Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen[#]	NDS 147, 1 (2018)	30-Nov-2017

Q(β^-)≈−1100; S(n)=7247 *25*; S(p)=4025 *25*; Q(α)=2054 *29* 2017Wa10,1982AdZZ

Q(β^-) value is from 1982AdZZ, where the population of 928, 952 and 1060 keV levels was reported in the decay of ^{164}Yb to ^{164}Tm, in sharp disagreement with Q(β^-)=−887 *29* in 2017Wa10. This discrepancy in Q(β^-) value needs to be resolved by further experiments on mass measurements as well as on the decay of ^{164}Yb. S(n), S(p) and Q(α) are from 2017Wa10.

S(2n)=16570 *40*, S(2p)=10440 *25* (2017Wa10).

Identification and production of ^{164}Tm by 1960Ab04 from decay of ^{164}Yb.

Precise mass measurement: 2005Li24.

Additional information 1.

^{164}Tm Levels

Cross Reference (XREF) Flags

- A ^{164}Yb ε decay (75.8 min)
- B ^{164}Tm IT decay (5.1 min)
- C ^{150}Nd(^{19}F,5nγ)
- D ^{154}Sm(^{14}N,4nγ)

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$	XREF	Comments
0.0	1$^+$	1.95 min *10*	ABCD	%ε+%β^+=100; %β^+=39 *1* (1971De22) μ=+2.38 *3* (1988Al04,2014StZZ) Q=+0.71 *5* (1988Al04,2016St14) Configuration=K^π=1$^+$,π7/2[523]⊗ν5/2[523]. The rms charge radius (<r^2>)$^{1/2}$: 5.1906 fm *42* (2013An02 evaluation). See also 2009An12 for trends in nuclear radii. Δ<r^2>(^{164}Tm−^{169}Tm)=−0.347 fm^2 *6* (1988Al04, laser-spectroscopy). μ,Q: laser-spectroscopy (1988Al04,1987Mi31,1986Al32). Configuration=π7/2[523]ν5/2[523] gives calculated μ=2.2 to 2.6 and Q=0.69 to 0.74 (1988Al04). $T_{1/2}$: weighted average of 2.0 min *1* (1965Ba40), 1.8 min *1* (1963Ra15), 2.0 min *5* (1960Ab04), and 2.04 min *10* (1960Wi17). Other: <45 min (1961Bj02, no activity due to ^{164}Tm was observed, authors set an upper limit based on the assumptions of short half-life for this nuclide, and production cross section similar to that for ^{163}Tm). J$^\pi$: spin from ABMR (1971Ek01), parity from log *ft*=4.8 to 0$^+$.
0.0+x[&]	6$^-$	5.1 min *1*	BCD	%ε+%β^+≈20; %IT≈80 (1971De22) Additional information 2. $T_{1/2}$: from 1971De22. E(level): x=10 *6* (2017Au03), ≈31 keV (estimated by 1987Dr07 from theoretical predictions of K^π=6$^-$ bandhead at 155 keV). J$^\pi$: spin from ABMR (1971Ek01); parity from log *ft* ≈ 4.9 to 7$^-$, 1985.0 level in ^{164}Er; proposed in (^{19}F,5nγ) as bandhead of K^π=6$^-$ bandhead, configuration=π7/2[404]⊗ν5/2[523]. Assignment: ^{166}Er(p,3n) ^{164}Er γ-rays (1971De22). 1971De22 observe no transitions above 20 keV (in ce or γ spectrum) corresponding to possible transitions in ^{164}Tm. The authors suggest, on the basis of systematics, that there is probably a low-lying 3$^-$ state through which the isomer probably decays.
0.0+y[p] *1*	(2$^+$)		C	Additional information 3. E(level): from the level-scheme Fig. 2 in 1999Re05, energy is close to 38 keV. This level may be the same as 37.5 keV, (2)$^+$ in Adopted Levels, and 38 keV here, but 1999Re05 show it as a different level from the well-established 37.5-keV, (2)$^+$ level from ^{164}Yb ε decay.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{164}Tm Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$	XREF	Comments
				Jπ: possible bandhead.
37.575 *13*	$(2)^+$		A C	Jπ: M1+E2 γ to 1^+, possible $K^\pi=1^+$ band member.
40.928 *4*	$(0^-,1^-)$		A	Jπ: (E1) γ to 1^+, log *ft*≈6.6 from 0^+.
84.0+y[p] *10*	(3^+)		C	Jπ: band member.
108.78[c] *7*	(3^+)		CD	Jπ: γ to 1^+; member of $K^\pi=2^+$ band.
110.3[b] *7*	(2^+)		C	Jπ: γ to 1^+; possible bandhead of $K^\pi=2^+$ band.
124.04+x[#] *3*	(6^-)	36 ns *5*	CD	Jπ: γ to 6^-; possible bandhead of $K^\pi=6^-$ band. $T_{1/2}$: from γ(t) in (^{14}N,4nγ) (1987Dr07).
134.93 *3*	$(1,2)^+$		A	Jπ: M1+E2 γ to $(2)^+$; γ to $(0^-,1^-)$.
140.99+x[f] *6*	(6^+)	5 ns *1*	CD	$T_{1/2}$: from γ(t) in (^{14}N,4nγ) (1987Dr07). Jπ: γ to 6^-; possible bandhead of $K^\pi=6^+$ band.
157.7+x[a] *4*	(7^-)		C	Jπ: γ to 6^-; member of $K^\pi=6^-$ band.
158.6[b] *9*	(4^+)		C	Jπ: γ to (2^+); member of $K^\pi=2^+$ band.
168.4+x[l] *8*	(6^+)		C	Jπ: member of $K^\pi=5^+$ band.
173.5[c] *8*	(5^+)		CD	Jπ: γ to (3^+); member of $K^\pi=2^+$ band.
182.17+x[@] *21*	(7^-)		CD	
185.1+x[g] *4*	(7^+)		CD	
188.8+y[p] *11*	(4^+)		C	
253.9[b] *9*	(6^+)		CD	
257.18+x[#] *21*	(8^-)		CD	
264.5+x[f] *4*	(8^+)		CD	
270.7+y[k] *11*	(5^+)		C	
302.0[c] *9*	(7^+)		CD	
302.7+x[m] *7*	(7^+)		C	
310.1+y[p] *11*	(5^+)		C	
338.3+x[&] *4*	(8^-)		C	
353.21+x[@] *21*	(9^-)		CD	
354.6+y[j] *11*	(6^+)		C	
362.79 *18*	$(0,1,2)^+$		A	Jπ: M1(+E2) γ to 1^+.
377.1+x[g] *4*	(9^+)		CD	
381.8[d] *10*	(6^-)		C	
390.51 *17*	$(0^+,1^+,2^+)$		A	Jπ: (M1(+E2)) γ to 1^+.
410.8[b] *9*	(8^+)		CD	
427.99 *19*	$(0^+,1,2,3)$		A	Jπ: γ to $(2)^+$; γ from (0,1).
443.4+x[l] *8*	(8^+)		C	
461.7+y[k] *11*	(7^+)		C	
463.7[e] *10*	(7^-)		C	
470.38+x[#] *22*	(10^-)		CD	
518.0+x[f] *4*	(10^+)		CD	
520.9[c] *9*	(9^+)		CD	
535.6+x[a] *5*	(9^-)		C	
543.0[h] *10*	(8^-)		C	
548.3[d] *9*	(8^-)		C	
550.0 *3*	$(1,2)^+$		A	Jπ: M1+E2 γ to 1^+.
554.96 *18*	$(1)^+$		A	Jπ: M1(+E2) γ to $(1,2)^+$; log *ft*≈6.9 from 0^+.
571.6 *4*	$(1)^+$		A	Jπ: E2+M1 γ to 1^+; log *ft*≈7.7 from 0^+.
581.51 *14*	$(1)^+$		A	Jπ: M1+E2 γ to $(1,2)^+$; log *ft*≈6.6 from 0^+.
587.9+y[j] *12*	(8^+)		C	
602.5+x[m] *8*	(9^+)		C	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{164}Tm Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	XREF	Comments
607.99+x[@] *22*	(11$^-$)	CD	
626.40 *19*	(0,1)	A	J$^{\pi}$: possible ε feeding from 0$^+$.
657.7[b] *9*	(10$^+$)	CD	
657.9[i] *9*	(9$^-$)	C	
675.55 *16*	(1)$^+$	A	J$^{\pi}$: M1(+E2) γ to 1$^+$; M1+E2 γ to (2)$^+$; log *ft*≈6.2 from 0$^+$.
685.5+x[g] *5*	(11$^+$)	CD	
685.9[e] *9*	(9$^-$)	C	
732.64 *16*	(1)$^+$	A	J$^{\pi}$: M1(+E2) γ to (2)$^+$; log *ft*≈6.9 from 0$^+$.
735.70 *14*	(1)$^+$	A	J$^{\pi}$: M1+E2 γ to (1)$^+$; log *ft*≈6.9 from 0$^+$.
736.9+y[k] *12*	(9$^+$)	C	
747.9+x[&] *5*	(10$^-$)	C	
770.62+x[#] *22*	(12$^-$)	CD	
773.5+x[l] *8*	(10$^+$)	C	
777.2[h] *9*	(10$^-$)	C	
786.3[d] *9*	(10$^-$)	C	
831.0[c] *9*	(11$^+$)	CD	
876.3+x[f] *5*	(12$^+$)	CD	
903.0+y[j] *13*	(10$^+$)	C	
928.40 *24*	(1$^+$)	A	J$^{\pi}$: (M1) γ to 1$^+$; log *ft*≈6.0 from 0$^+$.
937.8[i] *9*	(11$^-$)	C	
951.98 *24*	(0,1)$^-$	A	J$^{\pi}$: E1 γ to (1,2)$^+$; log *ft*≈5.6 from 0$^+$.
953.39+x[@] *23*	(13$^-$)	CD	
964.0+x[m] *9*	(11$^+$)	C	
974.3+x[a] *6*	(11$^-$)	C	
975.9[e] *9*	(11$^-$)	C	
1001.2[b] *9*	(12$^+$)	CD	
1060.02 *16*	(1$^+$)	A	J$^{\pi}$: (M1+E2) γ to 1$^+$; log *ft*≈4.2 from 0$^+$.
1091.2+y[k] *13*	(11$^+$)	C	
1091.5+x[g] *5*	(13$^+$)	CD	
1105.6[d] *9*	(12$^-$)	C	
1108.5[h] *9*	(12$^-$)	C	
1160.5+x[#] *3*	(14$^-$)	CD	
1170.2+x[l] *9*	(12$^+$)	C	
1211.0+x[&] *6*	(12$^-$)	C	
1232.4[c] *9*	(13$^+$)	CD	
1301.2+y[j] *14*	(12$^+$)	C	
1320.3[i] *9*	(13$^-$)	C	
1326.4+x[f] *5*	(14$^+$)	CD	
1344.4[e] *9*	(13$^-$)	C	
1390.4+x[@] *3*	(15$^-$)	CD	
1409.2+x[m] *10*	(13$^+$)	C	
1439.1[b] *9*	(14$^+$)	CD	
1455.1+x[a] *7*	(13$^-$)	C	
1512.6[d] *9*	(14$^-$)	C	
1525.0+y[k] *14*	(13$^+$)	C	
1541.7[h] *10*	(14$^-$)	C	
1583.9+x[g] *5*	(15$^+$)	CD	
1637.2+x[#] *4*	(16$^-$)	CD	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{164}Tm Levels (continued)

