Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 195,1 (2024)	19-Sep-2023

Q(β^-)=−1660 *30*; S(n)=7650 *40*; S(p)=3565 *27*; Q(α)=2280 *40* 2021Wa16
S(2n)=17320 *40*, S(2p)=9670 *30* (2021Wa16).
Additional information 1.
For theoretical treatments and discussions of signature splitting and inversion in ^{162}Tm and in doubly-odd nuclides in this mass region, see, e.g., 2000Lu07, 2001Kv02, 2001Ri19, 2001Zh16, 2003Ya19.

^{162}Tm Levels

Measured Coulomb displacement energies: 1983Ja03.

Cross Reference (XREF) Flags

- A ^{162}Tm IT decay (24.3 s)
- B ^{162}Yb ε decay
- C ^{130}Te(^{37}Cl,5nγ),^{152}Sm(^{14}N,4nγ)

E(level)[†]	J$^\pi$[‡#]	$T_{1/2}$	XREF	Comments
0.0[b]	1$^-$	21.70 min *19*	AB	%ε+%β^+=100 μ=+0.068 *8*; Q=+0.69 *3* J$^\pi$: J measured by atomic-beam magnetic resonance (1971Ek01) and π from μ. $T_{1/2}$: weighted average of 21.5 min *10* (1963Ab02), 22.5 min *10* (1969Pa16), 21.77 min *26* (1971Ch30), and 21.55 min *30* (1974DeZF). Also: 77 min *4* (1960Wi17), <45 min (1961Bj02), and 90 min *10* (1963Ra15). μ: From the 2019StZV compilation and based on the data of 1988Al04. Q: From the 2016St14 compilation and based on the data of 1988Al04. For measurements or tallies of $\Delta\langle r^2\rangle$ results see 1986Al32, 1987AlZU, 1987Ba07, 1987Mi31, and 1988Al04; for ^{162}Tm-^{160}Tm $\Delta\langle r^2\rangle\approx$0.20 fm^2 (taken from plot by evaluator). In an evaluation of nuclear rms charge radii, 2013An02 report $\langle r^2\rangle^{1/2}$=5.1713 fm *48*.
44.651[b] *18*	2$^-$	1.44 ns *13*	B	J$^\pi$: M1 component in the transition to 1$^-$ and assignment as a member of the K^π=1$^-$ band. $T_{1/2}$: weighted average of 1.55 ns *25* (1975AlYV) and 1.40 ns *15* (1978Sc10) from ^{162}Yb ε decay. Also 1977AnZG.
66.90[c] *10*	2$^-$		A	J$^\pi$: M1 component in the transition to 1$^-$ and assignment as the K^π=2$^-$ bandhead.
163.351[d] *20*	1$^+$	1.1 ns *1*	B	J$^\pi$: allowed unhindered ε transition (log *ft*=4.9) from the ^{162}Yb gs (J^π=0$^+$). $T_{1/2}$: from 1978Sc10 (^{162}Yb ε decay). Other: <15 ns (1972Go34). Also: 1977AnZG.
290.30[d] *4*	2$^+$		B	J$^\pi$: M1 component in the transition to 1$^+$, E1 to 1$^-$, and assignment as a K^π=1$^+$ band member.
408.31 *10*			B	
415.88 *5*	1$^+$		B	J$^\pi$: E2 γ to 2$^+$ and log *ft*=6.1 for the ε transition from the ^{162}Yb g.s. (J^π=0$^+$).
451.02 *6*			B	
739.45 *5*	1$^+$		B	J$^\pi$: M1 component in the transition to 1$^+$, log *ft*=5.5 for the ε transition from the ^{162}Yb gs (J^π=0$^+$).

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Adopted Levels, Gammas (continued)

^{162}Tm Levels (continued)

E(level)[†]	Jπ[‡#]	$T_{1/2}$	XREF	Comments
747.40 *7*	$0^+,1^+,2^+,3^+$		B	Jπ: E2 γ to 1^+.
754.93 *11*	$0^-,1^-,2^-$		B	Jπ: E1 γ to 1^+.
771.00 *6*	1^+		B	Jπ: E2 γ to 1^+ and log *ft*=5.7 for the ε transition from the ^{162}Yb gs ($J^\pi=0^+$).
780.20 *14*			B	
782.64 *7*	1^+		B	Jπ: E2 γ to 1^+ and log *ft*=5.7 for the ε transition from the ^{162}Yb gs ($J^\pi=0^+$).
791.82 *13*			B	
800.48 *8*			B	
815.75 *15*	$0^+,1^+,2^+$		B	Jπ: M1 γ to 1^+.
857.74 *15*			B	
901.40 *11*			B	
954.04 *11*	$0^-,1^-$		B	Jπ: E1 γ to 1^+ indicates $J^\pi=0^-$, 1^-, or 2^-. log *ft*=5.9 from 0^+ rules out 2^-.
x[f]	5^+	24.3 s *17*	A C	%ε+%β^+=17.5 *34*; %IT=82.5 *34* E(level): the isomeric transition from this level is not observed. From the absence of K x rays in coincidence with the 66.90 γ (which follows it in the decay) and from the α(K)/α ratio for E3 transitions in Tm, the energy of the isomeric transition is deduced to be <125 keV. Hence, the level energy (x) is <192 keV, but >66.9 keV, or 129 *62*. See the discussion in the ^{162}Tm IT decay data set. Jπ: deduced from half-life of IT decay to 2^- level and allowed ε decays (log *ft* values 4.6-5.8) to 4^+ and 6^+ levels in ^{162}Er (1974De47). $T_{1/2}$: from ^{162}Tm IT decay (1974De47).
96.0+x[e] *3*	(6^+)		C	
107.1+x[i] *3*	(6^+)		C	
131.29+x[t] *16*	(5^+)		C	
136.8+x *11*	(6^+)[@]		C	
151.2+x[m] *11*	(6^+)		C	
163.56+x[g] *25*	(6^-)		C	
189.3+x[h] *3*	(7^-)		C	
202.9+x[f] *3*	(7^+)		C	
210.9+x[j] *3*	(7^+)		C	
232.7+x[n] *11*	(7^+)		C	
237.5+x[g] *3*	(8^-)		C	
293.7+x[m] *11*	(8^+)		C	
305.1+x[h] *3*	(9^-)		C	
314.3+x[i] *3*	(8^+)		C	
322.9+x[e] *3*	(8^+)		C	
373.1+x[k] *4*	(6^-)		C	
393.3+x[n] *11*	(9^+)		C	
400.7+x[g] *3*	(10^-)		C	
413.1+x[j] *3*	(9^+)		C	
449.8+x[f] *3*	(9^+)		C	
514.5+x[h] *3*	(11^-)		C	
526.4+x[m] *11*	(10^+)		C	
555.5+x[i] *3*	(10^+)		C	
566.3+x[k] *4*	(8^-)		C	
595.2+x[e] *3*	(10^+)		C	
671.0+x[g] *3*	(12^-)		C	
690.4+x[n] *10*	(11^+)		C	

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Adopted Levels, Gammas (continued)

^{162}Tm Levels (continued)

E(level)†	Jπ‡#	XREF	E(level)†	Jπ‡#	XREF	E(level)†	Jπ‡#	XREF
717.2+x[l] 4	(9⁻)	C	2923.5+x[l] 4	(19⁻)	C	5248.9+x[q] 10	(26⁺)	C
728.3+x[j] 3	(11⁺)	C	3075.8+x[e] 3	(20⁺)	C	5324.5+x[h] 4	(27⁻)	C
787.0+x[f] 3	(11⁺)	C	3101.5+x[h] 3	(21⁻)	C	5369.7+x[m] 11	(26⁺)	C
814.5+x[k] 3	(10⁻)	C	3178.4+x[m] 10	(20⁺)	C	5406.3+x[f] 4	(27⁺)	C
838.4+x[h] 3	(13⁻)	C	3182.3+x[i] 7	(20⁺)	C	5602.0+x[p] 4	(27⁻)	C
883.4+x[m] 10	(12⁺)	C	3270.0+x? 6	(20⁻)	C	5642.0+x[r] 10	(27⁺)	C
910.7+x[i] 3	(12⁺)	C	3297.0+x[k] 5	(20⁻)	C	5684.6+x[g] 4	(28⁻)	C
979.1+x[e] 3	(12⁺)	C	3360.0+x[f] 3	(21⁺)	C	5808.0+x[e] 4	(28⁺)	C
1010.2+x[l] 3	(11⁻)	C	3418.4+x[g] 4	(22⁻)	C	5812.4+x[n] 11	(27⁺)	C
1051.3+x[g] 3	(14⁻)	C	3517.6+x[r] 10	(21⁺)	C	5904.8+x[l] 5	(27⁻)	C
1100.4+x[n] 10	(13⁺)	C	3540.5+x[n] 10	(21⁺)	C	5976.7+x[o] 4	(28⁻)	C
1140.2+x[k] 3	(12⁻)	C	3583.2+x[l] 4	(21⁻)	C	6060.6+x[q] 10	(28⁺)	C
1149.8+x[j] 3	(13⁺)	C	3609.0+x[j] 5	(21⁺)	C	6150.4+x[h] 4	(29⁻)	C
1226.5+x[f] 3	(13⁺)	C	3661.9+x[e] 3	(22⁺)	C	6188.0+x[m] 11	(28⁺)	C
1274.4+x[h] 3	(15⁻)	C	3816.9+x[h] 4	(23⁻)	C	6221.1+x[f] 4	(29⁺)	C
1344.0+x[m] 10	(14⁺)	C	3821.0+x[q] 10	(22⁺)	C	6394.2+x[p] 5	(29⁻)	C
1368.5+x[i] 3	(14⁺)	C	3860.6+x[i] 7	(22⁺)	C	6481.5+x[r] 10	(29⁺)	C
1374.9+x[l] 3	(13⁻)	C	3878.4+x[o] 4	(22⁻)	C	6538.6+x[g] 4	(30⁻)	C
1458.7+x[e] 3	(14⁺)	C	3890.1+x[m] 11	(22⁺)	C	6650.6+x[e] 4	(30⁺)	C
1530.8+x[g] 3	(16⁻)	C	3974.1+x[f] 3	(23⁺)	C	6658.4+x[n] 11	(29⁺)	C
1553.3+x[k] 3	(14⁻)	C	4007.6+x[k] 5	(22⁻)	C	6752.7+x[l] 5	(29⁻)	C
1604.9+x[n] 10	(15⁺)	C	4139.8+x[g] 4	(24⁻)	C	6799.4+x[o] 5	(30⁻)	C
1663.7+x[j] 3	(15⁺)	C	4145.8+x[r] 10	(23⁺)	C	7045.3+x[h] 4	(31⁻)	C
1741.1+x[f] 3	(15⁺)	C	4196.1+x[p] 4	(23⁻)	C	7069.0+x[m] 11	(30⁺)	C
1809.1+x[h] 3	(17⁻)	C	4259.4+x[n] 10	(23⁺)	C	7094.3+x[f] 4	(31⁺)	C
1815.9+x[l] 3	(15⁻)	C	4308.3+x[l] 4	(23⁻)	C	7255.4+x[p] 5	(31⁻)	C
1890.5+x[m] 10	(16⁺)	C	4309.4+x[e] 4	(24⁺)	C	7371.4+x[r] 11	(31⁺)	C
1913.6+x[i] 3	(16⁺)	C	4340.0+x[j] 5	(23⁺)	C	7458.1+x[g] 4	(32⁻)	C
1999.3+x[e] 3	(16⁺)	C	4490.6+x[q] 10	(24⁺)	C	7528.3+x[n] 11	(31⁺)	C
2053.4+x[k] 3	(16⁻)	C	4510.1+x[o] 4	(24⁻)	C	7551.8+x[e] 4	(32⁺)	C
2095.9+x[g] 3	(18⁻)	C	4519.1+x[i] 10	(24⁺)	C	7694.9+x[o] 5	(32⁻)	C
2187.9+x[n] 10	(17⁺)	C	4554.5+x[h] 4	(25⁻)	C	8008.5+x[m] 12	(32⁺)	C
2255.1+x[j] 4	(17⁺)	C	4613.0+x[m] 11	(24⁺)	C	8014.8+x[h] 5	(33⁻)	C
2273.2+x[f] 3	(17⁺)	C	4655.4+x[f] 4	(25⁺)	C	8023.5+x[f] 5	(33⁺)	C
2333.3+x[l] 3	(17⁻)	C	4751.8+x[k] 7	(24⁻)	C	8193.5+x[p] 5	(33⁻)	C
2424.6+x[h] 3	(19⁻)	C	4855.0+x[r] 10	(25⁺)	C	8417.7+x[n] 13	(33⁺)	C
2507.4+x[m] 10	(18⁺)	C	4867.4+x[p] 4	(25⁻)	C	8442.2+x[g] 5	(34⁻)	C
2523.8+x[i] 3	(18⁺)	C	4890.1+x[g] 4	(26⁻)	C	8512.9+x[e] 5	(34⁺)	C
2535.7+x[e] 3	(18⁺)	C	5013.4+x[n] 11	(25⁺)	C	8665.2+x[o] 6	(34⁻)	C
2635.5+x[k] 4	(18⁻)	C	5025.9+x[e] 4	(26⁺)	C	9007.8+x[f] 5	(35⁺)	C
2731.0+x[g] 3	(20⁻)	C	5085.2+x[l] 4	(25⁻)	C	9057.6+x[h] 5	(35⁻)	C
2799.5+x[f] 3	(19⁺)	C	5100.0+x[j] 6	(25⁺)	C	9208.5+x[p] 6	(35⁻)	C
2834.1+x[n] 10	(19⁺)	C	5215.6+x[o] 4	(26⁻)	C	9487.8+x[g] 7	(36⁻)	C
2909.4+x[j] 4	(19⁺)	C	5233.4+x[i] 10	(26⁺)	C	9534.2+x[e] 5	(36⁺)	C

