Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. J. Martin	NDS 114, 1497 (2013)	31-Aug-2013

$Q(\beta^-)=-12848$ (syst) *246*; $S(n)=1.28\times10^4$ *3*; $S(p)=2.79\times10^3$ *15*; $Q(\alpha)=2.78\times10^3$ *15* 2017Wa10
$Q(\varepsilon)=5.45\times10^3$ *14*; $S(2n)=23775$ *3*; $S(2p)=3.02\times10^3$ *15*; $Q(\varepsilon p)=4.71\times10^3$ *15* 2017Wa10
Additional information 1.

^{152}Yb Levels

Calculations:
Gamow-Teller β^+ decay: 1988Ku20, 1988Su16.
Isotope shift: 1992Be07, 1991Ho27, 1990Sp05, 1990Bi08, 1989Sp04.
2^+ g-factor: 2007An16.

Cross Reference (XREF) Flags

A	^{152}Yb IT decay
B	^{152}Lu ε decay (0.7 s)
C	^{156}Hf α decay (23 ms)
D	^{156}Hf α decay (0.52 ms)

E(level)	J^{π}†	$T_{1/2}$	XREF	Comments
0.0	0^+	3.03 s *6*	ABCD	$\%\varepsilon+\%\beta^+=100$; $\%\beta^+p=?$ $T_{1/2}$: From 1988BaZS. Other: 3.1 s *2* (1987To02), 3.2 s *3* (1982No13). $\%\beta^+p$: Although energetically possible, this decay has not been seen. $\Delta\langle r^2\rangle(^{152}Yb,^{176}Yb)=2.30$ fm^2 *5* (1994Ma57, using isotope shift data of 1989Sp04). $\langle r^2\rangle^{1/2}=5.030$ fm 14 (2004An14).
1531.4 *5*	2^+		AB	J^{π}: First excited state in even-even nucleus. Predicted B(E2)↑=0.33 *8* (1989Ra16, best fit in global systematics). This corresponds to a halflife of 0.10 ps +4-2.
1890.1 *6*	$(3)^-$		AB	J^{π}: E1 γ to 2^+.
2202.7 *7*	$(5)^-$		AB	J^{π}: E2 γ to $(3)^-$.
2550.1 *7*	$(7)^-$		A	J^{π}: E2 γ to $(5)^-$.
2689.9 *8*	$(8)^+$		A	J^{π}: E1 γ to $(7)^-$.
2744.5	(10^+)	30 μs *1*	A	%IT=100 $T_{1/2}$: from IT decay (1995Ni10).

† Syst. For N=82 nuclei and mults as noted. The mults of the cascading γ's, with no observed crossover transitions, tend to confirm the assignments.

$\gamma(^{152}$Yb)

E_i(level)	J^{π}_i	E_{γ}†	E_f	J^{π}_f	Mult.‡	α&	Comments
1531.4	2^+	1531.4 *5*	0.0	0^+	[E2]		
1890.1	$(3)^-$	358.7 *3*	1531.4	2^+	E1	0.0130	
2202.7	$(5)^-$	312.6 *3*	1890.1	$(3)^-$	E2	0.0653	
2550.1	$(7)^-$	347.6# *3*	2202.7	$(5)^-$	E2	0.0479	
2689.9	$(8)^+$	140.0# *3*	2550.1	$(7)^-$	E1	0.141	Mult.: from IT decay.

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Adopted Levels, Gammas (continued)

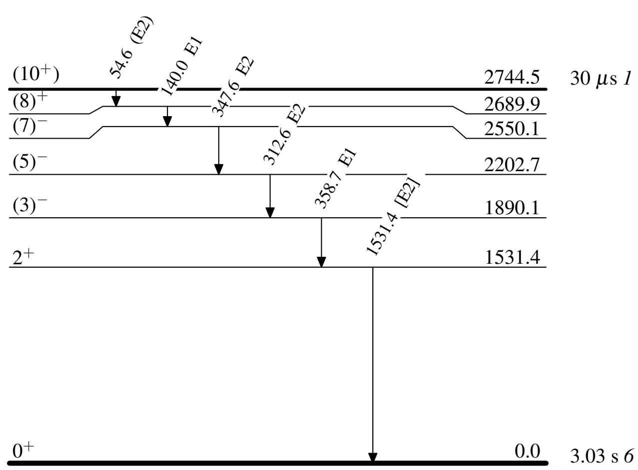
$\gamma(^{152}Yb)$ (continued)

E_i(level)	J^π_i	E_γ†	E_f	J^π_f	Mult.‡	α&	Comments
2744.5	(10+)	54.6@ *10*	2689.9	(8)+	(E2)	39 *4*	B(E2)(W.u.)=0.020 *3* α: The uncertainty given is that due to the uncertainty in Eγ.

† From ^{152}Lu ε decay, unless otherwise noted.
‡ From IT decay.
# From IT decay (1982No13). No uncertainties have been assigned by these authors. From a comparison with the 313, 359, and 1531γ's reported in ε decay, the evaluator has increased the energies from 1982No13 by 0.2 keV and has assigned an uncertainty of 0.3 keV.
@ From IT decay (1995Ni10).
& 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.

Adopted Levels, Gammas

Level Scheme



$^{152}_{70}Yb_{82}$

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 176, 1 (2021)	1-May-2021

Q(β^-)=−7890 *60*; S(n)=10401 *18*; S(p)=4882 *28*; Q(α)=3624 *25* 2021Wa16
S(2n)=18296 *10*, S(2p)=7437 *26* (2021Wa16).
Additional information 1.
In the (HI,xnγ) dataset there are important differences between the works of 2019Sa61 and of 2010Ba02 and 2005Ba88 respectively. 2019Sa61 used triple-coincidence data for level scheme analysis (double-coincidence data could not be used). When compared with 2010Ba02 or 2005Ba88 level schemes (obtained from double-coincidence data) many of the weak low-lying inter-band transitions from bands 2, 4, 5, 7, 8, 9 were not retrieved by 2019Sa61, as well as in-band transitions of band 9 and all transitions of bands 11 and 12. The comparison is even more difficult becasue of 2010Ba02 and 2005Ba88 that did not list any γ-ray relative intensity information. Although questioned, all missing transitions and their corresponding levels were maintained by 2019Sa61 in their level scheme (Figs. 9 and 10). Indeed while triple-coincidence techinque is more selective it can lose weak transitions due to the lack of statistics. As only an inter-comparison of double-coincidence data of 2019Sa61 with 2010Ba02 and 2005Ba88 together with a thorough analysis of possible contaminants could reject such transitions, they are kept and listed as questionable by the evaluator as well. As most of these questioned transitions are in between existing levels they could possibly be revealed by more productive experiments. Finally 2019Ma70 bring new data and confirm the existence and placements of the low-lying inter-band transitions of bands 7, 8 and 9 of 2005Ba88, which indicates that those of 2010Ba02 should not be discarded before new measurements.

^{160}Yb Levels

Cross Reference (XREF) Flags

A	^{160}Lu ε decay (36.1 s+40 s)
B	^{186}W(n,4p23nγ)
C	^{120}Sn(^{44}Ca,4nγ):tsd
D	(HI,xnγ)

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$[#]	XREF	Comments
0.0[&]	0$^+$	4.8 min *2*	AB D	%ε+%β^+=100 T$_{1/2}$: from 1969NeZW. 1970DeZF have measured an activity with T$_{1/2}$=4.1 min *2* and assigned it to ^{160}Yb. 1974AdZX have measured T$_{1/2}$=4.2 min *2* for a source prepared by chemical separation and mass separation following Ta(p) spallation and assigned the activity to ^{161}Yb. The activity measured by 1970DeZF was likely due to ^{161}Yb. From a compilation of optical isotope-shift data, 1987Au06 give λ(^{168}Yb-^{160}Yb)=0.719 fm^2 *40*, where the nuclear parameter, λ, is approximately equal to Δ<r^2>. In an evaluation of nuclear rms charge radii, 2013An02 report <r^2>$^{1/2}$=5.1781 fm *76*.
243.00[&] *7*	2$^+$	121 ps *7*	AB D	J$^\pi$: E2 transition to g.s.
638.39[&] *9*	4$^+$	8.5 ps *6*	AB D	J$^\pi$: E2 transition to 2$^+$ state only. Member of g.s. band. g: using a technique involving $\gamma\gamma$ coincidences in a 4π geometry as well as transient magnetic fields and the recoil-distance technique, 1990Lu02 measured an average g-factor of +0.48 *26* for the low-spin members (centering around the 4$^+$ state, and also including primarily the 2$^+$ and the 6$^+$ states) of the g.s. band.
820.51[f] *8*	2$^+$		A D	J$^\pi$: E2 transition to 0$^+$.
1086.01[h] *12*	(0)$^+$		A D	J$^\pi$: sole decay mode is E2 transition to 2$^+$ state. J^π=0$^+$ is thus preferred, although 1984Au13 state that 2$^+$,3$^+$,and 4$^+$ are possible.
1112.68[g] *10*	3$^+$		A D	J$^\pi$: M1+E2 γ to 2$^+$, D+Q γ to 4$^+$.
1147.16[&] *10*	6$^+$	1.9 ps *2*	B D	XREF: B(?). J$^\pi$: E2 transition to 4$^+$ state only. Member of g.s. band.

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Adopted Levels, Gammas (continued)

^{160}Yb Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
1221.6?			A	
1255.79[f] *11*	(4$^+$)		A D	J^{π}: 4$^+$ based on E2, 435γ to 2$^+$ (2019Ma70), contradicted by 3$^-$ based on E1, 617γ to 4$^+$ (2019Sa61). Moreover according to 1984Au13 both 435γ and 617γ are E1 based on α(K)exp (in the ε decay dataset) which makes 3$^-$ the best adopted value based on strong arguments. However if 3$^-$ this would be an odd-spin negative parity band with M2, 318γ and 366γ from band 8 and E3, 566γ from band 10, which is unlikely, which rather qualifies this level as the 4$^+$ and member of γ-vibrational band as placed in this dataset by 2005Ba88 and maintained by 2019Ma70.
1292.72[h] *10*	(2$^+$)		A D	J^{π}: γ transitions to 0$^+$ and 4$^+$ states.
1358.30[@] *10*	2$^+$		A D	J^{π}: 2$^+$ from γ to 0$^+$ and E2 transition to 4$^+$ in ε decay; (3$^-$) from DCO ratio of 1115γ to 2$^+$ in (HI,xnγ) (2010Ba02). 2$^+$ is preferred (determined by strong arguments), which makes (3$^-$) not only tentative but rather questionable.
1496.36 *15*	(1,2$^+$)		A	J^{π}: transitions to 0$^+$ and 2$^+$.
1525.37[c] *12*	3$^-$		A D	J^{π}: E1 705γ to 2$^+$; it qualifies this level as member of AE, π=−, α=1 band suggested by 2005Ba88 in (HI,xnγ).
1529.15 *12*	(2$^+$,3,4$^+$)		A	J^{π}: transitions to 2$^+$ and 4$^+$.
1567.45[b] *22*	(4)$^-$		A D	J^{π}: E1 transition to 4$^+$ state indicates that J^{π}=3$^-$, 4$^-$, or 5$^-$. Proposed assignment of this level as a member of the negative-parity, signature-0, side band suggests J^{π}=4$^-$.
1567.60?[d] *16*	5$^{(-)}$		D	A same energy, (4)$^-$ level decayed by a same energy transition (929.6γ, compare with 929γ here) was placed by 1987By04, 1983Ri10, and 1980Ri08 in another band, which makes questionable the existence of this level. J^{π}: D γ to 4$^+$, π from band assignment.
1573.95[g] *10*	5$^+$		D	J^{π}: E2 γ to 3$^+$.
1591.70[h] *11*	4$^+$		D	J^{π}: E2 γ from 6$^+$.
1629.0?[@j] *6*			D	
1676.37 *13*	(2$^+$,3,4$^+$)		A	J^{π}: transitions to 2$^+$ and 4$^+$.
1694.46[e] *18*	(4$^-$)		D	
1736.79[&] *12*	8$^+$	1.0 ps *2*	D	J^{π}: E2 γ to 6$^+$.
1743.15[f] *11*	(6$^+$)		D	J^{π}: E2 γ to (4$^+$).
1811.26 *25*	(1,2$^+$)		A	J^{π}: transitions to 0$^+$ and 2$^+$.
1871?[c]	(5$^-$)		D	Level drawn in continuation of band AE, π=−, α=1 with no J^{π} assignment in 2005Ba88 (Fig. 2, Level Scheme of ^{160}Yb), but not reproduced by 2010Ba02 and 2010Ba25. J^{π}: if really a member of AE, π=−, α=1 band, its upper level is (7$^-$) and its lower one is most likely 3$^-$.
1926.99[d] *13*	7$^-$		D	J^{π}: E1 multipolarity of 780γ to 6$^+$ state.
1952.0?[@j] *6*			D	
1957.22[h] *11*	6$^+$		D	J^{π}: E2 γ to 4$^+$.
2050.23[e] *16*	(6$^-$)		D	This 2051, (6$^-$) level with its decaying 482.7γ and 902.9γ placed in this band by 2010Ba02 and 2010Ba25 is the same as 2051, 6$^-$ level with its decaying 484 and 903.6 placed in a different band by 1987By04, 1983Ri10, and 1980Ri08. J^{π}: D multipolarity of 903γ to 6$^+$ state and band assignment.
2050.56[b] *24*	6$^-$		D	See comment at the nearby level. J^{π}: E2 312γ from 8$^-$.
2108.47[g] *11*	7$^+$		D	J^{π}: E2 γ to 5$^+$.
2272.0[@c] *6*	7$^-$		D	J^{π}: E2 554γ from 9$^-$.
2274.20[f] *12*	(8$^+$)		D	J^{π}: E2 γ to (6$^+$).
2362.32[b] *14*	8$^-$		D	J^{π}: M1+E2 435γ to 7$^-$ state.
2364.14[h] *12*	8$^+$		D	J^{π}: E2 γ to 6$^+$.

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Adopted Levels, Gammas (continued)

^{160}Yb Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
2372.63[d] *14*	9^-		D	J^{π}: E2 446γ to 7^- state.
2374.32[&] *14*	10^+	1.1 ps *3*	D	J^{π}: E2 638γ to 8^+. $T_{1/2}$: weighted average of 1.0 ps *6* (1988Fe01), 1.3 ps *3* (1990Lu02), and 0.60 ps *35* (1976Bo27).
2415.0?[@j]			D	
2480.55[c] *13*	9^-		D	J^{π}: E1 744γ to 8^+.
2527.41[e] *19*	(8^-)		D	
2578.58[b] *14*	10^-	90 ps *28*	D	J^{π}: E2 216γ to 8^-.
2649.3?[@a] *9*	(8^-)		D	
2700.81[g] *14*	9^+		D	
2703.8[l] *13*	$(8^-,9^+)$		D	
2718.4?[@k] *6*	(9^-)		D	J^{π}: $(7^-,8,9^-)$ from γ's to 7^-, 8^+ and 9^- respectively. (9^-) band-head assigned by 2010Ba02 (HI dataset) based on DCO and polarization measurements (with no listed evidence).
2763.99[c] *14*	11^-	46 ps *4*	D	J^{π}: E2 283γ to 9^-.
2789.83[f] *12*	(10^+)		D	J^{π}: E2 γ to (8^+).
2840.39[h] *13*	(10^+)		D	
2878.03[d] *16*	11^-		D	J^{π}: E2 505γ to 9^-.
2898.27[a] *17*	(10^-)		D	
2943?[@j]			D	
2960.80[&] *17*	12^+	1.0 ps *4*	D	$T_{1/2}$: 1990Lu02 report $T_{1/2}\leq0.8$ ps.
2977.65[b] *16*	12^-		D	
3008.8[e] *3*	(10^-)		D	
3024.6[l] *9*	$(10^-,11^+)$		D	
3127.5?[@k] *8*	(11^-)		D	
3137.55[i] *17*	12^+	<6 ps	D	J^{π}: E2 763γ to 10^+.
3195.70[c] *17*	13^-	<6 ps	D	
3318.72[f] *14*	(12^+)		D	J^{π}: E2 γ to (10^+).
3329.65[a] *17*	(12^-)		D	
3330.52[g] *17*	11^+		D	J^{π}: E2 γ to 9^+.
3365.00[&] *19*	14^+	7.7 ps *8*	D	μ=−3.2 *43* μ: From g=−0.23 *31* (1990Lu02, by intergal perturbed angular correlatin method). J^{π}: E2 404γ to 12^+.
3422.9[d] *3*	13^-	<3 ps	D	J^{π}: E2 545γ to 11^-.
3457.3[l] *9*	$(12^-,13^+)$		D	
3518.44[b] *17*	14^-	3.8 ps *12*	D	J^{π}: E2 541γ to 12^-.
3544.8?[@e] *11*	(12^-)		D	
3682.7?[@k] *8*	(13^-)		D	
3745.78[i] *17*	14^+		D	
3757.31[c] *19*	15^-	<3 ps	D	J^{π}: E2 562γ to 13^-.
3849.10[&] *22*	16^+	1.6 ps *3*	D	
3869.51[f] *17*	(14^+)		D	
3896.7[a] *3*	(14^-)		D	
4015.65[g] *21*	(13^+)		D	
4024.9[l] *13*	$(14^-,15^+)$		D	
4028.8[d] *4*	$15^{(-)}$		D	J^{π}: (E2) in-band 606γ to 13^-.
4172.52[b] *21*	16^-	1.4 ps *7*	D	J^{π}: E2 654γ to 14^-.
4310.7?[@k] *10*	(15^-)		D	

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Adopted Levels, Gammas (continued)