E(level)†	Jπ‡	XREF	E(level)†	Jπ‡	XREF	E(level)†	Jπ‡	XREF
1643.0+x[l] *10*	(14$^+$)	C	2602.5+x[n] *5*	(18$^+$)	C	3675.0+x[n] *6*	(22$^+$)	C
1702.5+x[&] *7*	(14$^-$)	C	2610.3+y[k] *16*	(17$^+$)	C	3855.3+x[f] *9*	(22$^+$)	C
1720.8[c] *9*	(15$^+$)	CD	2683.1[h] *11*	(18$^-$)	C	3855.3+x[&] *12*	(22$^-$)	C
1774.5+y[j] *15*	(14$^+$)	C	2704.8+x[&] *10*	(18$^-$)	C	3940.0+x[@] *6*	(23$^-$)	C
1788.5[e] *9*	(15$^-$)	C	2793.8+x[g] *6*	(19$^+$)	C	3943.8[d] *12*	(22$^-$)	C
1802.9[i] *10*	(15$^-$)	C	2824.6+x[#] *5*	(20$^-$)	CD	3945.9[b] *12*	(22$^+$)	C
1856.9+x[f] *6*	(16$^+$)	CD	2857.0+x[o] *5*	(19$^+$)	C	3973.6+x[o] *6*	(23$^+$)	C
1915.2+x[@] *4*	(17$^-$)	CD	2896.6[e] *11*	(19$^-$)	C	4085.9[h] *13*	(22$^-$)	C
1951.4+x[a] *8*	(15$^-$)	C	2911.4+y[j] *16*	(18$^+$)	C	4176.6+x[a] *13*	(23$^-$)	C
1964.6[b] *10*	(16$^+$)	CD	2927.6[c] *10*	(19$^+$)	C	4250.4+x[g] *10*	(23$^+$)	C
2006.0[d] *10*	(16$^-$)	C	2970.1+x[a] *11*	(19$^-$)	C	4262.7[e] *13*	(23$^-$)	C
2031.4+y[k] *15*	(15$^+$)	C	3003.2[i] *11*	(19$^-$)	C	4273.3+x[#] *7*	(24$^-$)	C
2071.1[h] *10*	(16$^-$)	C	3116.6+x[n] *5*	(20$^+$)	C	4291.5+x[n] *7*	(24$^+$)	C
2103.5+x[n] *5*	(16$^+$)	C	3130.3+x[f] *7*	(20$^+$)	C	4378.0[c] *12*	(23$^+$)	C
2153.8+x[g] *6*	(17$^+$)	CD	3199.5+x[@] *5*	(21$^-$)	C	4525.3+x[&] *13*	(24$^-$)	C
2194.5+x[#] *4*	(18$^-$)	CD	3230.5[d] *11*	(20$^-$)	C	4599.4[b] *13*	(24$^+$)	C
2198.9+x[&] *9*	(16$^-$)	C	3232.4[b] *11*	(20$^+$)	C	4620.8+x[o] *8*	(25$^+$)	C
2288.7[c] *10*	(17$^+$)	CD	3250.3+x[&] *11*	(20$^-$)	C	4633.9+x[f] *10*	(24$^+$)	C
2308.3[e] *10*	(17$^-$)	C	3264.1+y[k] *16*	(19$^+$)	C	4651.2[d] *13*	(24$^-$)	C
2316.0+y[j] *15*	(16$^+$)	C	3350.6[h] *12*	(20$^-$)	C	4732.8+x[@] *8*	(25$^-$)	C
2353.3+x[o] *5*	(17$^+$)	C	3389.2+x[o] *5*	(21$^+$)	C	5017.0[e] *14*	(25$^-$)	C
2370.0[i] *10*	(17$^-$)	C	3495.7+x[g] *8*	(21$^+$)	C	5021.5+x[g] *11*	(25$^+$)	C
2447.8+x[a] *9*	(17$^-$)	C	3520.2+x[#] *5*	(22$^-$)	C	5068.9+x[#] *9*	(26$^-$)	C
2460.3+x[f] *6*	(18$^+$)	CD	3541.1+x[a] *12*	(21$^-$)	C	5576.2+x[@] *10*	(27$^-$)	C
2521.3+x[@] *4*	(19$^-$)	CD	3549.1[e] *12*	(21$^-$)	C	5889.3+x[#] *10*	(28$^-$)	C
2567.6[b] *10*	(18$^+$)	CD	3635.4[i] *12*	(21$^-$)	C			
2581.6[d] *10*	(18$^-$)	C	3650.6[c] *11*	(21$^+$)	C			

† From least-squares fit to Eγ data.

‡ For high-spin (J>2) levels, the assignments are based on multipolarities and ΔJ deduced from γγ(θ)(DCO), and band structures, as proposed in ^{150}Nd(^{19}F,5nγ) (1999Re05). Ascending spins are assumed as the excitation energy increases in heavy-ion reactions.

[#] Band(A): $K^\pi=6^-$,π7/2[523]⊗ν5/2[642],α=0. B(M1)/B(E2)=0.9.

[@] Band(a): $K^\pi=6^-$,π7/2[523]⊗ν5/2[642],α=1. B(M1)/B(E2)=0.9.

[&] Band(B): $K^\pi=6^-$,π7/2[404]⊗ν5/2[523],α=0. B(M1)/B(E2)=0.5.

[a] Band(b): $K^\pi=6^-$,π7/2[404]⊗ν5/2[523],α=1. B(M1)/B(E2)=0.5.

[b] Band(C): $K^\pi=2^+$,π1/2[411]⊗ν5/2[642],α=0. B(M1)/B(E2)=0.1.

[c] Band(c): $K^\pi=2^+$,π1/2[411]⊗ν5/2[642],α=1. B(M1)/B(E2)=0.1.

[d] Band(D): $K^\pi=2^-$,π1/2[541]⊗ν5/2[642],α=0. B(M1)/B(E2)=0.3.

[e] Band(d): $K^\pi=2^-$,π1/2[541]⊗ν5/2[642],α=1. B(M1)/B(E2)=0.3.

[f] Band(E): $K^\pi=6^+$,π7/2[404]⊗ν5/2[642],α=0. B(M1)/B(E2)=0.2.

[g] Band(e): $K^\pi=6^+$,π7/2[404]⊗ν5/2[642],α=1. B(M1)/B(E2)=0.2.

[h] Band(F): $K^\pi=1^-$,π7/2[523]⊗ν5/2[642],α=0. B(M1)/B(E2)=1.3.

[i] Band(f): $K^\pi=1^-$,π7/2[523]⊗ν5/2[642],α=1. B(M1)/B(E2)=1.3.

[j] Band(G): $K^\pi=1^+$,π7/2[404]⊗ν5/2[642],α=0. B(M1)/B(E2)=0.1.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{164}Tm Levels (continued)

[k] Band(g): $K^{\pi}=1^{+}$,$\pi 7/2[404]\otimes\nu 5/2[642]$,$\alpha=1$. B(M1)/B(E2)=0.1.
[l] Band(H): $K^{\pi}=5^{+}$,$\pi 7/2[523]\otimes\nu 3/2[521]$,$\alpha=0$. B(M1)/B(E2)=0.9.
[m] Band(h): $K^{\pi}=5^{+}$,$\pi 7/2[523]\otimes\nu 3/2[521]$,$\alpha=1$. B(M1)/B(E2)=0.9.
[n] Band(I): $K^{\pi}=6^{+}$,3−qp band,$\alpha=0$. Configuration=$\pi 7/2[523]\otimes\nu 5/2[523](i_{13/2})^2$. B(M1)/B(E2)=1.2 after $i_{13/2}$ crossing.
[o] Band(i): $K^{\pi}=6^{+}$,3−qp band,$\alpha=1$. Configuration=$\pi 7/2[523]\otimes\nu 5/2[523](i_{13/2})^2$. B(M1)/B(E2)=1.2 (after $i_{13/2}$ crossing).
[p] Band(J): Band based on (2^{+}).

Adopted Levels, Gammas (continued)

γ(^{164}Tm)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[#]	α[@]	Comments
37.575	(2)$^+$	37.573 *13*	100	0.0	1$^+$	M1+E2	0.060 *12*	9.6 *4*	α(L)=7.5 *3*; α(M)=1.68 *7*; α(N)=0.392 *16*; α(O)=0.0552 *18*; α(P)=0.00277 *4*
40.928	(0$^-$,1$^-$)	40.928 *4*	100	0.0	1$^+$	(E1)		0.690	α(L)=0.538 *8*; α(M)=0.1210 *17* α(N)=0.0273 *4*; α(O)=0.00332 *5*; α(P)=0.0001039 *15*
84.0+y	(3$^+$)	84 *1*		0.0+y	(2$^+$)				
108.78	(3$^+$)	108.78 *7*	100	0.0	1$^+$				E_γ: from 1987Dr07 only. It is assumed that the 109, 3$^+$ level of 1999Re05 corresponds to the 108.8+Z′ level of 1987Dr07.
110.3	(2$^+$)	110.1 *7*		0.0	1$^+$				
124.04+x	(6$^-$)	124.04[‡] *3*	100	0.0+x	6$^-$	[M1+E2]		1.26 *3*	If M1, B(M1)(W.u.)=1.4E−4 *2*. If E2, B(E2)(W.u.)=4.5 *6*.
134.93	(1,2)$^+$	94.05 *10*	<140	40.928	(0$^-$,1$^-$)	[E1]		0.392	α(K)=0.324 *5*; α(L)=0.0531 *8*; α(M)=0.01183 *17* α(N)=0.00271 *4*; α(O)=0.000358 *6*; α(P)=1.432×10^{-5} *21*
		97.34 *3*	100 *23*	37.575	(2)$^+$	M1+E2	0.055	3.35	α(K)=2.80 *4*; α(L)=0.429 *6*; α(M)=0.0958 *14* α(N)=0.0224 *4*; α(O)=0.00321 *5*; α(P)=0.0001720 *25*
		135.0 *1*	<54	0.0	1$^+$	[M1+E2]		1.16 *16*	α(K)=0.8 *3*; α(L)=0.28 *12*; α(M)=0.07 *3* α(N)=0.015 *7*; α(O)=0.0019 *7*; α(P)=4.4×10^{-5} *24*
140.99+x	(6$^+$)	140.99[‡] *6*	100	0.0+x	6$^-$				
157.7+x	(7$^-$)	158.2 *7*		0.0+x	6$^-$				
158.6	(4$^+$)	48 *1*		110.3	(2$^+$)				
173.5	(5$^+$)	65 *1*		108.78	(3$^+$)	(E2)			
182.17+x	(7$^-$)	58.0 *3*		124.04+x	(6$^-$)				
		182.2 *7*		0.0+x	6$^-$	D			
185.1+x	(7$^+$)	44 *1*		140.99+x	(6$^+$)				
		185.2 *7*		0.0+x	6$^-$	D			
188.8+y	(4$^+$)	104.8 *5*	100	84.0+y	(3$^+$)				
253.9	(6$^+$)	80.2 *7*	12	173.5	(5$^+$)	D			
		95.3 *5*	100	158.6	(4$^+$)				
257.18+x	(8$^-$)	75.01[‡] *4*	100	182.17+x	(7$^-$)	D			
		99.7 *5*	57	157.7+x	(7$^-$)				
		133.1 *5*	63	124.04+x	(6$^-$)				
		257.3 *5*	53	0.0+x	6$^-$				
264.5+x	(8$^+$)	79.44[‡] *7*	100	185.1+x	(7$^+$)	(M1+E2)			
		123.5 *5*	7.7	140.99+x	(6$^+$)				
270.7+y	(5$^+$)	186.7 *5*	100	84.0+y	(3$^+$)				
302.0	(7$^+$)	48 *1*		253.9	(6$^+$)				
		128.6 *3*	100	173.5	(5$^+$)	(E2)			E_γ: other: 129.16 *6* in (^{14}N,4nγ).
302.7+x	(7$^+$)	117.6 *5*	100	185.1+x	(7$^+$)				
		134.5 *5*	50	168.4+x	(6$^+$)				
310.1+y	(5$^+$)	121.4 *5*	86	188.8+y	(4$^+$)				
		226.0 *5*	100	84.0+y	(3$^+$)				
338.3+x	(8$^-$)	180.6 *5*	100	157.7+x	(7$^-$)				
		338.3 *5*	96	0.0+x	6$^-$				