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Adopted Levels, Gammas (continued)

^{162}Tm Levels (continued)

E(level)[†]	Jπ[‡#]	XREF	E(level)[†]	Jπ[‡#]	XREF	E(level)[†]	Jπ[‡#]	XREF
9704.2+x[o] 6	(36⁻)	C	12575.6+x[h] 10	(41⁻)	C	326+y[t]	(9⁺)	C
10046.2+x[f] 6	(37⁺)	C	12896.4+x[g] 11	(42⁻)	C	490+y[s]	(10⁺)	C
10170.6+x[h] 7	(37⁻)	C	12935.0+x[e] 9	(42⁺)	C	674+y[t]	(11⁺)	C
10298.1+x[p] 6	(37⁻)	C	13451.1+x[f] 9	(43⁺)	C	900+y[s]	(12⁺)	C
10592.0+x[g] 9	(38⁻)	C	14129.1+x?[e]	(44⁺)	C	1136+y[t]	(13⁺)	C
10616.3+x[e] 6	(38⁺)	C	14650.0+x[f] 10	(45⁺)	C	1410+y[s]	(14⁺)	C
11136.4+x[f] 7	(39⁺)	C	15865.3+x?[f]	(47⁺)	C	1692+y[t]	(15⁺)	C
11345.6+x[h] 9	(39⁻)	C	y[&s]	(6⁺)	C	2001+y[s]	(16⁺)	C
11744.2+x[g] 10	(40⁻)	C	97+y[t]	(7⁺)	C	2314+y[t]	(17⁺)	C
11755.6+x[e] 7	(40⁺)	C	194+y[a]	(8⁺)	C	2650+y[s]	(18⁺)	C
12274.6+x[f] 8	(41⁺)	C	199+y[s]	(8⁺)	C	2965+y[t]	(19⁺)	C

[†] From least-squares fits to γ energies in the individual studies.
[‡] For discussions of the configuration assignments see 1974De47, 1983HoZU, 1987Dr07, 1989No02 and 1998Es06.
[#] For the levels populated in the heavy ion-induced γ-ray studies, the assignments are those of 1998Es06 and are based on γ-ray multipolarities, general considerations of rotational-band structure and the expected increase of spin with increasing excitation energy.
[@] Possible bandhead of the (π 7/2[523])+(ν 5/2[523]) band.
[&] The transition from this level to the bandhead (5⁺) is not observed. From this, 1998Es06, from ^{130}Te(^{37}Cl,5nγ), conclude that the γ-ray energy either coincides with one of the x-ray energies or lies below ≈35 keV, which is the limit implied by absorption in the target chamber.
[a] Level shown as uncertain by 1998Es06.
[b] Band(A): $K^{\pi}=1^{-}$ band, Configuration=(ν 3/2[521])-(π 1/2[411]). An alternate, but less preferred (1989No02), configuration is (π 5/2[402])-(ν 3/2[521]). Also, (π 5/2[402])-(ν 3/2[521]) has been discussed by 1983HoZU and 1989No02.
[c] Band(B): $K^{\pi}=2^{-}$ band, Configuration=(π 7/2[404])-(ν 3/2[521]). Also, the configuration (ν 3/2[521])+(π 1/2[411]) has been discussed by 1983HoZU; and a $K^{\pi}=1^{-}$ assignment, based on (π 7/2[404])-(ν 5/2[523]) has been discussed by 1989No02.
[d] Band(C): $K^{\pi}=1^{+}$ band, Configuration=(π 7/2[523])-(ν 5/2[523]).
[e] Band(D): (π 7/2[523])(ν 3/2[521]) band, signature=0.
[f] Band(E): (π 7/2[523])(ν 3/2[521]) band, signature=1.
[g] Band(F): (π 7/2[523])(ν 5/2[642]) band, signature=0.
[h] Band(G): (π 7/2[523])(ν 5/2[642]) band, signature=1.
[i] Band(H): (π 1/2[411])(ν 5/2[642]) band, signature=0.
[j] Band(I): (π 1/2[411])(ν 5/2[642]) band, signature=1.
[k] Band(J): (π 1/2[541])(ν 5/2[642]) band, signature=0.
[l] Band(K): (π 1/2[541])(ν 5/2[642]) band, signature=1.
[m] Band(L): (π 7/2[404])(ν 5/2[642]) band, signature=0.
[n] Band(M): (π 7/2[404])(ν 5/2[642]) band, signature=1.
[o] Band(N): (π 7/2[404])(ν 3/2[521]) band, signature=0.
[p] Band(O): (π 7/2[404])(ν 3/2[521]) band, signature=1.
[q] Band(P): (π 7/2[523])(ν 5/2[523]) band, signature=0.
[r] Band(Q): (π 7/2[523])(ν 5/2[523]) band, signature=1.
[s] Band(R): (π 5/2[402])(ν 5/2[642]) band, signature=0.
[t] Band(S): (π 5/2[402])(ν 5/2[642]) band, signature=1.

Adopted Levels, Gammas (continued)

γ(^{162}Tm)

Additional information 2.

E_i(level)	J_i^π	E_γ	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[#]	α[@]	Comments
44.651	2⁻	44.65 *2*	100	0.0	1⁻	M1+E2	0.28 *3*	11.9 *14*	B(M1)(W.u.)=0.0124 *+20−15*; B(E2)(W.u.)=2.4×10^2 *+7−5*
66.90	2⁻	66.90 *10*	100	0.0	1⁻	M1(+E2)	0.41 *41*	10.7 *14*	I_γ,Mult.,δ: from 1974De47 in ^{162}Tm IT decay (24.3 s) dataset.
163.351	1⁺	118.70 *2*	84 *4*	44.651	2⁻	E1		0.212	B(E1)(W.u.)=4.9×10^{-5} *+5−4*
		163.35 *3*	100 *4*	0.0	1⁻	E1		0.0911	B(E1)(W.u.)=2.25×10^{-5} *+23−20*
290.30	2⁺	126.78 *10*	100 *25*	163.351	1⁺	M1(+E2)		1.42 *16*	
		290.35 *4*	80 *8*	0.0	1⁻	E1		0.0208	
408.31		244.83 *10*	100	163.351	1⁺				
415.88	1⁺	125.58 *3*	100	290.30	2⁺	E2(+M1)		1.47 *16*	
451.02		406.39 *6*	100 *12*	44.651	2⁻				
		450.69 *18*	70 *12*	0.0	1⁻				
739.45	1⁺	576.10 *4*	100 *6*	163.351	1⁺	M1(+E2)		0.019 *8*	
747.40	0⁺,1⁺,2⁺,3⁺	457.38 *19*	45 *6*	290.30	2⁺				
		584.07 *7*	100 *12*	163.351	1⁺	E2		0.01163	
754.93	0⁻,1⁻,2⁻	591.58 *10*	100 *18*	163.351	1⁺	E1		0.00405	
771.00	1⁺	607.68 *5*	100 *11*	163.351	1⁺	E2		0.01058	
		725.96 *18*	11 *2*	44.651	2⁻				
780.20		329.3 *3*	35 *20*	451.02					
		616.84 *10*	100 *20*	163.351	1⁺				
782.64	1⁺	619.55 *15*	100 *18*	163.351	1⁺	E2		0.01010	
		738.07[&] *13*	≤100	44.651	2⁻				
		782.47 *10*	35 *5*	0.0	1⁻				
791.82		628.47 *12*	100	163.351	1⁺				
800.48		349.44 *7*	100 *10*	451.02		E1		0.01327	
		384.85 *24*	23 *10*	415.88	1⁺				
		637.13 *20*	23 *10*	163.351	1⁺				
815.75	0⁺,1⁺,2⁺	399.86 *14*	80 *20*	415.88	1⁺	M1		0.0676	
		652.5 *5*	100 *40*	163.351	1⁺				
857.74		694.39 *14*	100	163.351	1⁺				
901.40		738.07[&] *13*	≤690	163.351	1⁺				
		856.71 *18*	100 *31*	44.651	2⁻				
954.04	0⁻,1⁻	183.05 *22*	100 *12*	771.00	1⁺	E1		0.0676	
		206.82 *12*	64 *6*	747.40	0⁺,1⁺,2⁺,3⁺	E1		0.0492	
		545.40 *16*	28 *9*	408.31					
x	5⁺	(<125)	100	66.90	2⁻	[E3]			B(E3)(W.u.)=0.06 *+16−4* E_γ: inferred from the absence of K x rays in

$^{162}_{69}Tm_{93}$-5

Adopted Levels, Gammas (continued)

γ(^{162}Tm) (continued)

E_i(level)	J_i^π	E_γ	I_γ[†]	E_f	J_f^π	Mult.[‡]	Comments
							coincidence with the 66.90 γ and the α(K)/α ratio for E3 transitions in Tm (1974De47, IT decay).
96.0+x	(6$^+$)	96.0[&] *4*	100	x	5$^+$		
107.1+x	(6$^+$)	107.4 *4*	100	x	5$^+$		
131.29+x	(5$^+$)	131.29 *16*	100	x	5$^+$		
163.56+x	(6$^-$)	(32.2)		131.29+x	(5$^+$)		E_γ: from level energies. Existence is required by the level scheme (see the (HI,xnγ) data set).
		163.5 *3*		x	5$^+$		
202.9+x	(7$^+$)	96.0[&] *4*		107.1+x	(6$^+$)		
		106.6 *3*		96.0+x	(6$^+$)		
210.9+x	(7$^+$)	103.6 *4*		107.1+x	(6$^+$)		
		114.98 *22*	100	96.0+x	(6$^+$)		
232.7+x	(7$^+$)	81.50 *16*	≈100	151.2+x	(6$^+$)		
		95.95 *19*	≈33	136.8+x	(6$^+$)		
237.5+x	(8$^-$)	48.50 *20*	100 *13*	189.3+x	(7$^-$)		E_γ: from 1987Dr07, ^{152}Sm(^{14}N,4nγ). I_γ: in ^{152}Sm(^{14}N,4nγ), 1987Dr07 report Iγ(48.50γ)=380 *50*, relative to Iγ(73.87γ)=100 *10*.
		73.87 *16*	26 *3*	163.56+x	(6$^-$)		I_γ: see comment on the 48.50 γ.
293.7+x	(8$^+$)	61.00 *7*	100	232.7+x	(7$^+$)		
305.1+x	(9$^-$)	68.14 *16*	100 *6*	237.5+x	(8$^-$)	D	I_γ: from 1987Dr07, ^{152}Sm(^{14}N,4nγ).
		115.55 *19*	74 *11*	189.3+x	(7$^-$)	Q	I_γ: from 1987Dr07, ^{152}Sm(^{14}N,4nγ).
314.3+x	(8$^+$)	103.4 *4*		210.9+x	(7$^+$)	D	
		111.1 *3*	100 *5*	202.9+x	(7$^+$)	D	
		207.26 *18*	52 *5*	107.1+x	(6$^+$)		
322.9+x	(8$^+$)	111.93 *16*	100 *20*	210.9+x	(7$^+$)		
		120.3 *3*		202.9+x	(7$^+$)		
393.3+x	(9$^+$)	99.55 *16*	100 *6*	293.7+x	(8$^+$)	D	
		160.55 *17*	26 *3*	232.7+x	(7$^+$)		
400.7+x	(10$^-$)	95.88 *16*	100 *4*	305.1+x	(9$^-$)	D	
		162.93 *16*	1.9 *8*	237.5+x	(8$^-$)		
413.1+x	(9$^+$)	90.4 *6*	73 *6*	322.9+x	(8$^+$)		
		98.9 *3*	22 *4*	314.3+x	(8$^+$)		
		202.29 *20*	100 *7*	210.9+x	(7$^+$)		
449.8+x	(9$^+$)	126.87 *16*	100 *4*	322.9+x	(8$^+$)		
		135.35 *17*	90 *4*	314.3+x	(8$^+$)		
514.5+x	(11$^-$)	113.95 *15*	100	400.7+x	(10$^-$)	D	
		209.32 *16*	15.6 *13*	305.1+x	(9$^-$)	Q	I_γ: weighted average of 22.0 *22* (1987Dr07, ^{152}Sm(^{14}N,4nγ)) and 15.0 *7* (1998Es06, ^{130}Te(^{37}Cl,5nγ)).
526.4+x	(10$^+$)	133.05 *16*	100	393.3+x	(9$^+$)	D	
		232.68 *16*	43 *3*	293.7+x	(8$^+$)	Q	I_γ: weighted average of 46 *5* (1987Dr07, ^{152}Sm(^{14}N,4nγ)) and 42 *3* (1998Es06, ^{130}Te(^{37}Cl,5nγ)).