^{160}Yb Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
4375.78[i] *20*	16+		D	Jπ: E2 630γ to 14+.
4427.50[&] *24*	18+	2.1 ps *3*	D	
4428.71[c] *25*	17−	1.5 ps *6*	D	Jπ: E2 671γ to 15−.
4475.5[f] *3*	(16+)		D	
4555.7[a] *4*	(16−)		D	
4683.9[l] *17*	(16−,17+)		D	
4702.2[d] *4*	17(−)	<7 ps	D	Jπ: (E2) in-band 673γ to 15(−).
4714.2 *3*	(17,18+)		D	Jπ: 865γ to 16+ but no band assignment.
4911.7[b] *3*	18−	<5 ps	D	
4984.6 *3*	(17)		D	Jπ: 1136γ to 16+ but no band assignment.
4990.3?[@k] *16*	(17−)		D	
5035.8[i] *3*	(18+)		D	
5091.2[&] *3*	20+	1.1 ps *3*	D	Jπ: E2 664γ to 18+.
5176.7[c] *4*	19−	1.3 ps *8*	D	Jπ: (E2) in-band 748γ to 17−.
5203.7[a] *4*	(18−)		D	
5331.8[l] *20*	(18−,19+)		D	
5368.2 *11*			D	
5406.3[d] *5*	(19−)		D	
5692.7[b] *4*	20−		D	
5827.6[&] *3*	22+	0.53 ps *9*	D	Jπ: (E2) 736γ to 20+.
5947.8[c] *4*	21−	1.7 ps *6*	D	Jπ: (E2) in-band 771γ to 19−.
6123.9[d] *5*	(21−)		D	
6380.7[b] *4*	22−		D	Jπ: E2 664γ to 20−.
6623.2[&] *4*	24+	0.15 ps *2*	D	Jπ: E2 796γ to 22+.
6694.1[c] *5*	23−	<2 ps	D	Jπ: E2 746γ to 21−.
7092.4[b] *5*	24−		D	
7458.9[&] *4*	26+	0.18 ps *+3−4*	D	Jπ: E2 836γ to 24+.
7459.1[c] *5*	25−		D	Jπ: E2 836γ to 23−.
7870.4[b] *5*	26−		D	Jπ: E2 778γ to 24−.
8272.1[c] *11*	(27−)		D	
8289.6[&] *5*	(28+)	0.19 ps *3*	D	
8708.4[b] *6*	28−		D	Jπ: E2 838γ to 24−.
9126.6[&] *5*	(30+)	0.19 ps *+3−5*	D	
9132.1[c] *15*	(29−)		D	
9555.4[b] *6*	(30−)		D	
10003.6[&] *12*	(32+)	0.19 ps *+6−3*	D	
10010.1[c] *18*	(31−)		D	
10408.4[b] *12*	(32−)		D	
10887.1[c] *21*	(33−)		D	
10957.6[&] *15*	(34+)	0.18 ps *3*	D	
11293.4[b] *16*	(34−)		D	
11790.1[c] *23*	(35−)		D	
11964.6[&] *18*	(36+)	0.26 ps *3*	D	
12228.4[b] *19*	(36−)		D	
12740.1[c] *25*	(37−)		D	
13042.6[&] *21*	(38+)		D	
13228.4[b] *21*	(38−)		D	

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Adopted Levels, Gammas (continued)

^{160}Yb Levels (continued)

E(level)[†]	Jπ[‡]	XREF	Comments
13740[c] 3	(39⁻)	D	
14200.6[&] 23	(40⁺)	D	
14290?[b]	(40⁻)	D	
15403?[b]	(42⁻)	D	
0.0+x[m]	J≈(20)	C	Additional information 2.
654.0+x[m] 10	J+2	C	
1350.0+x[m] 15	J+4	C	
2085.0+x[m] 18	J+6	C	
2856.0+x[m] 20	J+8	C	
3641.0+x[m] 23	J+10	C	
4449.0+x[m] 25	J+12	C	
5304+x[m] 3	J+14	C	
6215+x[m] 3	J+16	C	
7177+x[m] 3	J+18	C	
8185+x[m] 4	J+20	C	
9237+x[m] 4	J+22	C	
10339+x[m] 4	J+24	C	
11501+x[m] 4	J+26	C	
12734+x[m] 4	J+28	C	
14045+x[m] 4	J+30	C	

† The level energies have been computed from a least-squares fit to the listed Eγ values. Where no uncertainties are given for the Eγ values, these uncertainties have been assumed to be 1 keV.

‡ Most values are from the levels populated in the heavy-ion-induced reactions based on measured γ-ray multipolarities (if polarization information is missing stretched quadrupole transitions are assumed to be E2) together with considerations of expected rotational-band structure and theoretical calculations. If available specific arguments are given in comments.

Except where otherwise noted, the $T_{1/2}$ values are obtained from the level lifetimes determined from the (HI,xnγ) reaction studies.

@ Level not confirmed by 2019Sa61 ((HI,xnγ) dataset).

& Band(A): Band 1 g.s. band.

a Band(b): Band 2 AG, π=−, α=0. From HI dataset established by 2010Ba02 and confirmed by 2019Sa61.

b Band(c): Band 3 AF, π=−, α=0. Negative-parity, signature-0, side band. Probable configuration=(ν 3/2[651])(ν 3/2[532] and ν 3/2[521]).

c Band(C): Band 4 AE, π=−, α=1. Negative-parity, signature-1, side band. Probable configuration=(ν 3/2[651])(ν 3/2[532] and ν 3/2[521]).

d Band(D): Band 5 octupole band, α=1. According to 2019Sa61 Band 5 is compatible with a Y30-octupole pear-shape one-phonon vibration band (2019Sa61). Probable configuration=(ν 3/2[651])(ν 3/2[532] and ν 3/2[521]).

e Band(d): Band 6 octupole band, α=0. Tetrahedral nature of this band proposed earlier in the literature is not supported in 2010Ba02 based on nonzero values of absolute and relative quadrupole moments. According to 2019Sa61 this band is compatible with a $K^{\pi}=2^-$, Y32-triplanar-octupole or tetrahedral-vibration band.

f Band(e): Band 7. Even-spin γ-vibrational band based on 2^+.

g Band(f): Band 8. Odd-spin γ-vibrational band based on 3^+.

h Band(E): Band 9. Tentative β-vibrational band.

i Band(G): Band 10. Aligned positive-parity (or S) band.

j Band(F): Band 11. Side band: unassigned J^{π} values from HI dataset established by 2005Ba88 and not confirmed by 2019Sa61.

k Band(B): Band 12 AH, π=−, α=1. From HI dataset established by 2010Ba02 and not confirmed by 2019Sa61.

l Band(H): Band 13. Side band: parity and signature uncertain. Except for the first transitions, this band (with even J values and

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Adopted Levels, Gammas (continued)

^{160}Yb Levels (continued)

π=−) is identical with the AG, π=−, α=0 band 2 (each band with different excitation energies).

[m] Band(I): Band 14 triaxial strongly-deformed band. Population intensity ≈ 0.3% of the 4n-reaction channel. The decay pattern and dynamic moment of inertia are found to be similar to triaxial strongly-bands in ^{157}Er and ^{158}Er. From model calculations, a minimum associated with this structure is suggested to correspond to deformation parameters: $\varepsilon_2\approx0.37$, $\gamma\approx20°$. A discontinuity in the dynamic moment of inertia for this band at $\hbar\omega$=0.40-0.45 MeV is interpreted as crossing between $\nu i_{13/2}$ levels. Possible configuration relative to ^{146}Gd core=$\pi[(h^8_{11/2},(h_{9/2},f_{7/2})^1]\otimes\nu[i^4_{13/2},h^{-2}_{11/2},N_{osc}=4^{-2}]$.

γ(^{160}Yb)

E$_i$(level)	J$^\pi_i$	E$_\gamma$[†]	I$_\gamma$[†]	E$_f$	J$^\pi_f$	Mult.[‡]	α[b]	Comments
243.00	2$^+$	243.2 *1*	100	0.0	0$^+$	E2[#]	0.1419	B(E2)(W.u.)=93 +*6*−*5* α(K)=0.0947 *14*; α(L)=0.0362 *6*; α(M)=0.00868 *13* α(N)=0.00200 *3*; α(O)=0.000245 *4*; α(P)=4.63×10^{-6} *7*
638.39	4$^+$	395.6 *1*	100	243.00	2$^+$	E2[#]	0.0332	B(E2)(W.u.)=129 *9* α(K)=0.0252 *4*; α(L)=0.00619 *9*; α(M)=0.001448 *21* α(N)=0.000335 *5*; α(O)=4.34×10^{-5} *6*; α(P)=1.346×10^{-6} *19*
820.51	2$^+$	577.2[@] *1*	100[@] *8*	243.00	2$^+$	M1+E2	0.0204 *80*	α(K)=0.0169 *70*; α(L)=0.00272 *79*; α(M)=6.1×10^{-4} *17* α(N)=1.43×10^{-4} *40*; α(O)=2.01×10^{-5} *62*; α(P)=9.9×10^{-7} *44* Mult.: from (HI,xnγ) dataset by R(DCO) (2019Ma70).
		820.4[@] *1*	57[@] *5*	0.0	0$^+$	E2[#]	0.00561	α(K)=0.00462 *7*; α(L)=0.000772 *11*; α(M)=0.0001748 *25* α(N)=4.08×10^{-5} *6*; α(O)=5.64×10^{-6} *8*; α(P)=2.59×10^{-7} *4*
1086.01	(0)$^+$	843.0[@] *1*	100[@]	243.00	2$^+$	E2[#]	0.00529	α(K)=0.00436 *7*; α(L)=0.000723 *11*; α(M)=0.0001635 *23* α(N)=3.82×10^{-5} *6*; α(O)=5.29×10^{-6} *8*; α(P)=2.45×10^{-7} *4*
1112.68	3$^+$	292.5[@] *3*	16[@] *2*	820.51	2$^+$	M1+E2	0.124 *45*	α(K)=0.099 *43*; α(L)=0.0195 *17*; α(M)=0.0045 *3* α(N)=0.00105 *7*; α(O)=0.000141 *19*; α(P)=5.7×10^{-6} *29* Mult.: based on R(DCO) and polarization in (HI,xnγ) dataset (2019Ma70).
		474.4[@] *1*	18[@] *2*	638.39	4$^+$	D+Q		Mult.: based on R(DCO) in (HI,xnγ) dataset (2019Ma70).
		869.6[@] *1*	100[@] *8*	243.00	2$^+$	(M1+E2)	0.0075 *26*	α(K)=0.0063 *23*; α(L)=9.5×10^{-4} *29*; α(M)=2.13×10^{-4} *62* α(N)=5.0×10^{-5} *15*; α(O)=7.1×10^{-6} *22*; α(P)=3.7×10^{-7} *14* Mult.: based on R(DCO) and polarization in (HI,xnγ) dataset (2019Ma70).
1147.16	6$^+$	509.2 *1*	100	638.39	4$^+$	E2	0.01703	B(E2)(W.u.)=166 +*19*−*16* α(K)=0.01342 *19*; α(L)=0.00279 *4*; α(M)=0.000645 *9* α(N)=0.0001498 *21*; α(O)=1.99×10^{-5} *3*; α(P)=7.37×10^{-7} *11*
1221.6?		978.5[@][c]	[@]	243.00	2$^+$			
1255.79	(4$^+$)	435.15 *10*	59 *12*	820.51	2$^+$	(E2)	0.0258	α(K)=0.0199 *3*; α(L)=0.00457 *7*; α(M)=0.001065 *15* α(N)=0.000247 *4*; α(O)=3.23×10^{-5} *5*; α(P)=1.075×10^{-6} *15* I$_\gamma$: from ^{160}Lu ε decay. Mult.: E2 based on DCO (2019Ma70) contradicts E1 based on α(K)exp (1984Au13).
		616.71 *10*	100 *18*	638.39	4$^+$	(M1+E2)	0.0173 *67*	α(K)=0.0144 *58*; α(L)=0.00229 *68*; α(M)=5.1×10^{-4} *15* α(N)=1.20×10^{-4} *35*; α(O)=1.69×10^{-5} *53*; α(P)=8.4×10^{-7} *37* I$_\gamma$: from ^{160}Lu ε decay. Mult.: contradictory assignments: M1+E2 (2019Ma70) versus E1 (2019Sa61 and 1984Au13).
		1012		243.00	2$^+$			Transition observed only in (HI,xnγ) (2005Ba88).
1292.72	(2$^+$)	653.8[@]	16[@]	638.39	4$^+$			
		1049.8[@] *1*	100[@] *16*	243.00	2$^+$			
		1292.7[@] *2*	61[@] *11*	0.0	0$^+$			

$\gamma(^{160}Yb)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[b]	Comments
1358.30	2+	719.9[@] 1	12[@] 1	638.39	4+	E2[#]	0.00747	α(K)=0.00610 9; α(L)=0.001070 15; α(M)=0.000243 4 α(N)=5.67×10^{-5} 8; α(O)=7.77×10^{-6} 11; α(P)=3.41×10^{-7} 5
		1115.3[@] 1	100[@] 7	243.00	2+			
		1358.3[@] 2	7[@] 6	0.0	0+			
1496.36	(1,2+)	1253.4[@] 2	67[@] 20	243.00	2+			
		1496.3[@] 2	100[@] 13	0.0	0+			
1525.37	3−	704.7[@] 1	100[@] 7	820.51	2+	E1[#]	0.00294	α(K)=0.00250 4; α(L)=0.000349 5; α(M)=7.72×10^{-5} 11 α(N)=1.80×10^{-5} 3; α(O)=2.56×10^{-6} 4; α(P)=1.333×10^{-7} 19
		886[c]		638.39	4+			Transition tentatively observed only in (HI,xnγ).
		1283.0[@] 2	18[@] 7	243.00	2+			Transition observed only in ε decay.
1529.15	(2+,3,4+)	890.7[@] 1	100[@] 14	638.39	4+			
		1286.4[@] 2	57[@] 14	243.00	2+			
1567.45	(4)−	929.1[@] 2	100[@]	638.39	4+	E1[#]	1.72×10^{-3}	α(K)=0.001460 21; α(L)=0.000201 3; α(M)=4.44×10^{-5} 7 α(N)=1.039×10^{-5} 15; α(O)=1.480×10^{-6} 21; α(P)=7.86×10^{-8} 11
1567.60?	5(−)	210[&c]		1358.30	2+			
		929.4 2	100	638.39	4+	D		
1573.95	5+	318.05 11		1255.79	(4+)			
		427.08 11		1147.16	6+			Mult.: M1+E2 adopted by 2019Ma70 in (HI,xnγ) dataset based on R(DCO) which however better fits Q,E2.
		461.33 10	89 44	1112.68	3+	E2	0.0220	α(K)=0.01708 24; α(L)=0.00377 6; α(M)=0.000876 13 α(N)=0.000203 3; α(O)=2.67×10^{-5} 4; α(P)=9.30×10^{-7} 13 Mult.: based on R(DCO) and polarization in (HI,xnγ) dataset (2019Ma70).
		935.43 10	100 56	638.39	4+			Mult.: M1+E2 adopted by 2019Ma70 in (HI,xnγ) dataset based on DCO which however based on polarization better fits E1(+M2).
1591.70	4+	299.33 21		1292.72	(2+)			
		953.34 15		638.39	4+			Mult.: M1+E2 adopted by 2019Ma70 in (HI,xnγ) dataset based on DCO which however better fits Q,E2.
		1348.65 15		243.00	2+			
1629.0?		371[&c]		1255.79	(4+)			
		514[&c]		1112.68	3+			
		806[&c]		820.51	2+			
1676.37	(2+,3,4+)	1038.0[@] 1	100[@] 25	638.39	4+			
		1433.2[@] 3	63[@] 38	243.00	2+			
1694.46	(4−)	337[&c]		1358.30	2+			
		1056.2 2	100	638.39	4+			
1736.79	8+	589.5 1	100	1147.16	6+	E2	0.01188	B(E2)(W.u.)=152 +38−26 α(K)=0.00952 14; α(L)=0.00183 3; α(M)=0.000419 6 α(N)=9.75×10^{-5} 14; α(O)=1.315×10^{-5} 19; α(P)=5.28×10^{-7} 8
1743.15	(6+)	488.04 10	100	1255.79	(4+)	E2	0.0191	α(K)=0.01495 21; α(L)=0.00319 5; α(M)=0.000739 11

$^{160}_{70}Yb_{90}$-8

$\gamma(^{160}$Yb) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[b]	Comments
								α(N)=0.0001716 *24*; α(O)=2.27×10^{-5} *4*; α(P)=8.18×10^{-7} *12* Mult.: based on R(DCO) in (HI,xnγ) dataset (2019Ma70).
1743.15	(6$^+$)	596.37 *10*		1147.16	6$^+$	D(+Q)		Mult.: M1+E2 adopted by 2019Ma70 in (HI,xnγ) dataset based on DCO which however better fits D(+Q).
		1104.52 *33*		638.39	4$^+$			A_p=0.17 *40* (2019Ma70). Mult.: electric character based on polarization adopted by 2019Ma70 in (HI,xnγ) dataset as E2 which however does not exclude E1.
1811.26	(1,2$^+$)	1568.9[@] *3*	100[@] *31*	243.00	2$^+$			
		1810.1[@] *4*	38[@] *15*	0.0	0$^+$			
1871?	(5$^-$)	346[c]	100	1525.37	3$^-$			
1926.99	7$^-$	359.5 *2*	4.5 *23*	1567.60?	5$^{(-)}$			
		779.7 *1*	100 *20*	1147.16	6$^+$	E1	0.00241	α(K)exp=0.0020 *9* α(K)=0.00204 *3*; α(L)=0.000284 *4*; α(M)=6.28×10^{-5} *9* α(N)=1.469×10^{-5} *21*; α(O)=2.08×10^{-6} *3*; α(P)=1.094×10^{-7} *16*
1952.0?		325[&c]		1629.0?				
		696[&c]		1255.79	(4$^+$)			
		839[&c]		1112.68	3$^+$			
1957.22	6$^+$	365.60 *11*		1591.70	4$^+$	E2	0.0414	α(K)=0.0310 *5*; α(L)=0.00807 *12*; α(M)=0.00190 *3* α(N)=0.000439 *7*; α(O)=5.63×10^{-5} *8*; α(P)=1.636×10^{-6} *23* Mult.: based on R(DCO) in (HI,xnγ) dataset (2019Ma70).
		809.89 *12*		1147.16	6$^+$	D(+Q)		Mult.: M1+E2 adopted by 2019Ma70 in (HI,xnγ) dataset based on DCO which however better fits D(+Q).
		1318.74 *11*		638.39	4$^+$	E2	0.00217	α(K)=0.00180 *3*; α(L)=0.000268 *4*; α(M)=5.97×10^{-5} *9* α(N)=1.398×10^{-5} *20*; α(O)=1.98×10^{-6} *3*; α(P)=1.013×10^{-7} *15*; α(IPF)=2.19×10^{-5} *3* Mult.: based on R(DCO) in (HI,xnγ) dataset (2019Ma70).
2050.23	(6$^-$)	355.9 *2*	34 *17*	1694.46	(4$^-$)			
		482.7 *2*	39 *22*	1567.60?	5$^{(-)}$			482.7γ and 902.9γ decaying from 2051, (6)$^-$ level are the same as 484γ and 903.6γ and decaying from 2051, (6)$^-$ level but placed in different bands by different autors (see comments on respective levels).
		902.9 *2*	100 *28*	1147.16	6$^+$	D		See comment at 483γ.
2050.56	6$^-$	484	50	1567.45	(4)$^-$			See comment at 483γ.
		903.6	100	1147.16	6$^+$			See comment at 483γ.
2108.47	7$^+$	365.55 *12*		1743.15	(6$^+$)			
		534.62 *10*	100 *50*	1573.95	5$^+$	E2	0.01507	α(K)=0.01195 *17*; α(L)=0.00242 *4*; α(M)=0.000557 *8* α(N)=0.0001294 *19*; α(O)=1.729×10^{-5} *25*; α(P)=6.59×10^{-7} *10* Mult.: based on R(DCO) in (HI,xnγ) dataset (2019Ma70).
		961.51 *11*		1147.16	6$^+$			Mult.: M1+E2 adopted by 2019Ma70 in (HI,xnγ) dataset based on polarization which however does not exclude E1 or E2.
2272.0	7$^-$	344[&c]		1926.99	7$^-$			
		704[&c]		1567.60?	5$^{(-)}$			
		1124[&c]		1147.16	6$^+$			

