*	2421.053	2$^+$			
		4844	30 *8*	983.531	2$^+$			
5846.5	3$^-$	2607	53 *9*	3239.771	4$^+$	[E1]	1.04×10^{-3} *1*	α(K)=1.033×10^{-5} *14*; α(L)=9.18×10^{-7} *13*; α(M)=1.174×10^{-7} *16* α(N)=6.40×10^{-9} *9*; α(IPF)=0.001024 *14*
		3551	100 *12*	2295.648	4$^+$	[E1]	1.50×10^{-3} *2*	α(K)=6.92×10^{-6} *10*; α(L)=6.14×10^{-7} *9*; α(M)=7.85×10^{-8} *11* α(N)=4.28×10^{-9} *6*; α(IPF)=0.001497 *21*
		4862	19 *5*	983.531	2$^+$	[E1]	1.98×10^{-3} *3*	α(K)=4.72×10^{-6} *7*; α(L)=4.19×10^{-7} *6*; α(M)=5.36×10^{-8} *7* α(N)=2.92×10^{-9} *4*; α(IPF)=0.001978 *28*
5886.7	(4$^+$ to 8$^+$)	1488	37 *10*	4398.7	6$^+$			
		2378	100 *10*	3508.548	6$^+$			

$^{48}_{22}Ti_{26}$-37

Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.	δ	α[†]	Comments
5888.41	(1,2,3)	2085.67 *16*	100 *18*	3802.73	2^-				
		2517.62 *24*	48 *8*	3370.87	2^+				
		3467.36 *21*	96 *14*	2421.053	2^+				
		4904.42 *17*	34 *3*	983.531	2^+				
5892.1	(1^-,2^+)	2533	39 *9*	3358.823	3^-				
		3471	79 *18*	2421.053	2^+				
		4908	85 *21*	983.531	2^+				
		5892	100 *24*	0.0	0^+				
5917.8	2^+	4934	100	983.531	2^+				
5974.8	(4^+,5,6)	662	65 *12*	5312.8	(5^-)				
		1018	88 *15*	4956.6	(4^+,5,6^-)				
		1570	100 *19*	4404.8	$5^{(+)}$				
		2466	85 *15*	3508.548	6^+				
		2642	46 *12*	3333.187	6^+				
5990.8	(4^+,5,6^+)	1586	100 *22*	4404.8	$5^{(+)}$				
		1592	76 *19*	4398.7	6^+				
		2751	95 *16*	3239.771	4^+				
5993.6	$(2)^+$	3572	100 *14*	2421.053	2^+				
		3698	33 *7*	2295.648	4^+				
		5010	42 *11*	983.531	2^+				
6034.9	9^+,7^+	837	54 *8*	5197.9	8^+	M1(+E2)		0.000160 *30*	α=0.000160 *30*; α(K)=0.000146 *27*; α(L)=1.30×10^{-5} *25*; α(M)=1.67×10^{-6} *31* α(N)=9.0×10^{-8} *17* Mult.: D(+Q) from pγ(θ) in (α,pγ); E1(+M2) ruled out by RUL. δ: δ(9→8)=0.00 *5* or δ(7→8)=−0.09 *9* from pγ(θ) in (α,pγ).
		1470	100 *8*	4564.8	$8^{(+)}$	M1+E2		0.000115 *14*	α=0.000115 *14*; α(K)=4.34×10^{-5} *30*; α(L)=3.87×10^{-6} *27*; α(M)=4.95×10^{-7} *35* α(N)=2.69×10^{-8} *19*; α(IPF)=6.7×10^{-5} *10* Mult.: D+Q from pγ(θ) in (α,pγ); E1+M2 ruled out by RUL. δ: δ(9→8)=0.10 *5* or δ(7→8)=−0.14 *8* from pγ(θ) in (α,pγ).
6036.8	4^+	3741	100	2295.648	4^+				
6039.7	6	870	16 *4*	5169.8	7^+				
		1641	100 *6*	4398.7	6^+	D(+Q)	0.0 *+2−3*		Mult.,δ: from pγ(θ) in (α,pγ).
		2531	8.8 *25*	3508.548	6^+				
6040.4	(1,2)	6040	100	0.0	0^+				
6042.40	(2,3)	1183[#]	32 *7*	4861.0	2^+,3^+,4^+				
		1967.78 *23*	100 *7*	4074.511	2^+				I_γ: from (α,pγ). Other: 100 *18* from (n,γ) E=thermal.
		5058.58 *13*	53 *4*	983.531	2^+				
6050.5		2268	100	3782.459	3^-,4^-				

$^{48}_{22}Ti_{26}$-38

Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ ‡	I_γ ‡	E_f	J_f^π	Mult.	α †	Comments
6054.47	(0$^+$ to 4$^+$)	3633.38 *25*	100 *13*	2421.053	2$^+$			
		5070.2 *5*	53 *8*	983.531	2$^+$			
6084.3	(4$^+$,5,6$^-$)	1680	100 *11*	4404.8	5$^{(+)}$			
		2301	21 *5*	3782.459	3$^-$,4$^-$			
		2576	40 *8*	3508.548	6$^+$			
6086	1	6086@ *4*		0.0	0$^+$	D&		
6103.2	10$^{(+)}$,8	1538.8 *10*	100	4564.8	8$^{(+)}$			E_γ: from (^{7}Li,p2nγ). Other: 1538 from (α,pγ). Mult.,δ: Q if J=10 or D+Q, −0.78 *7*, if J=8 from pγ(θ) in (α,pγ).
6119.6	(4$^+$,5)	2336	30 *5*	3782.459	3$^-$,4$^-$			
		2611	29 *5*	3508.548	6$^+$			
		2787	20 *4*	3333.187	6$^+$			
		3824	100 *11*	2295.648	4$^+$			
6126	1	6126@ *3*	100	0.0	0$^+$	D&		
6138	1$^{(+)}$	6138@ *4*		0.0	0$^+$	(M1)&		
6147.8	(4$^+$ to 8$^+$)	1749	100	4398.7	6$^+$			
6153.8	(4$^+$ to 7$^-$)	2107	28 *10*	4046.6	5$^{(-)}$			
		2645	45 *9*	3508.548	6$^+$			
		2821	100 *16*	3333.187	6$^+$			
6172.9	8$^+$,6$^+$	975	10 *3*	5197.9	8$^+$			
		1003	37 *5*	5169.8	7$^+$	M1+E2	0.000106 *15*	B(M1)(W.u.)=0.16 *+18−8* (if pure M1); B(E2)(W.u.)=3.9×10^2 *+42−19* (if pure E2) α=0.000106 *15*; α(K)=9.6×10^{-5} *13*; α(L)=8.6×10^{-6} *12*; α(M)=1.10×10^{-6} *15* α(N)=6.0×10^{-8} *8* Mult.: D+Q from pγ(θ) in (α,pγ); E1+M2 ruled out by RUL. δ: δ(8→7)=+0.07 *+7−5* or δ(6→7)=−0.10 *5* from pγ(θ) in (α,pγ).
		1608	100 *7*	4564.8	8$^{(+)}$			Mult.,δ: D+Q, 0.00 *+4−6* if J=8 or E2 if J=6 from pγ(θ) in (α,pγ).
6176.4	(2$^+$,3,4,5$^-$)	2817	100 *40*	3358.823	3$^-$			
		3881	100 *40*	2295.648	4$^+$			
6183.8	(2$^+$ to 6$^+$)	2944	82 *27*	3239.771	4$^+$			
		3888	100 *27*	2295.648	4$^+$			
6223.8	(0$^+$ to 4$^+$)	5240	100	983.531	2$^+$			
6233.6	3$^-$	2616	88 *18*	3616.812	2$^+$			
		3813	63 *15*	2421.053	2$^+$			
		5250	100 *25*	983.531	2$^+$			
6236	2$^+$	6236@ *3*		0.0	0$^+$	Q&		
6241.0	(4$^+$,5$^-$)	2907.7 *4*	100	3333.187	6$^+$			
6243.8	(0$^+$ to 3$^+$)	2505	67 *13*	3738.60	1$^+$			
		2873	100 *13*	3370.87	2$^+$			
6253.7	3$^-$	1873	78 *15*	4381.4	(3,4,5$^-$)			
		2180	100 *22*	4074.511	2$^+$			
		2881	66 *15*	3370.87	2$^+$			

$^{48}_{22}Ti_{26}$-39

Adopted Levels, Gammas (continued)

$\gamma(^{48}$Ti) (continued)

E_i(level)	J^π_i	E_γ‡	I_γ‡	E_f	J^π_f
6267.8	(3⁻)	5284	100	983.531	2⁺
6313.7	(4⁺,5⁻)	2980.4 *3*	100	3333.187	6⁺
6315.4	(2⁺,3,4⁺)	2698	25 *6*	3616.812	2⁺
		2943	94 *16*	3370.87	2⁺
		4021	94 *16*	2295.648	4⁺
		5332	100 *22*	983.531	2⁺
6322.0	(2,3,4)	2963	100 *16*	3358.823	3⁻
		3098	100 *16*	3223.971	3⁺
6331.1	(1⁺ to 5⁺)	3107	100	3223.971	3⁺
6336.5	3⁻	2554	100	3782.459	3⁻,4⁻
6363.8	(3,4)⁺	1959	100 *17*	4404.8	5$^{(+)}$
		3124	89 *17*	3239.771	4⁺
6365.16	3⁻	1572.41 *17*	25 *3*	4792.31	(1⁻,2,3⁻)
		4069.47 *10*	100 *7*	2295.648	4⁺
6394.8	(6⁺,7⁻)	764	17 *3*	5630.9	7
		1082	14 *3*	5312.8	(5⁻)
		1197	11 *3*	5197.9	8⁺
		1438	100 *9*	4956.6	(4⁺,5,6⁻)
6400.9	(4⁺ to 8⁺)	2002	100 *20*	4398.7	6⁺
		2892	44 *13*	3508.548	6⁺
		3068	56 *5*	3333.187	6⁺
6406.0	(1⁻ to 5⁻)	2553.7 *3*	100	3852.24	3⁻
6414.8	(2⁺ to 6⁺)	4119	100	2295.648	4⁺
6434.6	(3⁻ to 7⁻)	2388	100	4046.6	5$^{(-)}$
6451.1	(2⁺,3,4)	2598	61 *13*	3852.24	3⁻
		3212	100 *22*	3239.771	4⁺
		3227	57 *13*	3223.971	3⁺
6461.3	(4⁺ to 8⁺)	3128	100	3333.187	6⁺
6475.3	3⁻	2623	100	3852.24	3⁻
6490.36	(2⁺,3)	2687.52 *11*	100 *8*	3802.73	2⁻
		3252.4 *8*	16 *6*	3239.771	4⁺
		5506.4 *7*	33 *10*	983.531	2⁺
6491.6	(0⁺ to 4⁺)	4070	100 *33*	2421.053	2⁺
		5508	67 *33*	983.531	2⁺
6493.5	(4⁺,5,6,7⁻)	1577	43 *9*	4916.3	5⁻
		2447	100 *14*	4046.6	5$^{(-)}$
		2985	29 *5*	3508.548	6⁺
6507.8	(6⁺,7⁻)	1551	82 *29*	4956.6	(4⁺,5,6⁻)
		1943	25 *7*	4564.8	8$^{(+)}$
		2461	79 *14*	4046.6	5$^{(-)}$
		2999	100 *18*	3508.548	6⁺
		3175	71 *14*	3333.187	6⁺
6518.5	4⁺	3279	100 *16*	3239.771	4⁺