Adopted Levels, Gammas (continued)

γ(^{162}Tm) (continued)

E_i(level)	J_i^π	E_γ	I_γ[†]	E_f	J_f^π	Mult.[‡]	Comments
555.5+x	(10$^+$)	105.5 *5*	16.1 *14*	449.8+x	(9$^+$)		
		142.3 *3*		413.1+x	(9$^+$)		
		232.7 *4*	14.3 *13*	322.9+x	(8$^+$)		
		241.17 *16*	100 *4*	314.3+x	(8$^+$)	Q	
566.3+x	(8$^-$)	193.23 *18*	100 *9*	373.1+x	(6$^-$)		
		355.4 *3*	49 *12*	210.9+x	(7$^+$)	D	
595.2+x	(10$^+$)	145.48 *16*	100 *4*	449.8+x	(9$^+$)		
		182.22 *17*	37 *4*	413.1+x	(9$^+$)		
		272.34 *18*	44 *13*	322.9+x	(8$^+$)		
671.0+x	(12$^-$)	156.64 *15*	100	514.5+x	(11$^-$)	D	
		270.28 *16*	24.4 *11*	400.7+x	(10$^-$)	Q	I_γ: from 1998Es06 (^{130}Te(^{37}Cl,5nγ)). In ^{152}Sm(^{14}N,4nγ), 1987Dr07 report Iγ=24.1 *25*.
690.4+x	(11$^+$)	164.00 *16*	100 *5*	526.4+x	(10$^+$)		
		297.10 *16*	88 *5*	393.3+x	(9$^+$)	Q	I_γ: from 1998Es06 (^{130}Te(^{37}Cl,5nγ)). In ^{152}Sm(^{14}N,4nγ), 1987Dr07 report Iγ>29.
717.2+x	(9$^-$)	403.0 *3*	100	314.3+x	(8$^+$)	D	
728.3+x	(11$^+$)	133.12 *20*	42 *3*	595.2+x	(10$^+$)		
		173	≈7	555.5+x	(10$^+$)		
		314.72 *24*	100 *5*	413.1+x	(9$^+$)		
787.0+x	(11$^+$)	192.15 *22*	100 *14*	595.2+x	(10$^+$)		
		337.03 *17*	75 *8*	449.8+x	(9$^+$)		
814.5+x	(10$^-$)	248.21 *17*	100 *7*	566.3+x	(8$^-$)		
		401.62 *18*	69 *7*	413.1+x	(9$^+$)	D	
838.4+x	(13$^-$)	167.55 *15*	100	671.0+x	(12$^-$)	D	
		323.79 *16*	56.9 *21*	514.5+x	(11$^-$)	Q	I_γ: weighted average of 53 *4* (1987Dr07, ^{152}Sm(^{14}N,4nγ)) and 58.1 *23* (1998Es06, ^{130}Te(^{37}Cl,5nγ)).
883.4+x	(12$^+$)	192.95 *16*	64 *3*	690.4+x	(11$^+$)		I_γ: from 1998Es06 (^{130}Te(^{37}Cl,5nγ)). In ^{152}Sm(^{14}N,4nγ), 1987Dr07 report Iγ≈95.
		356.95 *16*	100 *5*	526.4+x	(10$^+$)	Q	
910.7+x	(12$^+$)	182.3 *3*	3.4 *8*	728.3+x	(11$^+$)		
		355.20 *16*	100 *4*	555.5+x	(10$^+$)		
979.1+x	(12$^+$)	192.28 *22*	70 *7*	787.0+x	(11$^+$)		
		384.01 *17*	100 *5*	595.2+x	(10$^+$)		
1010.2+x	(11$^-$)	293.0 *3*	93 *19*	717.2+x	(9$^-$)		
		454.55 *21*	100 *16*	555.5+x	(10$^+$)	D	
1051.3+x	(14$^-$)	212.90 *15*	100 *3*	838.4+x	(13$^-$)	D	
		380.17 *17*	66 *3*	671.0+x	(12$^-$)	Q	I_γ: from 1998Es06 (^{130}Te(^{37}Cl,5nγ)). In ^{152}Sm(^{14}N,4nγ), 1987Dr07 report Iγ=66 *5*.
1100.4+x	(13$^+$)	217.05 *16*	39.1 *24*	883.4+x	(12$^+$)	D	I_γ: from 1998Es06 (^{130}Te(^{37}Cl,5nγ)). In ^{152}Sm(^{14}N,4nγ), 1987Dr07 report Iγ=74 *16*.
		410.10 *16*	100 *4*	690.4+x	(11$^+$)	Q	
1140.2+x	(12$^-$)	325.88 *17*	100 *8*	814.5+x	(10$^-$)		
		411.89 *22*	27 *3*	728.3+x	(11$^+$)	D	
1149.8+x	(13$^+$)	239.8 *4*		910.7+x	(12$^+$)		
		421.35 *16*	100	728.3+x	(11$^+$)		
1226.5+x	(13$^+$)	247.49 *17*	46.7 *23*	979.1+x	(12$^+$)		

$^{162}_{69}Tm_{93}$-7

Adopted Levels, Gammas (continued)

γ(^{162}Tm) (continued)

E_i(level)	J_i^π	E_γ	I_γ[†]	E_f	J_f^π	Mult.[‡]	Comments
1226.5+x	(13$^+$)	439.36 *17*	100 *5*	787.0+x	(11$^+$)		
1274.4+x	(15$^-$)	222.71 *15*	90 *4*	1051.3+x	(14$^-$)	D	I_γ: weighted average of 94 *10* (1987Dr07, ^{152}Sm(^{14}N,4nγ)) and 89 *4* (1998Es06, ^{130}Te(^{37}Cl,5nγ)).
		436.03 *15*	100	838.4+x	(13$^-$)	Q	
1344.0+x	(14$^+$)	243.80 *16*	30.0 *18*	1100.4+x	(13$^+$)		
		460.54 *16*	100 *4*	883.4+x	(12$^+$)	Q	
1368.5+x	(14$^+$)	457.86 *16*	100	910.7+x	(12$^+$)	Q	
1374.9+x	(13$^-$)	234.5 *3*	22 *5*	1140.2+x	(12$^-$)		
		364.64 *17*	100 *9*	1010.2+x	(11$^-$)		
		464.05 *20*	76 *15*	910.7+x	(12$^+$)	D	
1458.7+x	(14$^+$)	232.03 *17*	38 *9*	1226.5+x	(13$^+$)		
		479.71 *17*	100 *5*	979.1+x	(12$^+$)		
1530.8+x	(16$^-$)	256.21 *15*	86 *3*	1274.4+x	(15$^-$)	D	I_γ: from 1998Es06 (^{130}Te(^{37}Cl,5nγ)). In ^{152}Sm(^{14}N,4nγ), 1987Dr07 report Iγ=43 *5*.
		479.70 *16*	100 *3*	1051.3+x	(14$^-$)		
1553.3+x	(14$^-$)	403.57 *22*	17 *5*	1149.8+x	(13$^+$)	D	
		413.48 *19*	100 *8*	1140.2+x	(12$^-$)		
1604.9+x	(15$^+$)	260.95 *17*	22.4 *20*	1344.0+x	(14$^+$)	D	
		504.45 *16*	100 *4*	1100.4+x	(13$^+$)		
1663.7+x	(15$^+$)	296	≈7	1368.5+x	(14$^+$)		
		513.87 *17*	100 *5*	1149.8+x	(13$^+$)		
1741.1+x	(15$^+$)	282.27 *17*	34.9 *22*	1458.7+x	(14$^+$)		
		514.82 *16*	100 *4*	1226.5+x	(13$^+$)		
1809.1+x	(17$^-$)	278.49 *16*	57.9 *18*	1530.8+x	(16$^-$)	D	
		534.55 *16*	100 *3*	1274.4+x	(15$^-$)	Q	
1815.9+x	(15$^-$)	263.0 *3*	16.1 *24*	1553.3+x	(14$^-$)		
		440.73 *19*	100 *4*	1374.9+x	(13$^-$)		
		447.26 *19*	42 *7*	1368.5+x	(14$^+$)	D	
1890.5+x	(16$^+$)	285.54 *18*	16.6 *14*	1604.9+x	(15$^+$)	D	
		546.51 *16*	100 *4*	1344.0+x	(14$^+$)	Q	
1913.6+x	(16$^+$)	545.07 *16*	100	1368.5+x	(14$^+$)		
1999.3+x	(16$^+$)	258.11 *18*	47 *8*	1741.1+x	(15$^+$)		
		540.49 *18*	100	1458.7+x	(14$^+$)		
		725.08 *20*	64 *8*	1274.4+x	(15$^-$)	D	
2053.4+x	(16$^-$)	389.4[c] *5*		1663.7+x	(15$^+$)	D	
		500.23 *17*	100	1553.3+x	(14$^-$)		
2095.9+x	(18$^-$)	286.55 *16*	50.8 *22*	1809.1+x	(17$^-$)	D	I_γ: weighted average of 48 *6* (1987Dr07, ^{152}Sm(^{14}N,4nγ)) and 51.3 *24* (1998Es06, ^{130}Te(^{37}Cl,5nγ)).
		565.12 *16*	100	1530.8+x	(16$^-$)		
2187.9+x	(17$^+$)	297.35 *19*	15 *3*	1890.5+x	(16$^+$)		
		583.08 *16*	100 *4*	1604.9+x	(15$^+$)	Q	
2255.1+x	(17$^+$)	591.32 *17*	100	1663.7+x	(15$^+$)		

$^{162}_{69}Tm_{93}$-8

Adopted Levels, Gammas (continued)

γ(^{162}Tm) (continued)

E_i(level)	J_i^π	E_γ	I_γ[†]	E_f	J_f^π	Mult.[‡]	Comments
2273.2+x	(17$^+$)	274.00 *18*	49.5 *25*	1999.3+x	(16$^+$)		
		532.17 *17*	100 *10*	1741.1+x	(15$^+$)		
		609.35 *24*	15.4 *25*	1663.7+x	(15$^+$)	Q	
		742.42 *20*	32 *5*	1530.8+x	(16$^-$)	Q	
2333.3+x	(17$^-$)	280.21 *20*	22 *3*	2053.4+x	(16$^-$)		
		419.79 *20*	29 *7*	1913.6+x	(16$^+$)	D	
		517.26 *18*	100 *7*	1815.9+x	(15$^-$)		
2424.6+x	(19$^-$)	328.37 *16*	43.1 *15*	2095.9+x	(18$^-$)		I_γ: from 1998Es06 (^{130}Te(^{37}Cl,5nγ)). In ^{152}Sm(^{14}N,4nγ), 1987Dr07 report Iγ=30 *4*.
		615.72 *16*	100 *3*	1809.1+x	(17$^-$)	Q	
2507.4+x	(18$^+$)	319.40 *18*	15.2 *25*	2187.9+x	(17$^+$)		
		616.87 *16*	100 *3*	1890.5+x	(16$^+$)	Q	
2523.8+x	(18$^+$)	610.36 *16*	100	1913.6+x	(16$^+$)	Q	
2535.7+x	(18$^+$)	262.45 *18*	40 *3*	2273.2+x	(17$^+$)		
		536.51 *18*	100 *6*	1999.3+x	(16$^+$)		
		622.08 *17*	79 *6*	1913.6+x	(16$^+$)	Q	
		726.6 *3*	37 *5*	1809.1+x	(17$^-$)	D	
2635.5+x	(18$^-$)	582.14 *18*	100	2053.4+x	(16$^-$)		
2731.0+x	(20$^-$)	306.34 *16*	38 *3*	2424.6+x	(19$^-$)	D	I_γ: weighted average of 41 *5* (1987Dr07, ^{152}Sm(^{14}N,4nγ)) and 37 *3* (1998Es06, ^{130}Te(^{37}Cl,5nγ)).
		635.09 *16*	100	2095.9+x	(18$^-$)	Q	
2799.5+x	(19$^+$)	263.70 *17*	39 *3*	2535.7+x	(18$^+$)		
		526.28 *16*	100 *5*	2273.2+x	(17$^+$)		
		544[c]		2255.1+x	(17$^+$)	Q	
		703.39 *18*	29 *4*	2095.9+x	(18$^-$)	D	
2834.1+x	(19$^+$)	326.69 *19*	12.4 *17*	2507.4+x	(18$^+$)		
		646.21 *16*	100 *4*	2187.9+x	(17$^+$)	Q	
2909.4+x	(19$^+$)	654.36 *18*	100	2255.1+x	(17$^+$)		
2923.5+x	(19$^-$)	590.14 *17*	100	2333.3+x	(17$^-$)		
3075.8+x	(20$^+$)	276.26 *17*	54 *10*	2799.5+x	(19$^+$)		
		540.21 *17*	100 *15*	2535.7+x	(18$^+$)		
		552.06 *17*	55 *5*	2523.8+x	(18$^+$)	Q	
3101.5+x	(21$^-$)	370.31 *16*	38.9 *15*	2731.0+x	(20$^-$)	D	I_γ: from 1998Es06 (^{130}Te(^{37}Cl,5nγ)). In ^{152}Sm(^{14}N,4nγ), 1987Dr07 report Iγ=71 *10*.
		677.06 *16*	100 *3*	2424.6+x	(19$^-$)	Q	
3178.4+x	(20$^+$)	344.37 *22*	16.6 *22*	2834.1+x	(19$^+$)		
		670.91 *17*	100 *5*	2507.4+x	(18$^+$)		
3182.3+x	(20$^+$)	658.5[b] *6*	100[b]	2523.8+x	(18$^+$)		
3270.0+x?	(20$^-$)	634.5 *4*	100	2635.5+x	(18$^-$)		
3297.0+x	(20$^-$)	661.51 *20*	100	2635.5+x	(18$^-$)		
3360.0+x	(21$^+$)	284.25 *16*	47 *5*	3075.8+x	(20$^+$)		
		560.37 *16*	100 *5*	2799.5+x	(19$^+$)		
3418.4+x	(22$^-$)	316.74 *16*	32.2 *12*	3101.5+x	(21$^-$)		I_γ: from 1998Es06 (^{130}Te(^{37}Cl,5nγ)). In ^{152}Sm(^{14}N,4nγ), 1987Dr07 report Iγ≈45.