$\gamma(^{160}$Yb) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[a]	α[b]	Comments
2274.20	(8+)	530.9 *1*	100 *60*	1743.15	(6+)	E2		0.01534	α(K)=0.01215 *17*; α(L)=0.00247 *4*; α(M)=0.000569 *8* α(N)=0.0001322 *19*; α(O)=1.764×10^{-5} *25*; α(P)=6.70×10^{-7} *10* Mult.: from R(DCO) in (HI,xnγ) dataset (2019Ma70).
		537.45 *15*		1736.79	8+				
		1127.35 *16*		1147.16	6+				
2362.32	8−	255.0 *2*	17 *9*	2108.47	7+	D			
		311.8 *2*	57 *17*	2050.56	6−	E2		0.0658	α(K)=0.0475 *7*; α(L)=0.01416 *20*; α(M)=0.00335 *5* α(N)=0.000774 *11*; α(O)=9.77×10^{-5} *14*; α(P)=2.44×10^{-6} *4*
		435.0 *2*	64 *19*	1926.99	7−	E2+M1	≈5	≈0.0269	α(K)≈0.0209; α(L)≈0.00465; α(M)≈0.001080 α(N)≈0.000250; α(O)≈3.30×10^{-5}; α(P)≈1.142×10^{-6} δ: from measured quadrupole content of ≈96% (1980Ri02, HI dataset).
		625.2 *2*	100 *30*	1736.79	8+	(E1)		0.00376	α(K)=0.00319 *5*; α(L)=0.000448 *7*; α(M)=9.93×10^{-5} *14* α(N)=2.32×10^{-5} *4*; α(O)=3.28×10^{-6} *5*; α(P)=1.693×10^{-7} *24*
2364.14	8+	406.81 *10*		1957.22	6+	(E2)		0.0308	α(K)=0.0234 *4*; α(L)=0.00564 *8*; α(M)=0.001319 *19* α(N)=0.000305 *5*; α(O)=3.97×10^{-5} *6*; α(P)=1.258×10^{-6} *18* Mult.: based on R(DCO) in (HI,xnγ) dataset (2019Ma70).
		1216.91 *11*	100 *50*	1147.16	6+	E2		0.00251	α(K)=0.00210 *3*; α(L)=0.000317 *5*; α(M)=7.08×10^{-5} *10* α(N)=1.657×10^{-5} *24*; α(O)=2.34×10^{-6} *4*; α(P)=1.182×10^{-7} *17*; α(IPF)=6.73×10^{-6} *10* Mult.: based on R(DCO) in (HI,xnγ) dataset (2019Ma70).
2372.63	9−	445.6 *2*	49 *10*	1926.99	7−	E2		0.0241	α(K)=0.0186 *3*; α(L)=0.00421 *6*; α(M)=0.000978 *14* α(N)=0.000227 *4*; α(O)=2.98×10^{-5} *5*; α(P)=1.010×10^{-6} *15*
		635.8 *1*	100 *20*	1736.79	8+	D			
2374.32	10+	637.5 *1*	100	1736.79	8+	E2		0.00987	α(K)=0.00797 *12*; α(L)=0.001473 *21*; α(M)=0.000337 *5* α(N)=7.84×10^{-5} *11*; α(O)=1.064×10^{-5} *15*; α(P)=4.44×10^{-7} *7* B(E2)(W.u.)=94 *+35−20*
2415.0?		463[&c]		1952.0?					
		672[&c]		1743.15	(6+)				
		1267[&c]		1147.16	6+				
2480.55	9−	106.2 *2*	1.6 *8*	2374.32	10+				
		209[&c]		2272.0	7−				
		553.5 *2*	22 *6*	1926.99	7−	E2		0.01384	α(K)=0.01102 *16*; α(L)=0.00219 *3*; α(M)=0.000503 *7* α(N)=0.0001169 *17*; α(O)=1.567×10^{-5} *22*; α(P)=6.09×10^{-7} *9*
		743.7 *1*	100 *10*	1736.79	8+	E1		0.00264	α(K)=0.00224 *4*; α(L)=0.000312 *5*; α(M)=6.91×10^{-5} *10* α(N)=1.616×10^{-5} *23*; α(O)=2.29×10^{-6} *4*; α(P)=1.199×10^{-7} *17*
2527.41	(8−)	477.2 *2*	68 *23*	2050.23	(6−)				
		600[&c]		1926.99	7−				
		790.6 *2*	100 *32*	1736.79	8+				
2578.58	10−	97.9 *2*	4.3 *22*	2480.55	9−				
		205.8 *2*	13 *4*	2372.63	9−	[M1,E2]		0.342 *98*	α(K)=0.26 *11*; α(L)=0.063 *8*; α(M)=0.0148 *23* α(N)=0.0034 *5*; α(O)=0.00045 *3*; α(P)=1.48×10^{-5} *77*
		216.4 *1*	100 *10*	2362.32	8−	E2		0.207	α(K)=0.1319 *19*; α(L)=0.0576 *9*; α(M)=0.01389 *20*

$\gamma(^{160}$Yb) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[b]	Comments
								α(N)=0.00319 *5*; α(O)=0.000387 *6*; α(P)=6.28×10^{-6} *9* B(E2)(W.u.)=1.8×10^2 *+8−4*
2649.3?	(8$^-$)	286[&c]		2362.32	8$^-$			
		377[&c]		2272.0	7$^-$			
		598[&c]		2050.23	(6$^-$)			
2700.81	9$^+$	592.47 *10*	100 *50*	2108.47	7$^+$			
		963.71 *15*		1736.79	8$^+$			Mult.: M1+E2 adopted by 2019Ma70 in (HI,xnγ) dataset based on polarization which however does not exclude E1 or E2.
2703.8	(8$^-$,9$^+$)	775.9[c]	100	1926.99	7$^-$			
		966.4[c]	21	1736.79	8$^+$			
2718.4?	(9$^-$)	346[&c]		2372.63	9$^-$			
		792[&c]		1926.99	7$^-$			
		982[&c]		1736.79	8$^+$			
2763.99	11$^-$	185.5 *2*	1.7 *9*	2578.58	10$^-$	[M1,E2]	0.47 *12*	α(K)=0.35 *15*; α(L)=0.092 *18*; α(M)=0.022 *5* α(N)=0.0050 *11*; α(O)=0.00064 *9*; α(P)=2.0×10^{-5} *11*
		283.4 *1*	100 *10*	2480.55	9$^-$	E2	0.0879	α(K)=0.0617 *9*; α(L)=0.0201 *3*; α(M)=0.00479 *7* α(N)=0.001105 *16*; α(O)=0.0001379 *20*; α(P)=3.12×10^{-6} *5* B(E2)(W.u.)=77 *+10−9*
		389.6 *2*	19 *6*	2374.32	10$^+$	[E1]	0.01066	α(K)=0.00899 *13*; α(L)=0.001303 *19*; α(M)=0.000290 *4* α(N)=6.75×10^{-5} *10*; α(O)=9.43×10^{-6} *14*; α(P)=4.66×10^{-7} *7* B(E1)(W.u.)=9.5×10^{-6} *+31−30*
		391.3 *2*	37 *11*	2372.63	9$^-$	[E2]	0.0342	α(K)=0.0259 *4*; α(L)=0.00642 *9*; α(M)=0.001503 *22* α(N)=0.000348 *5*; α(O)=4.50×10^{-5} *7*; α(P)=1.383×10^{-6} *20* B(E2)(W.u.)=5.7 *15*
2789.83	(10$^+$)	425.55 *10*		2364.14	8$^+$			Mult.: Q,E2 adopted in (HI,xnγ) dataset (2019Ma70) based on DCO which does not exclude D(+Q).
		515.63 *10*		2274.20	(8$^+$)	E2	0.01650	α(K)=0.01303 *19*; α(L)=0.00269 *4*; α(M)=0.000621 *9* α(N)=0.0001442 *21*; α(O)=1.92×10^{-5} *3*; α(P)=7.16×10^{-7} *10* Mult.: adopted in (HI,xnγ) dataset (2019Ma70) based on R(DCO).
		1053.14 *11*	100 *67*	1736.79	8$^+$			
2840.39	(10$^+$)	476.22 *11*		2364.14	8$^+$			
		566.18 *10*		2274.20	(8$^+$)			
		1104.52 *33*		1736.79	8$^+$			
2878.03	11$^-$	300[&c]		2578.58	10$^-$			
		398[&c]		2480.55	9$^-$			
		503.7 *2*	26 *8*	2374.32	10$^+$			
		505.4 *1*	100 *19*	2372.63	9$^-$	E2	0.01736	α(K)=0.01367 *20*; α(L)=0.00285 *4*; α(M)=0.000660 *10* α(N)=0.0001532 *22*; α(O)=2.04×10^{-5} *3*; α(P)=7.50×10^{-7} *11*
2898.27	(10$^-$)	179[&c]		2718.4?	(9$^-$)			
		250[&c]		2649.3?	(8$^-$)			
		319.7 *1*	100	2578.58	10$^-$			
		371[&c]		2527.41	(8$^-$)			

$^{160}_{70}$Yb$_{90}$-11

Adopted Levels, Gammas (continued)

γ(^{160}Yb) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[b]	Comments
2898.27	(10⁻)	418[&c]		2480.55	9⁻			
		526[&c]		2372.63	9⁻			
		536[&c]		2362.32	8⁻			
2943?		528[&c]		2415.0?				
2960.80	12⁺	586.6 *1*	100	2374.32	10⁺	E2	0.01202	α(K)=0.00963 *14*; α(L)=0.00185 *3*; α(M)=0.000425 *6* α(N)=9.89×10^{-5} *14*; α(O)=1.333×10^{-5} *19*; α(P)=5.34×10^{-7} *8* B(E2)(W.u.)=1.6×10^{2} *+10−5*
2977.65	12⁻	213.6 *2*	4.7 *24*	2763.99	11⁻			
		399.1 *1*	100 *10*	2578.58	10⁻	E2	0.0324	α(K)=0.0246 *4*; α(L)=0.00601 *9*; α(M)=0.001406 *20* α(N)=0.000325 *5*; α(O)=4.22×10^{-5} *6*; α(P)=1.318×10^{-6} *19*
3008.8	(10⁻)	481.4 *2*	100	2527.41	(8⁻)			
		646		2362.32	8⁻			
3024.6	(10⁻,11⁺)	320.8	67	2703.8	(8⁻,9⁺)			
		650.5	100	2374.32	10⁺			
3127.5?	(11⁻)	249[&c]		2878.03	11⁻			
		408[&c]		2718.4?	(9⁻)			
		646[&c]		2480.55	9⁻			
		752[&c]		2374.32	10⁺			
		754[&c]		2372.63	9⁻			
3137.55	12⁺	763.1 *1*	100	2374.32	10⁺	E2	0.00657	α(K)=0.00538 *8*; α(L)=0.000923 *13*; α(M)=0.000209 *3* α(N)=4.89×10^{-5} *7*; α(O)=6.72×10^{-6} *10*; α(P)=3.02×10^{-7} *5*
3195.70	13⁻	318[&c]		2878.03	11⁻			
		431.7 *1*	100	2763.99	11⁻	E2	0.0262	α(K)=0.0202 *3*; α(L)=0.00465 *7*; α(M)=0.001084 *16* α(N)=0.000251 *4*; α(O)=3.28×10^{-5} *5*; α(P)=1.089×10^{-6} *16*
3318.72	(12⁺)	478.37 *10*		2840.39	(10⁺)			
		528.84 *10*	100 *60*	2789.83	(10⁺)	E2	0.01549	α(K)=0.01226 *18*; α(L)=0.00249 *4*; α(M)=0.000575 *8* α(N)=0.0001337 *19*; α(O)=1.784×10^{-5} *25*; α(P)=6.76×10^{-7} *10* Mult.: adopted in (HI,xnγ) dataset (2019Ma70) based on R(DCO).
3329.65	(12⁻)	352.0 *2*	23 *15*	2977.65	12⁻			
		431.4 *1*	15 *8*	2898.27	(10⁻)			
		451[&c]		2878.03	11⁻			
		565.6 *2*	100 *31*	2763.99	11⁻			
		751[&c]		2578.58	10⁻			
3330.52	11⁺	629.71 *10*	100	2700.81	9⁺	E2	0.01016	α(K)=0.00819 *12*; α(L)=0.001523 *22*; α(M)=0.000348 *5* α(N)=8.11×10^{-5} *12*; α(O)=1.100×10^{-5} *16*; α(P)=4.56×10^{-7} *7* Mult.: based on R(DCO) in (HI,xnγ) dataset (2019Ma70).
3365.00	14⁺	404.2 *1*	100	2960.80	12⁺	E2	0.0313	B(E2)(W.u.)=128 *+15−12* α(K)=0.0238 *4*; α(L)=0.00576 *8*; α(M)=0.001347 *19* α(N)=0.000312 *5*; α(O)=4.05×10^{-5} *6*; α(P)=1.278×10^{-6} *18*
3422.9	13⁻	462[&c]		2960.80	12⁺			
		544.9 *2*	100	2878.03	11⁻	E2	0.01438	α(K)=0.01143 *16*; α(L)=0.00229 *4*; α(M)=0.000526 *8* α(N)=0.0001224 *18*; α(O)=1.638×10^{-5} *23*; α(P)=6.31×10^{-7} *9*

$^{160}_{70}Yb_{90}$-12

Adopted Levels, Gammas (continued)

$\gamma(^{160}Yb)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[b]	Comments
3422.9	13⁻	659[&c]		2763.99	11⁻			
3457.3	(12⁻,13⁺)	433	100	3024.6	(10⁻,11⁺)			
		496.3	47	2960.80	12⁺			
3518.44	14⁻	322.7 *2*	6 *4*	3195.70	13⁻			
		540.8 *1*	100 *10*	2977.65	12⁻	E2	0.01465	α(K)=0.01163 *17*; α(L)=0.00234 *4*; α(M)=0.000538 *8* α(N)=0.0001251 *18*; α(O)=1.673×10⁻⁵ *24*; α(P)=6.42×10⁻⁷ *9* B(E2)(W.u.)=58 *+27−14*
3544.8?	(12⁻)	536[&]		3008.8	(10⁻)			
3682.7?	(13⁻)	259[&c]		3422.9	13⁻			
		555[&c]		3127.5?	(11⁻)			
		804[&c]		2878.03	11⁻			
3745.78	14⁺	608.1 *1*	100 *10*	3137.55	12⁺			
		785.1 *1*	48 *10*	2960.80	12⁺			
3757.31	15⁻	334[&c]		3422.9	13⁻			
		561.6 *1*	100	3195.70	13⁻	E2	0.01335	α(K)=0.01065 *15*; α(L)=0.00210 *3*; α(M)=0.000482 *7* α(N)=0.0001121 *16*; α(O)=1.504×10⁻⁵ *21*; α(P)=5.89×10⁻⁷ *9*
3849.10	16⁺	484.1 *1*	100	3365.00	14⁺	E2	0.0194	α(K)=0.01517 *22*; α(L)=0.00325 *5*; α(M)=0.000753 *11* α(N)=0.0001748 *25*; α(O)=2.31×10⁻⁵ *4*; α(P)=8.30×10⁻⁷ *12* B(E2)(W.u.)=2.5×10² *+6−4*
3869.51	(14⁺)	550.79 *10*	100	3318.72	(12⁺)			
3896.7	(14⁻)	378[&c]		3518.44	14⁻			
		567.0 *2*	100	3329.65	(12⁻)			
4015.65	(13⁺)	686.00 *12*	100	3330.52	11⁺			
4024.9	(14⁻,15⁺)	567.6	100	3457.3	(12⁻,13⁺)			
4028.8	15⁽⁻⁾	605.9 *2*	100	3422.9	13⁻	(E2)	0.01112	α(K)=0.00894 *13*; α(L)=0.001693 *24*; α(M)=0.000388 *6* α(N)=9.03×10⁻⁵ *13*; α(O)=1.220×10⁻⁵ *18*; α(P)=4.97×10⁻⁷ *7*
		833[&c]		3195.70	13⁻			
4172.52	16⁻	415.2 *2*	2.0 *10*	3757.31	15⁻	[M1,E2]	0.048 *19*	α(K)=0.039 *17*; α(L)=0.0068 *15*; α(M)=0.0015 *3* α(N)=0.00036 *8*; α(O)=5.0×10⁻⁵ *13*; α(P)=2.3×10⁻⁶ *11*
		654.1 *2*	100 *31*	3518.44	14⁻	E2	0.00930	α(K)=0.00752 *11*; α(L)=0.001375 *20*; α(M)=0.000314 *5* α(N)=7.31×10⁻⁵ *11*; α(O)=9.95×10⁻⁶ *14*; α(P)=4.20×10⁻⁷ *6* B(E2)(W.u.)=64 *+56−21*
4310.7?	(15⁻)	628[&c]	100	3682.7?	(13⁻)			
4375.78	16⁺	630.0 *1*	100	3745.78	14⁺	E2	0.01015	α(K)=0.00818 *12*; α(L)=0.001521 *22*; α(M)=0.000348 *5* α(N)=8.10×10⁻⁵ *12*; α(O)=1.099×10⁻⁵ *16*; α(P)=4.56×10⁻⁷ *7*
		1011[&c]		3365.00	14⁺			
4427.50	18⁺	578.4 *1*	100	3849.10	16⁺	E2	0.01243	α(K)=0.00994 *14*; α(L)=0.00193 *3*; α(M)=0.000443 *7* α(N)=0.0001030 *15*; α(O)=1.386×10⁻⁵ *20*; α(P)=5.51×10⁻⁷ *8* B(E2)(W.u.)=80 *+13−10*
4428.71	17⁻	671.4 *2*	100	3757.31	15⁻	E2	0.00875	α(K)=0.00710 *10*; α(L)=0.001283 *18*; α(M)=0.000293 *5* α(N)=6.82×10⁻⁵ *10*; α(O)=9.29×10⁻⁶ *13*; α(P)=3.97×10⁻⁷ *6* B(E2)(W.u.)=53 *+34−16*