$^{164}_{69}Tm_{95}$-6

Adopted Levels, Gammas (continued)

γ(^{164}Tm) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[#]	α[@]	Comments
353.21+x	(9⁻)	96.04[‡] *3*	100	257.18+x	(8⁻)	(M1+E2)			
		171.04[‡] *7*	16	182.17+x	(7⁻)	(E2)			I_γ: other: 49 *5* in (^{14}N,4nγ).
354.6+y	(6⁺)	83.9 *5*	18	270.7+y	(5⁺)				
		165.8 *5*	100	188.8+y	(4⁺)				
362.79	(0,1,2)⁺	362.84 *19*	100	0.0	1⁺	M1(+E2)	<1.1	0.075 *13*	α(K)=0.062 *12*; α(L)=0.0100 *9*; α(M)=0.00225 *17* α(N)=0.00052 *4*; α(O)=7.4×10^{-5} *8*; α(P)=3.7×10^{-6} *8*
377.1+x	(9⁺)	112.55[‡] *4*	100	264.5+x	(8⁺)	(M1+E2)			
		191.0 *5*	46	185.1+x	(7⁺)				E_γ,I_γ: other: 191.95 *7*; 122 *19* in (^{14}N,4nγ).
381.8	(6⁻)	128.6 *7*		253.9	(6⁺)				
390.51	(0⁺,1⁺,2⁺)	390.60[&] *21*	100	0.0	1⁺	(M1(+E2))	<0.6	0.067 *6*	α(K)=0.056 *5*; α(L)=0.0085 *4*; α(M)=0.00190 *8* α(N)=0.000445 *20*; α(O)=6.4×10^{-5} *4*; α(P)=3.3×10^{-6} *3*
410.8	(8⁺)	109.0 *5*	4.7	302.0	(7⁺)				
		156.6 *3*	100	253.9	(6⁺)				E_γ: other: 157.96 *8* in (^{14}N,4nγ).
427.99	(0⁺,1,2,3)	390.60[&] *21*	100	37.575	(2)⁺				
443.4+x	(8⁺)	140.9 *7*		302.7+x	(7⁺)				
		274.8 *5*	100	168.4+x	(6⁺)				
461.7+y	(7⁺)	107.1 *5*	20	354.6+y	(6⁺)				
		151.7 *5*	90	310.1+y	(5⁺)				
		191.1 *5*	100	270.7+y	(5⁺)				
463.7	(7⁻)	209.8 *7*		253.9	(6⁺)				
470.38+x	(10⁻)	117.18[‡] *3*	100	353.21+x	(9⁻)	(M1+E2)			
		213.14[‡] *10*	23	257.18+x	(8⁻)	Q			I_γ: other: 51 *5* in (^{14}N,4nγ).
518.0+x	(10⁺)	140.99[‡] *6*	53	377.1+x	(9⁺)				I_γ: other: 310 *70* in (^{14}N,4nγ).
		253.49[‡] *8*	100	264.5+x	(8⁺)				
520.9	(9⁺)	110.4 *5*	10	410.8	(8⁺)	D			
		218.91[‡] *7*	100	302.0	(7⁺)	Q			
535.6+x	(9⁻)	197.6 *5*	85	338.3+x	(8⁻)				
		377.8 *5*	100	157.7+x	(7⁻)				
543.0	(8⁻)	79.3 *7*		463.7	(7⁻)				
		161.2 *7*		381.8	(6⁻)				
548.3	(8⁻)	166.9 *5*	17	381.8	(6⁻)				
		245.9 *5*	100	302.0	(7⁺)				
550.0	(1,2)⁺	187.8 *4*	100 *50*	362.79	(0,1,2)⁺	M1(+E2)	<2.8	0.43 *9*	α(K)=0.33 *11*; α(L)=0.079 *14*; α(M)=0.018 *4* α(N)=0.0042 *9*; α(O)=0.00056 *7*; α(P)=1.9×10^{-5} *8*
		549.8 *4*	45 *18*	0.0	1⁺	M1+E2	1.1 *8*	0.0208 *76*	
554.96	(1)⁺	164.45 *3*	100 *12*	390.51	(0⁺,1⁺,2⁺)	M1+E2	1.1 *+7−4*	0.62 *6*	α(K)=0.44 *8*; α(L)=0.135 *16*; α(M)=0.032 *5* α(N)=0.0073 *10*; α(O)=0.00093 *9*; α(P)=2.5×10^{-5} *6*
		419.5 *4*	32 *9*	134.93	(1,2)⁺	M1(+E2)	<0.9	0.052 *8*	α(K)=0.044 *7*; α(L)=0.0068 *6*; α(M)=0.00152 *12*

$^{164}_{69}Tm_{95}$-7

Adopted Levels, Gammas (continued)

γ(^{164}Tm) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[#]	α[@]	Comments
									α(N)=0.00035 *3*; α(O)=5.0×10^{-5} *5*; α(P)=2.6×10^{-6} *5*
571.6	(1)$^+$	534.0 *4*	<45	37.575	(2)$^+$				
		571.5 *6*	100 *30*	0.0	1$^+$	E2+M1	9.2 *22*	0.01244 *22*	
581.51	(1)$^+$	190.8 *4*	35 *15*	390.51	(0$^+$,1$^+$,2$^+$)	E2(+M1)	>4	0.31 *1*	α(K)=0.19 *1*; α(L)=0.0891 *8*; α(M)=0.0214 *2* α(N)=0.00489 *5*; α(O)=0.000595 *5*; α(P)=9.2×10^{-6} *5*
		446.7 *3*	100 *10*	134.93	(1,2)$^+$	E2+M1	34 *4*	0.0230	α(K)=0.0179 *3*; α(L)=0.00392 *6*; α(M)=0.000906 *13* α(N)=0.000209 *3*; α(O)=2.77×10^{-5} *4*; α(P)=9.77×10^{-7} *14*
		543.6 *3*	31 *5*	37.575	(2)$^+$	M1(+E2)	<0.9	0.027 *4*	
		581.6 *3*	<4	0.0	1$^+$				
587.9+y	(8$^+$)	125.9 *5*	16	461.7+y	(7$^+$)				
		233.3 *5*	100	354.6+y	(6$^+$)				
602.5+x	(9$^+$)	159.0 *5*	100	443.4+x	(8$^+$)				
		299.9 *5*	88	302.7+x	(7$^+$)				
607.99+x	(11$^-$)	137.64[‡] *4*	100	470.38+x	(10$^-$)	(M1+E2)			E_γ: adopted from (^{14}N,4nγ) due to better fit. Other: 138.5 *3* in (^{19}F,4nγ) fits poorly.
		254.1 *3*	36	353.21+x	(9$^-$)	Q			E_γ,I_γ: other: 254.83 *6*; 54 *6* in (^{14}N,4nγ).
626.40	(0,1)	199.1 *4*	100 *30*	427.99	(0$^+$,1,2,3)				
		491.3 *2*	≈15	134.93	(1,2)$^+$				
657.7	(10$^+$)	246.97[‡] *10*	100	410.8	(8$^+$)	Q			
657.9	(9$^-$)	110.0 *7*		548.3	(8$^-$)				
		115.2 *7*		543.0	(8$^-$)	(M1+E2)			
675.55	(1)$^+$	638.12 *23*	61 *7*	37.575	(2)$^+$	M1+E2	0.9 *+9–6*	0.0154 *40*	
		675.41 *22*	100 *11*	0.0	1$^+$	M1(+E2)	<0.8	0.0158 *19*	
685.5+x	(11$^+$)	167.5 *3*	50	518.0+x	(10$^+$)	(M1+E2)			E_γ,I_γ: other: 167.95 *8*; 34 *8* in (^{14}N,4nγ).
		308.3 *3*	100	377.1+x	(9$^+$)	Q			E_γ: other: 309.00 *7* in (^{14}N,4nγ).
685.9	(9$^-$)	274.7 *5*	100	410.8	(8$^+$)				
732.64	(1)$^+$	695.2 *3*	100 *20*	37.575	(2)$^+$	M1(+E2)	<0.9	0.0144 *20*	
		732.7 *3*	≈5	0.0	1$^+$				
735.70	(1)$^+$	154.18 *4*	100 *37*	581.51	(1)$^+$	M1+E2	0.055	0.904	α(K)=0.757 *11*; α(L)=0.1145 *16*; α(M)=0.0255 *4* α(N)=0.00597 *9*; α(O)=0.000858 *12*; α(P)=4.63×10^{-5} *7*
		601.8[a] *3*	≈16	134.93	(1,2)$^+$				
736.9+y	(9$^+$)	148.8 *5*	16	587.9+y	(8$^+$)				
		275.4 *5*	100	461.7+y	(7$^+$)				
747.9+x	(10$^-$)	212.6 *5*	57	535.6+x	(9$^-$)				
		409.3 *5*	100	338.3+x	(8$^-$)				
770.62+x	(12$^-$)	162.65[‡] *4*	100	607.99+x	(11$^-$)	(M1+E2)			
		299.4 *3*	36	470.38+x	(10$^-$)	Q			E_γ,I_γ: other: 300.26 *5*; 93 *11* in (^{14}N,4nγ).
773.5+x	(10$^+$)	170.9 *5*	100	602.5+x	(9$^+$)				
		330.2 *5*	65	443.4+x	(8$^+$)				
777.2	(10$^-$)	119.3 *3*	100	657.9	(9$^-$)	(M1+E2)			

Adopted Levels, Gammas (continued)

γ(^{164}Tm) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult.#	α@	Comments
777.2	(10$^-$)	234.2 *5*	38	543.0	(8$^-$)			
786.3	(10$^-$)	99.7 *5*	15	685.9	(9$^-$)			
		237.8 *5*	55	548.3	(8$^-$)			
		265.6 *5*	100	520.9	(9$^+$)	D		
831.0	(11$^+$)	173.1 *5*	12	657.9	(9$^-$)			
		310.3 *3*	100	520.9	(9$^+$)	Q		E_γ: other: 309.00 *7* in (^{14}N,4nγ).
876.3+x	(12$^+$)	190.6 *3*	34	685.5+x	(11$^+$)	(M1+E2)		E_γ,I_γ: other: 191.04 *7*; 54 *10* in (^{14}N,4nγ).
		358.3 *3*	100	518.0+x	(10$^+$)	Q		E_γ: other: 359.03 *10* in (^{14}N,4nγ).
903.0+y	(10$^+$)	315.1 *5*	100	587.9+y	(8$^+$)			
928.40	(1$^+$)	887.3 *3*	71 *18*	40.928	(0$^-$,1$^-$)	(E1)	0.00179	
		928.7 *4*	100 *40*	0.0	1$^+$	(M1)	0.00797	Mult.: from 1997ZaZW.
937.8	(11$^-$)	160.6 *3*	100	777.2	(10$^-$)	(M1+E2)		
		280.1 *5*	27	657.9	(9$^-$)	Q		
951.98	(0,1)$^-$	402.1 *3*	81 *15*	550.0	(1,2)$^+$	E1	0.00953	
		589.12 *20*	100 *12*	362.79	(0,1,2)$^+$	E1	0.00408	
953.39+x	(13$^-$)	182.78‡ *4*	100	770.62+x	(12$^-$)	(M1+E2)		
		344.8 *3*	65	607.99+x	(11$^-$)	Q		E_γ,I_γ: other: 345.42 *6*; 130 *38* in (^{14}N,4nγ).
964.0+x	(11$^+$)	190.5 *5*	100	773.5+x	(10$^+$)			
		361.6 *5*	50	602.5+x	(9$^+$)			
974.3+x	(11$^-$)	226.8 *5*	37	747.9+x	(10$^-$)			
		438.7 *5*	100	535.6+x	(9$^-$)			
975.9	(11$^-$)	189.1 *5*	79	786.3	(10$^-$)			
		290.3 *5*	63	685.9	(9$^-$)			
		318.2 *5*	100	657.7	(10$^+$)			
1001.2	(12$^+$)	343.4 *3*	100	657.7	(10$^+$)			E_γ: other: 343.98 *10* in (^{14}N,4nγ).
1060.02	(1$^+$)	324.26 *15*	<70	735.70	(1)$^+$			
		327.43 *15*	<70	732.64	(1)$^+$			
		1019.2 *4*	100 *23*	40.928	(0$^-$,1$^-$)			
		1059.8		0.0	1$^+$	(M1+E2)	0.0045 *14*	
1091.2+y	(11$^+$)	354.3 *5*	100	736.9+y	(9$^+$)			
1091.5+x	(13$^+$)	214.9 *5*	24	876.3+x	(12$^+$)	D+Q		E_γ,I_γ: other: 215.50 *9*; 58 *16* in (^{14}N,4nγ).
		406.2 *3*	100	685.5+x	(11$^+$)	Q		E_γ: other: 406.57 *12* in (^{14}N,4nγ).
1105.6	(12$^-$)	129.7 *5*	33	975.9	(11$^-$)			
		167.7 *3*	100	937.8	(11$^-$)			
		274.5 *5*	25	831.0	(11$^+$)	D		
		319.4 *5*	87	786.3	(10$^-$)			
		328.1 *5*	49	777.2	(10$^-$)			
1108.5	(12$^-$)	170.7 *3*	100	937.8	(11$^-$)	(M1+E2)		
		321.6 *5*	31	786.3	(10$^-$)			
		331.2 *5*	31	777.2	(10$^-$)	Q		
1160.5+x	(14$^-$)	207.4 *3*	100	953.39+x	(13$^-$)	D+Q		
		389.9 *3*	75	770.62+x	(12$^-$)	Q		
1170.2+x	(12$^+$)	206.2 *5*	100	964.0+x	(11$^+$)			