$^{48}_{22}$Ti$_{26}$-40

Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.	α[†]	Comments
6518.5	4^+	3294	75 *16*	3223.971	3^+			
6524.6	(4^+ to 8^+)	3016	100	3508.548	6^+			
6529.5	(1^- to 6^-)	2747	100	3782.459	3^-,4^-			
6537.0	(4^+ to 7^-)	2490	59 *10*	4046.6	$5^{(-)}$			
		3204	100 *10*	3333.187	6^+			
6538.9		1614	100	4924.92	$(2,3,4)^+$			
6542.0	(0^+ to 4^+)	5558.1 *3*	100	983.531	2^+			
6544.8	(2^+ to 6^+)	4249	100	2295.648	4^+			
6573.9	($5,6,7^+$)	943	52 *15*	5630.9	7			
		2169	30 *12*	4404.8	$5^{(+)}$			
		2175	67 *18*	4398.7	6^+			
		3065	100 *18*	3508.548	6^+			
		3241	55 *12*	3333.187	6^+			
6584.4	(3^-)	4289	79 *14*	2295.648	4^+			
		5600	100 *14*	983.531	2^+			
6604.3	1^-	5620[@] *4*	33[@]	983.531	2^+	E1[&]	2.20×10^{-3} *3*	B(E1)(W.u.)=0.00135 α(K)=3.98×10^{-6} *6*; α(L)=3.53×10^{-7} *5*; α(M)=4.52×10^{-8} *6* α(N)=2.467×10^{-9} *35*; α(IPF)=0.002196 *31*
		6604[@] *3*	100[@]	0.0	0^+	E1[&]		B(E1)(W.u.)=0.00251
6617.7	(4^+ to 8^+)	3109	100	3508.548	6^+			
6627.6	(0^-,1,2,3)	2888.9 *4*	100	3738.60	1^+			
6634.3	(3^-,4,5^-)	2588	89 *16*	4046.6	$5^{(-)}$			
		2781	100 *21*	3852.24	3^-			
		3395	74 *13*	3239.771	4^+			
6652.6	(1^- to 6^-)	2870	100	3782.459	3^-,4^-			
6661.6	(3^- to 7^-)	2615	100	4046.6	$5^{(-)}$			
6672.6	$(2,3,4)^+$	2890	100	3782.459	3^-,4^-			
6707.29	(2^+,3,4)	3483.5 *3*	100 *14*	3223.971	3^+			
		4411.1 *3*	99 *12*	2295.648	4^+			
6707.4	(2^+,3,4^+)	2854	100 *15*	3852.24	3^-			
		4412	42 *10*	2295.648	4^+			
		5724	50 *12*	983.531	2^+			
6711.6	(4^+,5,6,7^-)	672	75 *17*	6039.7	6			
		1795	100 *22*	4916.3	5^-			
		2665	39 *11*	4046.6	$5^{(-)}$			
		3203	64 *14*	3508.548	6^+			
6744.9	(4^+,5,6^+)	2698	49 *9*	4046.6	$5^{(-)}$			
		3236	40 *9*	3508.548	6^+			
		3412	100 *20*	3333.187	6^+			
		4449	97 *17*	2295.648	4^+			
6757.9	(6^+,7,8,9)	723	29 *6*	6034.9	9^+,7^+			
		1127	14 *4*	5630.9	7			

$^{48}_{22}Ti_{26}$-41

Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ ‡	I_γ ‡	E_f	J_f^π	Mult.	Comments
6757.9	(6$^+$,7,8,9)	1560	100 *7*	5197.9	8$^+$		
6771.3	(4$^+$ to 8$^+$)	3438	100	3333.187	6$^+$		
6798.0	(1$^+$,2,3,4)	3573.9 *6*	100	3223.971	3$^+$		
6808.5		2427	100	4381.4	(3,4,5$^-$)		
6814.9	(3$^-$)	3575	100	3239.771	4$^+$		
6825.7	(4$^+$ to 8$^+$)	2427	100 *17*	4398.7	6$^+$		
		3317	67 *17*	3508.548	6$^+$		
6827.8	(2$^+$,3,4$^+$)	2108.7 *3*	100 *22*	4719.137	4$^+$		
		5843.7 *5*	20 *4*	983.531	2$^+$		
6831.6	(0$^+$ to 4$^+$)	4410	100 *17*	2421.053	2$^+$		
		5848	67 *17*	983.531	2$^+$		
6841.9	3$^-$	3602	67 *12*	3239.771	4$^+$		
		4546	100 *12*	2295.648	4$^+$		
6869.0	(1$^-$ to 5$^-$)	3510	100	3358.823	3$^-$		
6878.3	(0$^+$ to 4$^+$)	4457	100	2421.053	2$^+$		
6880.9	(6$^+$,7$^-$)	1568	100 *3*	5312.8	(5$^-$)		
		2316	11 *3*	4564.8	8$^{(+)}$		
6886.0	(4$^+$ to 8$^+$)	3377	100 *18*	3508.548	6$^+$		
		3553	82 *18*	3333.187	6$^+$		
6898.0	(1,2$^+$)	3901.4 *7*	100 *29*	2997.31	0$^+$		
		5912.3 *10*	73 *23*	983.531	2$^+$		
6907.0	10,8,6	872	100	6034.9	9$^+$,7$^+$	D+Q	Mult.,δ: δ(10→9)=−0.03 *4*, δ(8→9)=−0.02 *4*, δ(8→7)=−0.05+5-2, or δ(6→7)=−0.19 *+13−3* from p$\gamma(\theta)$ in (α,pγ).
6916.7	(3$^-$ to 7$^-$)	2870	100	4046.6	5$^{(-)}$		
6944.7	(4$^+$,5,6,7$^-$)	2898	100 *14*	4046.6	5$^{(-)}$		
		3436	43 *14*	3508.548	6$^+$		
6955.8	(5$^+$ to 8$^+$)	1786	43 *7*	5169.8	7$^+$		
		3447	100 *7*	3508.548	6$^+$		
6957.0	(1$^-$,2,3,4$^+$)	3104.4 *4*	100 *24*	3852.24	3$^-$		
		4536.0 *4*	51 *11*	2421.053	2$^+$		
6966.9	(2$^+$ to 6$^+$)	4671	100	2295.648	4$^+$		
6971.9	(0$^+$ to 4$^+$)	5988	100	983.531	2$^+$		
6975.4	(3$^-$ to 7$^-$)	1983	52 *9*	4992.0	5$^-$		
		2019	100 *9*	4956.6	(4$^+$,5,6$^-$)		
6976.30	(1,2,3,4$^+$)	1620.05 *18*	86 *10*	5356.23	(2$^+$,3,4$^+$)		
		2941.0 *4*	100 *26*	4035.153	2$^+$		
6979	1$^-$	6978@ *3*		0.0	0$^+$	E1&	
6983.4	(1$^-$ to 5$^-$)	3131	100	3852.24	3$^-$		
6985.8	(6$^+$,7)	1816	41 *9*	5169.8	7$^+$		
		2029	94 *19*	4956.6	(4$^+$,5,6$^-$)		
		2421	78 *16*	4564.8	8$^{(+)}$		
		3477	100 *22*	3508.548	6$^+$		
7033.5	(4$^+$)	2652	100	4381.4	(3,4,5$^-$)		

$^{48}_{22}Ti_{26}$-42

Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.
7040.9	(6$^+$,7,8,9$^+$)	467	11.1 *22*	6573.9	(5,6,7$^+$)	
		2476	100 *11*	4564.8	8$^{(+)}$	
7041	1,2	7040[@] *4*		0.0	0$^+$	D,Q[&]
7054.0	(3$^-$)	3695	100	3358.823	3$^-$	
7060.80	(0$^-$,1,2,3$^-$)	3361.16 *20*	100	3699.52	1$^{(-)}$	
7067.0	(3$^-$,4$^+$)	2870	100	4196.90	(2$^+$)	
7071?	1$^+$	7070[@a] *4*		0.0	0$^+$	M1[&]
7076.0	(6$^+$ to 10$^+$)	973	100 *25*	6103.2	10$^{(+)}$,8	
		1878	75 *15*	5197.9	8$^+$	
		2511	75 *15*	4564.8	8$^{(+)}$	
7094.1	(5$^+$ to 8$^+$)	1924	25 *13*	5169.8	7$^+$	
		3761	100 *13*	3333.187	6$^+$	
7100.9	(2$^+$ to 6$^+$)	4805	100	2295.648	4$^+$	
7110	1	7109[@] *5*		0.0	0$^+$	D[&]
7111.9	(5 to 9)	1481	100	5630.9	7	
7118.9	(6$^+$,7$^-$)	1806	100 *23*	5312.8	(5$^-$)	
		1921	64 *9*	5197.9	8$^+$	
		2554	64 *9*	4564.8	8$^{(+)}$	
		2720	82 *14*	4398.7	6$^+$	
		3610	45 *9*	3508.548	6$^+$	
		3786	100 *18*	3333.187	6$^+$	
7124	1$^-$	7123[@] *3*		0.0	0$^+$	E1[&]
7149.8	(4$^+$ to 8$^+$)	2751	100	4398.7	6$^+$	
7162.7	(4$^+$ to 8$^+$)	3654	100	3508.548	6$^+$	
7183.6	(0$^+$ to 4$^+$)	4762	67 *17*	2421.053	2$^+$	
		6200	100 *17*	983.531	2$^+$	
7199.3	(0$^+$ to 4$^+$)	4778	100	2421.053	2$^+$	
7221.6	(1,2,3,4$^+$)	2840	100 *12*	4381.4	(3,4,5$^-$)	
		3147	67 *12*	4074.511	2$^+$	
7221.6	1$^+$	7221[@] *2*		0.0	0$^+$	M1[&]
7256.8	(4)$^+$	3210	100 *15*	4046.6	5$^{(-)}$	
		4017	67 *15*	3239.771	4$^+$	
7275.1	(4$^+$)	1962	51 *10*	5313.3	2$^+$	
		3766	100 *16*	3508.548	6$^+$	
		3942	45 *10*	3333.187	6$^+$	
7290.0	3$^+$	6306	100	983.531	2$^+$	
7323.0	3$^-$	6339	100	983.531	2$^+$	
7326.9	(6$^+$ to 10$^+$)	2129	100 *11*	5197.9	8$^+$	
		2762	54 *11*	4564.8	8$^{(+)}$	
7344.8	(4$^+$ to 8$^+$)	2946	100	4398.7	6$^+$	
7353.9	(5 to 9)	1723	100	5630.9	7	
7358.98	2$^+$	3620.3 *3*	84 *11*	3738.60	1$^+$	

$^{48}_{22}Ti_{26}$-43

Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.	Comments
7358.98	2+	4134.85 *23*	100 *14*	3223.971	3+		
		4937.6 *4*	73 *14*	2421.053	2+		
		6374.7 *5*	51 *8*	983.531	2+		
7375.1	11,9,7	468	11.1 *22*	6907.0	10,8,6		Mult.: not pure E2 or M2 (ΔJ=2) from comparison to RUL.
		1272	100.0 *22*	6103.2	$10^{(+)}$,8	D+Q	Mult.,δ: δ(11→10)=0.00 *6*, δ(9→10)=−0.05 *7*, δ(9→8)=0.00 *7*, or δ(7→8)=−0.07 *9* from pγ(θ) in (α,pγ).
7387.9		814	100	6573.9	(5,6,7+)		
7427.9	9,7	1393	100 *9*	6034.9	9+,7+		Mult.,δ: D+Q, −0.60 *15*, if 9→9, Q if 9→7, or D+Q, −0.67 *15*, if 7→7.
		2230	21 *5*	5197.9	8+		
		2863	30 *8*	4564.8	$8^{(+)}$		
7431.9	(2,3,4)+	5136	100	2295.648	4+		
7442.9	(4+,5,6+)	3044	54 *12*	4398.7	6+		
		5147	100 *12*	2295.648	4+		
7450	1−	7449[@] *3*		0.0	0+	E1[&]	
7476.8	(3+ to 7+)	2520	100 *12*	4956.6	(4+,5,6−)		
		3072	47 *12*	4404.8	$5^{(+)}$		
7484.0	(0+ to 4+)	6500	100	983.531	2+		
7484	1	7483[@] *4*		0.0	0+	D[&]	
7497.9	(4+)	2185	100	5312.8	(5−)		
7531.9	(6+,7,8+)	1901	43 *7*	5630.9	7		
		2334	100 *16*	5197.9	8+		
		3133	84 *14*	4398.7	6+		
7536.0		460	29 *14*	7076.0	(6+ to 10+)		
		629	86 *14*	6907.0	10,8,6		
		778	71 *14*	6757.9	(6+,7,8,9)		
		1433	100 *14*	6103.2	$10^{(+)}$,8		
7541.71	(2+,3,4+)	3344.66 *9*	100 *7*	4196.90	(2+)		
		4184.5 *15*	3.7 *22*	3358.823	3−		
		4302.6 *4*	13.8 *27*	3239.771	4+		
		4316.8 *5*	12.4 *27*	3223.971	3+		
7557.0	(2+ to 6+)	5261	100	2295.648	4+		
7572.4	(4+ to 8+)	4239	100	3333.187	6+		
7574.15	(2+,3,4,5−)	3186.35 *22*	100	4387.691	4+		
7586	$1^{(-)}$	7585[@] *4*		0.0	0+	(E1)[&]	
7588.1	(5,6,7,8+)	1415	50 *10*	6172.9	8+,6+		
		1957	88 *14*	5630.9	7		
		4255	100 *19*	3333.187	6+		
7616.13	(1−,2)	2858.8 *3*	100 *16*	4757.73	(3−)		
		3763.7 *3*	55 *10*	3852.24	3−		
		3876.8 *3*	100 *16*	3738.60	1+		
		3916.8 *6*	42 *10*	3699.52	$1^{(-)}$		
7623.9	(6+,7−)	2311	100 *20*	5312.8	(5−)		