γ(^{160}Yb) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[b]	Comments
4475.5	(16$^+$)	606.0 *2*	100	3869.51	(14$^+$)			
4555.7	(16$^-$)	659.0 *2*	100	3896.7	(14$^-$)			
4683.9	(16$^-$,17$^+$)	659.0	100	4024.9	(14$^-$,15$^+$)			
4702.2	17$^{(-)}$	673.4 *2*	100	4028.8	15$^{(-)}$	(E2)	0.00870	α(K)=0.00705 *10*; α(L)=0.001273 *18*; α(M)=0.000290 *4* α(N)=6.76×10^{-5} *10*; α(O)=9.22×10^{-6} *13*; α(P)=3.94×10^{-7} *6*
4714.2	(17,18$^+$)	865.1 *2*	100	3849.10	16$^+$			
4911.7	18$^-$	483.0 *2*	<3.4	4428.71	17$^-$	[M1,E2]	0.032 *13*	α(K)=0.026 *12*; α(L)=0.0044 *12*; α(M)=0.00100 *25* α(N)=0.00023 *6*; α(O)=3.25×10^{-5} *93*; α(P)=1.54×10^{-6} *71*
		739.2 *2*	100 *31*	4172.52	16$^-$	E2	0.00705	α(K)=0.00576 *8*; α(L)=0.001000 *14*; α(M)=0.000227 *4* α(N)=5.30×10^{-5} *8*; α(O)=7.28×10^{-6} *11*; α(P)=3.23×10^{-7} *5*
4984.6	(17)	1135.5 *2*	100	3849.10	16$^+$			
4990.3?	(17$^-$)	681[&c]	100	4310.7?	(15$^-$)			
5035.8	(18$^+$)	660.0 *2*	100	4375.78	16$^+$			
5091.2	20$^+$	663.7 *1*	100	4427.50	18$^+$	E2	0.00899	α(K)=0.00728 *11*; α(L)=0.001323 *19*; α(M)=0.000302 *5* α(N)=7.03×10^{-5} *10*; α(O)=9.57×10^{-6} *14*; α(P)=4.07×10^{-7} *6* B(E2)(W.u.)=77 *+30−17*
5176.7	19$^-$	748.0 *2*	100	4428.71	17$^-$	(E2)	0.00686	α(K)=0.00561 *8*; α(L)=0.000971 *14*; α(M)=0.000220 *3* α(N)=5.14×10^{-5} *8*; α(O)=7.06×10^{-6} *10*; α(P)=3.15×10^{-7} *5* B(E2)(W.u.)=36 *+36−14*
5203.7	(18$^-$)	648.0 *2*	100	4555.7	(16$^-$)			
5331.8	(18$^-$,19$^+$)	647.9	100	4683.9	(16$^-$,17$^+$)			
5368.2		654	100	4714.2	(17,18$^+$)			
5406.3	(19$^-$)	704.1 *2*	100	4702.2	17$^{(-)}$			
5692.7	20$^-$	781.0 *2*	100	4911.7	18$^-$			
5827.6	22$^+$	736.4 *1*	100	5091.2	20$^+$	E2	0.00711	α(K)=0.00581 *9*; α(L)=0.001010 *15*; α(M)=0.000229 *4* α(N)=5.35×10^{-5} *8*; α(O)=7.34×10^{-6} *11*; α(P)=3.25×10^{-7} *5* B(E2)(W.u.)=95 *+19−14*
5947.8	21$^-$	771.1 *2*	100	5176.7	19$^-$	(E2)	0.00642	α(K)=0.00526 *8*; α(L)=0.000899 *13*; α(M)=0.000204 *3* α(N)=4.76×10^{-5} *7*; α(O)=6.55×10^{-6} *10*; α(P)=2.95×10^{-7} *5* B(E2)(W.u.)=24 *+12−6*
6123.9	(21$^-$)	717.6 *2*	100	5406.3	(19$^-$)			
6380.7	22$^-$	688.0 *2*	100	5692.7	20$^-$	E2	0.00828	α(K)=0.00673 *10*; α(L)=0.001203 *17*; α(M)=0.000274 *4* α(N)=6.39×10^{-5} *9*; α(O)=8.72×10^{-6} *13*; α(P)=3.76×10^{-7} *6*
6623.2	24$^+$	795.6 *2*	100	5827.6	22$^+$	E2	0.00600	α(K)=0.00492 *7*; α(L)=0.000832 *12*; α(M)=0.000189 *3* α(N)=4.40×10^{-5} *7*; α(O)=6.07×10^{-6} *9*; α(P)=2.76×10^{-7} *4* B(E2)(W.u.)=228 *+34−28*
6694.1	23$^-$	746.3 *2*	100	5947.8	21$^-$	E2	0.00690	α(K)=0.00564 *8*; α(L)=0.000976 *14*; α(M)=0.000222 *4* α(N)=5.17×10^{-5} *8*; α(O)=7.10×10^{-6} *10*; α(P)=3.16×10^{-7} *5*
7092.4	24$^-$	711.7 *2*	100	6380.7	22$^-$			
7458.9	26$^+$	835.7 *2*	100	6623.2	24$^+$	E2	0.00539	α(K)=0.00444 *7*; α(L)=0.000739 *11*; α(M)=0.0001670 *24* α(N)=3.90×10^{-5} *6*; α(O)=5.40×10^{-6} *8*; α(P)=2.50×10^{-7} *4* B(E2)(W.u.)=149 *+41−22*

$^{160}_{70}$Yb$_{90}$-14

γ(^{160}Yb) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[b]	Comments
7459.1	25$^-$	765.0 *2*	100	6694.1	23$^-$	E2	0.00653	α(K)=0.00535 *8*; α(L)=0.000917 *13*; α(M)=0.000208 *3* α(N)=4.86×10^{-5} *7*; α(O)=6.68×10^{-6} *10*; α(P)=3.00×10^{-7} *5*
7870.4	26$^-$	778.0 *2*	100	7092.4	24$^-$	E2	0.00630	α(K)=0.00516 *8*; α(L)=0.000880 *13*; α(M)=0.000199 *3* α(N)=4.65×10^{-5} *7*; α(O)=6.41×10^{-6} *9*; α(P)=2.90×10^{-7} *4*
8272.1	(27$^-$)	813		7459.1	25$^-$			
8289.6	(28$^+$)	830.7 *2*	100	7458.9	26$^+$			
8708.4	28$^-$	838.0 *2*	100	7870.4	26$^-$	E2	0.00536	α(K)=0.00442 *7*; α(L)=0.000734 *11*; α(M)=0.0001659 *24* α(N)=3.87×10^{-5} *6*; α(O)=5.36×10^{-6} *8*; α(P)=2.48×10^{-7} *4*
9126.6	(30$^+$)	837.0 *2*	100	8289.6	(28$^+$)			
9132.1	(29$^-$)	860	100	8272.1	(27$^-$)			
9555.4	(30$^-$)	847.0 *2*	100	8708.4	28$^-$			
10003.6	(32$^+$)	877	100	9126.6	(30$^+$)	[E2]	0.00487	α(K)=0.00402 *6*; α(L)=0.000658 *10*; α(M)=0.0001486 *21* α(N)=3.47×10^{-5} *5*; α(O)=4.82×10^{-6} *7*; α(P)=2.26×10^{-7} *4* B(E2)(W.u.)=111 *+21−26*
10010.1	(31$^-$)	878	100	9132.1	(29$^-$)			
10408.4	(32$^-$)	853	100	9555.4	(30$^-$)			
10887.1	(33$^-$)	877	100	10010.1	(31$^-$)			
10957.6	(34$^+$)	954	100	10003.6	(32$^+$)	[E2]	0.00408	B(E2)(W.u.)=77 *+15−11* α(K)=0.00339 *5*; α(L)=0.000541 *8*; α(M)=0.0001218 *17* α(N)=2.85×10^{-5} *4*; α(O)=3.97×10^{-6} *6*; α(P)=1.91×10^{-7} *3*
11293.4	(34$^-$)	885	100	10408.4	(32$^-$)			
11790.1	(35$^-$)	903	100	10887.1	(33$^-$)			
11964.6	(36$^+$)	1007	100	10957.6	(34$^+$)	[E2]	0.00366	B(E2)(W.u.)=41 *+5−4* α(K)=0.00304 *5*; α(L)=0.000479 *7*; α(M)=0.0001076 *15* α(N)=2.51×10^{-5} *4*; α(O)=3.52×10^{-6} *5*; α(P)=1.711×10^{-7} *24*
12228.4	(36$^-$)	935	100	11293.4	(34$^-$)			
12740.1	(37$^-$)	950	100	11790.1	(35$^-$)			
13042.6	(38$^+$)	1078	100	11964.6	(36$^+$)			
13228.4	(38$^-$)	1000	100	12228.4	(36$^-$)			
13740	(39$^-$)	1000	100	12740.1	(37$^-$)			
14200.6	(40$^+$)	1158	100	13042.6	(38$^+$)			
14290?	(40$^-$)	1061[c]	100	13228.4	(38$^-$)			
15403?	(42$^-$)	1113[c]	100	14290?	(40$^-$)			
654.0+x	J+2	654	100	0.0+x	J≈(20)			
1350.0+x	J+4	696	100	654.0+x	J+2			
2085.0+x	J+6	735	100	1350.0+x	J+4			
2856.0+x	J+8	771	100	2085.0+x	J+6			
3641.0+x	J+10	785	100	2856.0+x	J+8			
4449.0+x	J+12	808	100	3641.0+x	J+10			
5304+x	J+14	855	100	4449.0+x	J+12			
6215+x	J+16	911	100	5304+x	J+14			
7177+x	J+18	962	100	6215+x	J+16			
8185+x	J+20	1008	100	7177+x	J+18			

$^{160}_{70}$Yb$_{90}$-15

Adopted Levels, Gammas (continued)

$\gamma(^{160}\mathrm{Yb})$ (continued)

E_i(level)	J^π_i	E_γ †	I_γ †	E_f	J^π_f
9237+x	J+22	1052	100	8185+x	J+20
10339+x	J+24	1102	100	9237+x	J+22
11501+x	J+26	1162	100	10339+x	J+24
12734+x	J+28	1233	100	11501+x	J+26
14045+x	J+30	1311	100	12734+x	J+28

† From (HI,xnγ), except as noted.

‡ Except as noted from (HI,xnγ) based on angular-distribution, angular-correlation and polarization measurements (2019Sa61).

Determined from α(K)exp data from the ^{160}Lu(ε+β^+) decay.

@ From ^{160}Lu ε decay.

& γ transition not confirmed by 2019Sa61 ((HI,xnγ) dataset).

[a] Additional information 3.

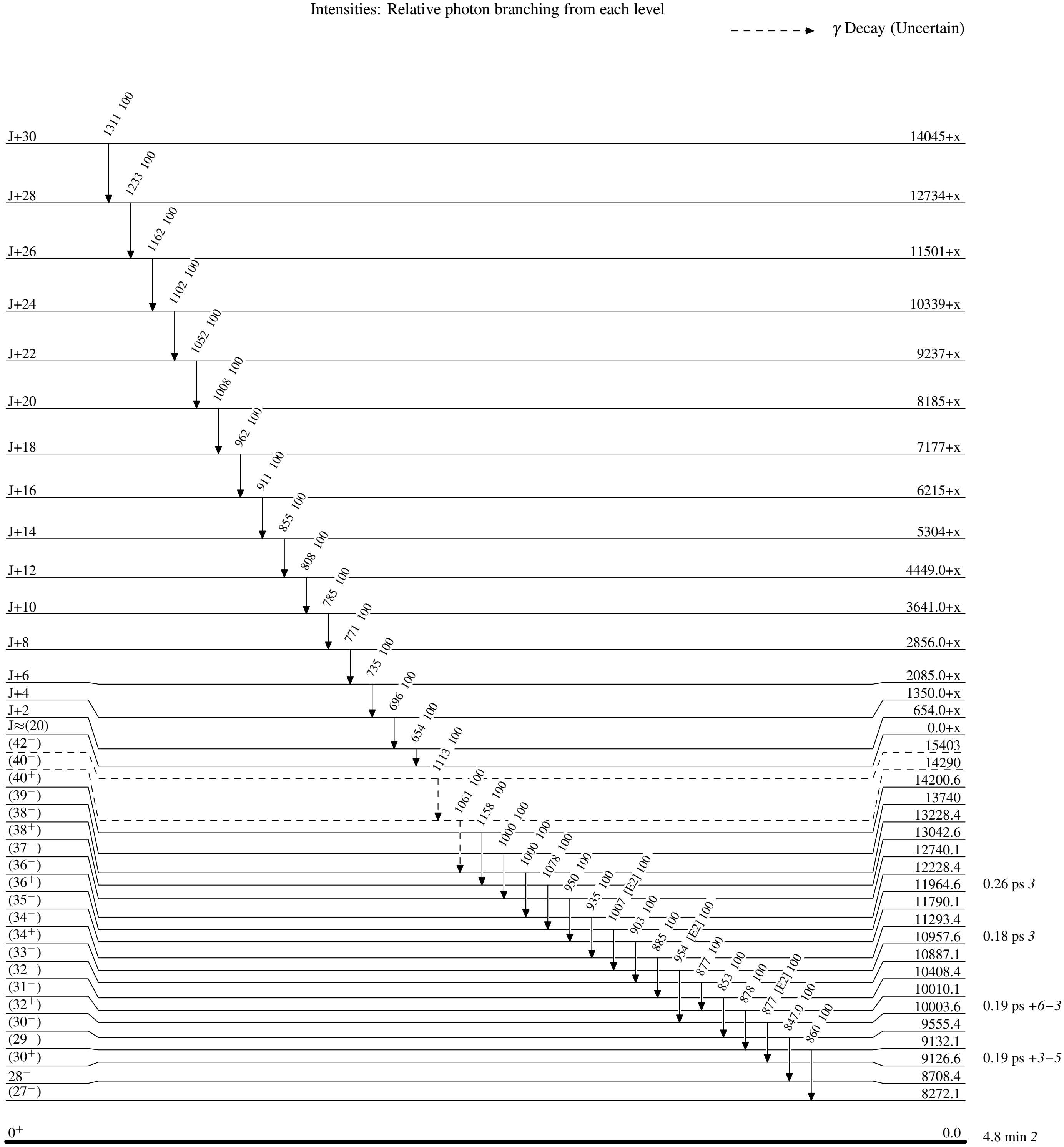
[b] Additional information 4.

[c] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



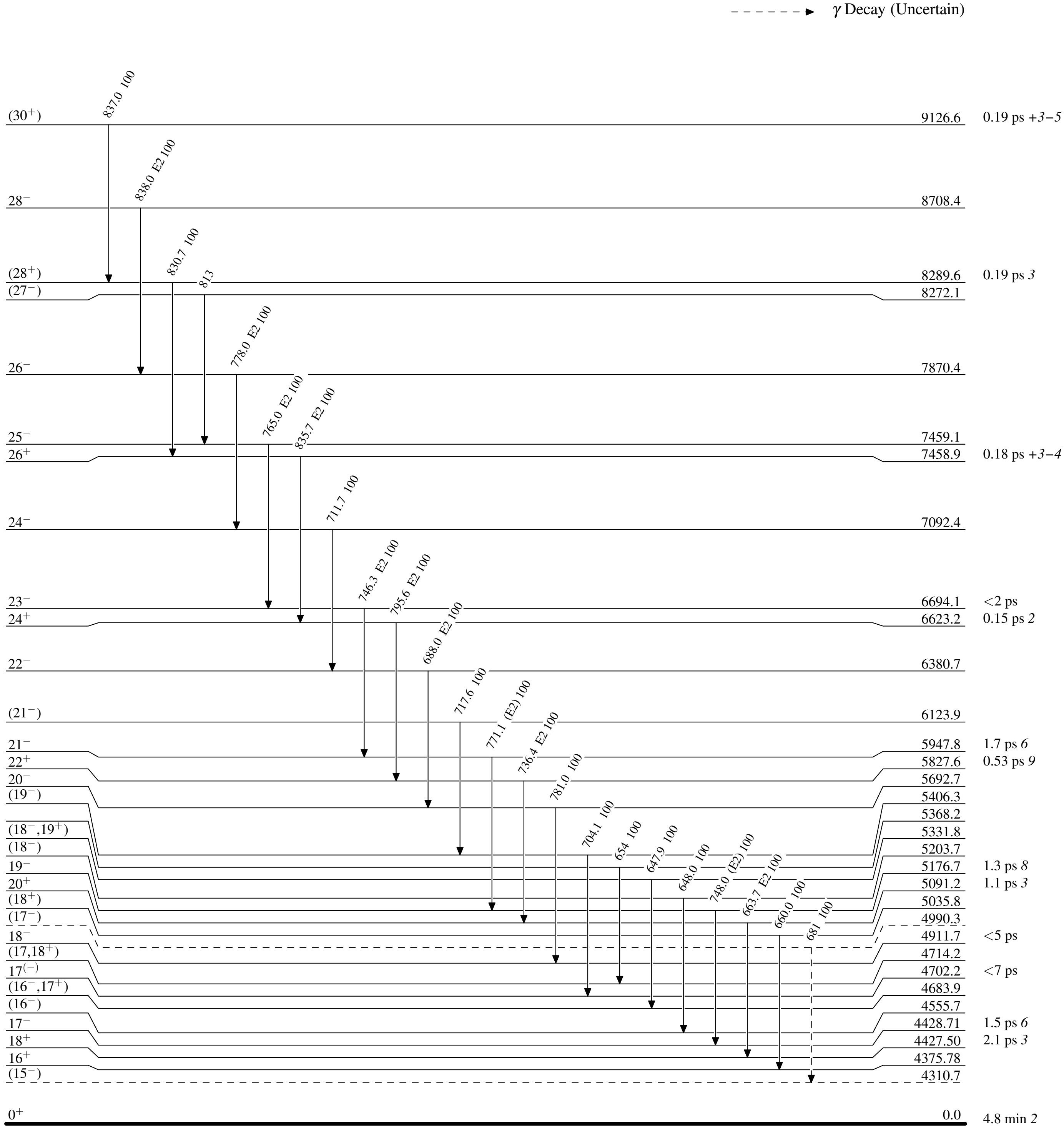
$^{160}_{70}Yb_{90}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