$^{164}_{69}Tm_{95}$-9

Adopted Levels, Gammas (continued)

$\gamma(^{164}Tm)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	Comments
1170.2+x	(12^+)	396.6 *5*	96	773.5+x	(10^+)		
1211.0+x	(12^-)	236.6 *5*	39	974.3+x	(11^-)		
		462.8 *5*	100	747.9+x	(10^-)		
1232.4	(13^+)	230.6 *5*	13	1001.2	(12^+)	D	
		401.6 *3*	100	831.0	(11^+)		E_γ: other: 402.26 *20* in (^{14}N,4nγ).
1301.2+y	(12^+)	398.2 *5*	100	903.0+y	(10^+)		
1320.3	(13^-)	211.8 *3*	100	1108.5	(12^-)		
		383.0 *5*	41	937.8	(11^-)	Q	
1326.4+x	(14^+)	234.7 *5*	25	1091.5+x	(13^+)	D+Q	E_γ,I_γ: other: 235.04 *10*; 49 *7* in (^{14}N,4nγ).
		450.1 *3*	100	876.3+x	(12^+)	Q	E_γ: other: 450.52 *10* in (^{14}N,4nγ).
1344.4	(13^-)	238.1 *5*	80	1105.6	(12^-)		
		343.7 *5*	100	1001.2	(12^+)		
		368.4 *5*	94	975.9	(11^-)		
1390.4+x	(15^-)	229.98 *9*	70	1160.5+x	(14^-)	D+Q	
		436.6 *3*	100	953.39+x	(13^-)	Q	E_γ,I_γ: other: 437.14 *10* in (^{14}N,4nγ).
1409.2+x	(13^+)	445.2 *5*	100	964.0+x	(11^+)		
1439.1	(14^+)	437.8 *3*	100	1001.2	(12^+)	Q	E_γ: other: 438.92 *10* in (^{14}N,4nγ).
1455.1+x	(13^-)	243.8 *5*	54	1211.0+x	(12^-)		
		481.3 *5*	100	974.3+x	(11^-)		
1512.6	(14^-)	279.7 *5*	6.7	1232.4	(13^+)	D	
		403.7 *5*	15	1108.5	(12^-)		
		407.4 *3*	100	1105.6	(12^-)		
1525.0+y	(13^+)	433.8 *5*	100	1091.2+y	(11^+)		
1541.7	(14^-)	221.3 *5*	100	1320.3	(13^-)	D+Q	
		433.3 *5*	93	1108.5	(12^-)	Q	
		435.6 *5*	69	1105.6	(12^-)		
1583.9+x	(15^+)	257.46[‡] *10*	18	1326.4+x	(14^+)	D+Q	I_γ: other: 46 *12* in (^{14}N,4nγ).
		492.4 *3*	100	1091.5+x	(13^+)	Q	
1637.2+x	(16^-)	247.1 *3*	84	1390.4+x	(15^-)	D+Q	E_γ,I_γ: other: 247.51 *7*; 59 *8* in (^{14}N,4nγ).
		476.4 *3*	100	1160.5+x	(14^-)	Q	
1643.0+x	(14^+)	472.8 *5*	100	1170.2+x	(12^+)		
1702.5+x	(14^-)	247.6 *5*	64	1455.1+x	(13^-)		
		491.3 *5*	100	1211.0+x	(12^-)		
1720.8	(15^+)	281.7 *5*	8	1439.1	(14^+)		
		488.5 *3*	100	1232.4	(13^+)		E_γ: other: 488.9 *3* in (^{14}N,4nγ).
1774.5+y	(14^+)	473.3 *5*	100	1301.2+y	(12^+)		
1788.5	(15^-)	275.6 *5*	69	1512.6	(14^-)		
		349.7 *5*	27	1439.1	(14^+)	D	
		443.8 *5*	100	1344.4	(13^-)		
1802.9	(15^-)	261.0 *3*	100	1541.7	(14^-)	D+Q	
		483.1 *5*	77	1320.3	(13^-)		
1856.9+x	(16^+)	272.6 *5*	18	1583.9+x	(15^+)	D+Q	
		530.7 *3*	100	1326.4+x	(14^+)	Q	

$^{164}_{69}Tm_{95}$-10

Adopted Levels, Gammas (continued)

γ(^{164}Tm) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]	Comments
1915.2+x	(17$^-$)	278.1 *3*	54	1637.2+x	(16$^-$)	D+Q	E_γ: other: 277.27 *8* in (^{14}N,4nγ).
		524.8 *3*	100	1390.4+x	(15$^-$)	Q	
1951.4+x	(15$^-$)	248.8 *5*	100	1702.5+x	(14$^-$)		
		496.3 *5*	93	1455.1+x	(13$^-$)		
1964.6	(16$^+$)	525.4 *3*	100	1439.1	(14$^+$)		E_γ: other: 526.02 *21* in (^{14}N,4nγ).
2006.0	(16$^-$)	493.6 *3*	100	1512.6	(14$^-$)		
2031.4+y	(15$^+$)	506.4 *5*	100	1525.0+y	(13$^+$)		
2071.1	(16$^-$)	268.1 *5*	76	1802.9	(15$^-$)	D+Q	
		529.6 *5*	100	1541.7	(14$^-$)	Q	
2103.5+x	(16$^+$)	713.2 *5*	100	1390.4+x	(15$^-$)	D	
2153.8+x	(17$^+$)	297.7 *5*	14	1856.9+x	(16$^+$)		
		569.9 *3*	100	1583.9+x	(15$^+$)	Q	
2194.5+x	(18$^-$)	279.5 *3*	54	1915.2+x	(17$^-$)	D+Q	E_γ,I_γ: other: 279.98 *8*; 24 *3* in (^{14}N,4nγ).
		557.1 *3*	100	1637.2+x	(16$^-$)	Q	
2198.9+x	(16$^-$)	496.4 *5*	100	1702.5+x	(14$^-$)		
2288.7	(17$^+$)	323.7 *5*	7	1964.6	(16$^+$)		
		568.0 *3*	100	1720.8	(15$^+$)		E_γ: other: 568.7 *3* in (^{14}N,4nγ).
2308.3	(17$^-$)	302.7 *5*	21	2006.0	(16$^-$)		
		519.3 *5*	100	1788.5	(15$^-$)		
2316.0+y	(16$^+$)	541.5 *5*	100	1774.5+y	(14$^+$)		
2353.3+x	(17$^+$)	249.7 *5*	41	2103.5+x	(16$^+$)		
		716.4 *5*	100	1637.2+x	(16$^-$)	D	
2370.0	(17$^-$)	298.7 *5*	84	2071.1	(16$^-$)	D+Q	
		567.1 *5*	100	1802.9	(15$^-$)	Q	
2447.8+x	(17$^-$)	496.4 *5*	100	1951.4+x	(15$^-$)		
2460.3+x	(18$^+$)	307.4 *5*	9	2153.8+x	(17$^+$)		
		603.2 *3*	100	1856.9+x	(16$^+$)	Q	
2521.3+x	(19$^-$)	326.7 *5*	35	2194.5+x	(18$^-$)	D+Q	
		605.9 *3*	100	1915.2+x	(17$^-$)	Q	
2567.6	(18$^+$)	603.0 *3*	100	1964.6	(16$^+$)		
2581.6	(18$^-$)	575.6 *3*	100	2006.0	(16$^-$)		
2602.5+x	(18$^+$)	249.1 *5*	91	2353.3+x	(17$^+$)		
		499.3 *5*	41	2103.5+x	(16$^+$)		
		687.4 *5*	100	1915.2+x	(17$^-$)	D	
2610.3+y	(17$^+$)	578.9 *5*	100	2031.4+y	(15$^+$)		
2683.1	(18$^-$)	312.6 *5*	91	2370.0	(17$^-$)	D+Q	
		612.0 *5*	100	2071.1	(16$^-$)	Q	
2704.8+x	(18$^-$)	505.9 *5*	100	2198.9+x	(16$^-$)		
2793.8+x	(19$^+$)	333.7 *5*	10	2460.3+x	(18$^+$)		
		639.9 *3*	100	2153.8+x	(17$^+$)	Q	
2824.6+x	(20$^-$)	303.0 *5*	36	2521.3+x	(19$^-$)		
		630.1 *3*	100	2194.5+x	(18$^-$)	Q	
2857.0+x	(19$^+$)	254.8 *5*	100	2602.5+x	(18$^+$)		

$^{164}_{69}Tm_{95}$-11

Adopted Levels, Gammas (continued)