$^{48}_{22}Ti_{26}$-44

Adopted Levels, Gammas (continued)

γ(^{48}Ti) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.	Comments
7623.9	$(6^+,7^-)$	3059	100 *20*	4564.8	$8^{(+)}$		
7656.9	$(6^+$ to $10^+)$	3092	100	4564.8	$8^{(+)}$		
7669.2	10,8	1566	100	6103.2	$10^{(+)}$,8	D+Q	Mult.,δ: δ(10→10)=−0.90 *14* or δ(8→8)=−0.95 *15* from pγ(θ) in (α,pγ).
7709.7	$(3^-$ to $7^-)$	3663	100	4046.6	$5^{(-)}$		
7969	1	7968[@] *4*		0.0	0^+	D[&]	
8010	1	8009[@] *4*		0.0	0^+	D[&]	
8092.1	12,10,8,6	717	100	7375.1	11,9,7	D+Q	δ,Mult.: δ(12→11)=+0.02 *6*, δ(10→11)=−0.05 *6*, δ(10→9)=+0.02 *6*, δ(8→9)=−0.05 *6*, δ(8→7)=+0.02 *6*, or δ(6→7)=−0.07 *6* from pγ(θ) in (α,pγ).
8199	1^+	8198[@] *4*		0.0	0^+	(M1)	Mult.: D,Q from γ(θ) and azimuthal asymmetries in (γ,γ); Δπ=no from level scheme.
8255	1	8254[@] *4*		0.0	0^+	D[&]	
8323.9	10,8,6	896	100	7427.9	9,7	D+Q	Mult.,δ: δ(10→9)=+0.05 *7*, δ(8→9)=−0.14 *8*, δ(8→7)=+0.10 *+10−5*, δ(6→7)=−0.19 *+13−3*.
8572	$1^{(-)}$	8571[@] *4*		0.0	0^+	(E1)[&]	
8592	1	8591[@] *4*		0.0	0^+	D[&]	
8672	1	8671[@] *5*		0.0	0^+	D[&]	
8933	1	8932[@] *5*		0.0	0^+	D[&]	
8996	$1^{(+)}$	8995[@] *5*		0.0	0^+	(M1)[&]	
9025	1	9024[@] *5*		0.0	0^+	D[&]	
9977	1^-	9976[@] *6*		0.0	0^+	E1[&]	

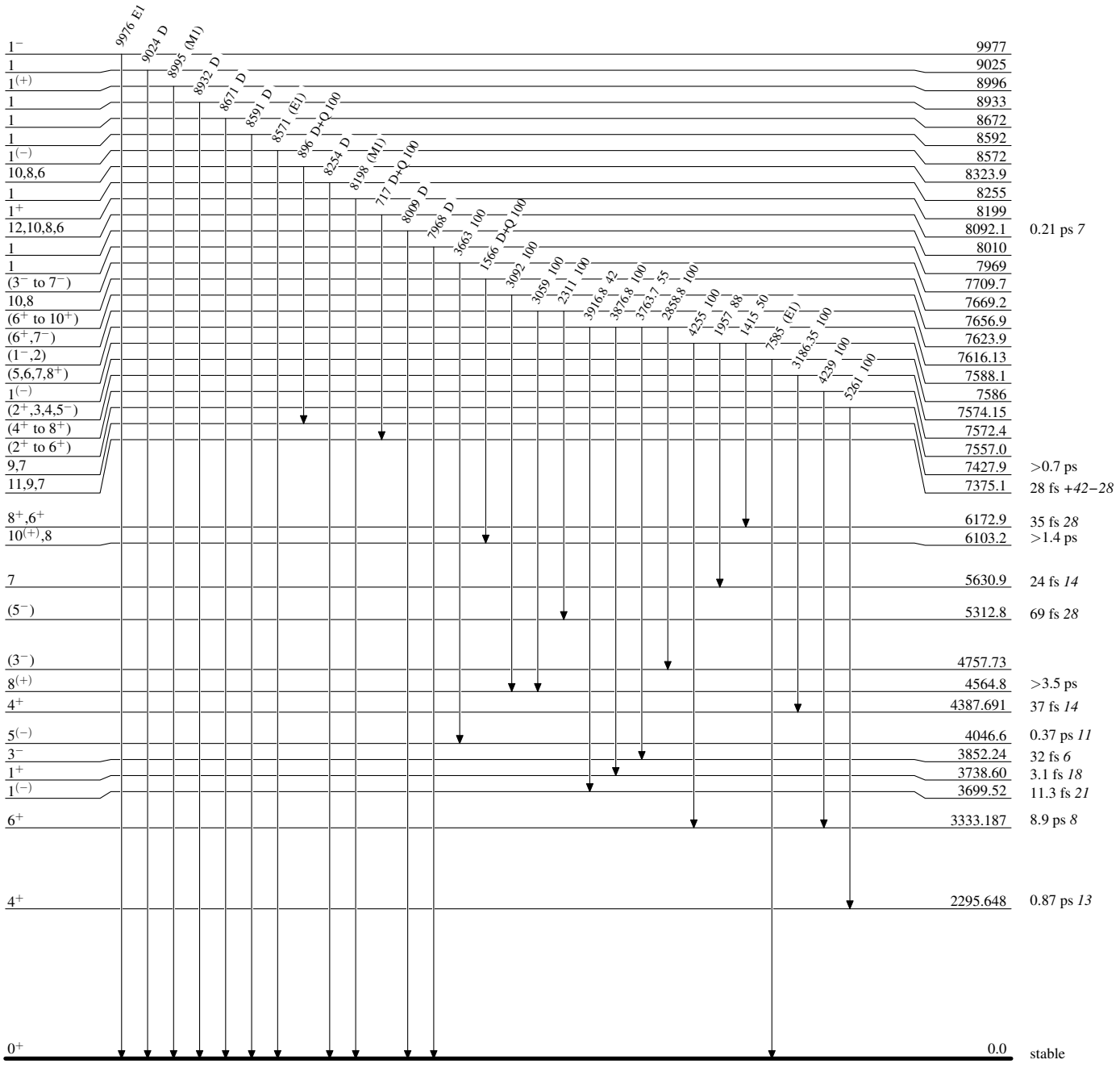
[†] Additional information 1.
[‡] From (α,pγ) for those with no ΔEγ and from (n,γ) E=thermal for those with ΔEγ, unless otherwise noted. For Eγ from (α,pγ), ΔEγ=1 keV is assumed in the least-squares fit to get E(level).
[#] Those γ branches are reported by 1979Gl07 in (α,pγ), but not confirmed in (n,γ) E=thermal by 1984Ru06, which constructs the (n,γ) level scheme with the aid of the Ritz combination and previous experiments. This method in 1984Ru06 is, perhaps, more rigorous than those employed by other authors for the placement of transitions. Therefore, if for states observed in (n,γ) there are transitions assigned in other experiments which are not confirmed, the placements of these transitions are probably questionable.
[@] From (γ,γ′).
[&] From γ(θ) and azimuthal asymmetries in (γ,γ′).
[a] Placement of transition in the level scheme is uncertain.