Legend

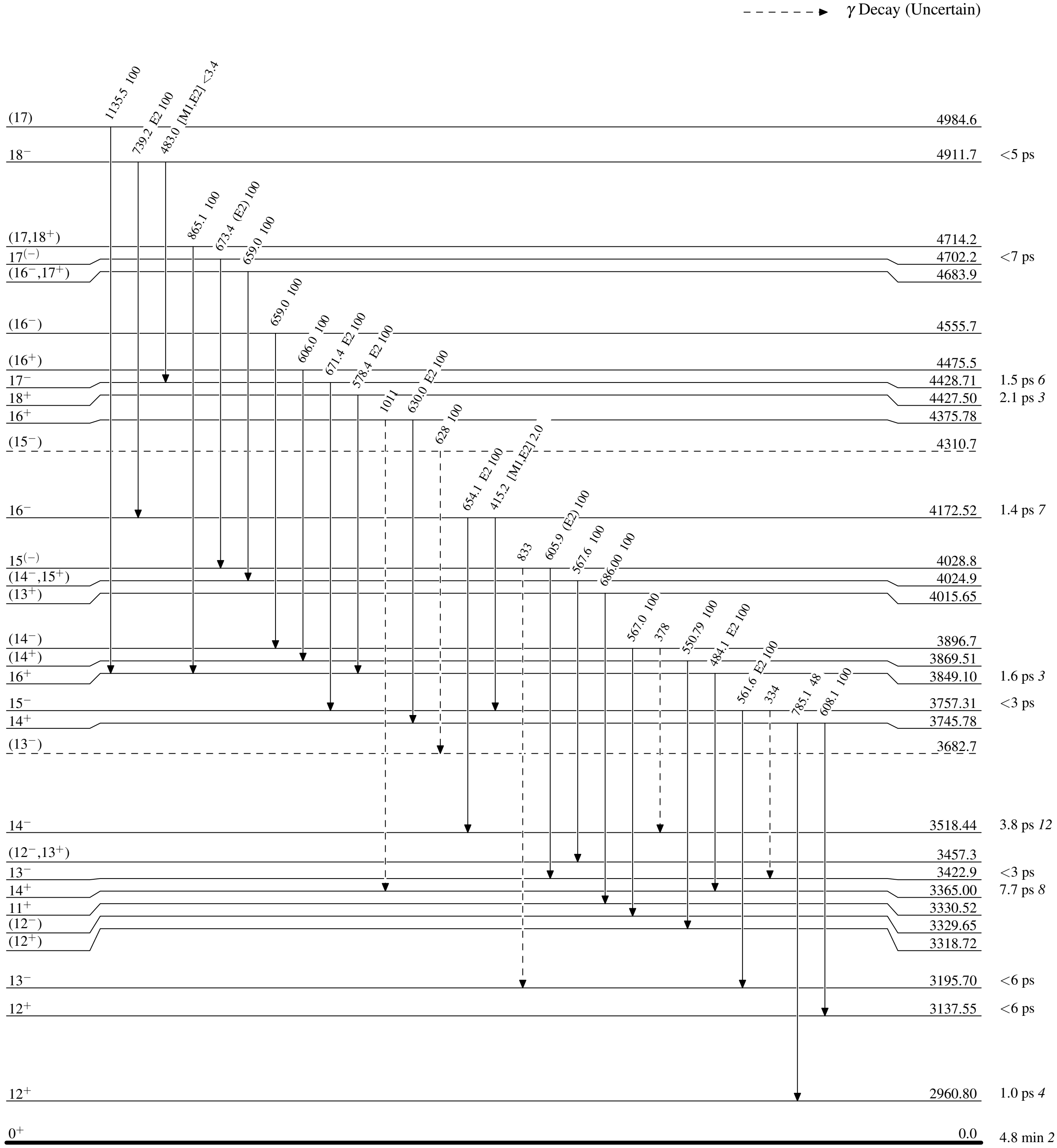


$^{160}_{70}Yb_{90}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{160}_{70}Yb_{90}$

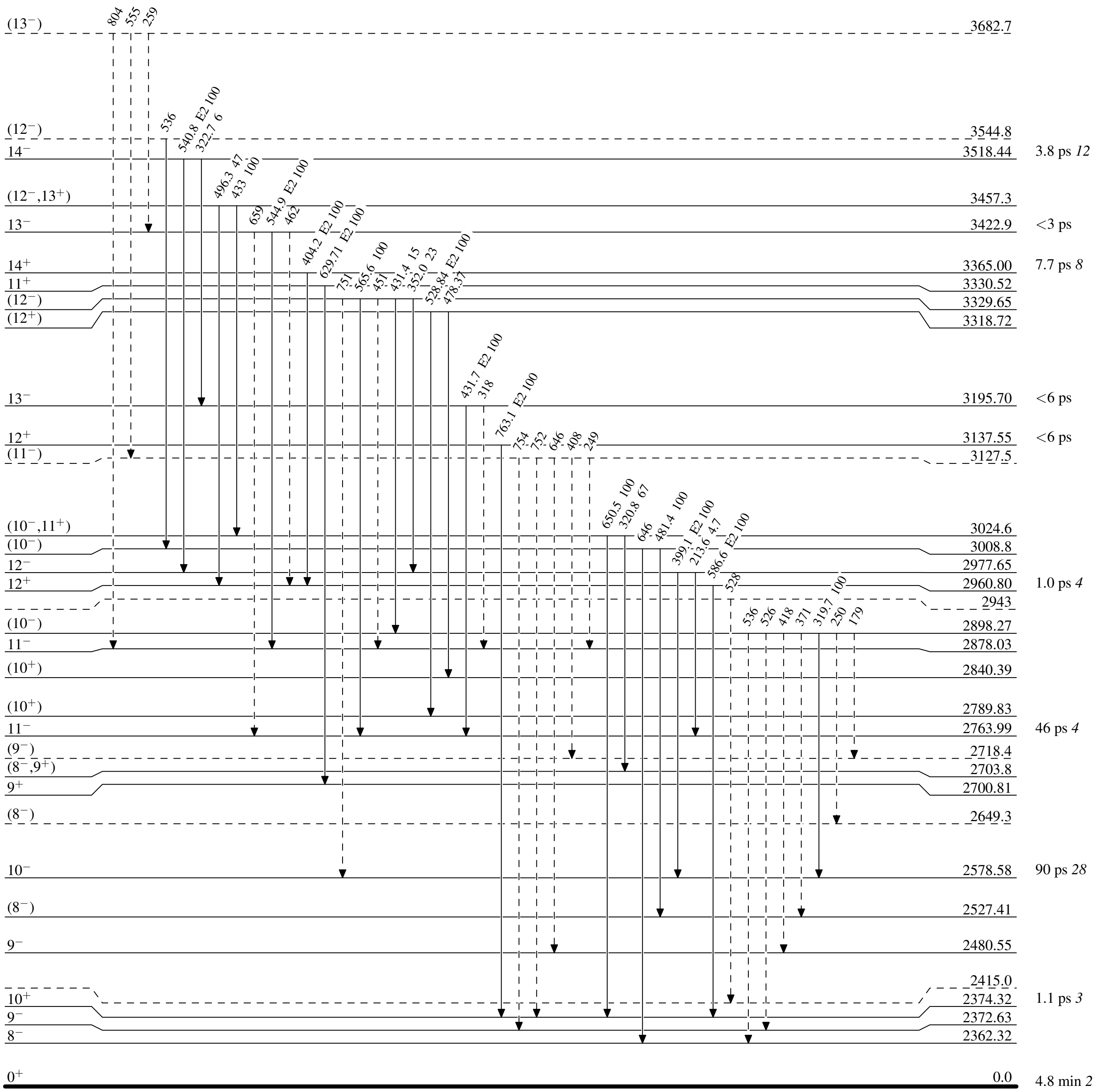
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

Legend

γ Decay (Uncertain)



$^{160}_{70}Yb_{90}$

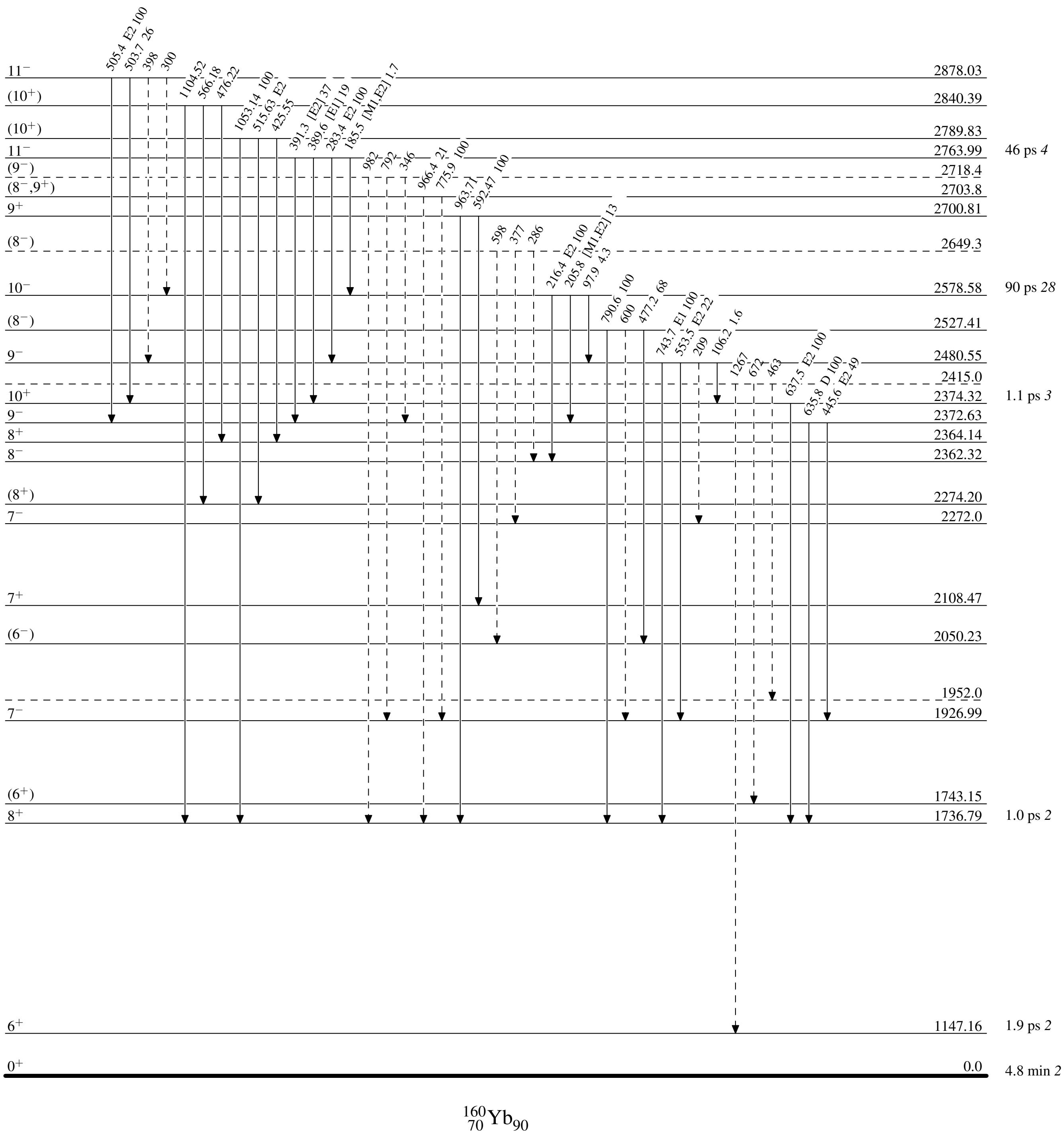
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



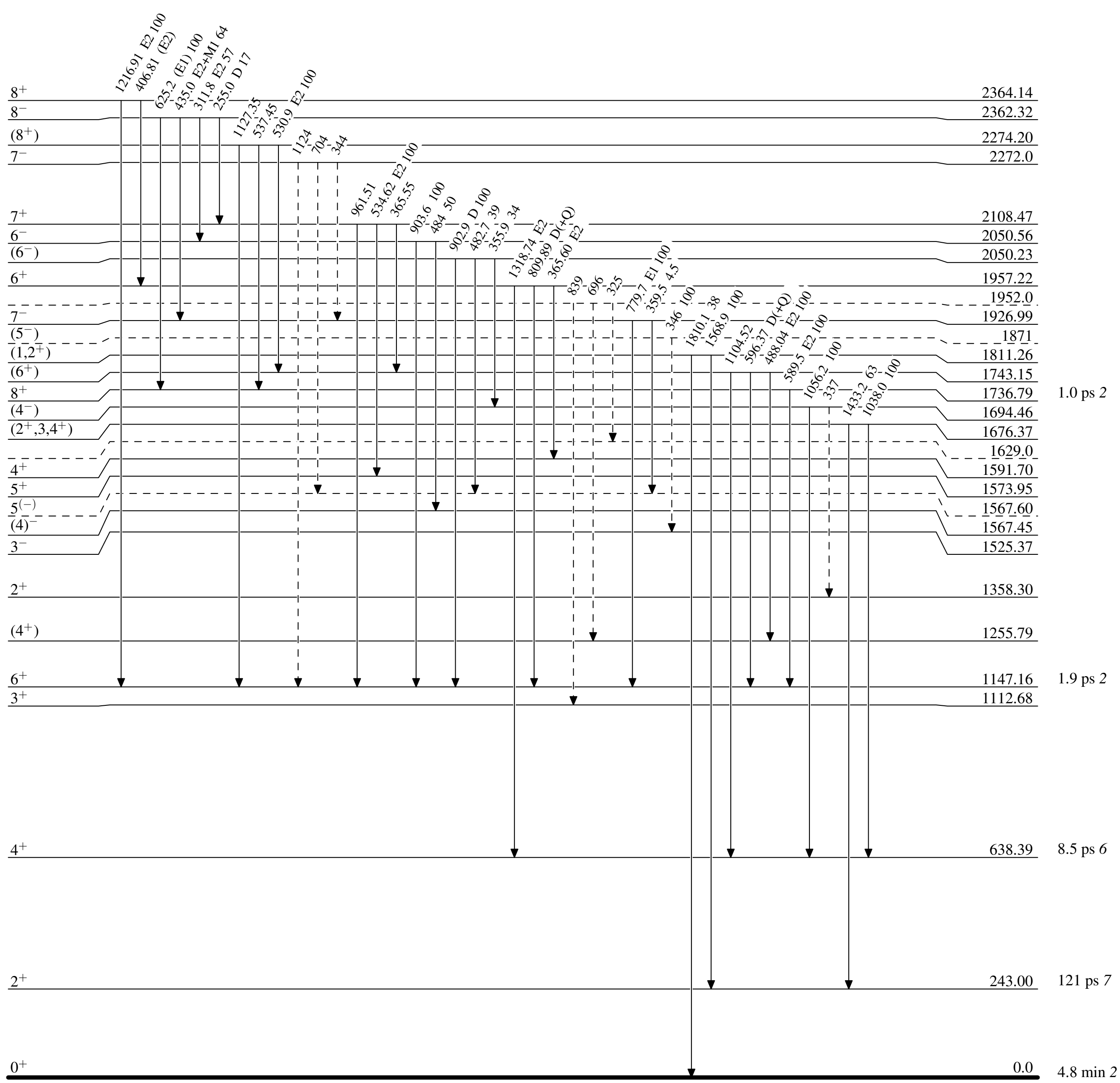
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{160}_{70}Yb_{90}$

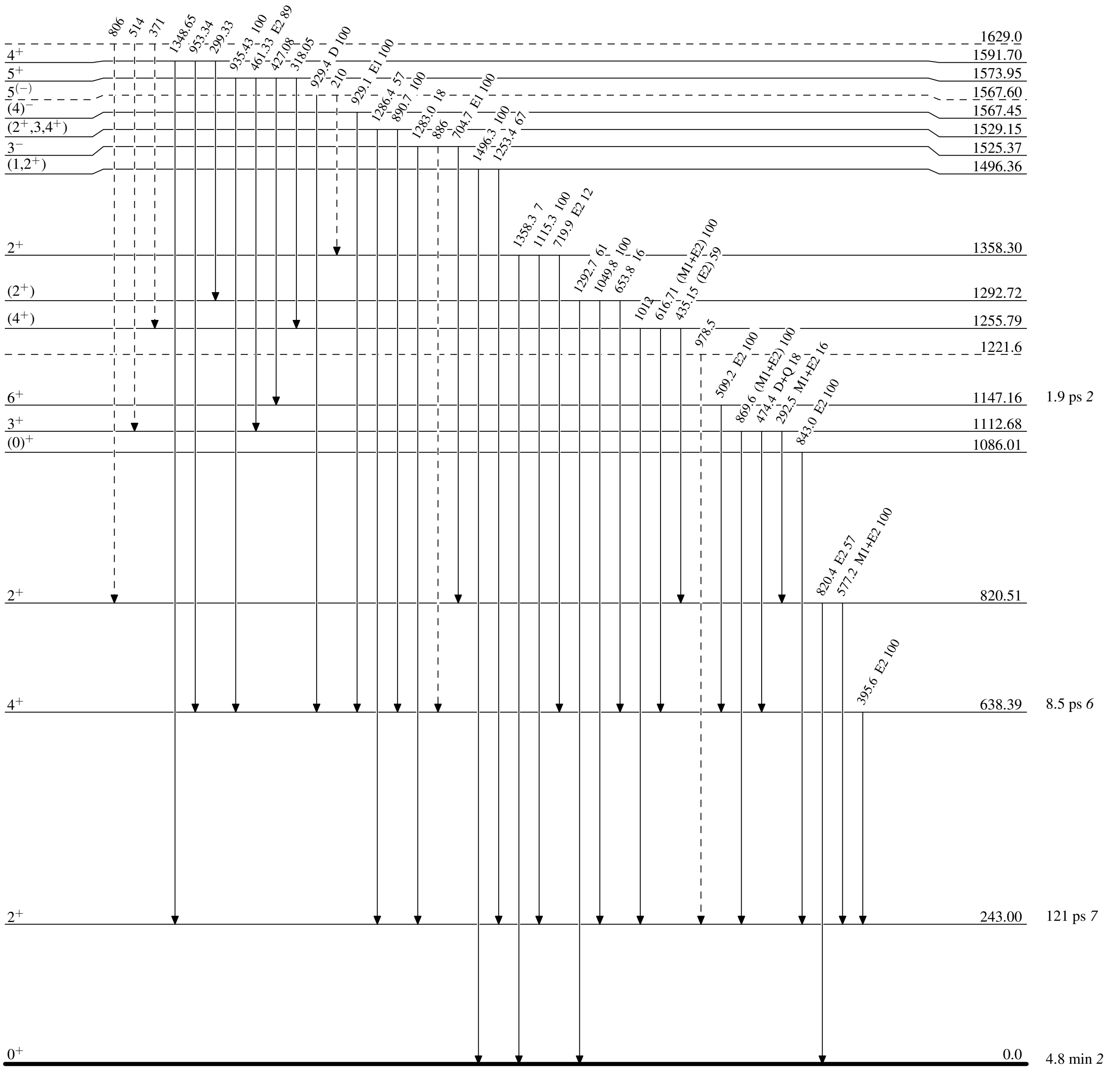
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