γ(^{164}Tm) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[#]
2857.0+x	(19$^+$)	503.8 *5*	62	2353.3+x	(17$^+$)	
		662.7 *5*	76	2194.5+x	(18$^-$)	D
2896.6	(19$^-$)	588.3 *5*	100	2308.3	(17$^-$)	
2911.4+y	(18$^+$)	595.4 *5*	100	2316.0+y	(16$^+$)	
2927.6	(19$^+$)	638.9 *3*	100	2288.7	(17$^+$)	
2970.1+x	(19$^-$)	522.3 *5*	100	2447.8+x	(17$^-$)	
3003.2	(19$^-$)	319.7 *5*	62	2683.1	(18$^-$)	D
		633.6 *5*	100	2370.0	(17$^-$)	Q
3116.6+x	(20$^+$)	259.9 *5*	100	2857.0+x	(19$^+$)	
		514.1 *5*	100	2602.5+x	(18$^+$)	
		595.0 *5*	68	2521.3+x	(19$^-$)	D
3130.3+x	(20$^+$)	336.4 *5*	13	2793.8+x	(19$^+$)	
		670.0 *5*	100	2460.3+x	(18$^+$)	Q
3199.5+x	(21$^-$)	374.7 *5*	31	2824.6+x	(20$^-$)	D
		678.3 *5*	100	2521.3+x	(19$^-$)	
3230.5	(20$^-$)	648.9 *5*	100	2581.6	(18$^-$)	
3232.4	(20$^+$)	664.8 *3*	100	2567.6	(18$^+$)	
3250.3+x	(20$^-$)	545.5 *5*	100	2704.8+x	(18$^-$)	
3264.1+y	(19$^+$)	653.8 *5*	100	2610.3+y	(17$^+$)	
3350.6	(20$^-$)	667.5 *5*	100	2683.1	(18$^-$)	
3389.2+x	(21$^+$)	272.8 *5*	67	3116.6+x	(20$^+$)	
		532.5 *5*	100	2857.0+x	(19$^+$)	
		564.2 *5*	44	2824.6+x	(20$^-$)	
3495.7+x	(21$^+$)	701.9 *5*	100	2793.8+x	(19$^+$)	Q
3520.2+x	(22$^-$)	320.5 *5*	31	3199.5+x	(21$^-$)	
		695.6 *3*	100	2824.6+x	(20$^-$)	Q
3541.1+x	(21$^-$)	571.0 *5*	100	2970.1+x	(19$^-$)	
3549.1	(21$^-$)	652.5 *5*	100	2896.6	(19$^-$)	
3635.4	(21$^-$)	632.2 *5*	100	3003.2	(19$^-$)	
3650.6	(21$^+$)	723.0 *5*	100	2927.6	(19$^+$)	
3675.0+x	(22$^+$)	285.9 *5*	94	3389.2+x	(21$^+$)	
		558.4 *5*	100	3116.6+x	(20$^+$)	
3855.3+x	(22$^+$)	725.0 *5*	100	3130.3+x	(20$^+$)	
3855.3+x	(22$^-$)	605.0 *5*	100	3250.3+x	(20$^-$)	
3940.0+x	(23$^-$)	419.7 *5*	45	3520.2+x	(22$^-$)	
		740.6 *5*	100	3199.5+x	(21$^-$)	Q
3943.8	(22$^-$)	713.3 *5*	100	3230.5	(20$^-$)	
3945.9	(22$^+$)	713.5 *5*	100	3232.4	(20$^+$)	
3973.6+x	(23$^+$)	298.9 *7*		3675.0+x	(22$^+$)	
		584.3 *5*	100	3389.2+x	(21$^+$)	
4085.9	(22$^-$)	735.3 *5*	100	3350.6	(20$^-$)	
4176.6+x	(23$^-$)	635.5 *5*	100	3541.1+x	(21$^-$)	
4250.4+x	(23$^+$)	754.7 *5*	100	3495.7+x	(21$^+$)	
4262.7	(23$^-$)	713.6 *5*	100	3549.1	(21$^-$)	
4273.3+x	(24$^-$)	753.1 *5*	100	3520.2+x	(22$^-$)	
4291.5+x	(24$^+$)	318.0 *5*	42	3973.6+x	(23$^+$)	
		616.4 *5*	100	3675.0+x	(22$^+$)	
4378.0	(23$^+$)	727.4 *5*	100	3650.6	(21$^+$)	
4525.3+x	(24$^-$)	670.0 *5*	100	3855.3+x	(22$^-$)	
4599.4	(24$^+$)	653.5 *5*	100	3945.9	(22$^+$)	
4620.8+x	(25$^+$)	647.2 *5*	100	3973.6+x	(23$^+$)	
4633.9+x	(24$^+$)	778.6 *5*	100	3855.3+x	(22$^+$)	
4651.2	(24$^-$)	707.4 *5*	100	3943.8	(22$^-$)	
4732.8+x	(25$^-$)	792.8 *5*	100	3940.0+x	(23$^-$)	
5017.0	(25$^-$)	754.3 *5*	100	4262.7	(23$^-$)	
5021.5+x	(25$^+$)	771.1 *5*	100	4250.4+x	(23$^+$)	
5068.9+x	(26$^-$)	795.6 *5*	100	4273.3+x	(24$^-$)	
5576.2+x	(27$^-$)	843.4 *5*	100	4732.8+x	(25$^-$)	
5889.3+x	(28$^-$)	820.4 *5*	100	5068.9+x	(26$^-$)	

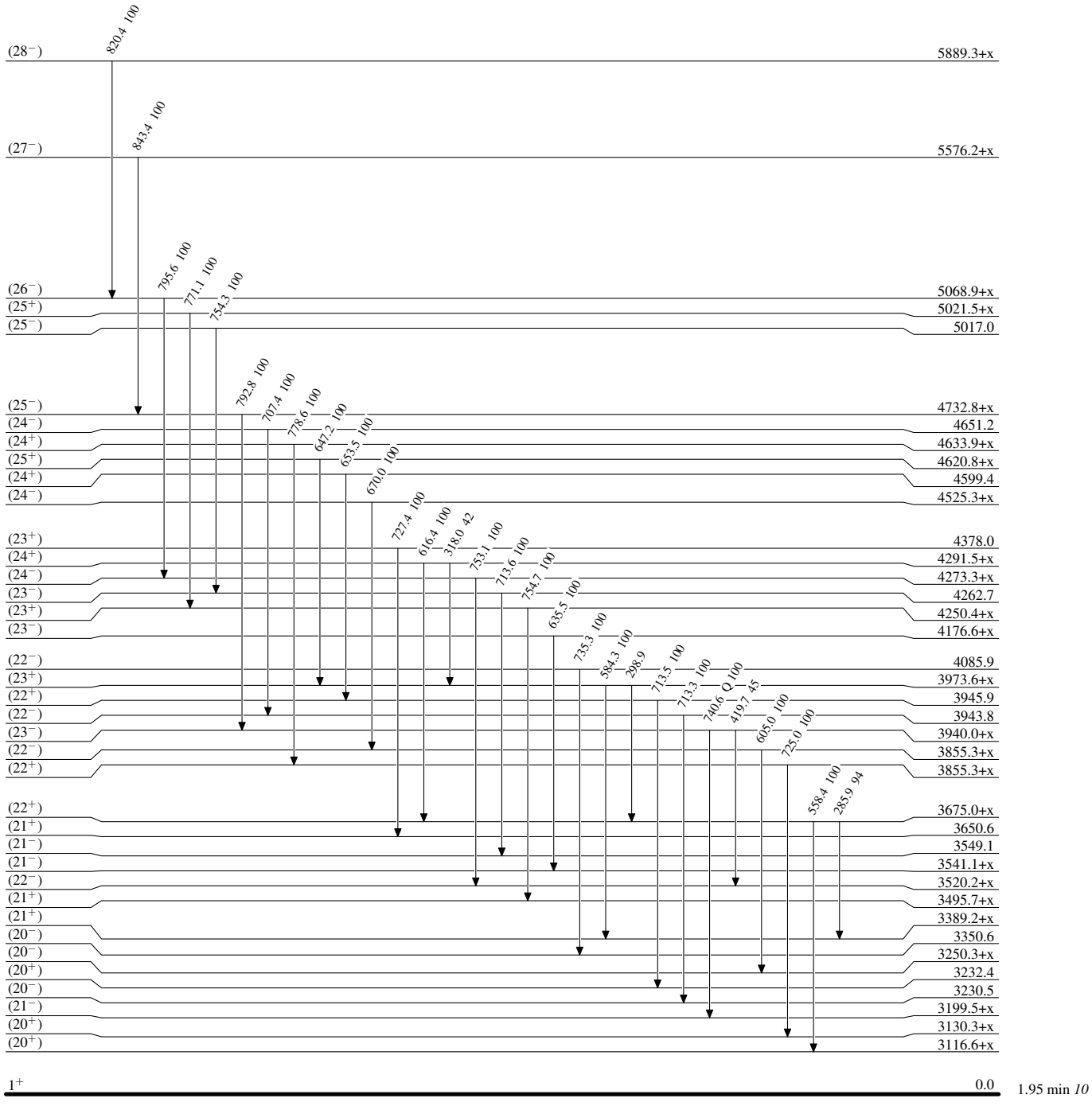
[†] For low-spin (J≤2) states, the values are from ^{164}Yb ε decay. For high-spin levels, values are from (^{19}F,5nγ), unless otherwise stated.
[‡] From (^{14}N,4nγ), value from (^{19}F,5nγ) is less precise.
[#] From ce data in ^{164}Yb ε decay for γ transitions from low-spin (≤2) levels, and from DCO ratios in (^{19}F,5nγ) for transitions from high-spin (J>2) levels.
[@] Additional information 4.
[&] Multiply placed.
[a] Placement of transition in the level scheme is uncertain.