$^{162}_{69}Tm_{93}$-9

Adopted Levels, Gammas (continued)

γ(^{162}Tm) (continued)

E_i(level)	J_i^π	E_γ	I_γ[†]	E_f	J_f^π	Mult.[‡]	Comments
3418.4+x	(22$^-$)	687.37 *16*	100 *3*	2731.0+x	(20$^-$)	Q	
3517.6+x	(21$^+$)	683.44 *17*	100	2834.1+x	(19$^+$)	Q	
3540.5+x	(21$^+$)	706.35 *17*	100	2834.1+x	(19$^+$)		
3583.2+x	(21$^-$)	659.68 *18*	100	2923.5+x	(19$^-$)		
3609.0+x	(21$^+$)	699.60 *18*	100	2909.4+x	(19$^+$)		
3661.9+x	(22$^+$)	301.75 *16*	47 *3*	3360.0+x	(21$^+$)		
		586.14 *16*	100 *9*	3075.8+x	(20$^+$)		
3816.9+x	(23$^-$)	398.43 *16*	36.4 *17*	3418.4+x	(22$^-$)		I_γ: from 1998Es06 (^{130}Te(^{37}Cl,5nγ)). In ^{152}Sm(^{14}N,4nγ), 1987Dr07 report Iγ≈48.
		715.60 *16*	100 *4*	3101.5+x	(21$^-$)		
3821.0+x	(22$^+$)	303.48 *18*	100	3517.6+x	(21$^+$)		
3860.6+x	(22$^+$)	678.34 *18*	100	3182.3+x	(20$^+$)		
3878.4+x	(22$^-$)	1147.35 *19*	100	2731.0+x	(20$^-$)	Q	
3890.1+x	(22$^+$)	711.72 *17*	100	3178.4+x	(20$^+$)		
3974.1+x	(23$^+$)	312.41 *17*	43 *4*	3661.9+x	(22$^+$)		
		614.27 *17*	100 *4*	3360.0+x	(21$^+$)		
4007.6+x	(22$^-$)	710.6 *3*	100	3297.0+x	(20$^-$)		
4139.8+x	(24$^-$)	323.07 *17*	28.6 *15*	3816.9+x	(23$^-$)		I_γ: from 1998Es06 (^{130}Te(^{37}Cl,5nγ)). In ^{152}Sm(^{14}N,4nγ), 1987Dr07 report Iγ<100.
		721.25 *16*	100 *4*	3418.4+x	(22$^-$)		
4145.8+x	(23$^+$)	324.47 *23*	81 *16*	3821.0+x	(22$^+$)		
		605.42 *19*	78 *5*	3540.5+x	(21$^+$)	Q	
		628.06 *19*	100 *15*	3517.6+x	(21$^+$)		
4196.1+x	(23$^-$)	1094.66 *23*	100	3101.5+x	(21$^-$)	Q	
4259.4+x	(23$^+$)	718.71 *23*	100 *8*	3540.5+x	(21$^+$)		
		742.1 *3*	52 *11*	3517.6+x	(21$^+$)	Q	
4308.3+x	(23$^-$)	725.16 *19*	100	3583.2+x	(21$^-$)		
4309.4+x	(24$^+$)	335.25 *17*	37 *3*	3974.1+x	(23$^+$)		
		647.38 *17*	100 *3*	3661.9+x	(22$^+$)		
4340.0+x	(23$^+$)	731.01 *23*	100	3609.0+x	(21$^+$)		
4490.6+x	(24$^+$)	344.62 *18*	69 *8*	4145.8+x	(23$^+$)		
		669.93 *22*	100 *14*	3821.0+x	(22$^+$)		
4510.1+x	(24$^-$)	631.70 *18*	100 *11*	3878.4+x	(22$^-$)		
		1091.80 *21*	93 *10*	3418.4+x	(22$^-$)	Q	
4519.1+x	(24$^+$)	658.5[b] *6*	100[b]	3860.6+x	(22$^+$)		
4554.5+x	(25$^-$)	414.62 *16*	37.5 *22*	4139.8+x	(24$^-$)		
		737.53 *16*	100 *4*	3816.9+x	(23$^-$)		
4613.0+x	(24$^+$)	722.93 *19*	100	3890.1+x	(22$^+$)		
4655.4+x	(25$^+$)	345.61 *17*	31.8 *25*	4309.4+x	(24$^+$)		
		681.20 *17*	100 *4*	3974.1+x	(23$^+$)		
4751.8+x	(24$^-$)	744.2 *4*	100	4007.6+x	(22$^-$)		
4855.0+x	(25$^+$)	364.17 *19*	59 *6*	4490.6+x	(24$^+$)		
		709.21 *22*	100 *15*	4145.8+x	(23$^+$)		

$^{162}_{69}Tm_{93}$-10

Adopted Levels, Gammas (continued)

γ(^{162}Tm) (continued)

E_i(level)	J_i^π	E_γ	I_γ [†]	E_f	J_f^π	Mult.[‡]
4867.4+x	(25$^-$)	671.30 *17*	100 *11*	4196.1+x	(23$^-$)	
		1050.48 *22*	80 *10*	3816.9+x	(23$^-$)	Q
4890.1+x	(26$^-$)	335.48 *19*	25.9 *15*	4554.5+x	(25$^-$)	
		750.45 *16*	100 *4*	4139.8+x	(24$^-$)	
5013.4+x	(25$^+$)	754.05 *20*	100	4259.4+x	(23$^+$)	
5025.9+x	(26$^+$)	370.26 *17*	34 *4*	4655.4+x	(25$^+$)	
		716.86 *17*	100 *4*	4309.4+x	(24$^+$)	
5085.2+x	(25$^-$)	776.83 *20*	100	4308.3+x	(23$^-$)	
5100.0+x	(25$^+$)	759.94 *21*	100	4340.0+x	(23$^+$)	
5215.6+x	(26$^-$)	705.71 *19*	100 *7*	4510.1+x	(24$^-$)	
		1075.60 *21*	38 *6*	4139.8+x	(24$^-$)	Q
5233.4+x	(26$^+$)	714.7 *5*	100 *23*	4519.1+x	(24$^+$)	
		742.5 *4*	94 *23*	4490.6+x	(24$^+$)	
5248.9+x	(26$^+$)	393.89 *24*	45 *8*	4855.0+x	(25$^+$)	
		729.6 *3*	48 *10*	4519.1+x	(24$^+$)	Q
		758.65 *25*	100 *10*	4490.6+x	(24$^+$)	
5324.5+x	(27$^-$)	434.1 *5*	36 *3*	4890.1+x	(26$^-$)	
		769.97 *16*	100 *4*	4554.5+x	(25$^-$)	
5369.7+x	(26$^+$)	756.61 *18*	100	4613.0+x	(24$^+$)	
5406.3+x	(27$^+$)	380.43 *18*	32 *5*	5025.9+x	(26$^+$)	
		750.92 *17*	100 *7*	4655.4+x	(25$^+$)	
5602.0+x	(27$^-$)	734.52 *18*	100 *8*	4867.4+x	(25$^-$)	
		1047.5 *3*	≈30	4554.5+x	(25$^-$)	Q
5642.0+x	(27$^+$)	393.35 *22*	44 *7*	5248.9+x	(26$^+$)	
		786.89 *21*	100 *10*	4855.0+x	(25$^+$)	
5684.6+x	(28$^-$)	360.00 *17*	25.9 *20*	5324.5+x	(27$^-$)	
		794.50 *16*	100 *4*	4890.1+x	(26$^-$)	
5808.0+x	(28$^+$)	401.48 *18*	31 *3*	5406.3+x	(27$^+$)	
		782.20 *17*	100 *7*	5025.9+x	(26$^+$)	
5812.4+x	(27$^+$)	798.94 *22*	100	5013.4+x	(25$^+$)	
5904.8+x	(27$^-$)	819.68 *23*	100	5085.2+x	(25$^-$)	
5976.7+x	(28$^-$)	761.12 *17*	100	5215.6+x	(26$^-$)	
6060.6+x	(28$^+$)	418.6 *3*	40 *10*	5642.0+x	(27$^+$)	
		811.7 *3*	100 *15*	5248.9+x	(26$^+$)	
6150.4+x	(29$^-$)	465.91 *18*	33 *4*	5684.6+x	(28$^-$)	
		826.00 *17*	100 *5*	5324.5+x	(27$^-$)	
6188.0+x	(28$^+$)	818.34 *20*	100	5369.7+x	(26$^+$)	
6221.1+x	(29$^+$)	412.96 *18*	26 *3*	5808.0+x	(28$^+$)	
		814.84 *17*	100 *5*	5406.3+x	(27$^+$)	
6394.2+x	(29$^-$)	792.24 *18*	100	5602.0+x	(27$^-$)	
6481.5+x	(29$^+$)	420.8 *3*	38 *10*	6060.6+x	(28$^+$)	
		839.57 *23*	100 *12*	5642.0+x	(27$^+$)	
6538.6+x	(30$^-$)	388.4 *3*	20.5 *23*	6150.4+x	(29$^-$)	
		853.82 *16*	100 *5*	5684.6+x	(28$^-$)	
6650.6+x	(30$^+$)	429.45 *25*	22 *7*	6221.1+x	(29$^+$)	
		842.63 *17*	100 *4*	5808.0+x	(28$^+$)	
6658.4+x	(29$^+$)	846.09 *23*	100	5812.4+x	(27$^+$)	
6752.7+x	(29$^-$)	847.82 *20*	100	5904.8+x	(27$^-$)	
6799.4+x	(30$^-$)	822.65 *18*	100	5976.7+x	(28$^-$)	
7045.3+x	(31$^-$)	506.4 *5*	31 *5*	6538.6+x	(30$^-$)	
		894.96 *17*	100 *8*	6150.4+x	(29$^-$)	
7069.0+x	(30$^+$)	881.01 *23*	100	6188.0+x	(28$^+$)	
7094.3+x	(31$^+$)	443.7 *3*	21 *4*	6650.6+x	(30$^+$)	
		873.24 *18*	100 *6*	6221.1+x	(29$^+$)	
7255.4+x	(31$^-$)	861.20 *17*	100	6394.2+x	(29$^-$)	
7371.4+x	(31$^+$)	889.9 *4*	100	6481.5+x	(29$^+$)	
7458.1+x	(32$^-$)	412.9 *5*	18 *4*	7045.3+x	(31$^-$)	
		919.48 *18*	100 *6*	6538.6+x	(30$^-$)	
7528.3+x	(31$^+$)	869.9 *3*	100	6658.4+x	(29$^+$)	
7551.8+x	(32$^+$)	458	≈19	7094.3+x	(31$^+$)	
		901.16 *18*	100 *9*	6650.6+x	(30$^+$)	
7694.9+x	(32$^-$)	895.49 *19*	100	6799.4+x	(30$^-$)	
8008.5+x	(32$^+$)	939.54 *22*	100	7069.0+x	(30$^+$)	
8014.8+x	(33$^-$)	556.4 *5*	30 *7*	7458.1+x	(32$^-$)	
		969.57 *19*	100 *8*	7045.3+x	(31$^-$)	
8023.5+x	(33$^+$)	929.17 *20*	100	7094.3+x	(31$^+$)	
8193.5+x	(33$^-$)	938.10 *19*	100	7255.4+x	(31$^-$)	
8417.7+x	(33$^+$)	889.4 *5*	100	7528.3+x	(31$^+$)	
8442.2+x	(34$^-$)	427.4 *5*	13 *4*	8014.8+x	(33$^-$)	
		984.01 *21*	100 *8*	7458.1+x	(32$^-$)	
8512.9+x	(34$^+$)	961.08 *19*	100	7551.8+x	(32$^+$)	
8665.2+x	(34$^-$)	970.32 *22*	100	7694.9+x	(32$^-$)	
9007.8+x	(35$^+$)	984.36 *23*	100	8023.5+x	(33$^+$)	
9057.6+x	(35$^-$)	1042.74 *24*	100	8014.8+x	(33$^-$)	
9208.5+x	(35$^-$)	1014.98 *20*	100	8193.5+x	(33$^-$)	
9487.8+x	(36$^-$)	430[c]		9057.6+x	(35$^-$)	
		1045.6 *5*	100 *11*	8442.2+x	(34$^-$)	
9534.2+x	(36$^+$)	1021.33 *22*	100	8512.9+x	(34$^+$)	
9704.2+x	(36$^-$)	1038.98 *24*	100	8665.2+x	(34$^-$)	
10046.2+x	(37$^+$)	1038.34 *25*	100	9007.8+x	(35$^+$)	
10170.6+x	(37$^-$)	1113.0 *5*	100	9057.6+x	(35$^-$)	
10298.1+x	(37$^-$)	1089.6 *3*	100	9208.5+x	(35$^-$)	
10592.0+x	(38$^-$)	1104.2 *5*	100	9487.8+x	(36$^-$)	
10616.3+x	(38$^+$)	1082.1 *3*	100	9534.2+x	(36$^+$)	