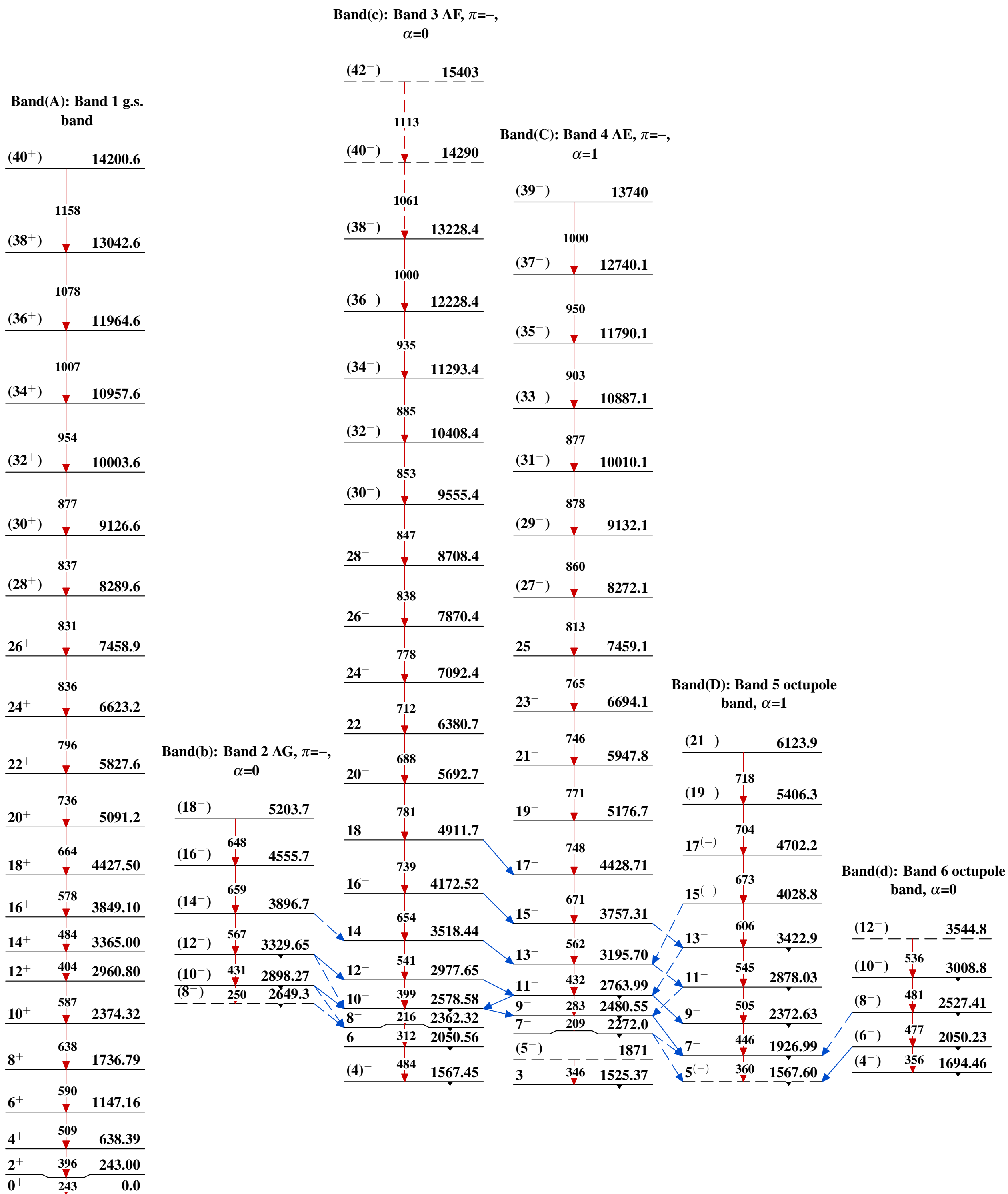
Legend

γ Decay (Uncertain)



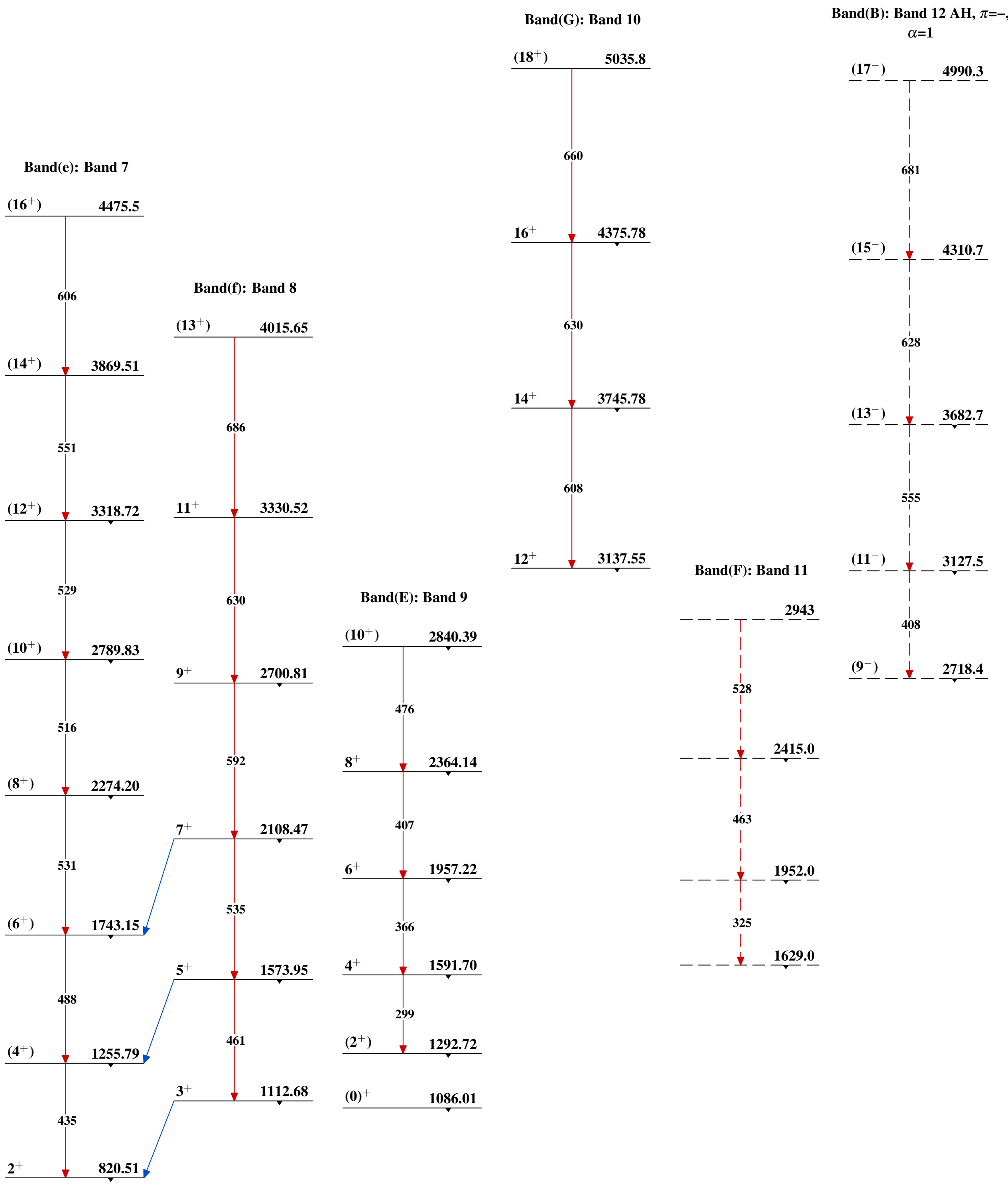
$^{160}_{70}Yb_{90}$

Adopted Levels, Gammas



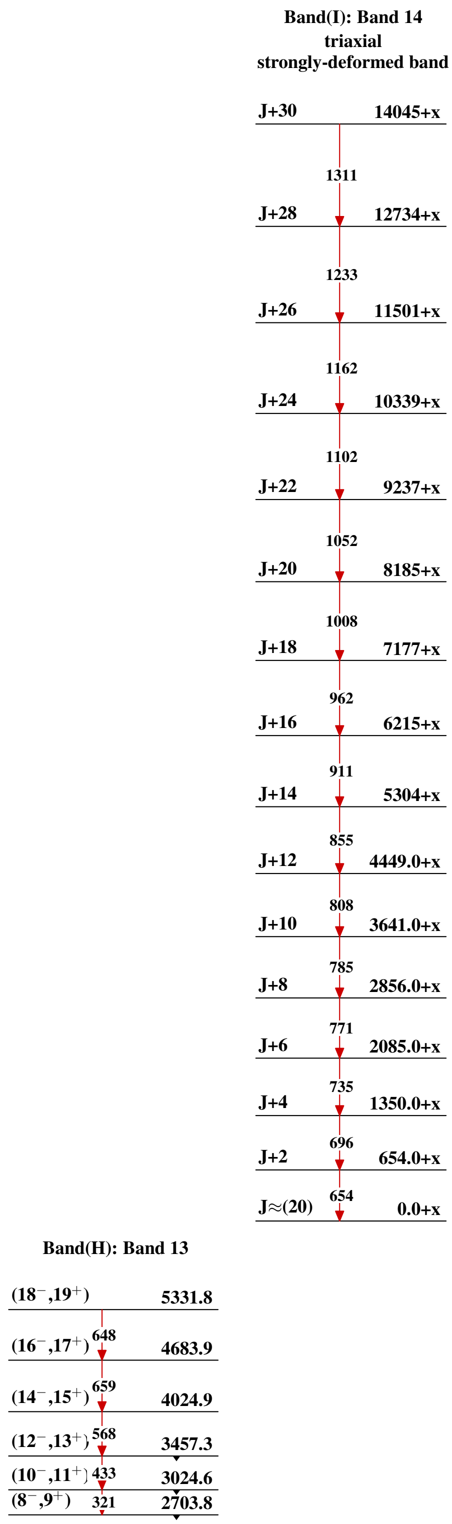
$^{160}_{70}Yb_{90}$

Adopted Levels, Gammas (continued)



$^{160}_{70}Yb_{90}$

Adopted Levels, Gammas (continued)



$^{160}_{70}Yb_{90}$

Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 109,1103 (2008)	1-Mar-2008

Q(β^-)=−5.57×10^3 *3*; S(n)=9.37×10^3 *3*; S(p)=5955 *8*; Q(α)=2313 *7* 2012Wa38
Note: Current evaluation has used the following Q record −5570 30 *9373* 29 *5942* 8 *2329* 8 2003Au03.
For isotope shift data see, e.g., 1989Sp04, 1991Ho27.
Other reactions:

^{124}Sn(^{48}Ca,xnγ), E=205 MeV; ESSA30 Compton-suppressed Ge detector array; investigated rotational damping γ quasicontinuum (1989KhZY).

^{166}Yb Levels

Cross Reference (XREF) Flags

A	^{166}Lu ε decay (2.65 min)	F	^{124}Sn(^{48}Ca,6nγ)
B	^{166}Lu ε decay (1.41 min)	G	^{186}W(n,4p17nγ)
C	^{166}Lu ε decay (2.12 min)	H	^{154}Sm(^{16}O,4nγ),^{159}Tb(^{11}B,4nγ)
D	^{130}Te(^{40}Ar,4nγ)	I	Er(α,xnγ), ^{166}Er(^{3}He,3nγ),
E	^{168}Yb(p,t)		

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$[#]	XREF	Comments
0.0	0$^+$	56.7 h *1*	ABCDEFGHI	%ε=100 T$_{1/2}$: from 1970Ka23 (182γ(t)). Other measurements: 1954Mi16, 1955Ne03, 1957Go40, 1959Ba12, 1960Bu27, 1963Pa08. Assignment: ^{181}Ta(p,4p12n), E(p)=340 MeV, chem, ms, parent ^{166}Tm (1955Ne03); ^{169}Tm(p,4n), E(p)=230 MeV, ion chem, parent ^{166}Tm (1960Bu27). Δ<r^2>(166,176)=+0.577 *17* (1994Ma57, deduced from isotope shift data of 1982Bu21). <r^2>$^{1/2}$(charge)=5.250 *6* (2004An14).
102.37[e] *3*	2$^+$[@]	1.24 ns *6*	ABCDEFGHI	J$^\pi$: stretched E2 102γ to 0$^+$ g.s.
330.48[e] *4*	4$^+$[@]	52.9 ps *17*	ABCDEFGHI	J$^\pi$: stretched E2 228γ to 2$^+$ 102.
667.97[e] *5*	6$^+$[@]	7.8 ps *3*	A D GHI	
932.38[f] *5*	(2)$^+$		B E HI	J$^\pi$: M1 830γ to 2$^+$ 102, 932γ to 0$^+$ g.s., fit to a band.
1039.14[f] *5*	(3)$^+$		AB HI	J$^\pi$: E2 937γ to 2$^+$ 102, (E2) 709γ to 4$^+$ 330, fit to a band.
1043[g] *10*	(0$^+$)		E	E(level): from (p,t). J$^\pi$: L(p,t)=(0).
1098.25[e] *6*	8$^+$[@]	2.14 ps *24*	A D GHI	
1144.29[g] *22*	(2$^+$)		I	J$^\pi$: 1042γ to 2$^+$ 102, 1144γ to 0$^+$ g.s., fit to a band.
1162.74[f] *6*	(4)$^+$		AB I	J$^\pi$: M1+E2 832γ to 4$^+$ 330; 494γ to 6$^+$ 668; 1060γ to 2$^+$ 102.
1315.22 *14*			B	J$^\pi$: 985γ to 4$^+$ 330.
1327.85[f] *5*	(5)$^+$		A D HI	J$^\pi$: M1+E2 997γ to 4$^+$ 330; (E2) 660γ to 6$^+$ 668; E2 289γ to (3)$^+$ 1039; not J=4 from 997γ-228γ(θ) in ^{166}Lu ε decay (2.65 min).
1342.5[g] *3*	(4$^+$)		I	J$^\pi$: γ to 4$^+$, possible γ to 2$^+$, band assignment.
1358.93[h] *7*	1$^-$		C	J$^\pi$: log *ft*=5.3 from J=0 in ^{166}Lu(2.12 min) decay; π from independently-established π=− for band.
1386.05 *11*	(2$^+$,3,4$^+$)		B	J$^\pi$: γ's to 2$^+$ and 4$^+$.
1418.6[h] *3*	(3)$^-$[d]		I	
1451.38 *20*			B	J$^\pi$: gammas to 2$^+$ 102 and (3)$^+$ 1039.
1482.43[f] *6*	(6)$^+$		A I	J$^\pi$: M1 814γ to 6$^+$ 668, 319γ to (4)$^+$ 1163, fit to a band.
1503.37[k] *7*	(2$^-$)[c]		B I	J$^\pi$: γ's to 3$^+$ and 2$^+$, fit to a band.

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Adopted Levels, Gammas (continued)

^{166}Yb Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
1505.40 *7*	$(5)^-$		A I	J^{π}: E1+M2 838γ to 6^+ 668, γ to 4^+.
1529.67 *9*	1^-		C	J^{π}: ^{166}Lu(2.12 min) ε decay from 0^- is allowed.
1570.58[h] *15*	$(5)^-$		A I	J^{π}: γ's to 4^+ and 6^+, fit to a π=$-$ band.
1579.87 *25*	(2^+)		C E	XREF: E(1581). J^{π}: 1578γ to 0^+ g.s., 1249γ to 4^+ 330.
1605.94[e] *16*	10^+[@]	1.0 ps *5*	D GHI	
1607.42 *20*	$(2^+,3,4^+)$		B	J^{π}: γ's to 2^+ and 4^+.
1608.01[g] *11*	6^+		I	J^{π}: 940γ to 6^+ 668 has an E0 component.
1616.78[k] *5*	(4^-)[c]		A D HI	
1684.80 *14*	$(2^+,3,4^+)$		AB	J^{π}: 1582γ to 2^+ 102, 1354γ to 4^+ 330.
1704.54[f] *18*	$(7)^+$		D HI	J^{π}: M1+E2 1037γ to 6^+ 668, fit to a band.
1724.85 *11*	$(6^+,7^+)$		A	J^{π}: 397γ to $(5)^+$ 1328, possible 625γ to 8^+ 1098.
1744.27 *6*	$(3^+,4^+)$		B	J^{π}: 812γ to $(2)^+$ 932, 705γ to $(3)^+$ 1039, (E2) 212γ from $(5,6)^+$ 1957.
1790.33[i] *7*	(5^-)[&]		A D HI	J^{π}: fit to a band, γ's to 4^+ and 6^+.
1812.47[f] *13*	(8^+)[d]		A I	
1818.28 *20*	$(4^+,5,6^+)$		A	J^{π}: 1151γ to 6^+ 668, 1487γ to 4^+ 330.
1833.3[h] *5*	$(7)^-$		A I	J^{π}: E1 1165γ to 6^+ 668, band assignment.
1835.42[k] *20*	(6^-)[c]		D HI	
1852.91[g] *19*	8^+		I	J^{π}: 755γ to 8^+ 1098 has an E0 component.
1865.41[j] *5*	$(6)^-$[a]		A D HI	J^{π}: M1 360γ to $(5)^-$ 1505, (E1) 383γ to $(6)^+$ 1482, band assignment.
1923.1 *4*	$(1,2^+)$		C	J^{π}: 1923γ to 0^+ g.s., 1820γ to 2^+ 102.
1940.90[h] *21*	$(9)^-$		I	J^{π}: E1 843γ to 8^+ 1098, band assignment.
1957.13 *6*	$(5,6)^+$		A H	J^{π}: M1 629γ to $(5)^+$ 1328, $\Delta J \le 1$ 209γ from $J \ge 6$, 2166.
1958.93[i] *7*	7^-[&]		A D HI	J^{π}: E1 861γ to 8^+ 1098, E1 1291γ to 6^+ 668.
2016.35 *22*	$(4^+,5,6^+)$		A	J^{π}: 1482γ to 4^+ 330, possible 534γ to $(6)^+$ 1482.
2029.32 *7*	$(3^-,4^-)$		B	J^{π}: E1 285γ to $(3^+,4^+)$ 1744, 526γ to (2^-) 1503, 1698γ to 4^+ 331.
2030.14[l] *22*	8^+[b]		I	J^{π}: γ to 8^+ has an E0 component.
2072.33[j] *19*	(8^-)[a]		D HI	J^{π}: (E2) 208γ to $(6)^-$ 1865, band assignment.
2098.61 *12*	1^-		C	J^{π}: ^{166}Lu(2.12 min) ε decay from 0^- is allowed (log *ft*=5.3).
2137.13[k] *24*	(8^-)[c]		D HI	
2143.11[f] *23*	$(10)^+$		I	J^{π}: M1 537γ to 10^+ 1606, fit to a band.
2150.32[f] *23*	$(9)^+$		D HI	J^{π}: M1+E2 1053γ to 8^+ 1098, 445γ to $(7)^+$ 1705, fit to a band.
2165.77 *7*	$(6,7)^+$		A	J^{π}: 1067γ to 8^+ 1098, 1497γ to 6^+ 668, M1+E2 209γ to $J \le 6$, π=+ 1957.
2176.02[e] *22*	12^+[@]	0.64 ps *33*	D GHI	
2209.90[i] *24*	$(9)^-$[&]		D HI	J^{π}: E1 1111γ to 8^+ 1098, fit to a band.
2214.89[l] *18*	10^+[b]		I	J^{π}: γ to 10^+ has an E0 component.
2233.36 *6*	$6^-,7^-$	<10 ns	A HI	$T_{1/2}$: from ^{166}Lu ε decay (2.65 min). J^{π}: ^{166}Lu(2.65 min) ε decay from J=6 is allowed (log *ft*=4.7); M1 274γ to 7^- 1959, M1 368γ to $(6)^-$ 1865. Low log *ft* from configuration containing the (ν 5/2[523]) orbital implies the presence of the (π 7/2[523]) orbital in the configuration of this level.
2319.56[g] *25*	(10^+)		I	J^{π}: 713γ to 10^+ 1606, 507γ to (8^+) 1812, band assignment.
2361.45[j] *21*	(10^-)[a]		D HI	
2417.51[i] *24*	$(11)^-$[&]		D HI	
2426.44 *17*	1^-		C	J^{π}: ^{166}Lu(2.12 min) ε decay from 0^- is allowed.
2491.1[k] *3*	(10^-)[c]		D HI	