$^{164}_{69}Tm_{95}$-12

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

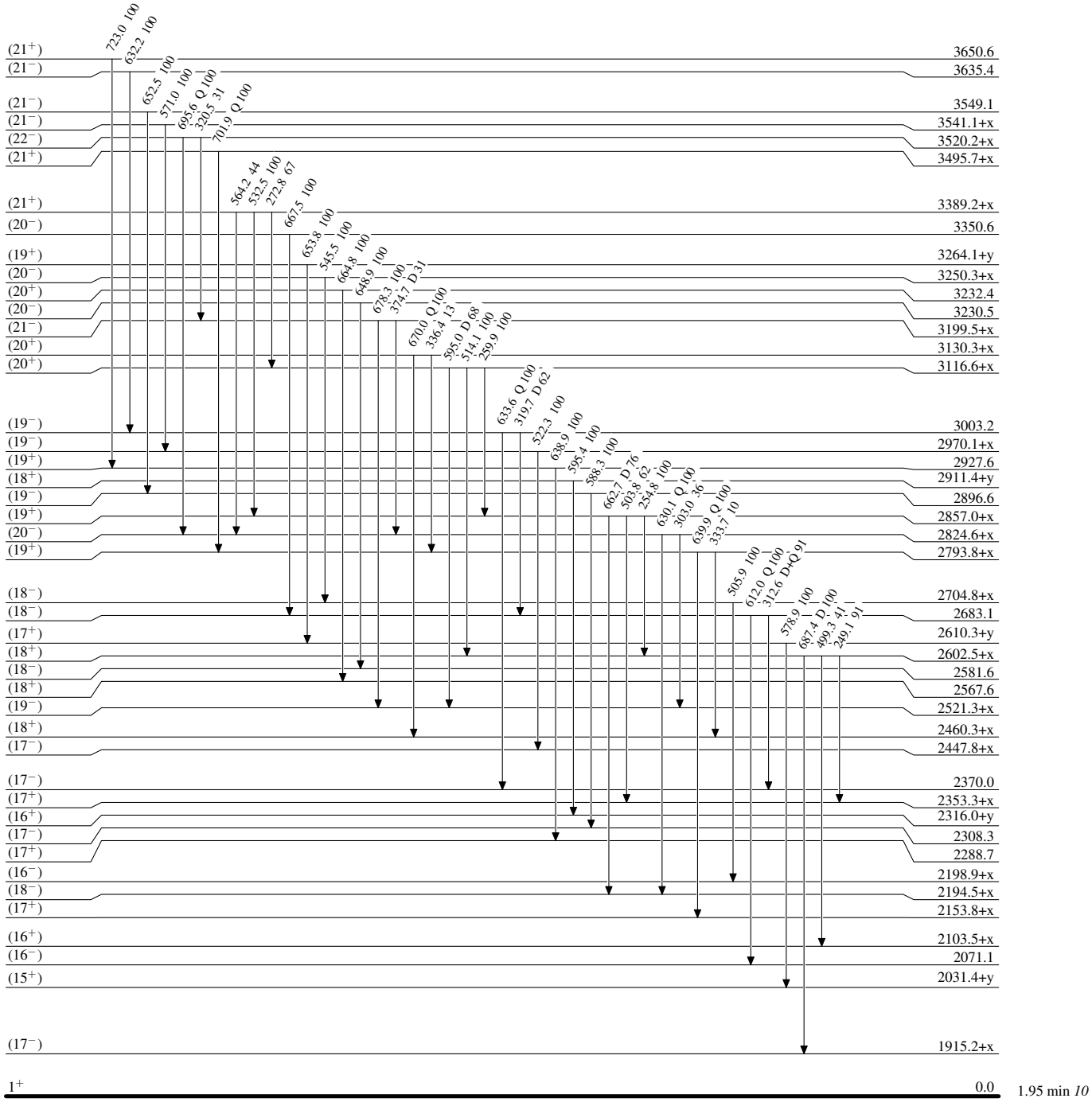


$^{164}_{69}Tm_{95}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

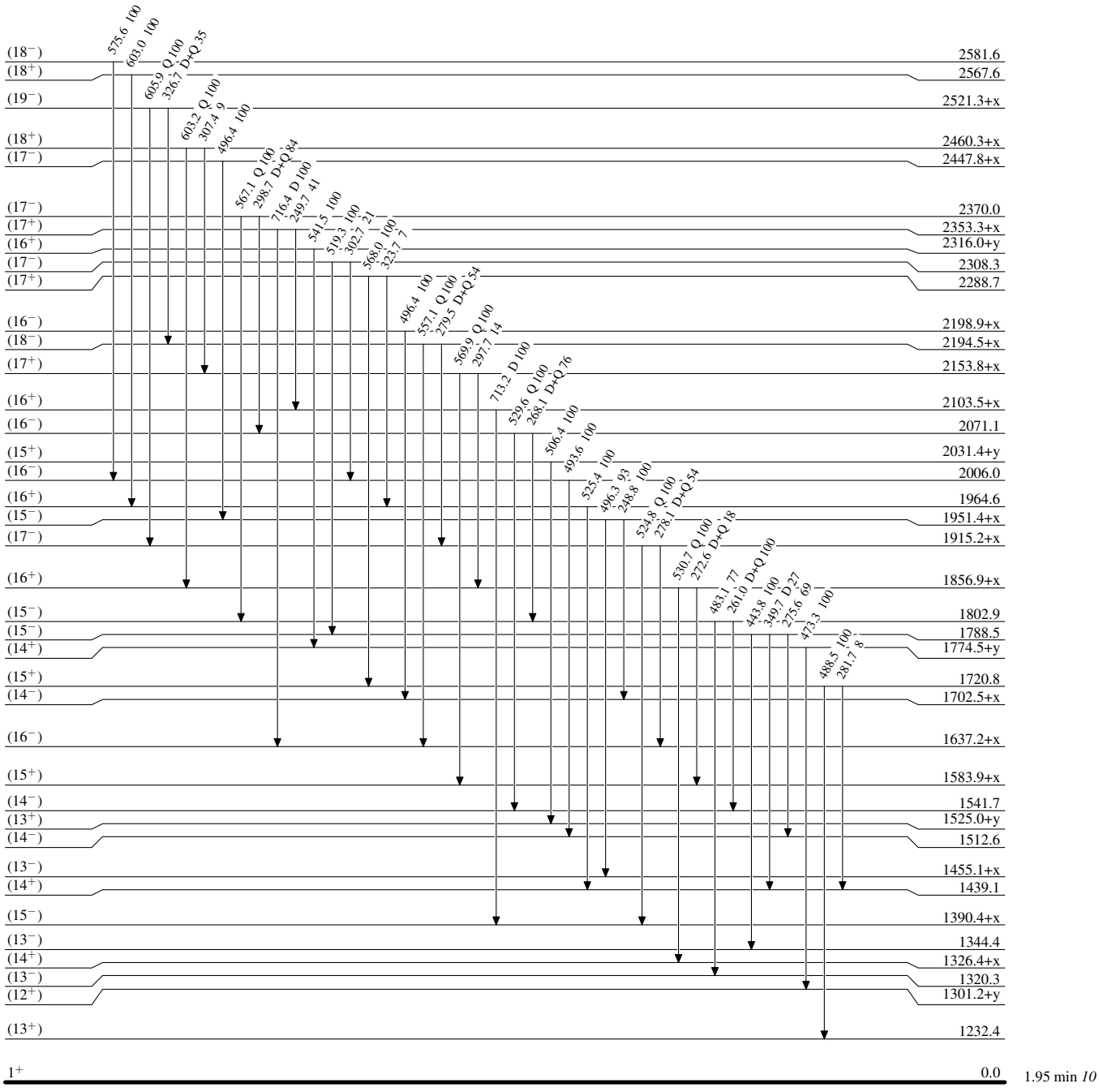


$^{164}_{69}Tm_{95}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

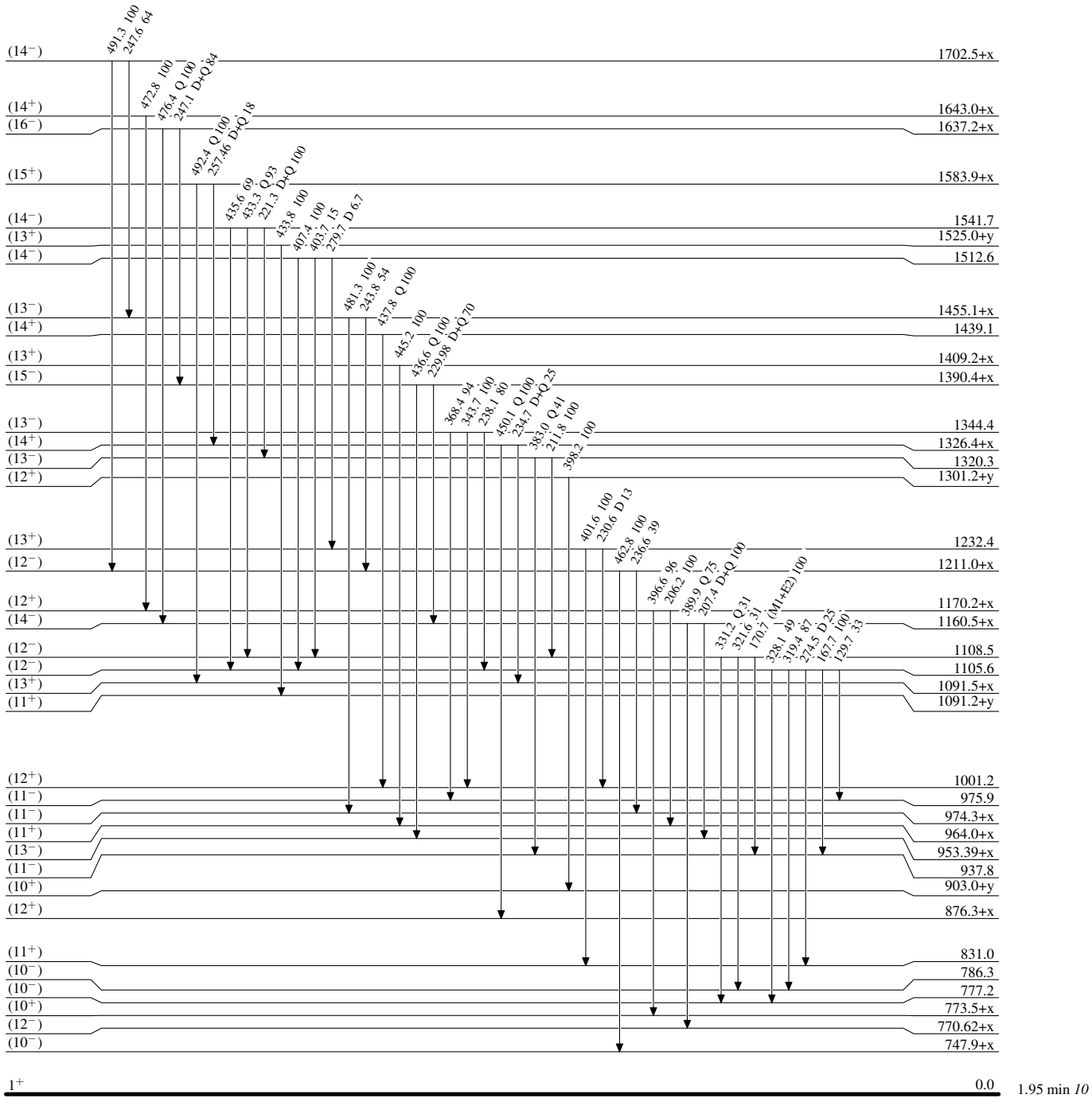


$^{164}_{69}Tm_{95}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

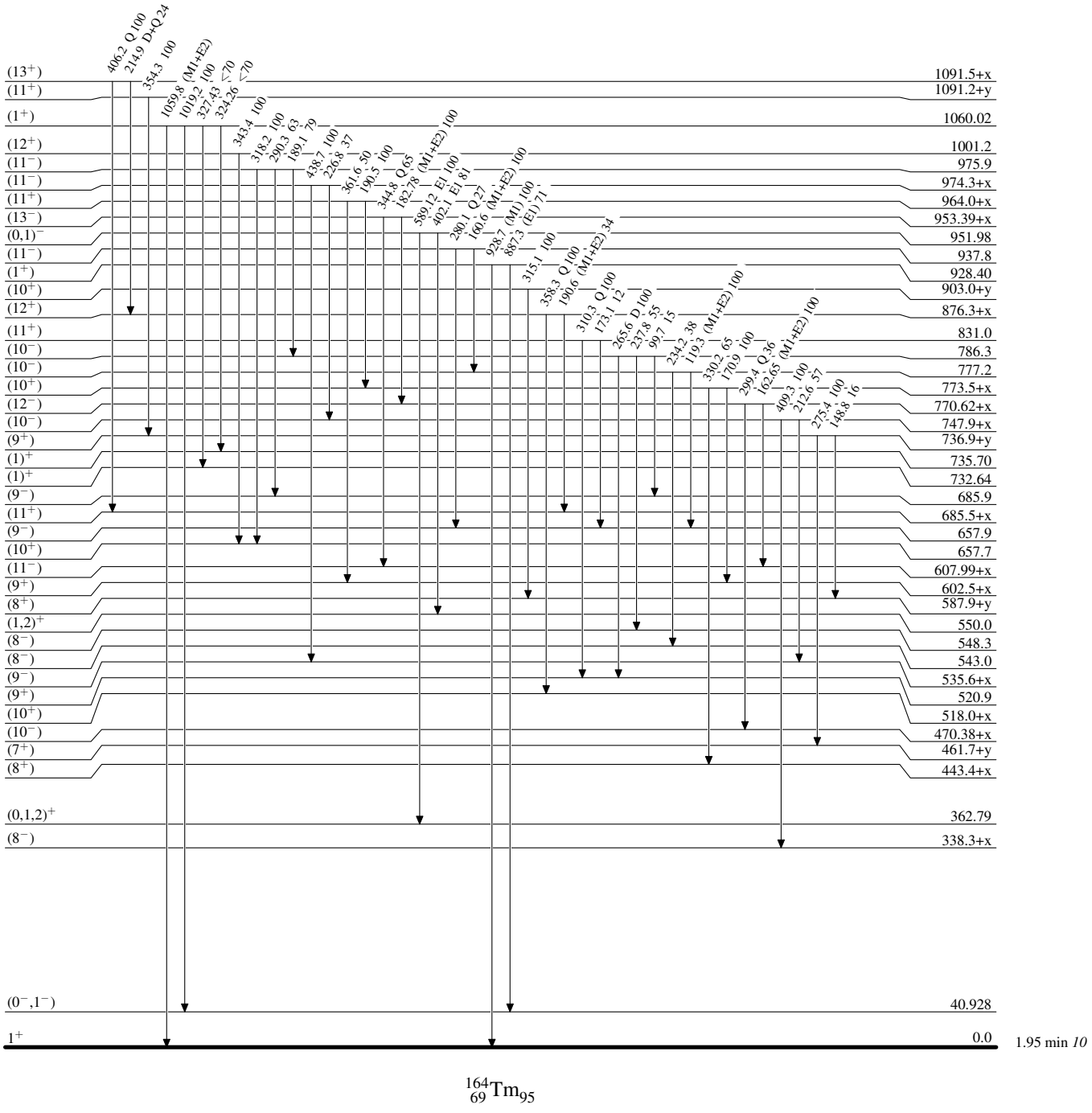


$^{164}_{69}Tm_{95}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{164}_{69}Tm_{95}$