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Adopted Levels, Gammas (continued)

γ(^{162}Tm) (continued)

E_i(level)	J_i^π	E_γ	I_γ[†]	E_f	J_f^π	Comments
11136.4+x	(39$^+$)	1090.2 *3*	100	10046.2+x	(37$^+$)	
11345.6+x	(39$^-$)	1175.0 *5*	100	10170.6+x	(37$^-$)	
11744.2+x	(40$^-$)	1152.2[a] *5*	100[a]	10592.0+x	(38$^-$)	
11755.6+x	(40$^+$)	1139.3 *4*	100	10616.3+x	(38$^+$)	
12274.6+x	(41$^+$)	1138.2 *4*	100	11136.4+x	(39$^+$)	
12575.6+x	(41$^-$)	1230.0 *5*	100	11345.6+x	(39$^-$)	
12896.4+x	(42$^-$)	1152.2[a] *5*	100[a]	11744.2+x	(40$^-$)	
12935.0+x	(42$^+$)	1179.4 *5*	100	11755.6+x	(40$^+$)	
13451.1+x	(43$^+$)	1176.5 *4*	100	12274.6+x	(41$^+$)	
14129.1+x?	(44$^+$)	1194[c]	100	12935.0+x	(42$^+$)	
14650.0+x	(45$^+$)	1198.9 *4*	100	13451.1+x	(43$^+$)	
15865.3+x?	(47$^+$)	1215[c]	100	14650.0+x	(45$^+$)	
y	(6$^+$)	(z)		131.29+x	(5$^+$)	E_γ: z=y−x−131.29, the value is probably less than or equal to the x-ray energies (see the comment on the energy of the level giving rise to this γ).
97+y	(7$^+$)	97	100	y	(6$^+$)	E_γ: γ shown as questionable on level scheme of 1998Es06.
199+y	(8$^+$)	102.6 *5*	100	97+y	(7$^+$)	
326+y	(9$^+$)	126.32 *17*	70 *8*	199+y	(8$^+$)	
		131.35 *19*	100 *12*	194+y	(8$^+$)	E_γ: γ shown as questionable on level scheme of 1998Es06.
		228.		97+y	(7$^+$)	E_γ: γ shown as questionable on level scheme of 1998Es06.
490+y	(10$^+$)	164.44 *17*	100 *12*	326+y	(9$^+$)	
		290.6 *3*	23 *3*	199+y	(8$^+$)	
674+y	(11$^+$)	183.88 *17*	100 *11*	490+y	(10$^+$)	
		348.03 *19*	66 *7*	326+y	(9$^+$)	
900+y	(12$^+$)	225.83 *17*	100 *6*	674+y	(11$^+$)	
		409.81 *20*	76 *8*	490+y	(10$^+$)	
1136+y	(13$^+$)	236.53 *18*	89 *6*	900+y	(12$^+$)	
		462.34 *18*	100 *6*	674+y	(11$^+$)	
1410+y	(14$^+$)	274.09 *18*	80 *5*	1136+y	(13$^+$)	
		510.48 *18*	100 *9*	900+y	(12$^+$)	
1692+y	(15$^+$)	281.07 *18*	55 *4*	1410+y	(14$^+$)	
		555.84 *18*	100 *7*	1136+y	(13$^+$)	
2001+y	(16$^+$)	309.1 *3*	59 *6*	1692+y	(15$^+$)	
		590.48 *19*	100 *9*	1410+y	(14$^+$)	
2314+y	(17$^+$)	313.5 *3*	49 *5*	2001+y	(16$^+$)	
		622.45 *20*	100 *8*	1692+y	(15$^+$)	
2650+y	(18$^+$)	649.5 *3*	100	2001+y	(16$^+$)	
2965+y	(19$^+$)	651.20 *23*	100	2314+y	(17$^+$)	

[†] For levels populated in (HI,xnγ), the values are from 1998Es06, unless otherwise noted.

[‡] The specific multipolarities are from 1982Ad03 (^{162}Yb ε decay) and are based on L subshell ratios and α(K)exp values. For the 44, 118 and 163 γ's, the same

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Adopted Levels, Gammas (continued)

$\gamma(^{162}Tm)$ (continued)

assignments are also made by 1969Pa16, 1972Ch23, 1972Go34, and 1975St12. The assignments shown as D and Q are the evaluator's interpretation of the $\gamma(\theta)$ coefficients from the in-beam studies of 1987Dr07 and the DCO ratios from 1998Es06.

From 1982Ad03 (^{162}Yb ε decay) with similar values given by 1975St12 and 1972Go34.

@ Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

& Multiply placed.

a Multiply placed with undivided intensity.

b Multiply placed with intensity suitably divided.

c Placement of transition in the level scheme is uncertain.

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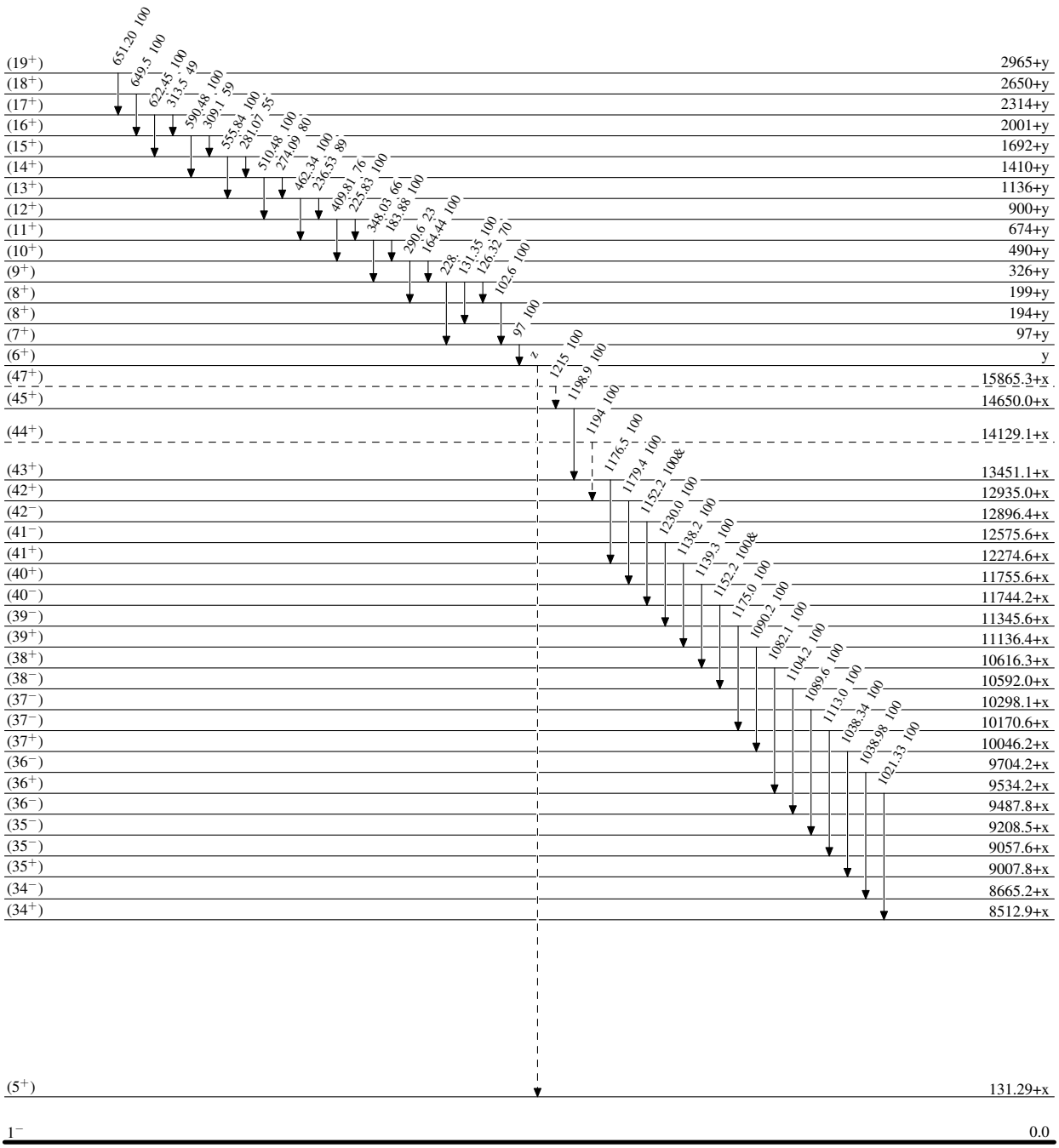
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

– – – – – – ► γ Decay (Uncertain)



21.70 min *19*

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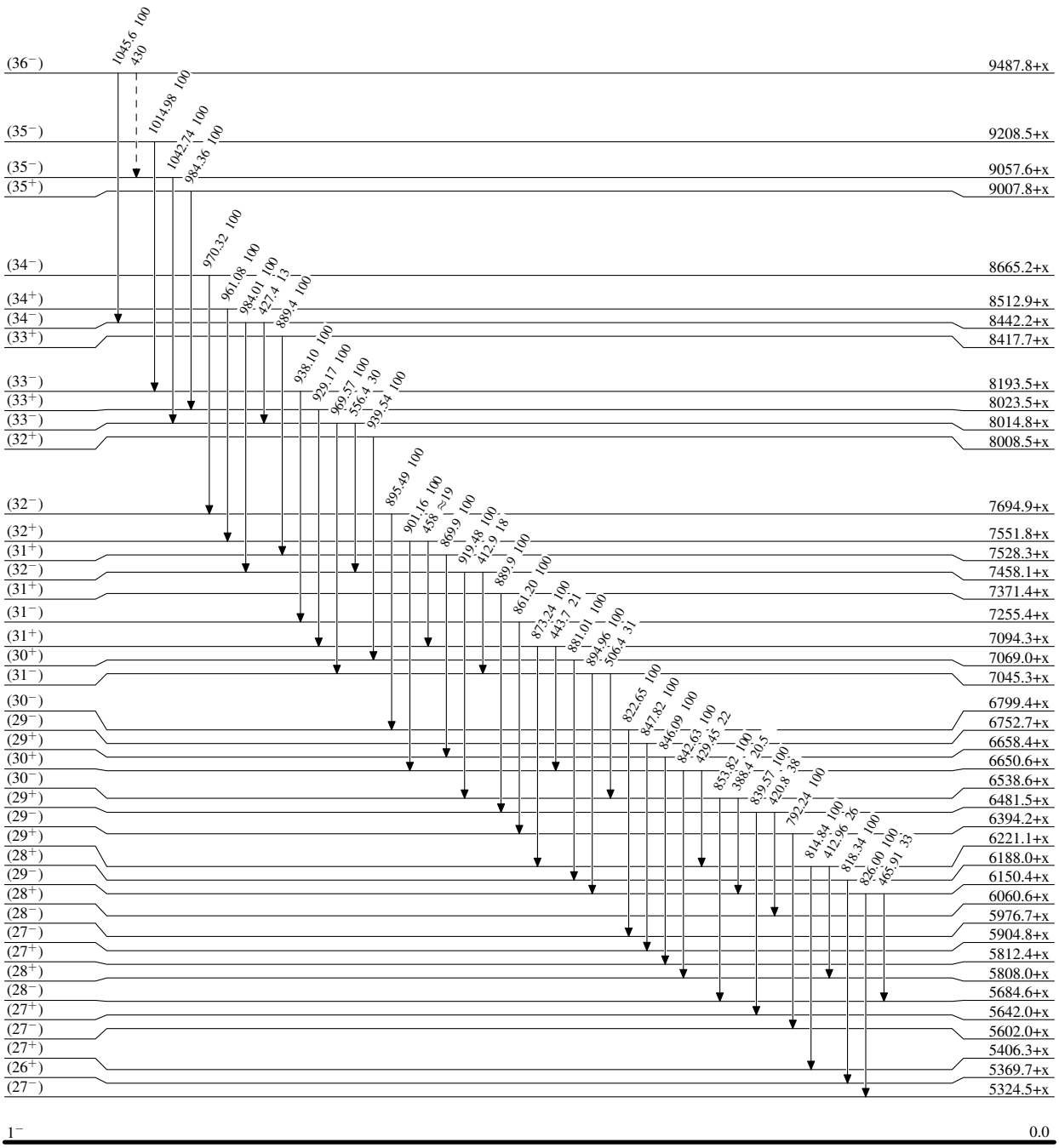
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