$^{48}_{22}Ti_{26}$-45

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

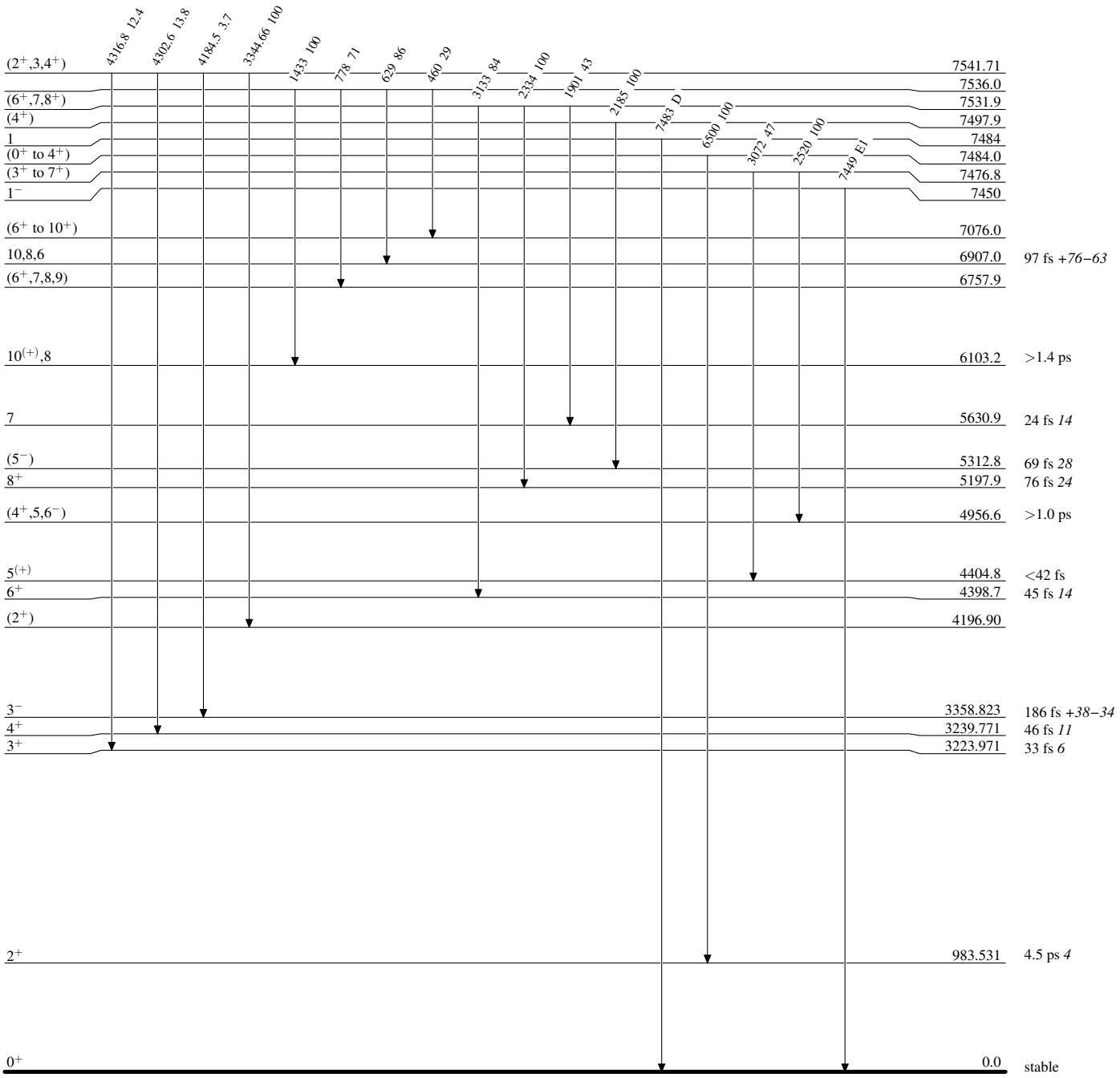


$^{48}_{22}Ti_{26}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

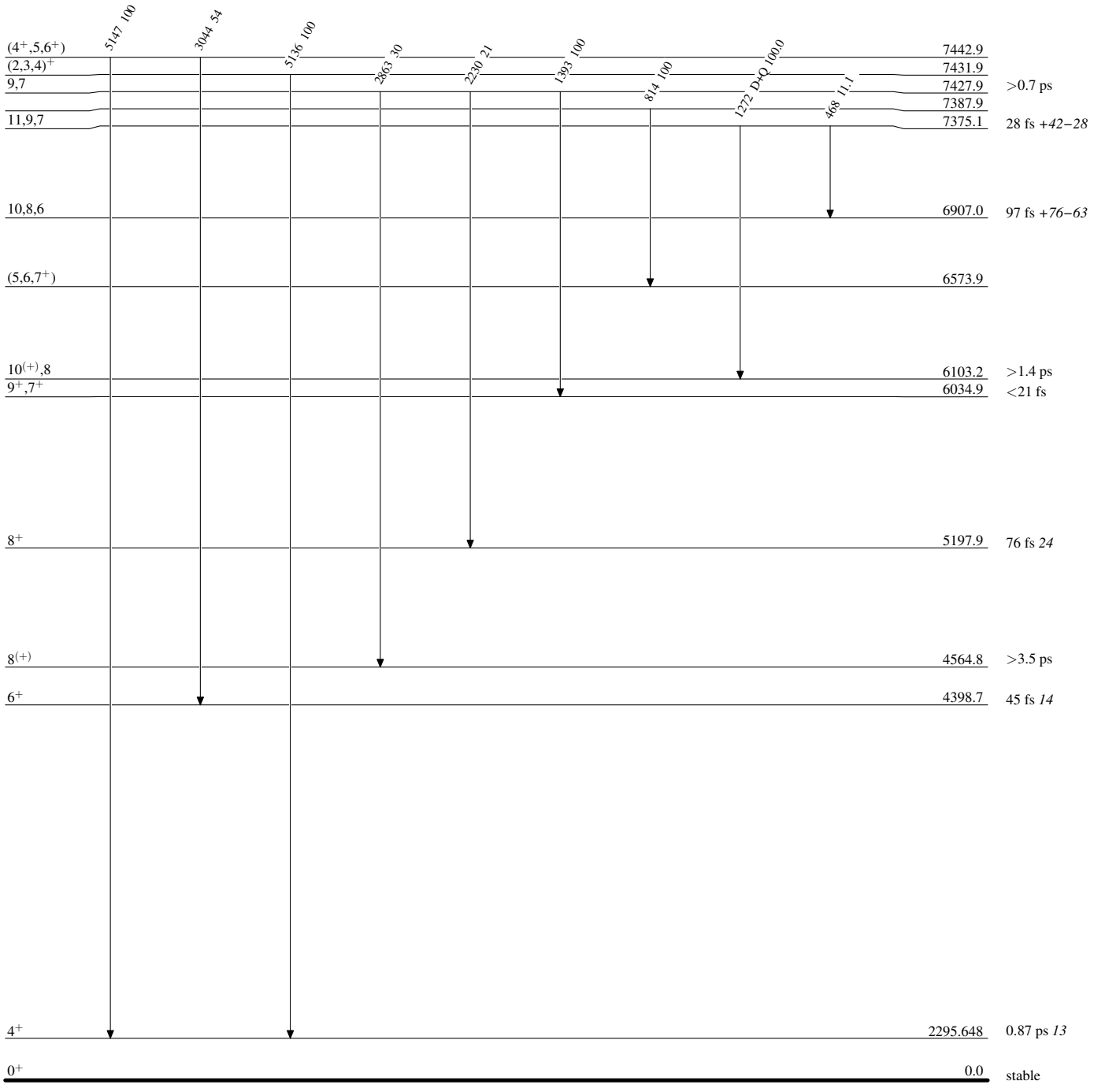


$^{48}_{22}Ti_{26}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

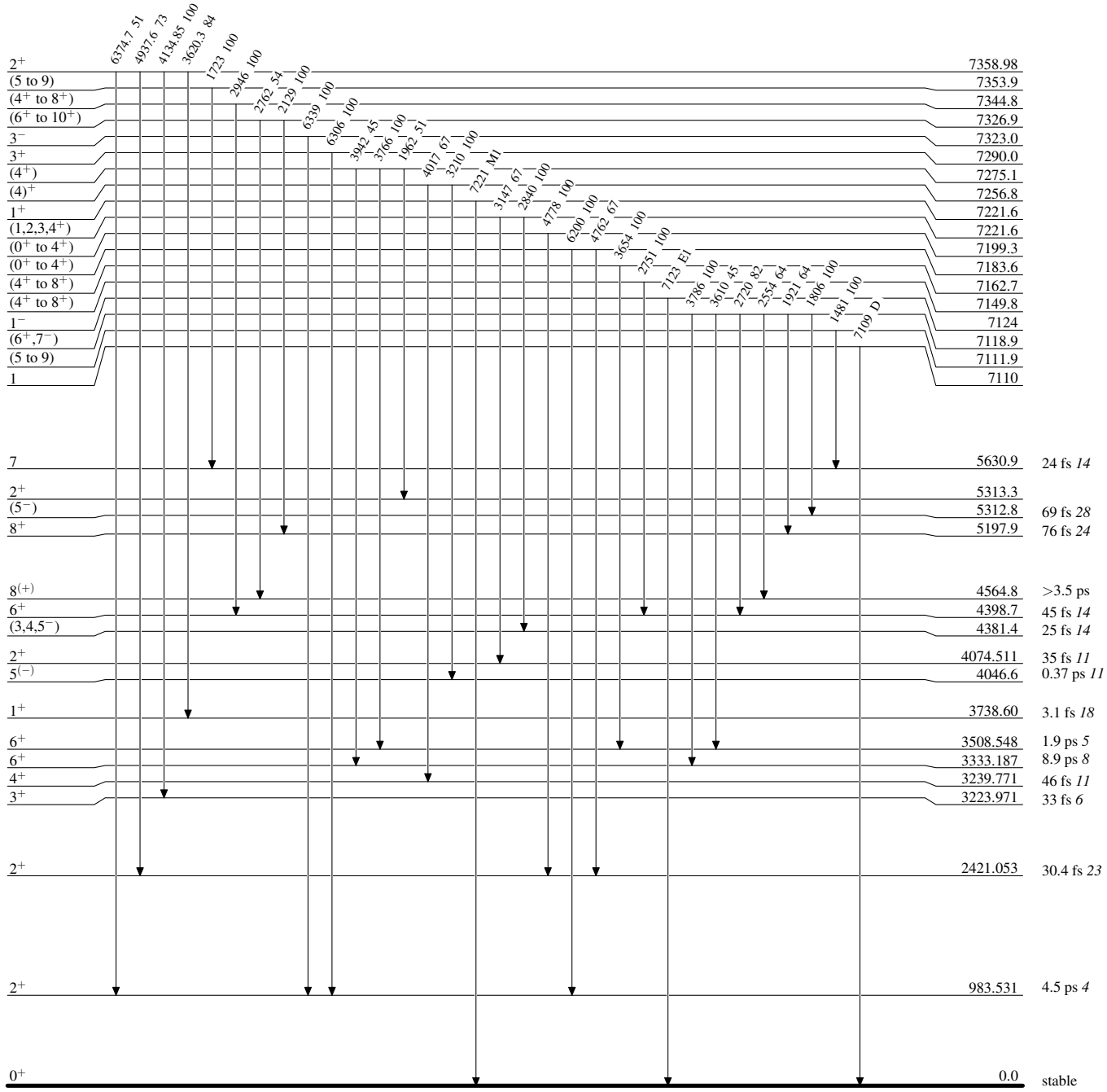


$^{48}_{22}Ti_{26}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{48}_{22}Ti_{26}$

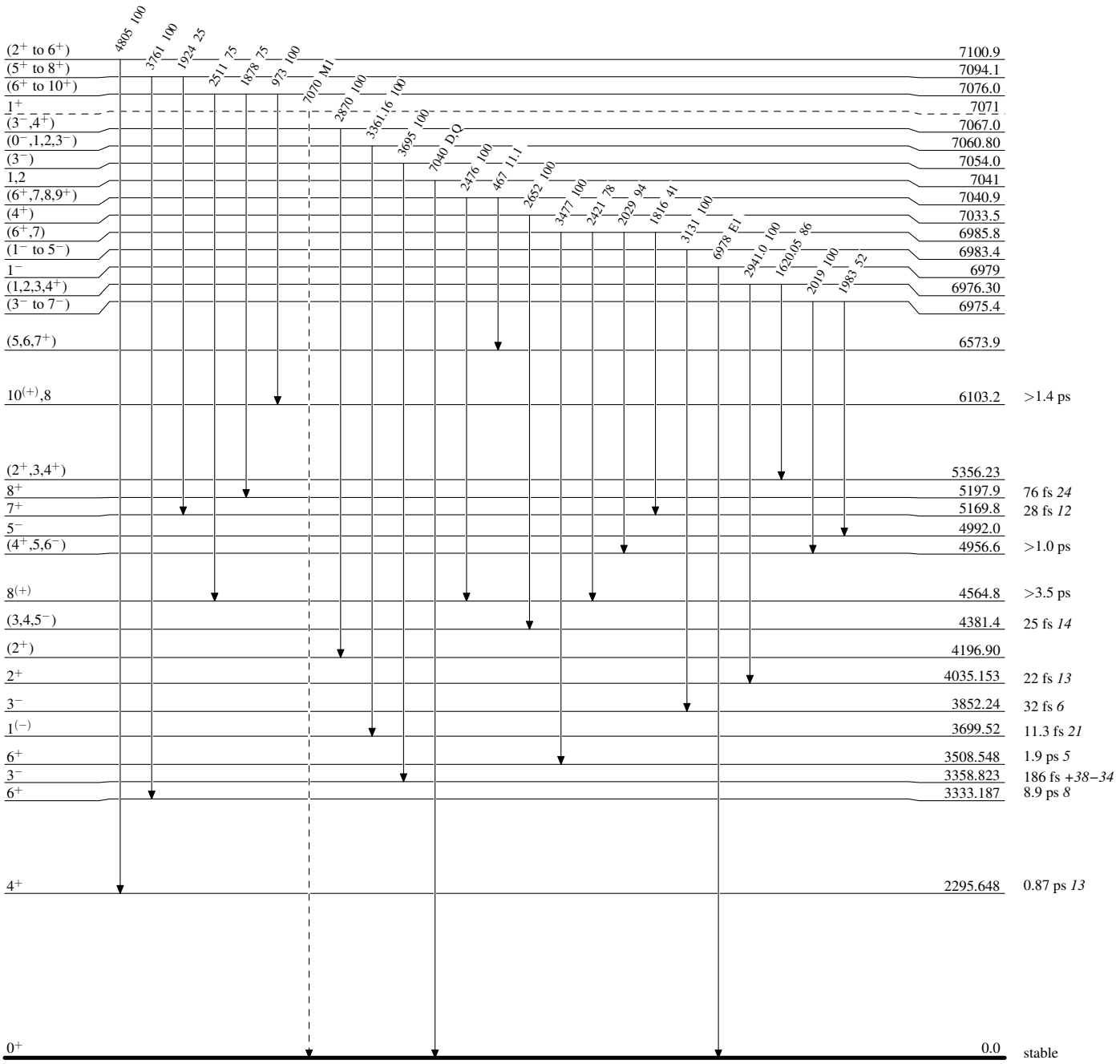
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