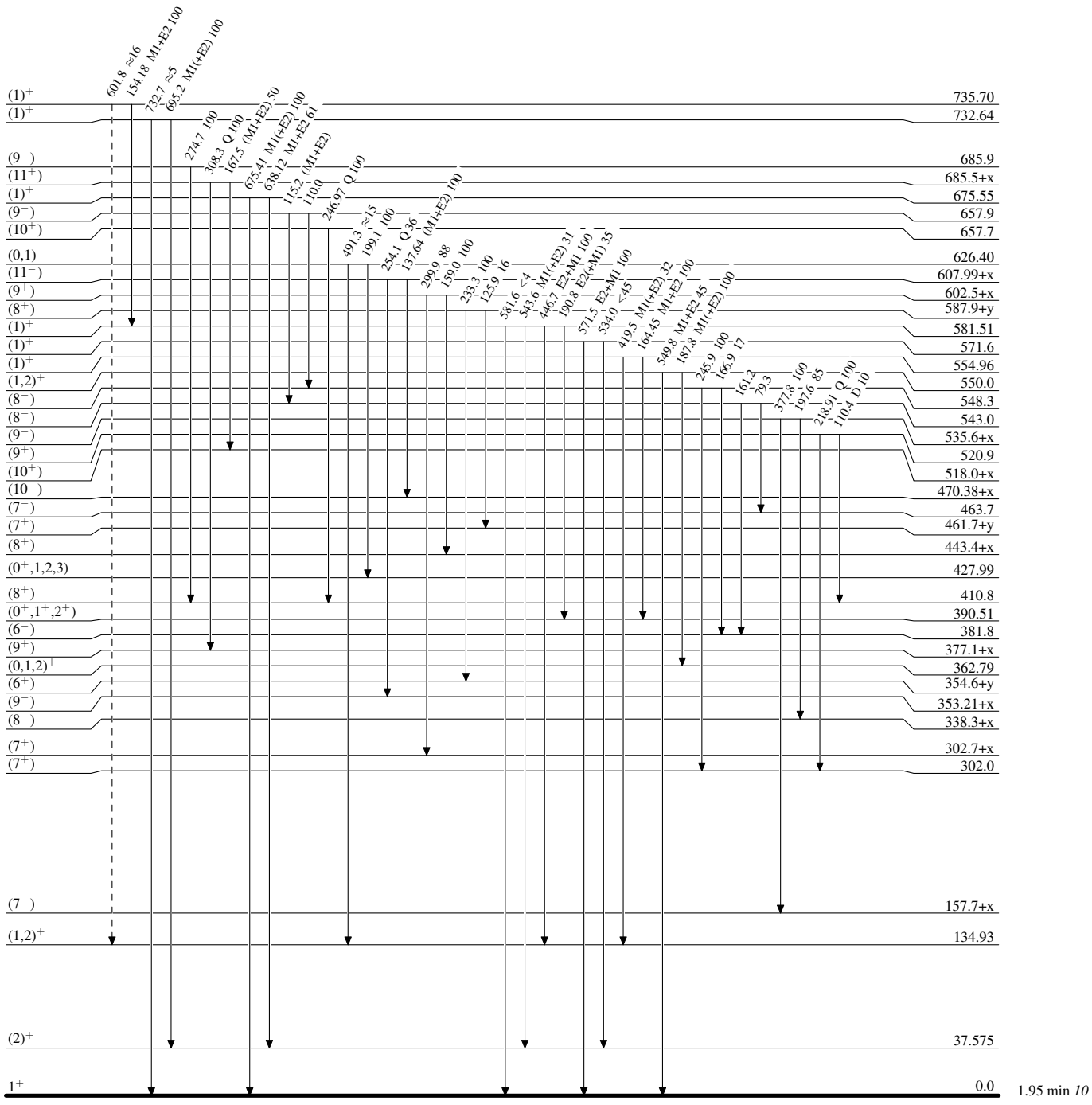
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