– – – – – – ► γ Decay (Uncertain)



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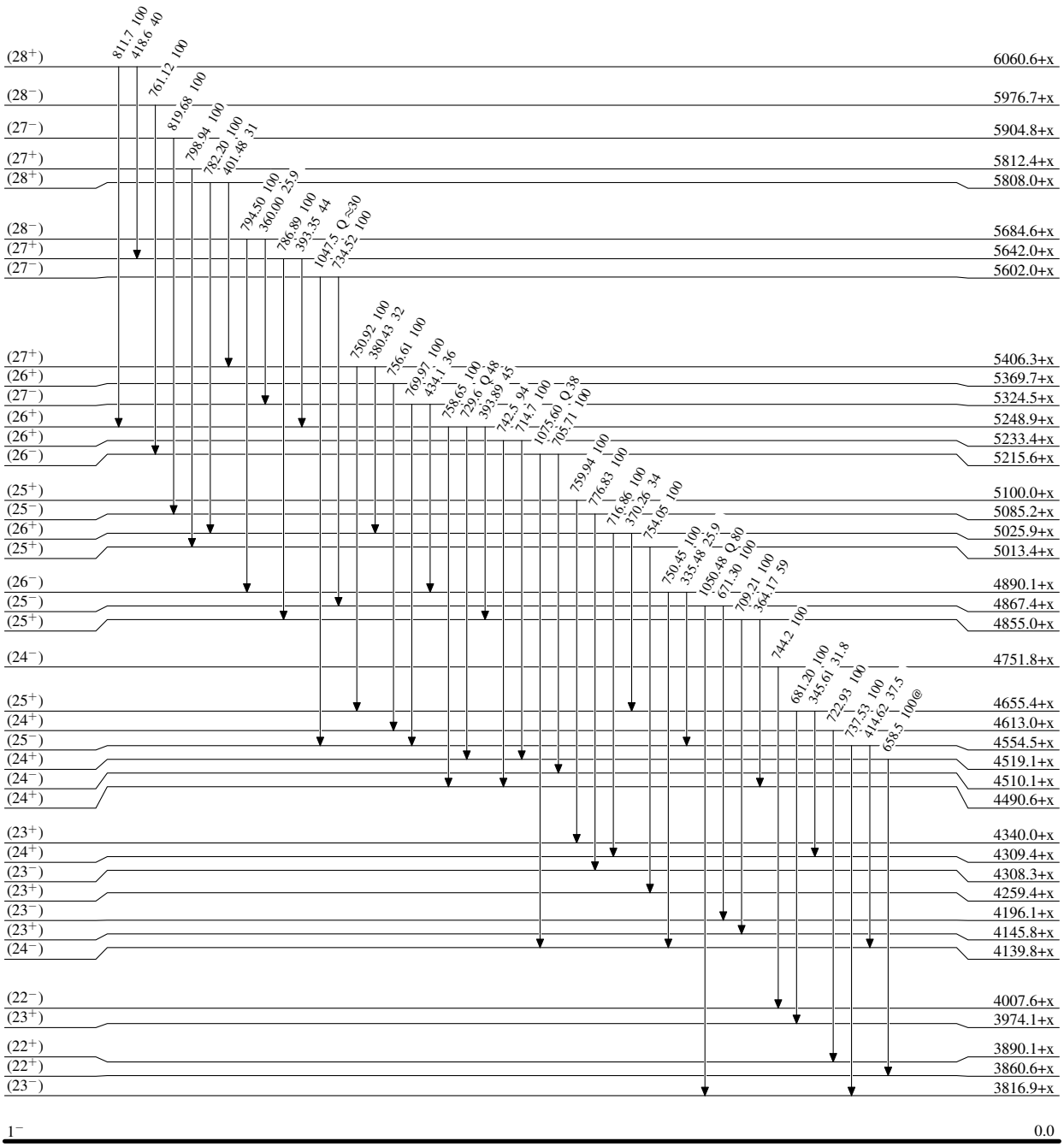
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided



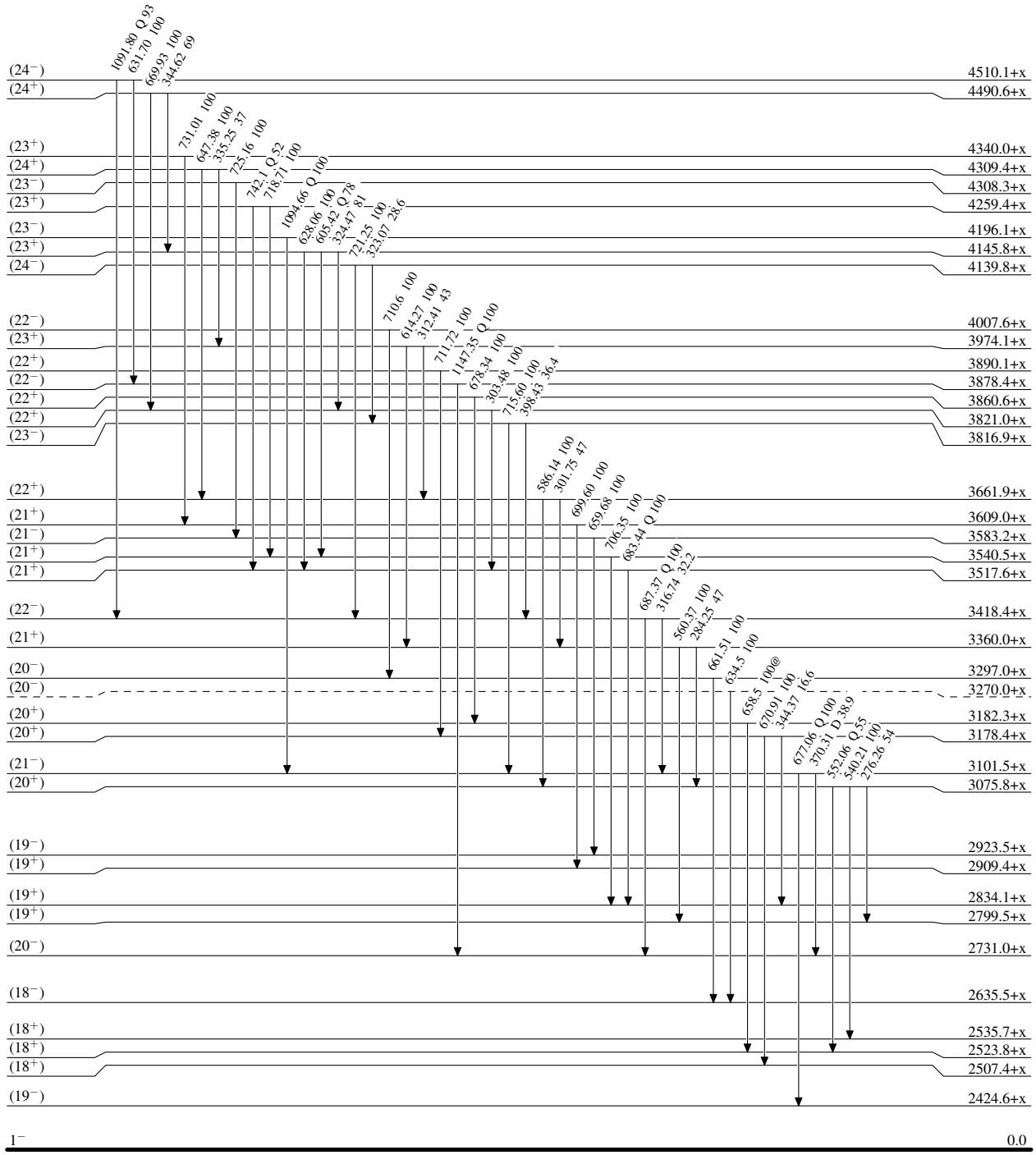
21.70 min *19*

$^{162}_{69}Tm_{93}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided



$^{162}_{69}Tm_{93}$

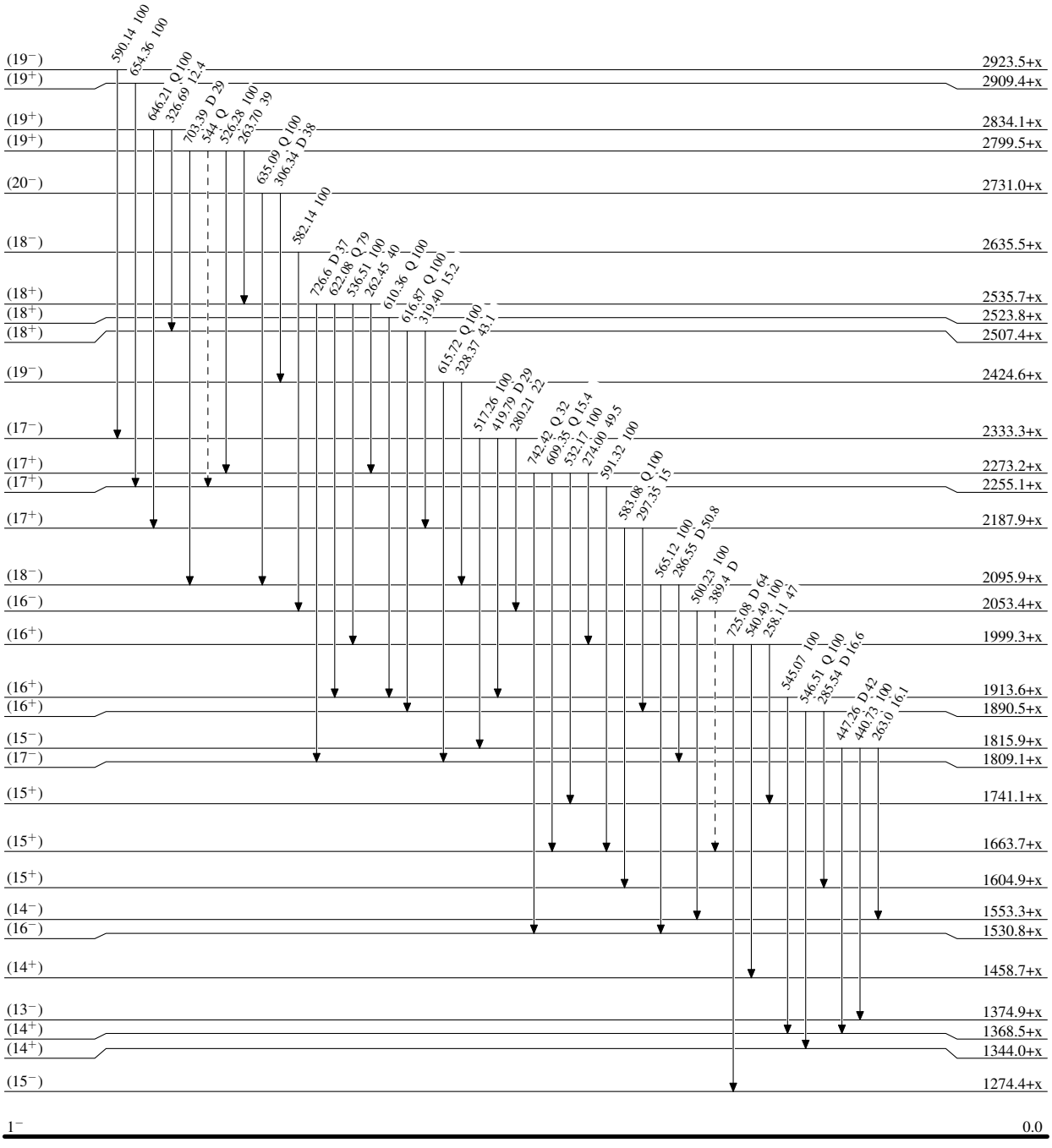
Adopted Levels, Gammas

Level Scheme (continued)

Legend

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

- - - - - - ► γ Decay (Uncertain)