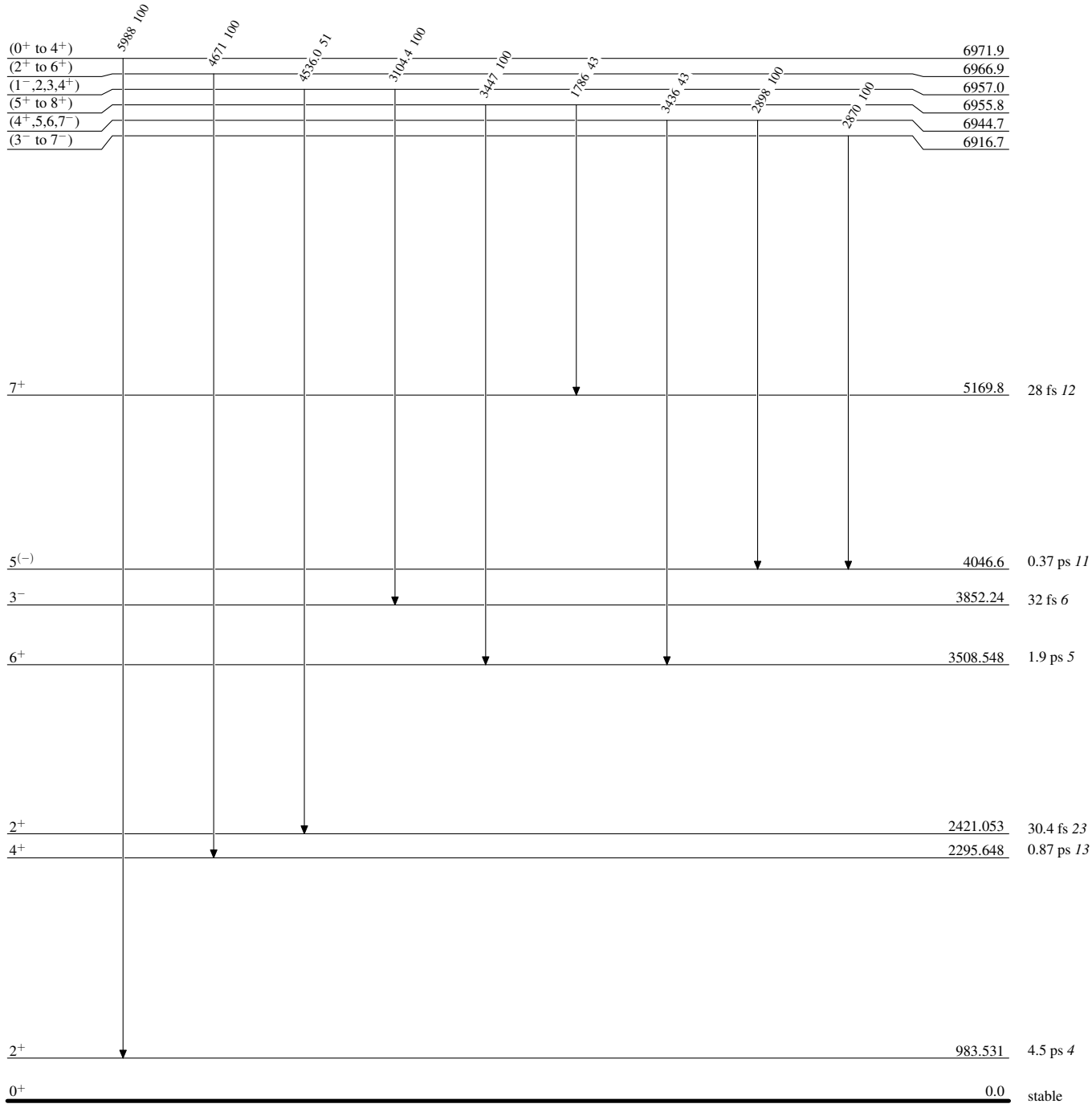


$^{48}_{22}Ti_{26}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

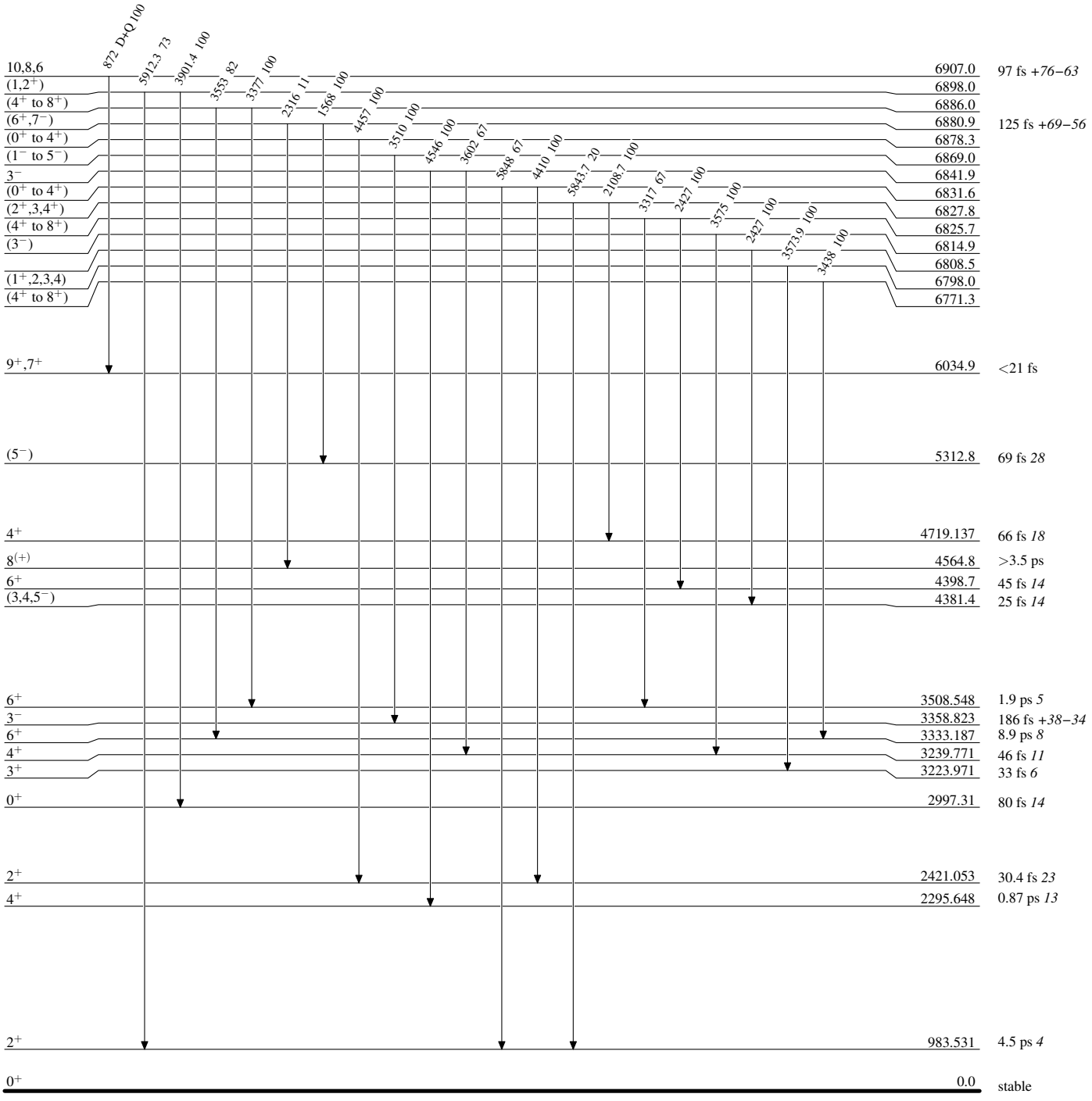


$^{48}_{22}Ti_{26}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

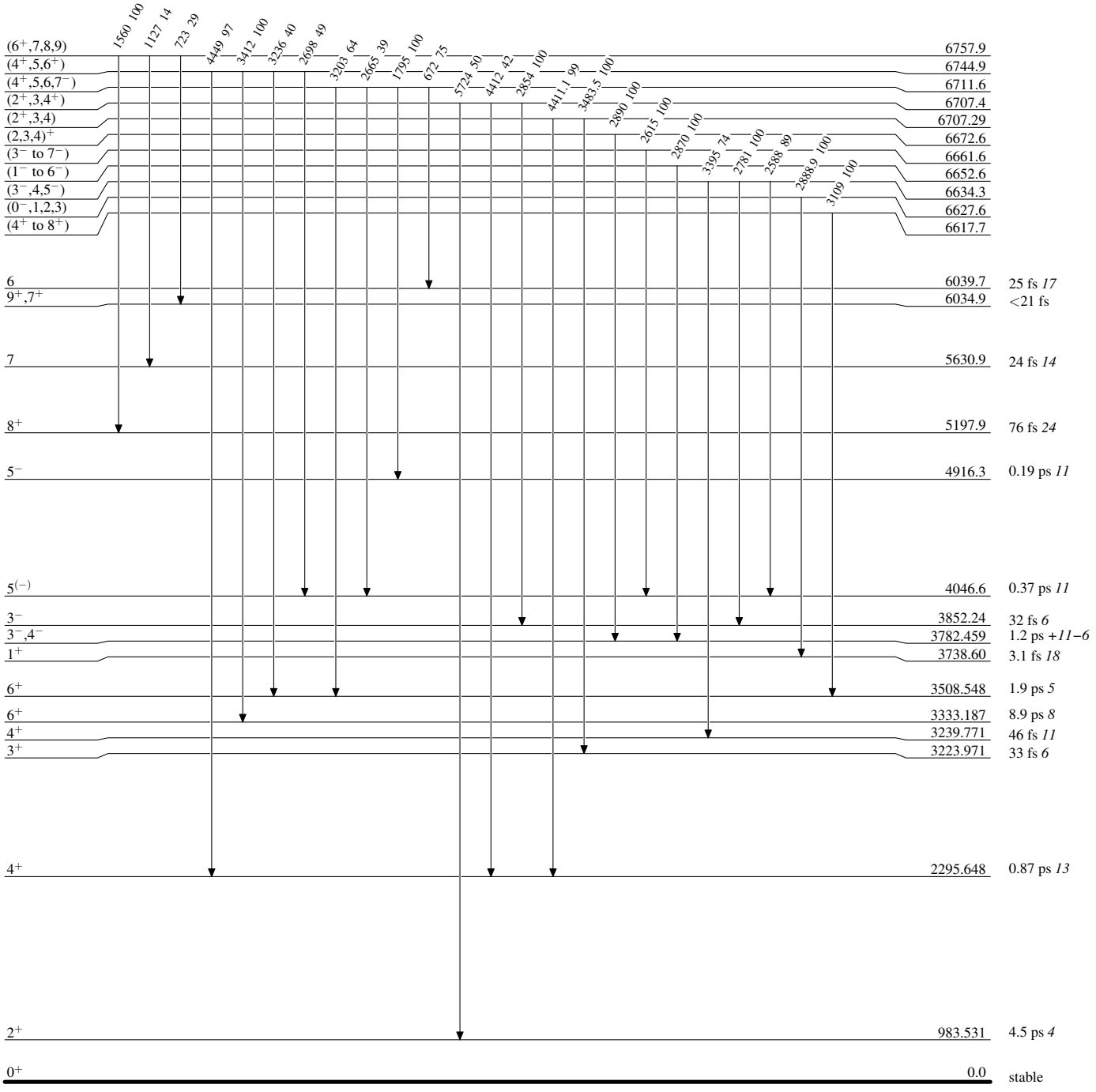


$^{48}_{22}Ti_{26}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