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Adopted Levels, Gammas (continued)

^{166}Yb Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
2531.3[l] 3	12^{+}[b]		D HI	J^{π}: γ to 12^{+} is M1, fit to a band.
2609.6[f] 3	(12^{+})[d]		I	J^{π}: (M1) 433γ to 12^{+} 2176, 467γ to $(10)^{+}$ 2143, band assignment.
2646.7[f] 4	$(11)^{+}$		HI	J^{π}: stretched E2 intraband 496γ to $(9)^{+}$ 2150.
2728.9[j] 4	(12^{-})[a]		D HI	
2779.5[e] 3	14^{+}[@]	0.51 ps 30	D GHI	
2862.9[i] 3	$(13)^{-}$[&]		D HI	
2891.6[k] 3	(12^{-})[c]		D HI	
2897.9[l] 3	14^{+}[b]		D H	
3166.5[j] 5	(14^{-})[a]		D H	
3196.7[f] 7	(13^{+})[d]		H	J^{π}: stretched Q intraband 550γ to $(11)^{+}$ 2647.
3273.7[l] 3	16^{+}[b]	1.14 ps 27	D HI	
3350.6[k] 5	(14^{-})[c]		D HI	
3354.0[i] 3	(15^{-})[&]		D H	
3490.1[e] 3	16^{+}[@]		D H	
3665.9[j] 5	(16^{-})[a]		D H	
3782.0[l] 4	18^{+}[b]	0.82 ps 10	D HI	
3878.1[k] 7	(16^{-})[c]		D H	
3892.2[i] 4	$(17)^{-}$[&]		D H	
4189.9[e] 4	(18^{+})[@]		D H	
4218.7[j] 5	(18^{-})[a]		D H	
4370.6[l] 4	20^{+}[b]	0.41 ps 3	D HI	
4470.8[k] 9	(18^{-})[c]		D H	
4478.7[i] 4	$(19)^{-}$[&]		D H	
4819.2[j] 6	(20^{-})[a]		D H	
4922.8[e] 4	20^{+}[@]		D	
5036.9[l] 5	22^{+}[b]	0.201 ps 21	D H	
5108.7[i] 5	(21^{-})[&]		D H	
5119.1[k] 10	(20^{-})[c]		D H	
5468.6[j] 6	(22^{-})[a]		D H	
5649.7[e] 7	(22^{+})[@]		D	
5775.5[l] 5	24^{+}[b]	0.125 ps 14	D H	
5782.7[i] 5	(23^{-})[&]		D H	
5814.0[k] 11	(22^{-})[c]		D	
6173.4[j] 7	(24^{-})[a]		D	
6378.1?[e] 10	(24^{+})[@]		D	
6507.6[i] 6	(25^{-})[&]		D	
6551.8[k] 12	(24^{-})[c]		D	
6581.8[l] 6	26^{+}[b]	0.083 ps 7	D	
6940.0[j] 7	(26^{-})[a]		D	
7294.7[i] 6	(27^{-})[&]		D	
7334.6?[k] 15	(26^{-})[c]		D	
7452.0[l] 6	28^{+}[b]	0.069 ps 7	D	
7773.6[j] 7	(28^{-})[a]		D	

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Adopted Levels, Gammas (continued)

^{166}Yb Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
8148.5[i] *8*	(29⁻)[&]		D	
8387.0[l] *6*	30+[b]	0.055 ps *7*	D	
8677.0[j] *9*	(30⁻)[a]		D	
9071.3[i] *9*	(31⁻)[&]		D	
9385.8[l] *8*	32+[b]	0.042 ps *7*	D	
9648.6[j] *10*	(32⁻)[a]		D	
10057.5[i] *11*	(33⁻)[&]		D	
10445.8[l] *10*	34+[b]	0.035 ps *7*	D	
11102?[i] *2*	(35⁻)[&]		D	
11557.8[l] *11*	(36+)[b]		D	Jπ: from probable band assignment.
12186?[i] *2*	(37⁻)[&]		D	
12716?[l] *2*	(38+)[b]		D	Jπ: from probable band assignment.
0.0+x[m]	J		F	Additional information 1.
162.6+x[n] *10*	J+1		F	
334.9+x[m] *13*	J+2		F	
524.9+x[n] *13*	J+3		F	
735.5+x[m] *16*	J+4		F	
966.4+x[n] *16*	J+5		F	
1217.0+x[m] *18*	J+6		F	
1486.2+x[n] *18*	J+7		F	
1772.7+x[m] *18*	J+8		F	
2075.2+x[n] *19*	J+9		F	
2392.6+x[m] *19*	J+10		F	
2722.6+x[n] *20*	J+11		F	
3064.1+x[m] *20*	J+12		F	
3416.6+x[n] *21*	J+13		F	
3778.4+x[m] *21*	J+14		F	
4149.6+x[n] *22*	J+15		F	
4531.2+x[m] *23*	J+16		F	
4921.6+x[n] *24*	J+17		F	

† From least-squares fit to Eγ, assigning 1 keV uncertainty to data for which authors did not state an uncertainty.
‡ Values given without comment are based on band structure deduced in the (α,xnγ), (^{16}O,4nγ) and (^{40}Ar,4nγ) reaction studies and supported in part by transition multipolarities.
# The half-lives of excited states are from (^{40}Ar,4nγ), unless otherwise noted.
@ Based on known J^{π}=0⁺ for the g.s. bandhead, stretched E2 character for the 102γ connecting the J=0 and 2 members and stretched Q character for a number of other intraband transitions, firm J^{π} assignments are adopted for J≤22 members of the g.s. band.
& Based on established J^{π}=7⁻ for the 1959 level and regular progression of Eγ and Iγ for cascade gammas in band, many of which are stretched Q.
a The regularity and the stretched Q character of the cascade transitions populating the (6)⁻ 1865 level justify the classification of this cascade as a band.
b Based on established J^{π}=8⁺ and 10⁺ for the 2030 and 2215 levels, respectively, and E2 character of the 375γ connecting the J=16 and 14 members of the band, firm J^{π} assignments have been adopted for the J=8 through 36 members of this band.
c Tentatively assigned on the basis of systematics (1984Fi18).
d Fit to a band.
e Band(A): K^{π}=0⁺ g.s. band. A=16.99, B=−=0.027.

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Adopted Levels, Gammas (continued)

^{166}Yb Levels (continued)

[f] Band(B): $K^{\pi}=2^{+}$ γ-vibrational band. A=13.86, B=0.021 (even J); A=17.58, B=−0.036 (odd J).
[g] Band(C): $K^{\pi}=0^{+}$ β-vibrational band. A=17 if B=0.
[h] Band(D): $K^{\pi}=(0)^{-}$ band. π=− for band is established by E1 1165γ and 843γ to π=+ g.s. levels.
[i] Band(E): $K^{\pi}=5^{-}$, α=1 band.
[j] Band(F): $K^{\pi}=5^{-}$, α=0 band.
[k] Band(G): $K^{\pi}=(2^{-})$ band.
[l] Band(H): π=+ super band. Becomes yrast for J≥16.
[m] Band(I): ((π 7/2[523])+(π 7/2[404]))(ν $i^2_{13/2}$)? band. Configuration assignment supported by large B(M1)/B(E2) ratios, bandhead energy and crossing frequency arguments (1994Ol04).
[n] Band(i): ((π 7/2[523])+(π 7/2[404]))(ν $i^2_{13/2}$)? band. See comment on signature partner of this band.

$\gamma(^{166}Yb)$

E_i(level)	J^π_i	E_γ[‡]	I_γ[†]	E_f	J^π_f	Mult.[#]	δ	α[g]	Comments
102.37	2^+	102.38[b] *3*	100[b]	0.0	0^+	E2		2.93	B(E2)(W.u.)=191 *10* Mult.: from ce data in ^{166}Lu ε decay (2.65 min).
330.48	4^+	228.12[b] *3*	100[b]	102.37	2^+	E2		0.1743	B(E2)(W.u.)=272 *9* Mult.: from ce data in ^{166}Lu ε decay (2.65 min).
667.97	6^+	337.50[b] *3*	100[b]	330.48	4^+	E2		0.0521	B(E2)(W.u.)=291 *12* Mult.: from α(L)exp in ^{166}Lu ε decay (2.65 min) and α(K)exp and $\gamma(\theta)$ in (α,xnγ).
932.38	$(2)^+$	830.06[c] *9*	100[c] *5*	102.37	2^+	M1		0.01134	
		932.35[c] *7*	78[c] *5*	0.0	0^+				
1039.14	$(3)^+$	708.82[b] *7*	20.0[b] *21*	330.48	4^+	(E2)		0.00774	Other Iγ: 17 *5* in ε decay (1.41 min), 25 in (^{16}O,4nγ), 54 *6* in (α,xnγ).
		936.79[b] *7*	100[b] *4*	102.37	2^+	E2		0.00424	
1098.25	8^+	430.28[b] *3*	100[b]	667.97	6^+	E2[f]		0.0264	B(E2)(W.u.)=3.2×10^2 *4*
1144.29	(2^+)	1042.0[@] *3*	100[@]	102.37	2^+				
		1144.2 *3*		0.0	0^+				E_γ: for doubly-placed transition in (α,xnγ).
1162.74	$(4)^+$	494.2[b] *8*	4[b] *2*	667.97	6^+				
		832.20[b] *8*	100[b] *7*	330.48	4^+	M1+E2	+0.6 *2*	0.0097 *8*	δ: from 832γ-228$\gamma(\theta)$ in ^{166}Lu ε decay (2.65 min); larger δ solution rejected based on measured α(K)exp.
		1060.28[b] *11*	21.8[b] *14*	102.37	2^+				
1315.22		152.49[b] *13*	65[b] *5*	1162.74	$(4)^+$				
		984.6[b] *6*	100[b] *20*	330.48	4^+				
1327.85	$(5)^+$	289.3 *3*	7.9 *8*	1039.14	$(3)^+$	E2		0.0829	E_γ: from (α,xnγ). I_γ: from (α,xnγ). Others: <10.9 in ε decay (2.65 min).
		659.93[b] *5*	20.5[b] *14*	667.97	6^+	(E2)		0.00911	Other Eγ: 659.2 *3* in (α,xnγ). Other Iγ: 30 *3* in (α,xnγ).
		997.38[b] *5*	100[b] *4*	330.48	4^+	M1+E2	−10 *+3−13*	0.00376 *7*	δ: −0.2 *1* or −10 *+3−13* from 997γ-228$\gamma(\theta)$ (2007Mc08) in ^{166}Lu ε decay (2.65 min); α(K)exp=0.0036 *3* in (α,xnγ) rules out the first option.
1342.5	(4^+)	1012.0 *3*		330.48	4^+				E_γ: from (α,xnγ).
		1238.9[i] *3*		102.37	2^+				E_γ: from (α,xnγ).
1358.93	1^-	1256.64[b] *10*	100[b] *10*	102.37	2^+				
		1358.79[b] *10*	88[b] *11*	0.0	0^+				
1386.05	$(2^+,3,4^+)$	345.0[hci] *6*	<14[hc]	1039.14	$(3)^+$				
		1054.7[c] *6*	23[c] *11*	330.48	4^+				
		1283.45[c] *21*	100[c] *20*	102.37	2^+				
1418.6	$(3)^-$	1316.2[@] *3*	100[@]	102.37	2^+				

$^{166}_{70}Yb_{96}$-6

$\gamma(^{166}$Yb) (continued)

E_i(level)	J^π_i	E_γ[‡]	I_γ[†]	E_f	J^π_f	Mult.[#]	δ	α[g]	Comments
1451.38		412.20[c] *20*	100[c] *9*	1039.14	(3)$^+$				
		1349.4[c] *6*	45[c] *18*	102.37	2$^+$				
1482.43	(6)$^+$	318.6[@i] *3*	24.3[@] *24*	1162.74	(4)$^+$				
		814.46 *5*	100 *9*	667.97	6$^+$	M1		0.01189	E_γ: from ε decay (2.65 min). I_γ: from (α,xnγ).
		1151.7[h] *4*	<8.5[h]	330.48	4$^+$				E_γ: weighted average of 1151.1 *4* in ε decay (2.65 min) and 1152.0 *3* in (α,xnγ). I_γ: from ε decay (2.65 min).
1503.37	(2$^-$)	464.29[c] *7*	24[c] *7*	1039.14	(3)$^+$				
		570.93[c] *9*	100[c] *10*	932.38	(2)$^+$				
1505.40	(5)$^-$	837.57[b] *8*	62[b] *4*	667.97	6$^+$	E1+M2	0.31 *+3−4*	0.0044 *6*	
		1174.80[b] *13*	100[b] *9*	330.48	4$^+$				
1529.67	1$^-$	1427.18[d] *14*	100[d] *10*	102.37	2$^+$				
		1529.73[d] *11*	48[d] *3*	0.0	0$^+$				
1570.58	(5)$^-$	901.5[b] *6*	30[b] *12*	667.97	6$^+$				
		1240.05[b] *25*	100[b] *12*	330.48	4$^+$				
1579.87	(2$^+$)	1249.4[d] *8*	56[d] *22*	330.48	4$^+$				
		1477.5[d] *3*	100[d] *17*	102.37	2$^+$				
		1579.4[d] *6*	39[d] *17*	0.0	0$^+$				
1605.94	10$^+$	507.2 *2*	100	1098.25	8$^+$	E2		0.01718	B(E2)(W.u.)=3.1×10^2 *16* Mult.: Q from $\gamma(\theta)$ in (^{16}O,4nγ); not M2 from RUL.
1607.42	(2$^+$,3,4$^+$)	568.5[c] *6*	64[c] *27*	1039.14	(3)$^+$				
		1276.92[c] *22*	100[c] *27*	330.48	4$^+$				
		1504.9[c] *6*	100[c] *27*	102.37	2$^+$				
1608.01	6$^+$	939.5[@] *3*	100[@]	667.97	6$^+$	E0+M1+E2		0.0063 *21*	
1616.78	(4$^-$)	288.87[hb] *5*	<48[hb]	1327.85	(5)$^+$				
		453.86[b] *8*	38.9[b] *25*	1162.74	(4)$^+$				Other Iγ: 55 *5* in (α,xnγ).
		577.70[b] *5*	100[b] *6*	1039.14	(3)$^+$	[E1]		0.00444	
1684.80	(2$^+$,3,4$^+$)	1354.35[b] *15*	100[b] *21*	330.48	4$^+$				
		1582.2[b] *6*	14[b] *7*	102.37	2$^+$				
1704.54	(7)$^+$	376.9[@] *3*	42[@] *4*	1327.85	(5)$^+$				
		1036.6[@] *3*	100[@] *11*	667.97	6$^+$	M1+E2		0.0050 *16*	
1724.85	(6$^+$,7$^+$)	397.02[b] *10*	70.6[b] *20*	1327.85	(5)$^+$				
		625.29[bi] *46*	20[b] *6*	1098.25	8$^+$				
		1056.3[b] *6*	100[b] *22*	667.97	6$^+$				

$^{166}_{70}$Yb$_{96}$-7

Adopted Levels, Gammas (continued)

$\gamma(^{166}Yb)$ (continued)

E_i(level)	J^π_i	E_γ[‡]	I_γ[†]	E_f	J^π_f	Mult.[#]	α[g]	Comments
1744.27	$(3^+,4^+)$	705.08[c] *11*	45[c] *4*	1039.14	$(3)^+$			
		811.92[c] *6*	100[c] *6*	932.38	$(2)^+$			
1790.33	(5^-)	219.4[b] *3*	4.2[b] *5*	1570.58	$(5)^-$			
		1122.38[b] *8*	52[b] *3*	667.97	6^+			
		1459.63[b] *10*	100[b] *5*	330.48	4^+			
1812.47	(8^+)	330.9[hb] *5*	<87[hb]	1482.43	$(6)^+$			
		714.39[b] *15*	100[b] *10*	1098.25	8^+			
		1144.5[b] *5*	80[b] *20*	667.97	6^+			
1818.28	$(4^+,5,6^+)$	490.4[b] *5*	42[b] *12*	1327.85	$(5)^+$			
		1151.1[hb] *4*	42[hb] *12*	667.97	6^+			
		1487.3[b] *4*	100[b] *19*	330.48	4^+			
1833.3	$(7)^-$	735.2[b] *6*	90[b] *30*	1098.25	8^+			
		1165.2[b] *6*	100[b] *40*	667.97	6^+	E1	1.14×10^{-3}	
1835.42	(6^-)	217.9[@] *3*	<4[@]	1616.78	(4^-)			
		507.4[@] *3*	100[@] *10*	1327.85	$(5)^+$			
1852.91	8^+	754.8[@] *3*	100[@] *10*	1098.25	8^+	E0+M1+E2	0.011 *4*	α: based on α(K)exp in (HI,xnγ).
		1184.1[@] *3*	90[@] *10*	667.97	6^+			
1865.41	$(6)^-$	74.92[b] *10*	11.0[b] *15*	1790.33	(5^-)	M1,E2	8.9 *12*	Mult.: from α(exp) in ^{166}Lu ε decay (2.65 min).
		248.53[b] *7*	59[b] *3*	1616.78	(4^-)	(E2)	0.1324	Mult.: from α(K)exp in ^{166}Lu ε decay (2.65 min).
		294.8[b] *3*	4.5[b] *10*	1570.58	$(5)^-$			
		360.09[b] *7*	44[b] *4*	1505.40	$(5)^-$	M1	0.0966	Mult.: from α(K)exp in ^{166}Lu ε decay (2.65 min).
		382.97[b] *4*	37.5[b] *25*	1482.43	$(6)^+$	(E1)	0.01110	Mult.: from α(K)exp in ^{166}Lu ε decay (2.65 min).
		537.64[b] *4*	100[b] *4*	1327.85	$(5)^+$	(E1)	0.00518	Mult.: D from $\gamma(\theta)$ in (^{16}O,4nγ) from α(K)exp in ^{166}Lu ε decay (2.65 min).
		1197.2[b] *3*	7.0[b] *10*	667.97	6^+			
1923.1	$(1,2^+)$	1820.4[b] *6*	38[b] *19*	102.37	2^+			
		1923.2[b] *4*	100[b] *13*	0.0	0^+			
1940.90	$(9)^-$	843.3[@] *3*	100[@]	1098.25	8^+	E1	0.00207	
1957.13	$(5,6)^+$	139.0[b] *3*	5.9[b] *18*	1818.28	$(4^+,5,6^+)$			
		166.6[b]	[b]	1790.33	(5^-)			
		212.4[b] *3*	16.4[b] *18*	1744.27	$(3^+,4^+)$	(E2)	0.220	Mult.: from ^{166}Lu ε decay (2.65 min).
		272.2[b] *5*	23[b] *3*	1684.80	$(2^+,3,4^+)$			
		386.7[b] *6*	4.1[b] *18*	1570.58	$(5)^-$			