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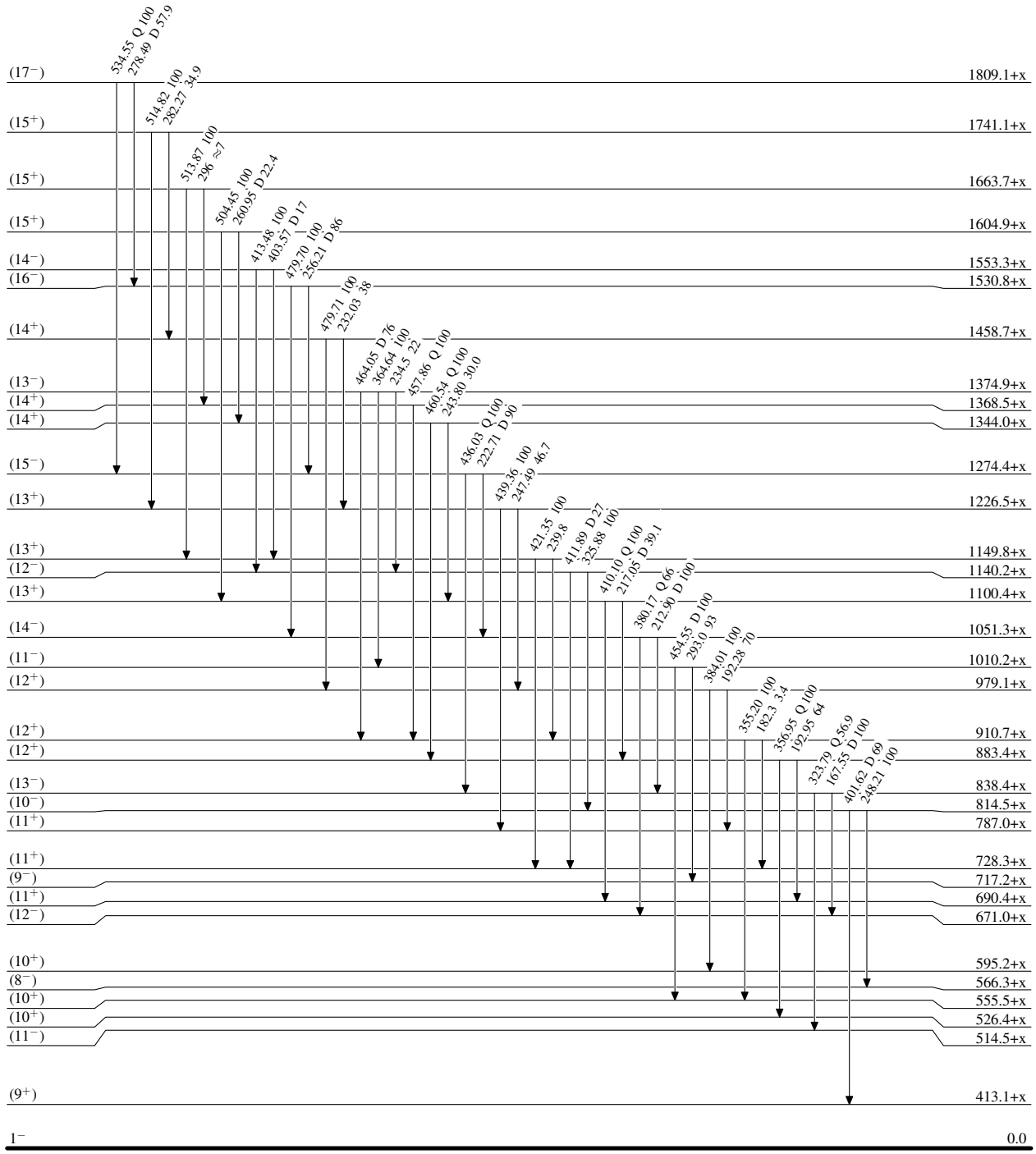
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

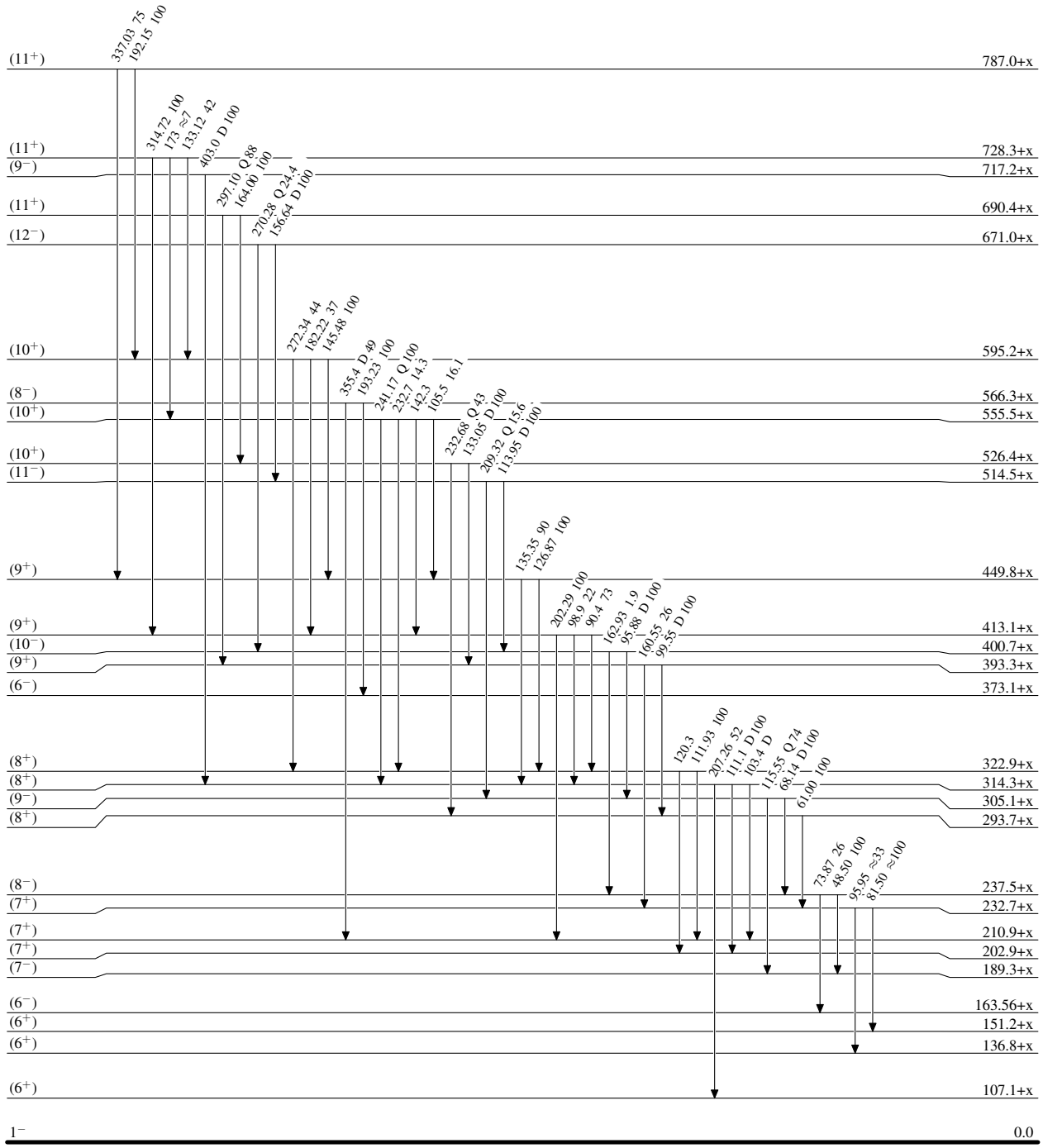


$^{162}_{69}Tm_{93}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided



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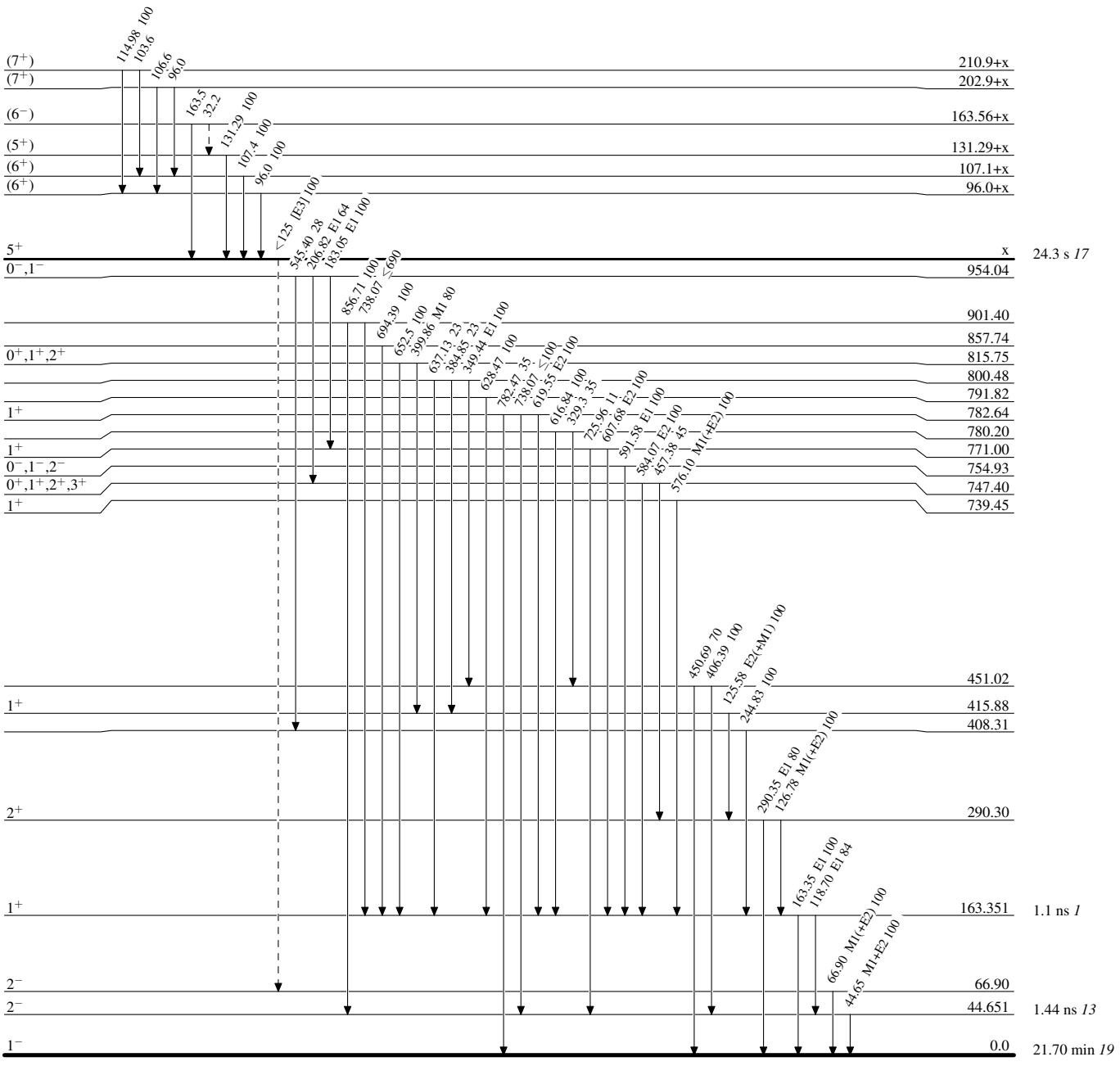
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

Legend

- - - - - - ► γ Decay (Uncertain)



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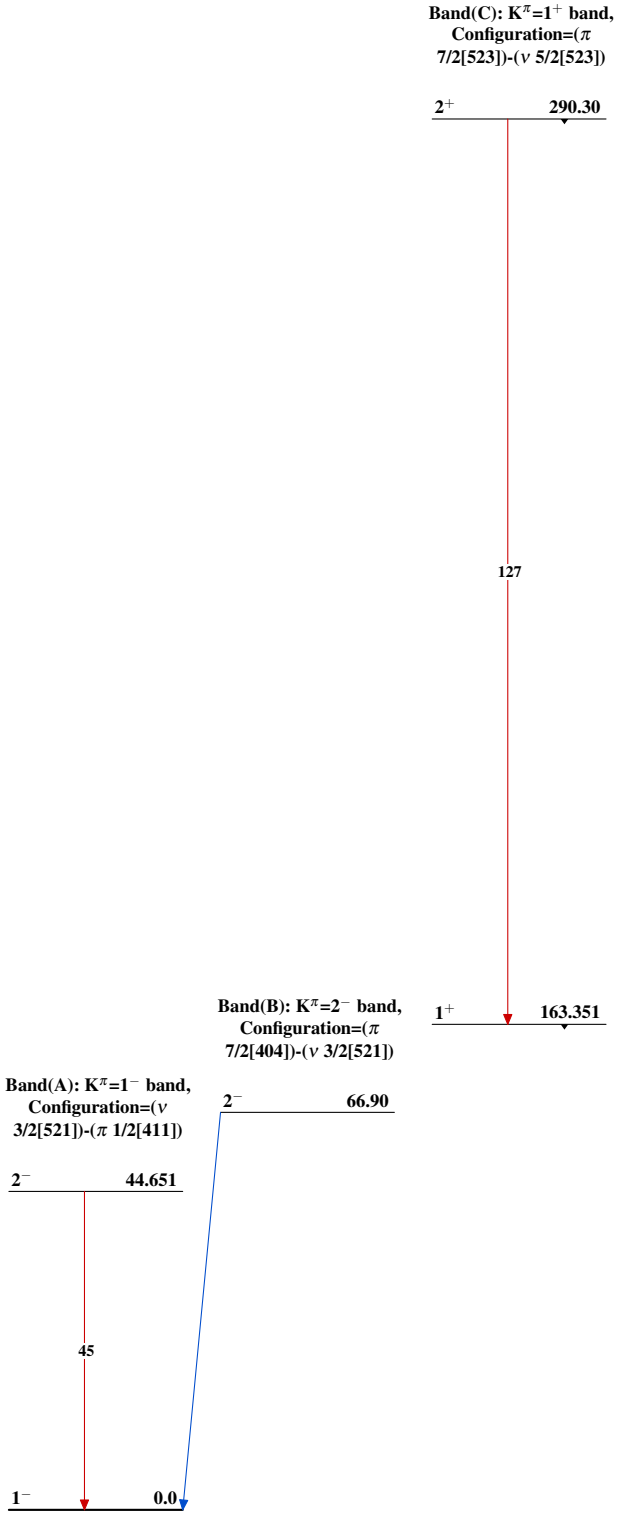
Adopted Levels, Gammas