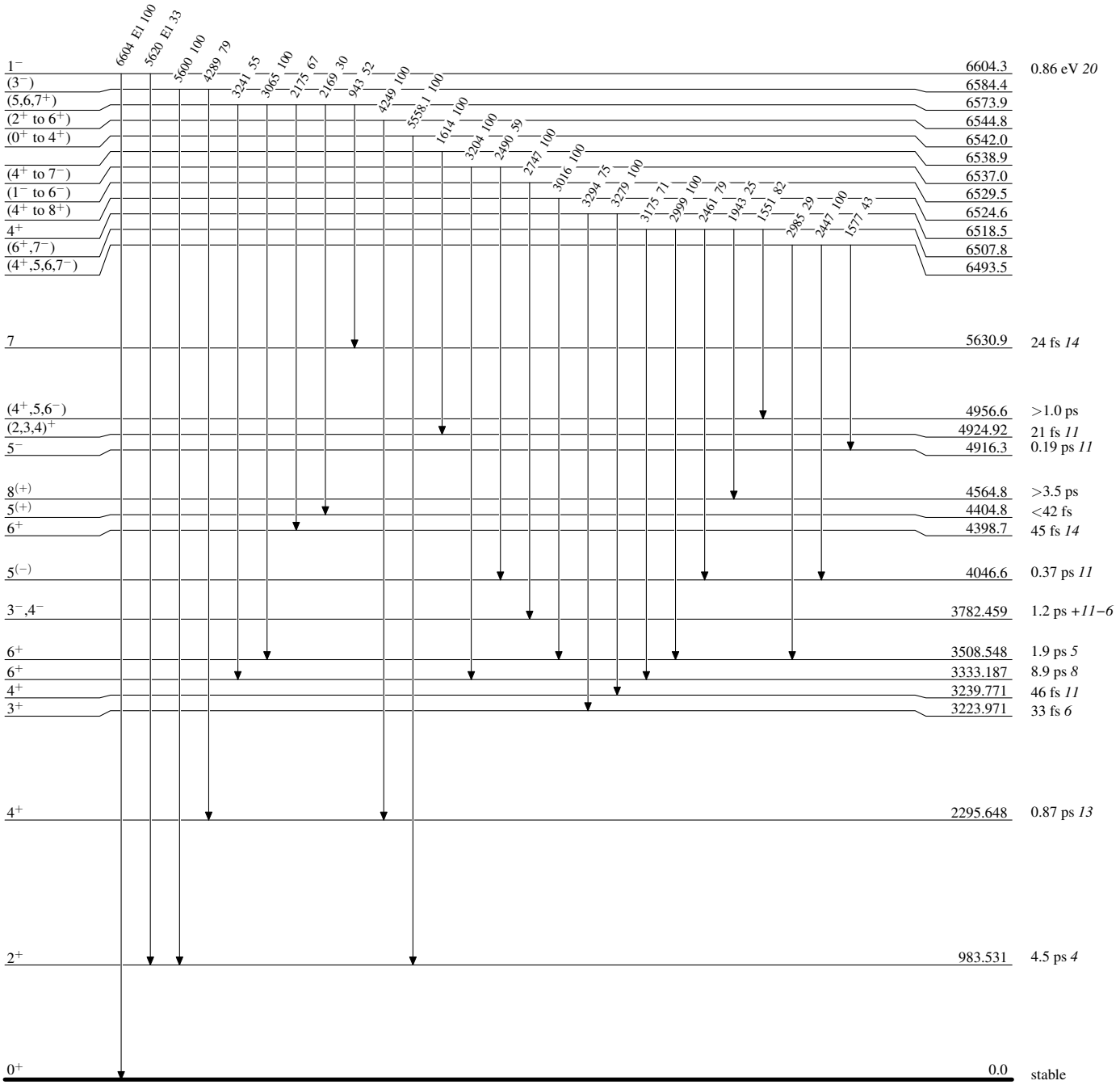


$^{48}_{22}Ti_{26}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

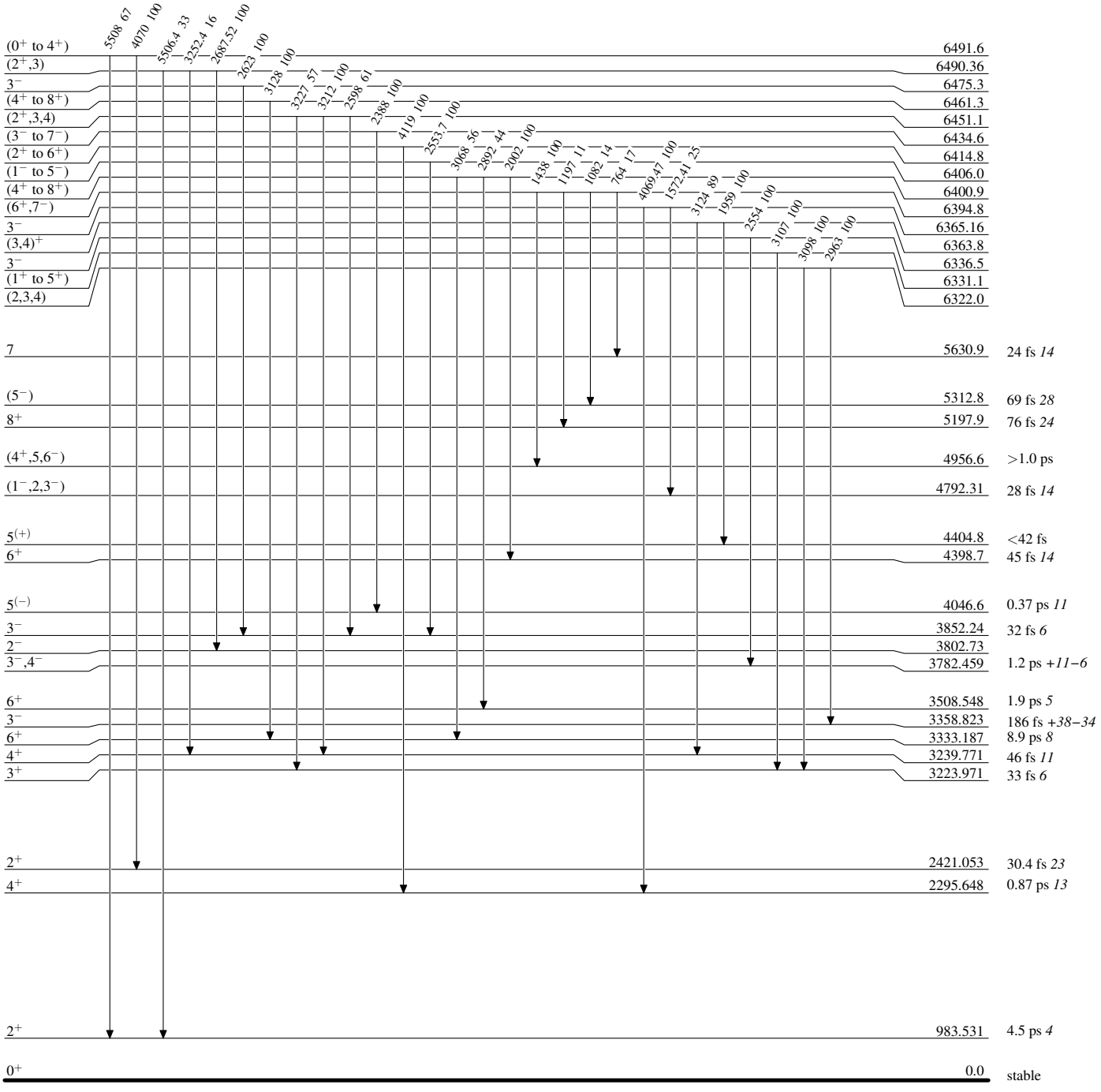


$^{48}_{22}Ti_{26}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

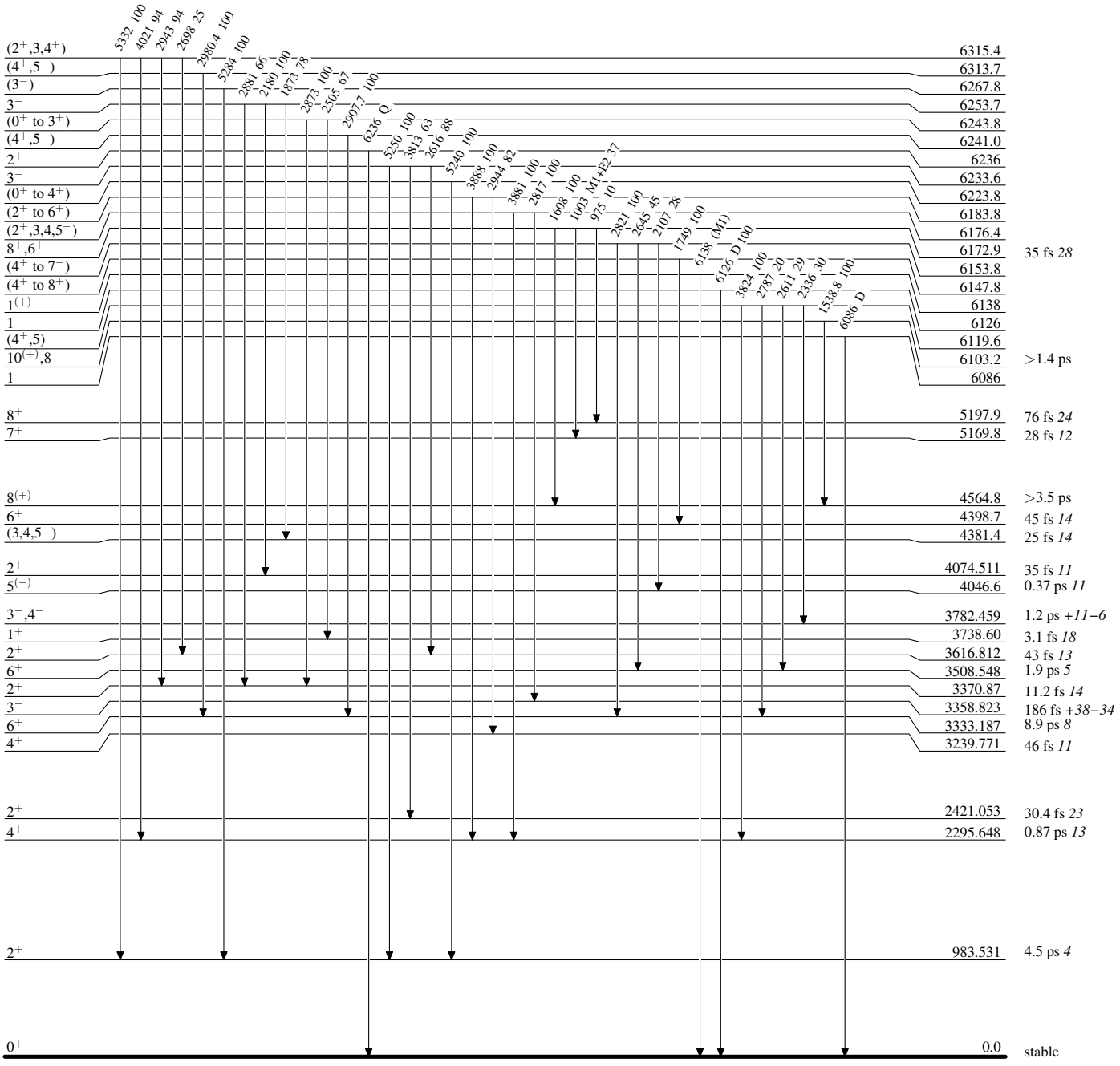


$^{48}_{22}Ti_{26}$

Adopted Levels, Gammas

Level Scheme (continued)