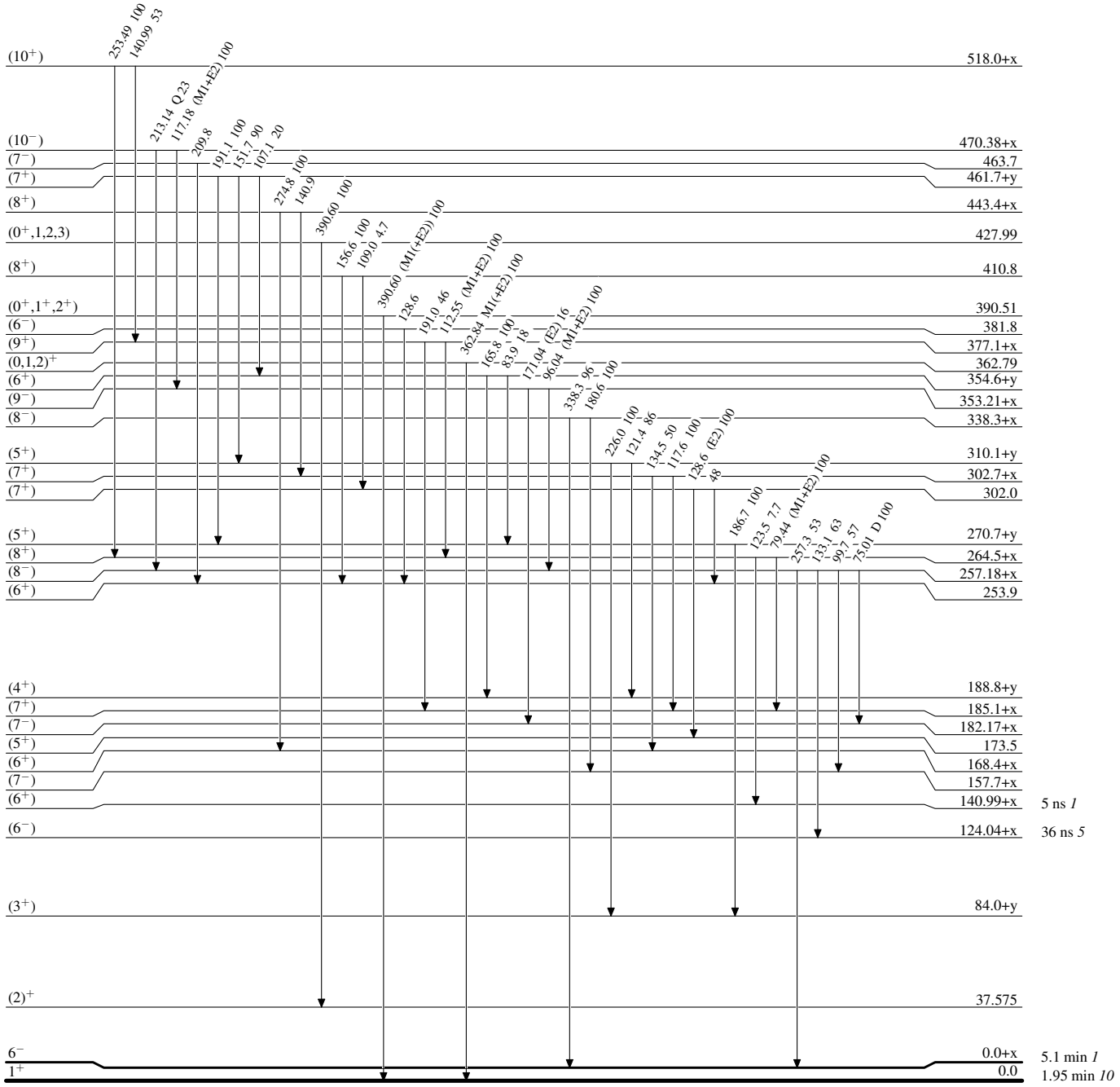


$^{164}_{69}Tm_{95}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

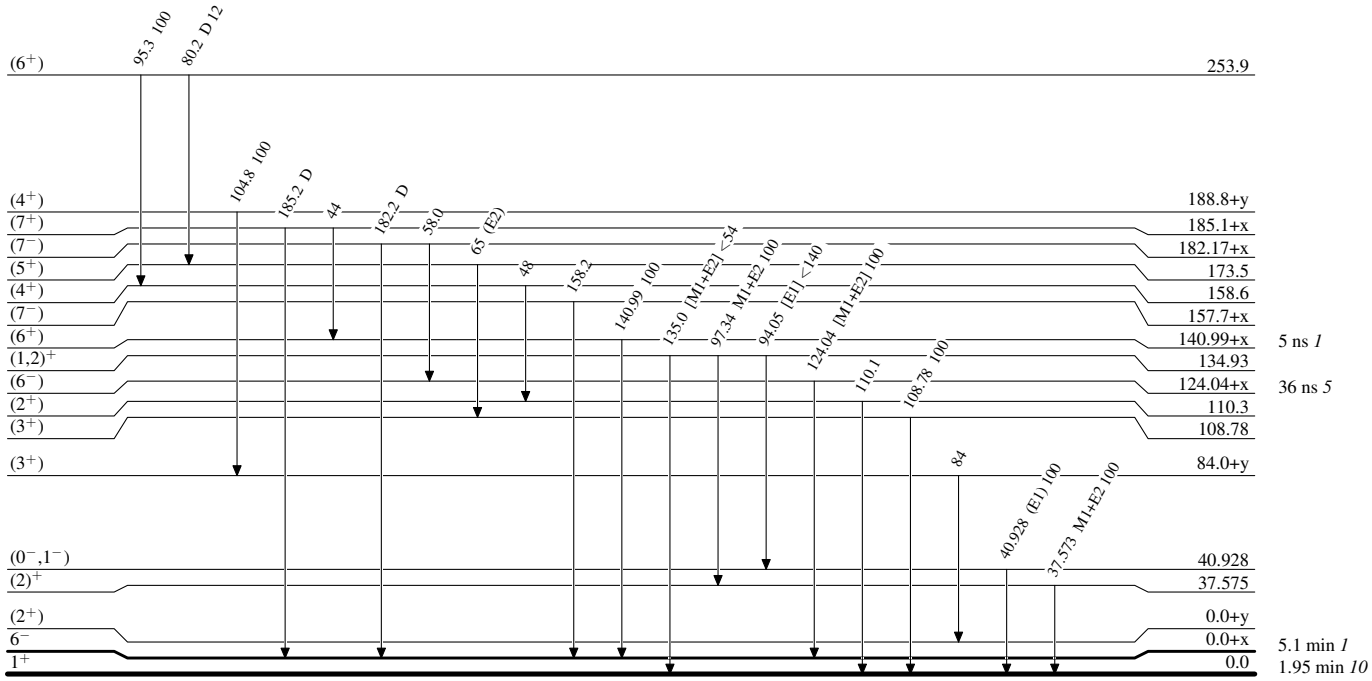


$^{164}_{69}Tm_{95}$

Adopted Levels, Gammas

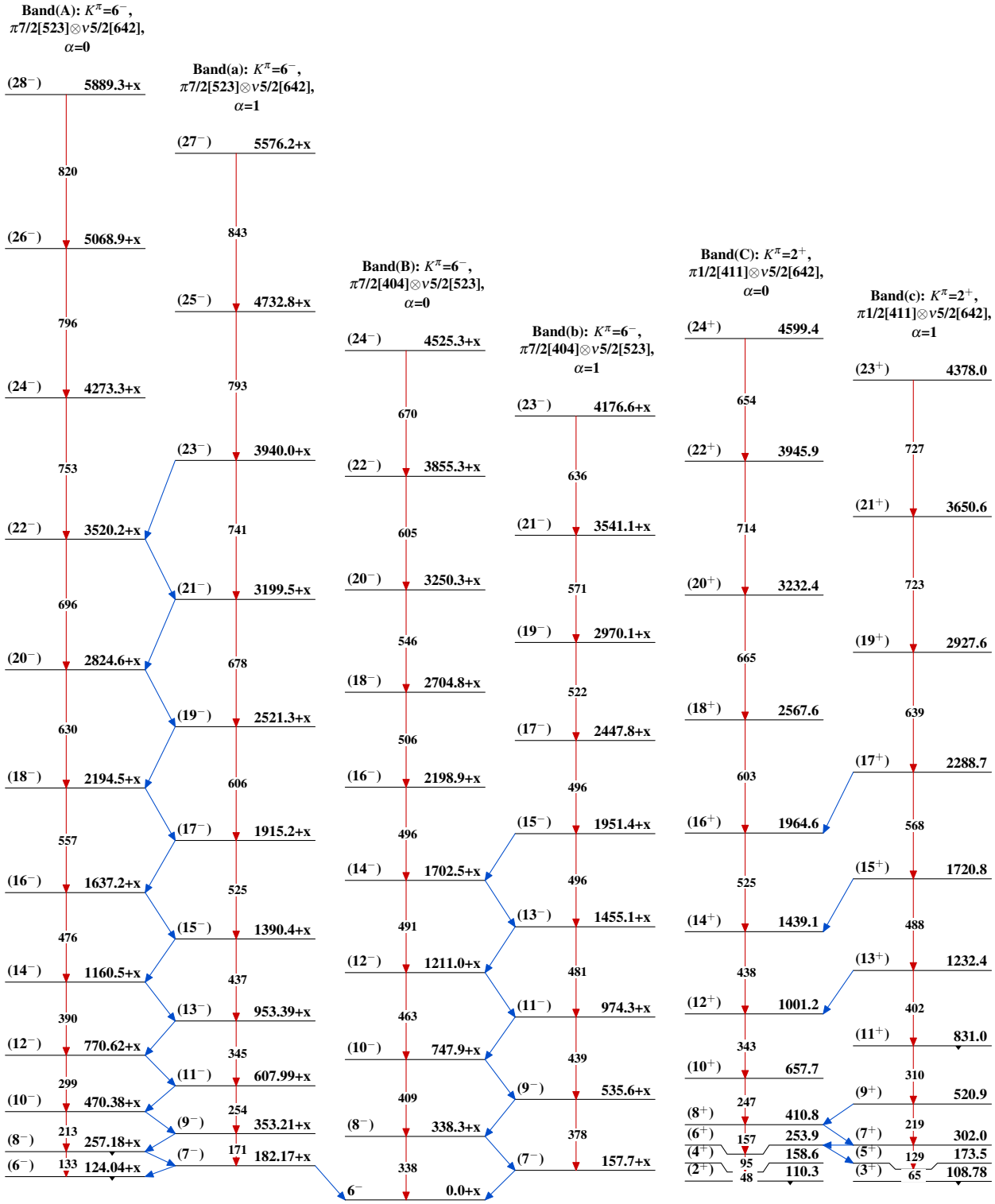
Level Scheme (continued)

Intensities: Relative photon branching from each level



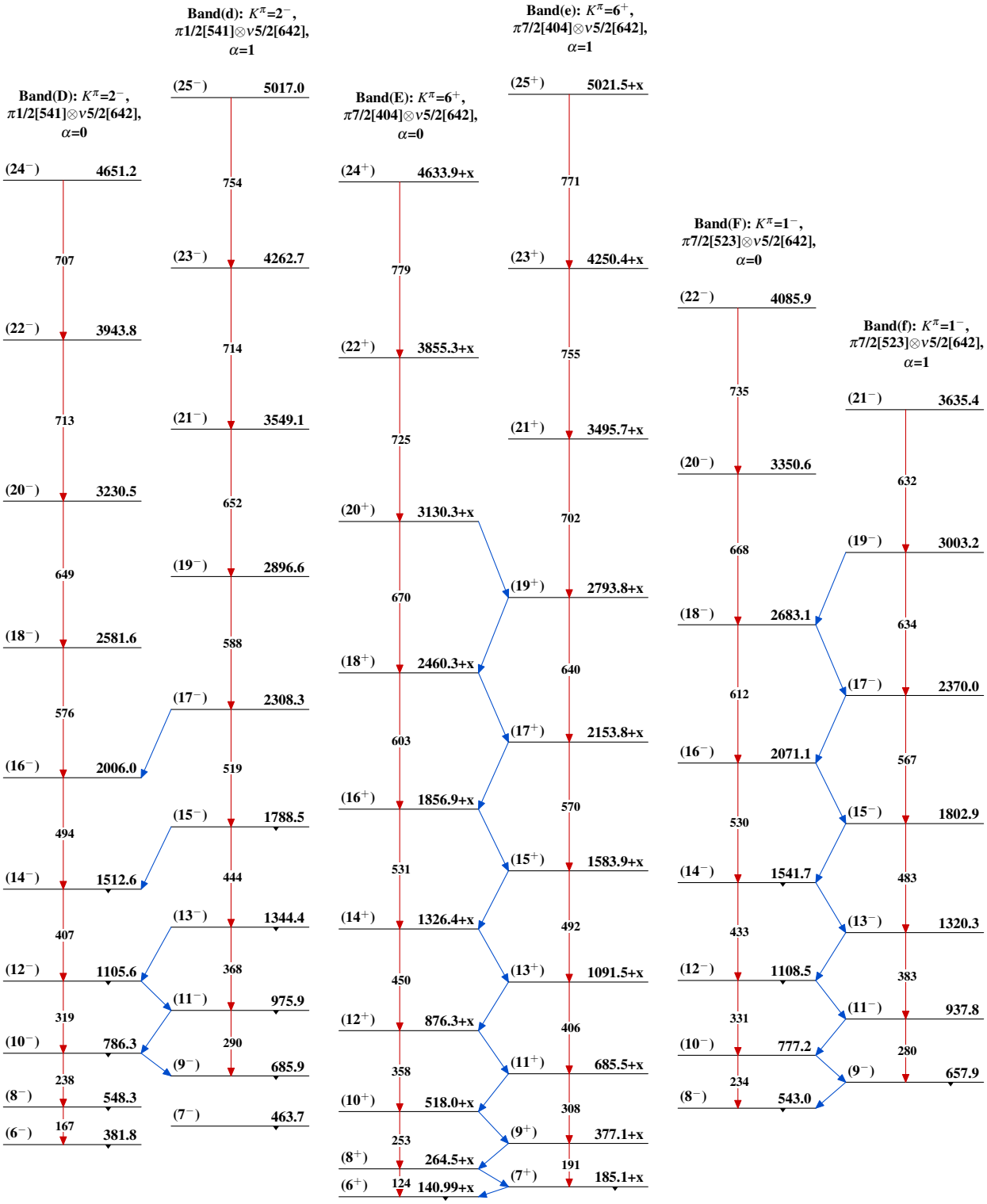
$^{164}_{69}Tm_{95}$

Adopted Levels, Gammas



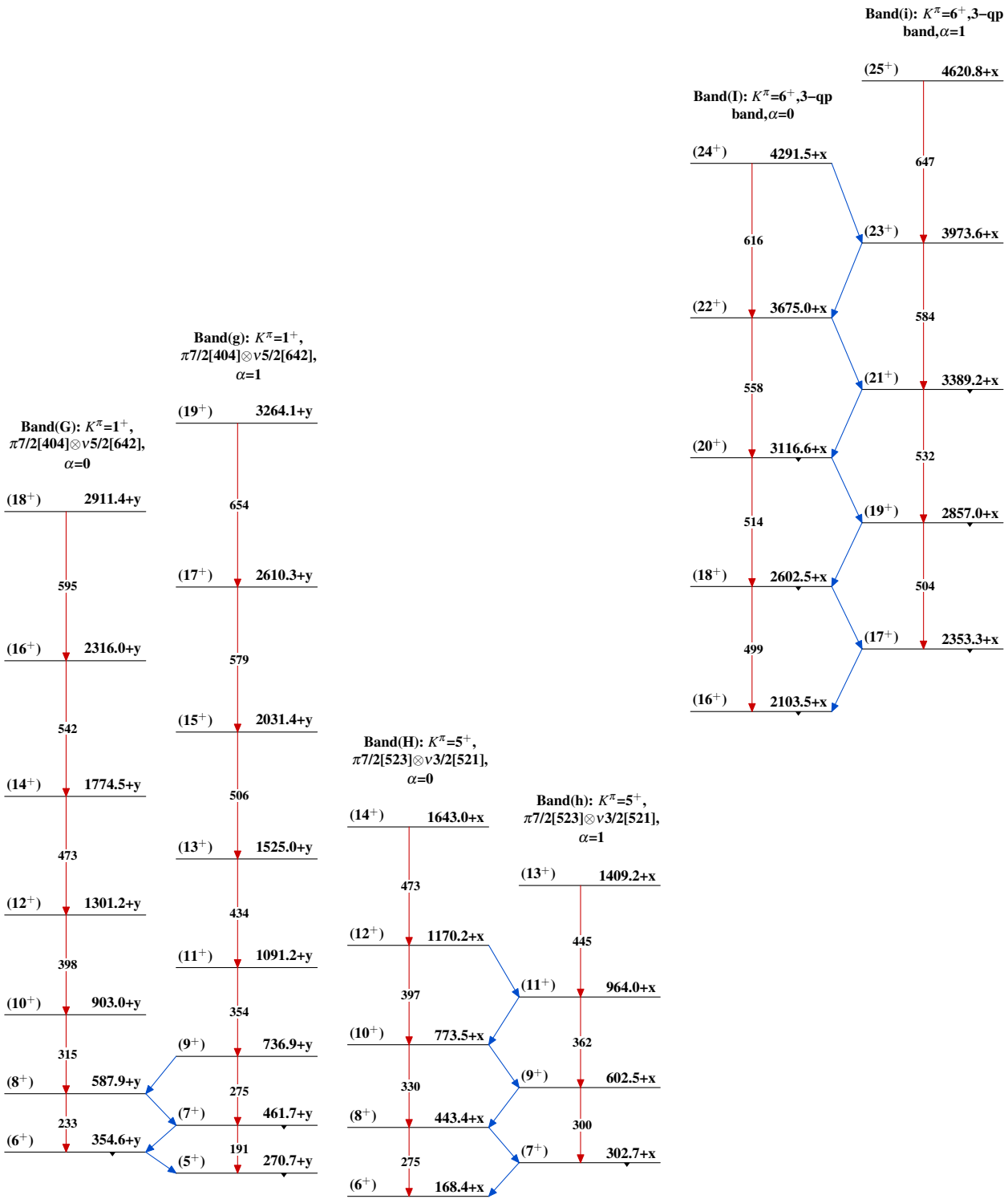
$^{164}_{69}Tm_{95}$

Adopted Levels, Gammas (continued)

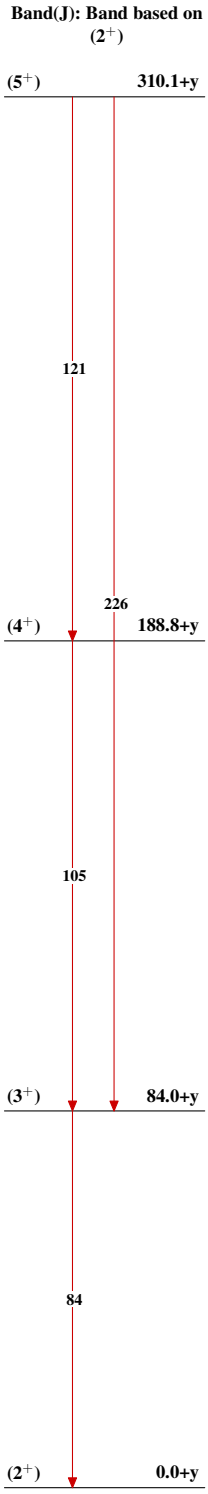


$^{164}_{69}Tm_{95}$

Adopted Levels, Gammas (continued)



Adopted Levels, Gammas (continued)



$^{164}_{69}Tm_{95}$