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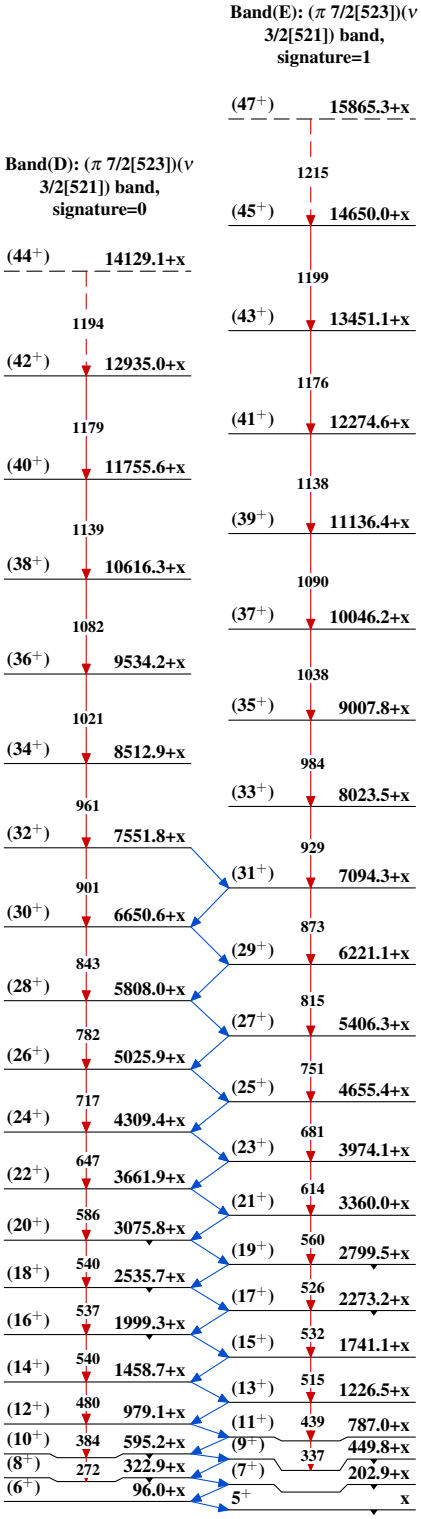
Adopted Levels, Gammas (continued)



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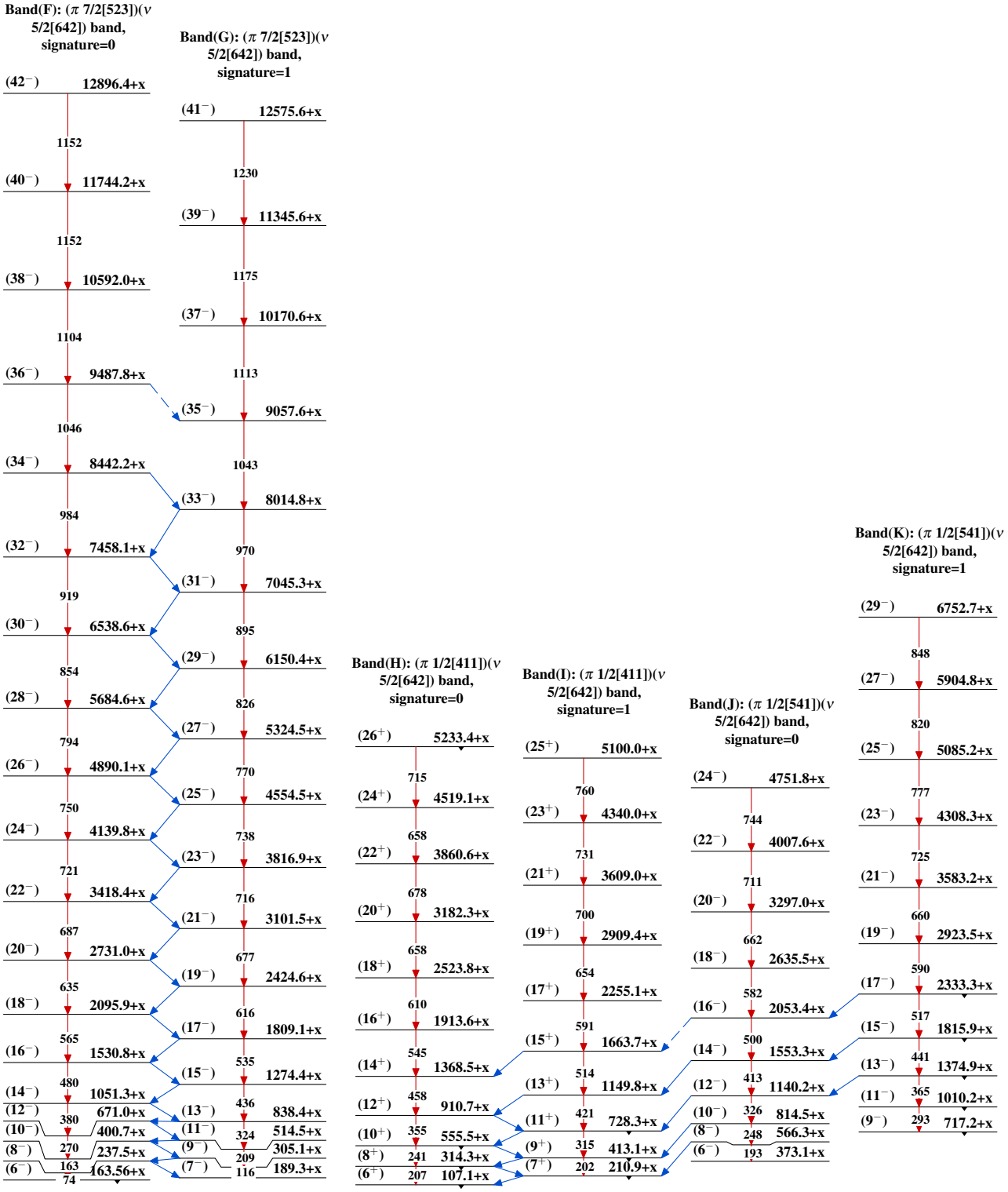
Adopted Levels, Gammas (continued)



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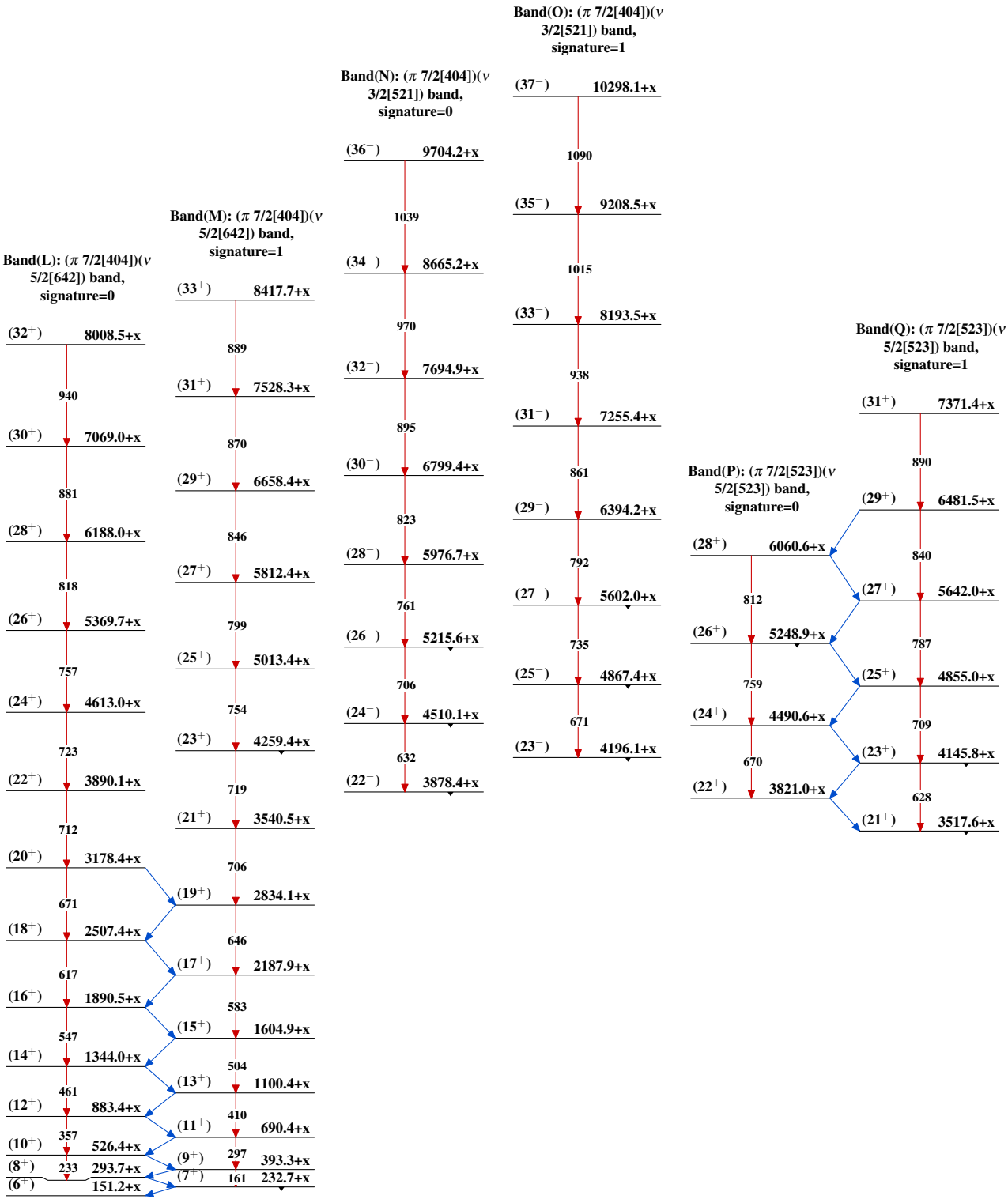
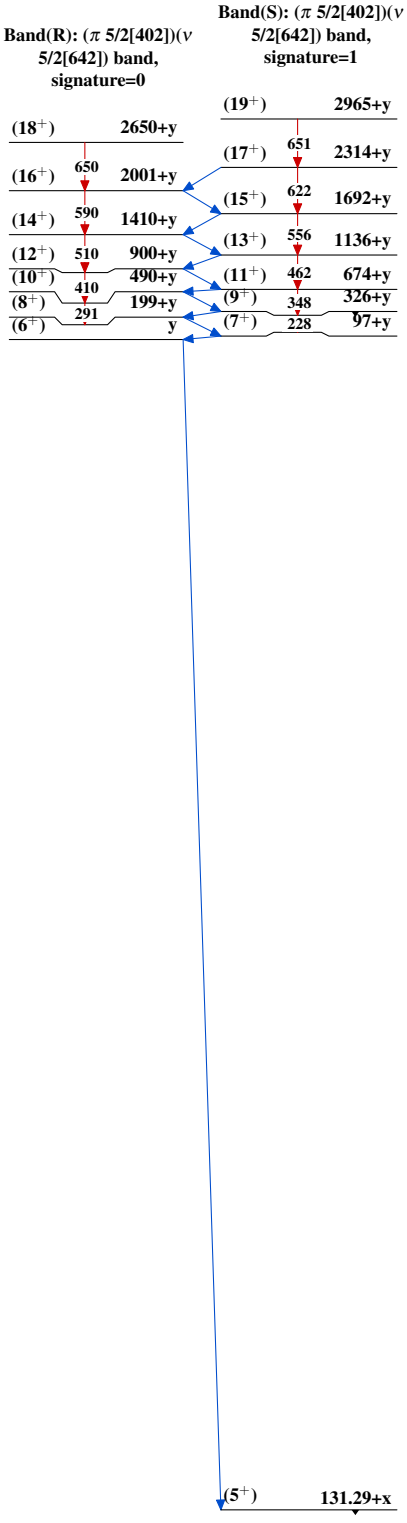
Adopted Levels, Gammas (continued)



Adopted Levels, Gammas (continued)



$^{162}_{69}Tm_{93}$