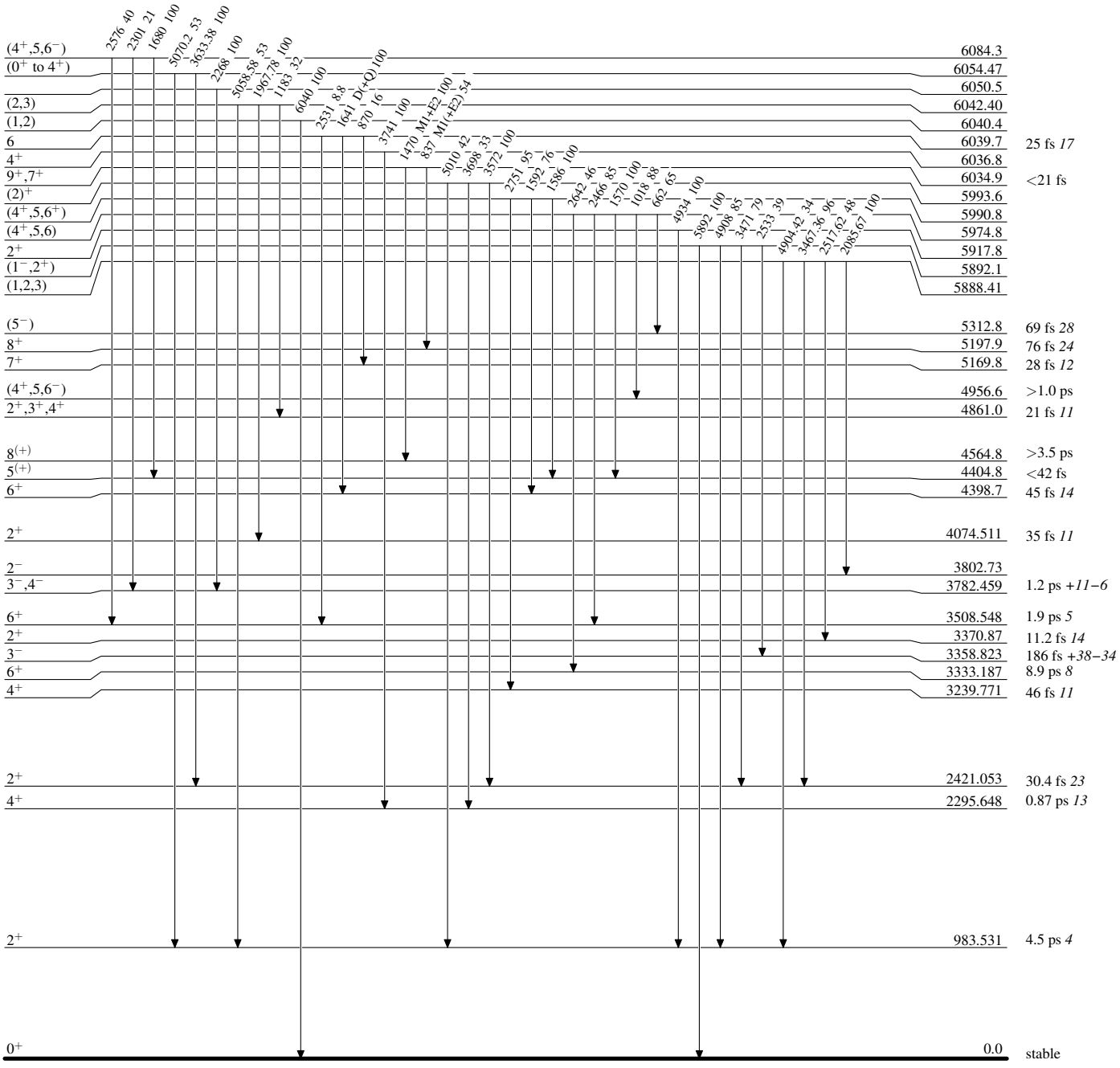
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{48}_{22}Ti_{26}$

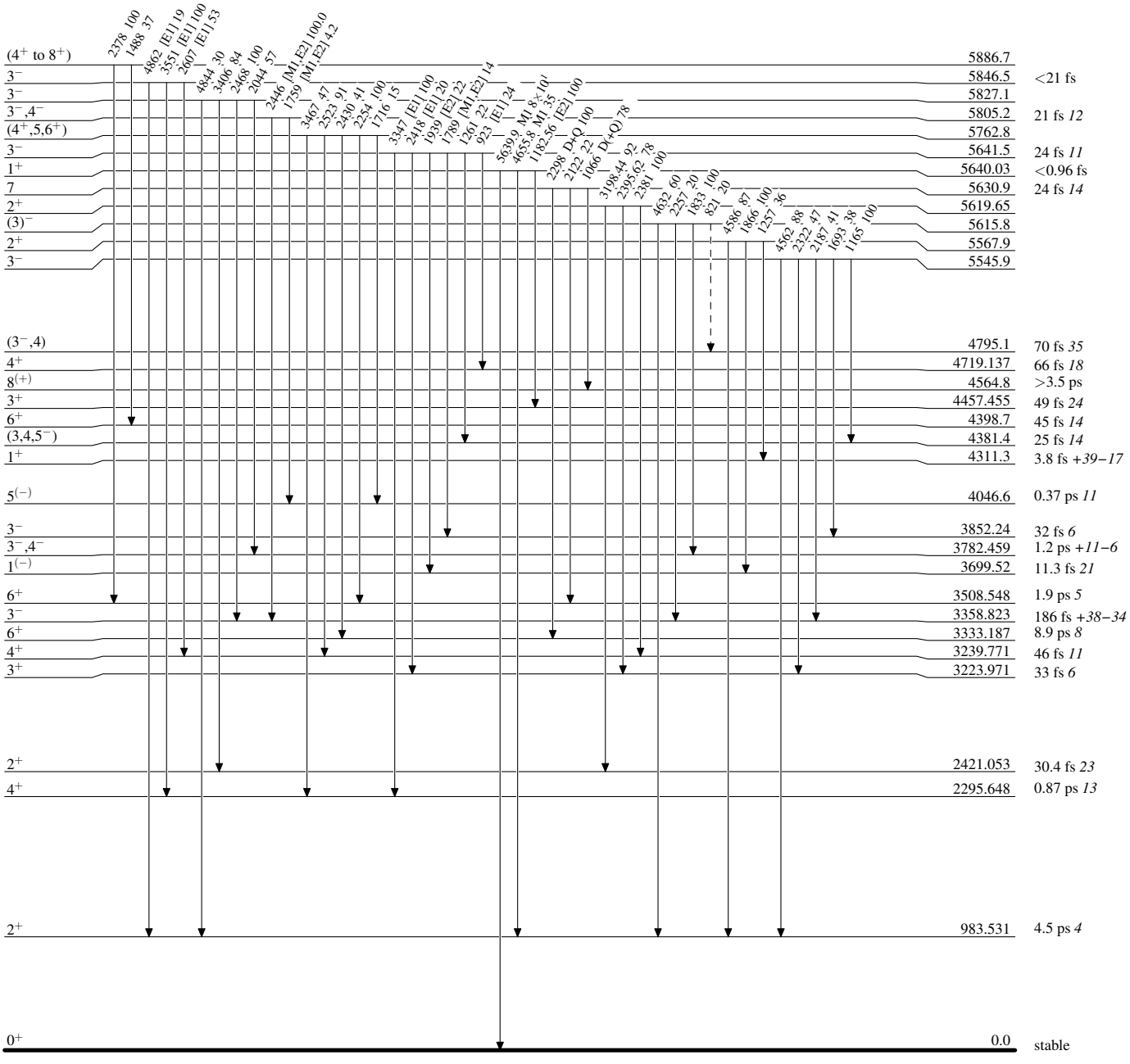
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

– – – – – – ► γ Decay (Uncertain)

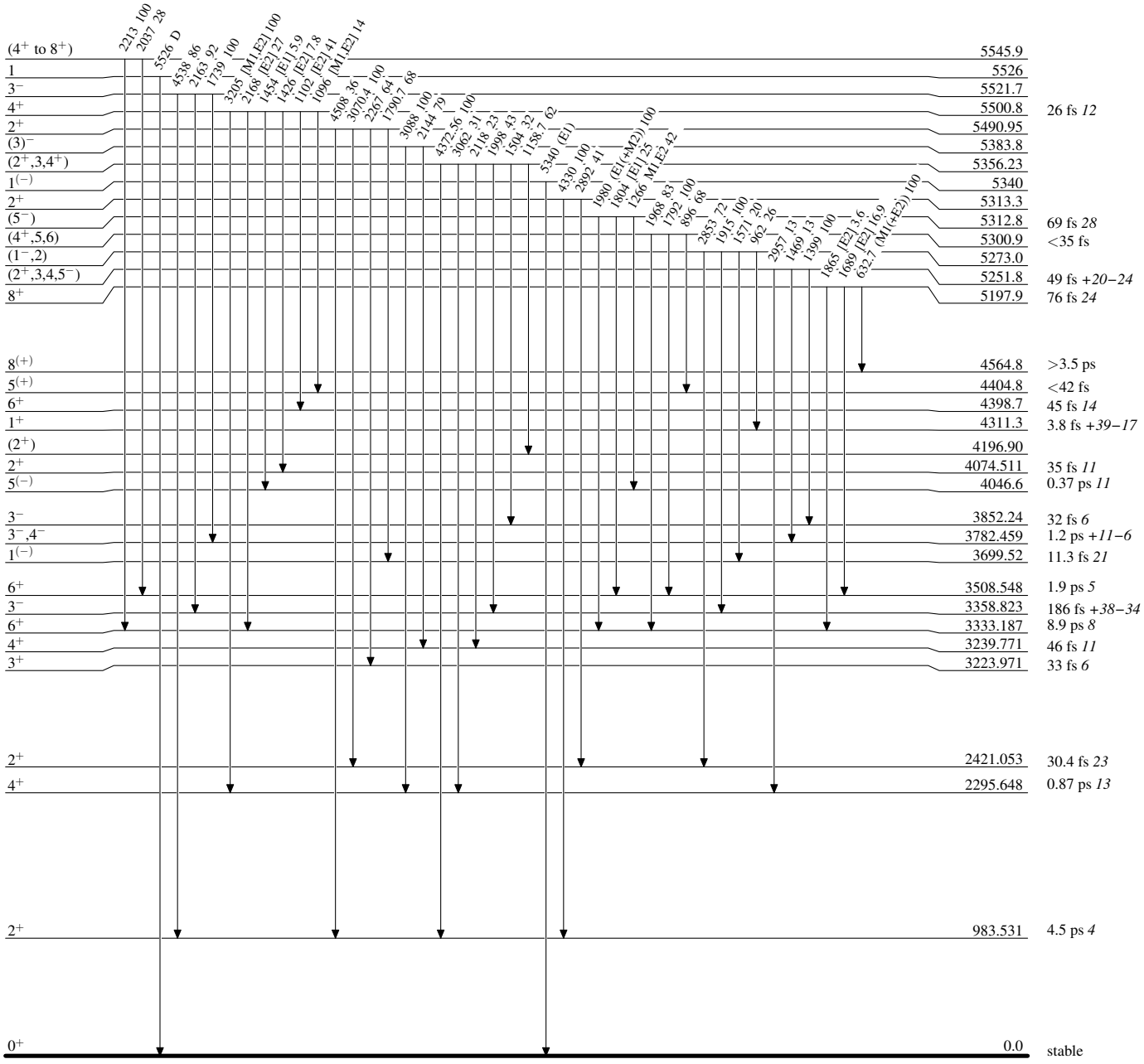


$^{48}_{22}Ti_{26}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

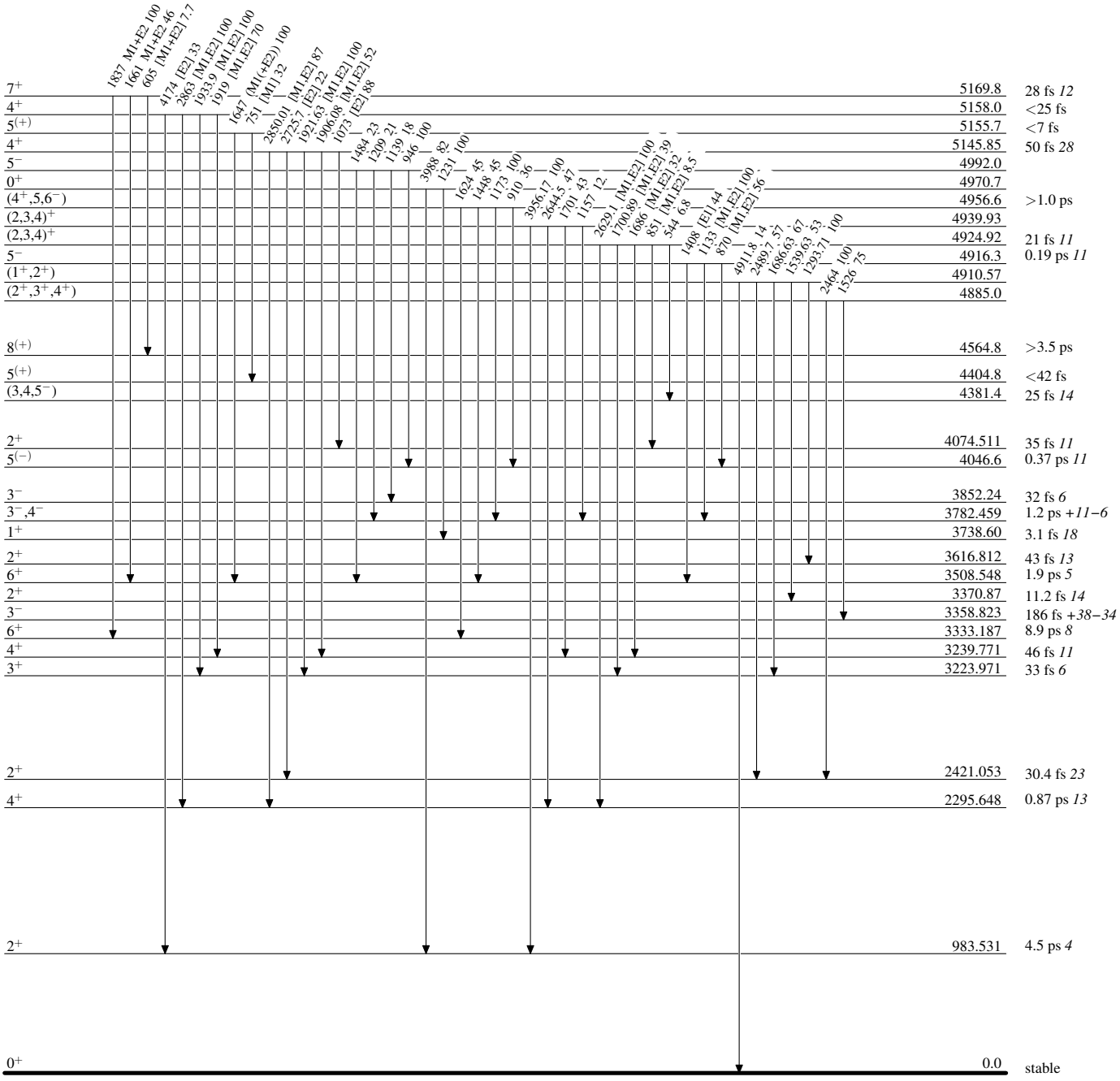


$^{48}_{22}Ti_{26}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

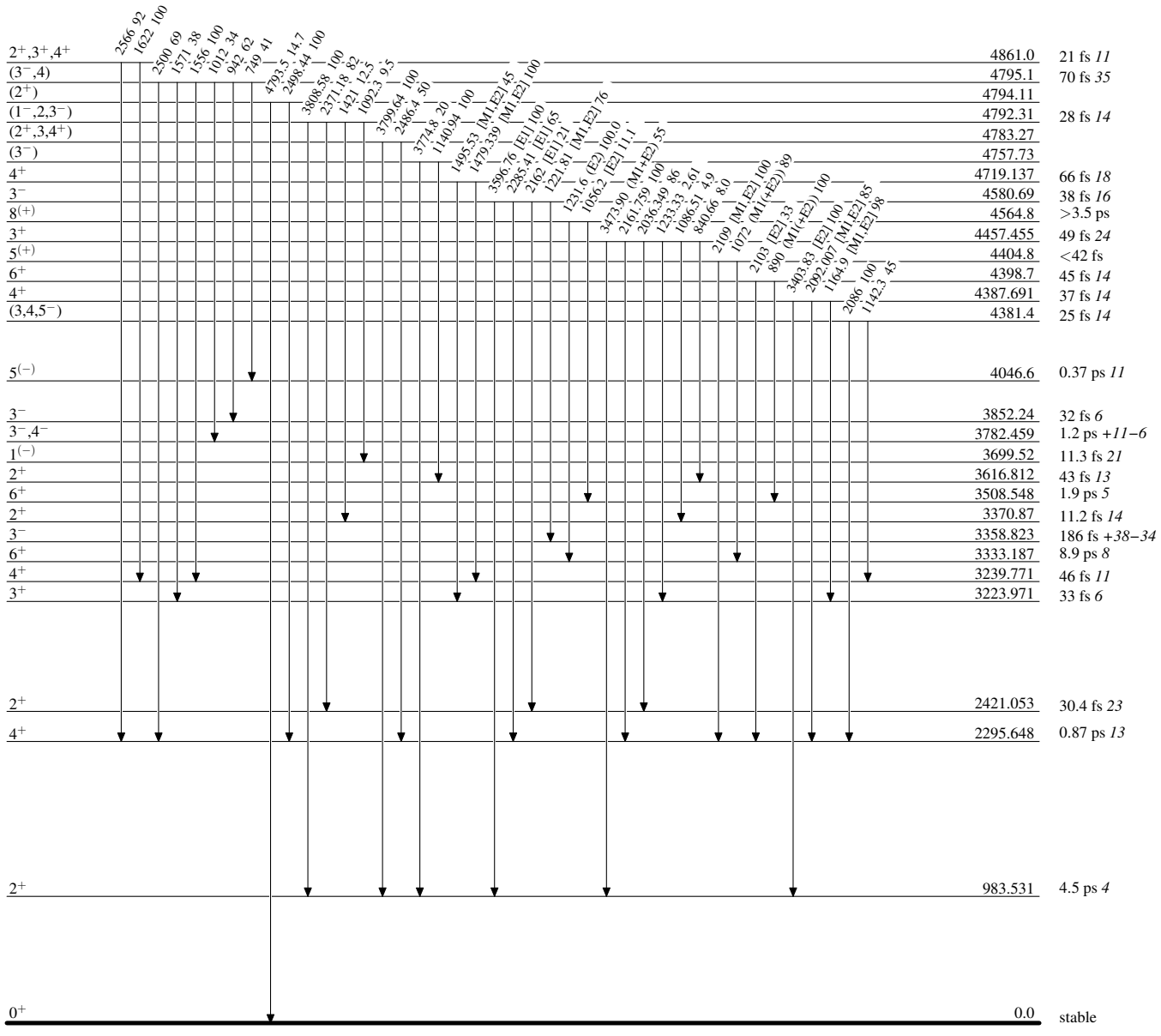


$^{48}_{22}Ti_{26}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



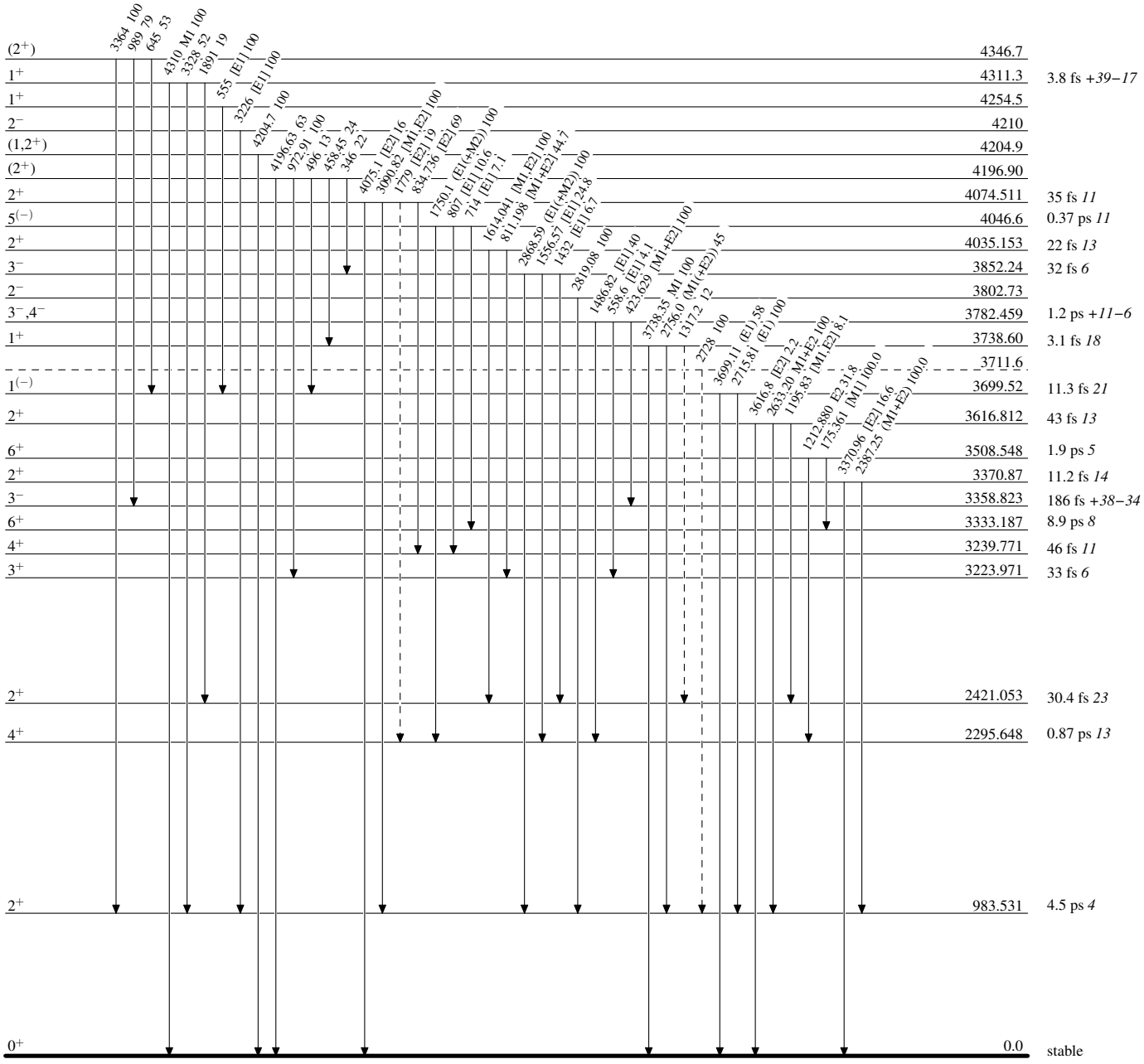
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

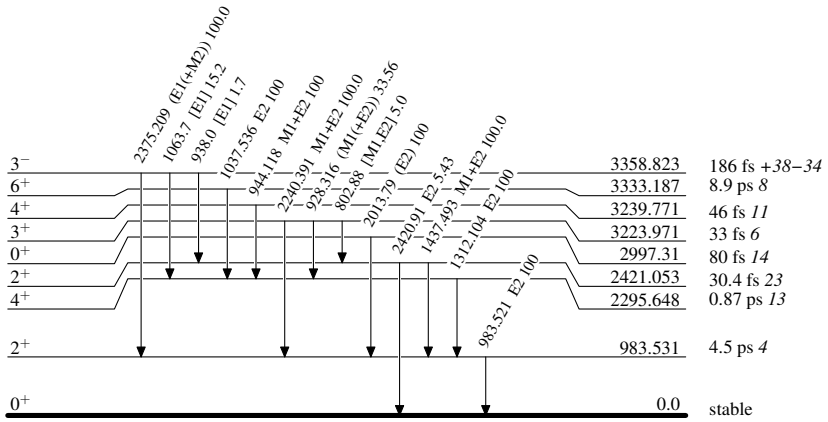


$^{48}_{22}Ti_{26}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{48}_{22}Ti_{26}$