$^{166}_{70}Yb_{96}$-8

Adopted Levels, Gammas (continued)

$\gamma(^{166}Yb)$ (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[†]	E_f	J_f^π	Mult.[#]	α[g]	Comments
1957.13	$(5,6)^+$	474.74[b] *6*	39.2[b] *23*	1482.43	$(6)^+$			
		629.32[b] *7*	100[b] *6*	1327.85	$(5)^+$	M1	0.0227	Mult.: from α(K)exp in ^{166}Lu ε decay (2.65 min).
		794.41[b] *5*	43[b] *3*	1162.74	$(4)^+$			
		1626.6[b] *3*	13.5[b] *23*	330.48	4^+			
1958.93	7^-	93.2[b] *5*	2.1[b] *4*	1865.41	$(6)^-$	[M1,E2]	4.17 *11*	
		860.56[b] *11*	33.5[b] *21*	1098.25	8^+	E1+(M2)	0.014 *13*	Other Iγ: 98 *10* in (α,xnγ).
		1290.71[b] *20*	100[b] *7*	667.97	6^+	E1	1.01×10^{-3}	Mult.: from α(K)exp in (α,xnγ) and $\gamma(\theta)$ in (^{16}O,4nγ).
2016.35	$(4^+,5,6^+)$	330.9[hi] *5*	<100[h]	1684.80	$(2^+,3,4^+)$			
		445.8[b] *4*	41[b] *16*	1570.58	$(5)^-$			
		534.2[bi] *6*	100[b] *31*	1482.43	$(6)^+$			
		1685.85[b] *25*	92[b] *15*	330.48	4^+			
2029.32	$(3^-,4^-)$	285.07[c] *5*	100[c] *5*	1744.27	$(3^+,4^+)$	E1	0.0226	Mult.: from α(K)exp in ε decay (1.41 min).
		345.0[hc] *6*	<5[hc]	1684.80	$(2^+,3,4^+)$			
		421.26[c] *9*	19[c] *1*	1607.42	$(2^+,3,4^+)$			
		526.01[c] *10*	27[c] *3*	1503.37	(2^-)			
		643.2[c] *1*	32[c] *3*	1386.05	$(2^+,3,4^+)$			
		866.4[c] *4*	11[c] *2*	1162.74	$(4)^+$			
		1698.7[c] *4*	12[c] *3*	330.48	4^+			
2030.14	8^+	547.5[@] *3*	<14[@]	1482.43	$(6)^+$			
		932.1[@] *3*	100[@] *10*	1098.25	8^+	E0+M1	0.116 *12*	α: from α(K)exp in (α,xnγ).
2072.33	(8^-)	112.9 *3*	10 *5*	1958.93	7^-			Iγ: from (^{40}Ar,4nγ).
		207.6 *3*	100 *50*	1865.41	$(6)^-$	(E2)	0.237	Other Eγ: 206.0 *5* in (^{16}O,4nγ) and (^{40}Ar,4nγ). Iγ: from (^{40}Ar,4nγ).
2098.61	1^-	518.0[b] *8*	7[b] *3*	1579.87	(2^+)			
		1996.25[b] *15*	21[b] *6*	102.37	2^+			
		2098.6[b] *2*	100[b] *12*	0.0	0^+			
2137.13	(8^-)	300.8[@] *3*	100[@] *11*	1835.42	(6^-)	(E2)	0.0733	Mult.: Q intraband γ in (^{16}O,4nγ).
		433.2[@] *3*	<22[@]	1704.54	$(7)^+$			
2143.11	$(10)^+$	331.0[h@] *3*	<110[h@]	1812.47	(8^+)			
		537.2[@] *3*	100[@] *10*	1605.94	10^+	M1	0.0340	
2150.32	$(9)^+$	445.4[@] *3*	<207[@]	1704.54	$(7)^+$	[E2]	0.0241	
		1052.5[@] *3*	100[@] *10*	1098.25	8^+	E2+M1	0.00334	Mult.: D+Q from $\gamma(\theta)$ in (^{16}O,4nγ); α(K)exp in (α,4nγ).

$^{166}_{70}Yb_{96}$-9

Adopted Levels, Gammas (continued)

γ(^{166}Yb) (continued)

E_i(level)	J^π_i	E_γ[‡]	I_γ[†]	E_f	J^π_f	Mult.[#]	δ	α[g]	Comments
2165.77	$(6,7)^+$	208.65[b] *10*	100[b] *10*	1957.13	$(5,6)^+$	M1+E2	0.9 *4*	0.34 *5*	Mult.: from ^{166}Lu ε decay (2.65 min).
		1067.34[b] *20*	68[b] *9*	1098.25	8^+				
		1497.33[b] *23*	20[b] *4*	667.97	6^+				
2176.02	12^+	570.6[@] *3*	100[@]	1605.94	10^+	E2[f]		0.01290	B(E2)(W.u.)=2.7×10^2 *14* Other Eγ: 569.4 *2* in (^{40}Ar,4nγ), 569.7 *2* in (^{16}O,4nγ).
2209.90	$(9)^-$	1111.4[@] *3*	100[@]	1098.25	8^+	E1		1.24×10^{-3}	
2214.89	10^+	361.3[@] *3*	<45[@]	1852.91	8^+				
		402.7[@] *3*	<45[@]	1812.47	(8^+)				
		608.9[@] *3*	77[@] *8*	1605.94	10^+	E0+M1+E2		0.052 *26*	α: based on α(K)exp in (α,xnγ).
		1117.1[@] *3*	100[@] *10*	1098.25	8^+				
2233.36	$6^-,7^-$	67.57[b] *4*	12.7[b] *13*	2165.77	$(6,7)^+$	E1		0.943	B(E1)(W.u.)>4.2×10^{-6} Mult.: from ^{166}Lu ε decay (2.65 min).
		274.41[b] *4*	31.8[b] *20*	1958.93	7^-	M1		0.200	B(M1)(W.u.)>1.5×10^{-5} Mult.: from ^{166}Lu ε decay (2.65 min).
		276.28[b] *4*	43.6[b] *26*	1957.13	$(5,6)^+$	(E1)		0.0244	B(E1)(W.u.)>2.1×10^{-7} Mult.: from ^{166}Lu ε decay (2.65 min).
		367.95[b] *3*	100[b] *3*	1865.41	$(6)^-$	M1		0.0913	B(M1)(W.u.)>2.0×10^{-5} Mult.: from ^{166}Lu ε decay (2.65 min).
		442.87[b] *20*	1.7[b] *4*	1790.33	(5^-)				
2319.56	(10^+)	507.4[h] *3*	[h]	1812.47	(8^+)				Eγ: from (α,xnγ).
		713.3 *3*		1605.94	10^+				Eγ: from (α,xnγ).
2361.45	(10^-)	151.3[@] *3*	59[@] *6*	2209.90	$(9)^-$				Iγ: see comment on 289.2γ.
		289.2[@] *2*	100[@] *6*	2072.33	(8^-)	(E2)		0.0831	Mult.: Q from DCO ratio in (^{40}Ar,4nγ) for intraband γ. However, γ may Be a doublet in this reaction based on I(289γ)/I(151γ)=8 *4* cf. adopted value of 1.7 *2*.
		420.6[@] *3*	94[@] *9*	1940.90	$(9)^-$				
2417.51	$(11)^-$	477.2[@] *3*	<34[@]	1940.90	$(9)^-$				
		811.0[@] *3*	100[@] *10*	1605.94	10^+	(E1)		0.00223	Mult.: D from γ(θ) in (^{16}O,4nγ), Δπ=(yes) from level scheme.
2426.44	1^-	1067.32[d] *20*	60[d] *10*	1358.93	1^-				
		2324.6[d] *3*	100[d] *8*	102.37	2^+				
		2425.9[d] *6*	6[d] *3*	0.0	0^+				
2491.1	(10^-)	341.0 *5*		2150.32	$(9)^+$				Eγ: from (^{16}O,4nγ). Iγ: weak γ in (^{16}O,4nγ).

$^{166}_{70}$Yb$_{96}$-10

$\gamma(^{166}Yb)$ (continued)

E_i(level)	J^π_i	E_γ[‡]	I_γ[†]	E_f	J^π_f	Mult.[#]	α[g]	Comments
2491.1	(10^-)	353.7 *3*	100	2137.13	(8^-)	(E2)	0.0455	E_γ: from (α,xnγ). Mult.: Q intraband γ from $\gamma(\theta)$ in (^{16}O,4nγ).
2531.3	12^+	355.8[@] *3*	65[@] *7*	2176.02	12^+	M1	0.0998	
		924.7[@] *3*	100[@] *10*	1605.94	10^+			
2609.6	(12^+)	433.2[@] *3*	<200[@]	2176.02	12^+	(M1)	0.0594	
		466.9[@] *3*	100[@] *10*	2143.11	$(10)^+$			
2646.7	$(11)^+$	496.4[@] *3*	100[@]	2150.32	$(9)^+$	E2	0.0182	
2728.9	(12^-)	367.5[@] *3*	100[@]	2361.45	(10^-)	(E2)	0.0409	Mult.: Q intraband γ from DCO ratio in (^{40}Ar,4nγ).
2779.5	14^+	603.6[@] *2*	100[@]	2176.02	12^+	E2[f]	0.01122	B(E2)(W.u.)=2.5×10^2 *15*
2862.9	$(13)^-$	445.4[@] *3*	72[@] *8*	2417.51	$(11)^-$	(E2)	0.0240	Mult.: Q intraband γ from DCO ratio in (^{40}Ar,4nγ).
		686.3[@] *3*	100[@] *10*	2176.02	12^+	E1	0.00310	
2891.6	(12^-)	400.2[@] *3*	100[@] *11*	2491.1	(10^-)	(E2)	0.0322	
		715.8[@] *3*	<36[@]	2176.02	12^+			
2897.9	14^+	366.0 *5*	9 *5*	2531.3	12^+	(E2)	0.0413	Mult.: Q from DCO ratio in (^{40}Ar.4nγ) for intraband γ.
		722.1 *2*	100 *10*	2176.02	12^+	(E2)	0.00742	Mult.: Q from DCO ratio in (^{40}Ar.4nγ), $\Delta\pi$=no from level scheme.
3166.5	(14^-)	437.6 *2*	100	2728.9	(12^-)	(E2)	0.0252	Mult.: Q intraband γ from DCO in (^{40}Ar,4nγ) and from $\gamma(\theta)$ in (^{16}O,4nγ).
3196.7	(13^+)	550.0[a] *5*	100[a]	2646.7	$(11)^+$	(E2)	0.01405	Mult.: from $\gamma(\theta)$ in (^{16}O,4nγ) for intraband γ.
3273.7	16^+	375.8 *2*	22.6 *23*	2897.9	14^+	E2[f]	0.0383	B(E2)(W.u.)=2.2×10^2 *6*
		494.3 *2*	100 *10*	2779.5	14^+	E2[f]	0.0184	B(E2)(W.u.)=2.5×10^2 *7*
3350.6	(14^-)	459.0[@] *3*	100[@]	2891.6	(12^-)	(E2)	0.0222	Mult.: Q from $\gamma(\theta)$ in (^{16}O,4nγ) for intraband γ.
3354.0	(15^-)	490.8 *2*	100 *10*	2862.9	$(13)^-$	(E2)[e]	0.0187	
		575.1 *5*	32 *16*	2779.5	14^+	D		Mult.: from $\gamma(\theta)$ in (^{16}O,4nγ).
3490.1	16^+	592.5 *2*	63 *6*	2897.9	14^+			
		710.5 *2*	100 *10*	2779.5	14^+	(E2)[e]	0.00770	
3665.9	(16^-)	499.4 *2*	100	3166.5	(14^-)	(E2)[e]	0.0179	
3782.0	18^+	508.3 *2*	100	3273.7	16^+	[E2]	0.01711	B(E2)(W.u.)=3.7×10^2 *5*
3878.1	(16^-)	527.5[a] *5*	100[a]	3350.6	(14^-)	(E2)[e]	0.01557	
3892.2	$(17)^-$	403.0[a] *5*	49[a]	3490.1	16^+			I_γ: for possible doublet.
		538.1 *2*	100	3354.0	(15^-)	(E2)[e]	0.01483	I_γ: from (^{16}O,4nγ).
4189.9	(18^+)	699.8 *2*	100	3490.1	16^+	(E2)[e]	0.00797	
4218.7	(18^-)	552.8 *2*	100	3665.9	(16^-)	(E2)[e]	0.01388	
4370.6	20^+	588.5 *2*	100	3782.0	18^+	E2[f]	0.01192	B(E2)(W.u.)=3.6×10^2 *3*
4470.8	(18^-)	592.7 *5*	100	3878.1	(16^-)	[E2]	0.01172	
4478.7	$(19)^-$	586.5 *2*	100	3892.2	$(17)^-$	(E2)[e]	0.01202	
4819.2	(20^-)	600.4 *2*	100	4218.7	(18^-)	(E2)[e]	0.01137	
4922.8	20^+	732.9 *2*	100	4189.9	(18^+)	(E2)[e]	0.00718	

$^{166}_{70}$Yb$_{96}$-11

$\gamma(^{166}$Yb) (continued)

E_i(level)	J^π_i	E_γ[‡]	I_γ[†]	E_f	J^π_f	Mult.[#]	α[g]	Comments
5036.9	22^+	666.3 2	100	4370.6	20^+	E2[f]	0.00891	B(E2)(W.u.)=3.9×10^2 4
5108.7	(21^-)	630.0 2	100	4478.7	$(19)^-$	(E2)[e]	0.01015	
5119.1	(20^-)	648.3 5	100	4470.8	(18^-)			
5468.6	(22^-)	649.4 2	100	4819.2	(20^-)	(E2)[f]	0.00945	
5649.7	(22^+)	726.9 5	100	4922.8	20^+	(E2)[e]	0.00731	
5775.5	24^+	738.6 2	100	5036.9	22^+	[E2]	0.00706	B(E2)(W.u.)=3.8×10^2 5
5782.7	(23^-)	674.0 2	100	5108.7	(21^-)	(E2)[e]	0.00868	
5814.0	(22^-)	694.9 5	100	5119.1	(20^-)			
6173.4	(24^-)	704.8 2	100	5468.6	(22^-)	(E2)[e]	0.00784	
6378.1?	(24^+)	728.5[i] 5	100	5649.7	(22^+)	(E2)[e]	0.00728	
6507.6	(25^-)	724.9 2	100	5782.7	(23^-)	[E2]	0.00736	
6551.8	(24^-)	737.8 5	100	5814.0	(22^-)			
6581.8	26^+	806.3 2	100	5775.5	24^+	E2[f]	0.00583	B(E2)(W.u.)=3.7×10^2 3
6940.0	(26^-)	766.6 2	100	6173.4	(24^-)	(E2)[e]	0.00650	
7294.7	(27^-)	787.1 2	100	6507.6	(25^-)	(E2)[e]	0.00614	
7334.6?	(26^-)	783.0[i] 5	100	6551.8	(24^-)			
7452.0	28^+	870.2 2	100	6581.8	26^+	[E2]	0.00495	B(E2)(W.u.)=3.0×10^2 3
7773.6	(28^-)	833.6 2	100	6940.0	(26^-)	(E2)[e]	0.00542	
8148.5	(29^-)	853.8 5	100	7294.7	(27^-)	(E2)[e]	0.00515	
8387.0	30^+	935.0 2	100	7452.0	28^+	E2[f]	0.00426	B(E2)(W.u.)=2.6×10^2 4
8677.0	(30^-)	903.4 5	100	7773.6	(28^-)	(E2)[e]	0.00457	
9071.3	(31^-)	922.8 5	100	8148.5	(29^-)	[E2]	0.00438	
9385.8	32^+	998.8 5	100	8387.0	30^+	(E2)[e]	0.00372	B(E2)(W.u.)=2.5×10^2 5
9648.6	(32^-)	971.6 5	100	8677.0	(30^-)	(E2)[e]	0.00393	
10057.5	(33^-)	986.2 5	100	9071.3	(31^-)	(E2)[e]	0.00381	
10445.8	34^+	1060.0 5	100	9385.8	32^+	[E2]	0.00329	B(E2)(W.u.)=2.2×10^2 5
11102?	(35^-)	1045.0[i] 5	100	10057.5	(33^-)			
11557.8	(36^+)	1112.0 5	100	10445.8	34^+			
12186?	(37^-)	1084.0[i] 5	100	11102?	(35^-)			
12716?	(38^+)	1158.0[i] 5	100	11557.8	(36^+)			
162.6+x	J+1	162.6[&]	100	0.0+x	J			
334.9+x	J+2	172.3[&]	100	162.6+x	J+1			
524.9+x	J+3	190.0[&]		334.9+x	J+2			
		362.3[&]		162.6+x	J+1			
735.5+x	J+4	210.6[&]		524.9+x	J+3			
		400.6[&i]		334.9+x	J+2			
966.4+x	J+5	230.9[&]		735.5+x	J+4			

$^{166}_{70}$Yb$_{96}$-12

Adopted Levels, Gammas (continued)

$\gamma(^{166}Yb)$ (continued)

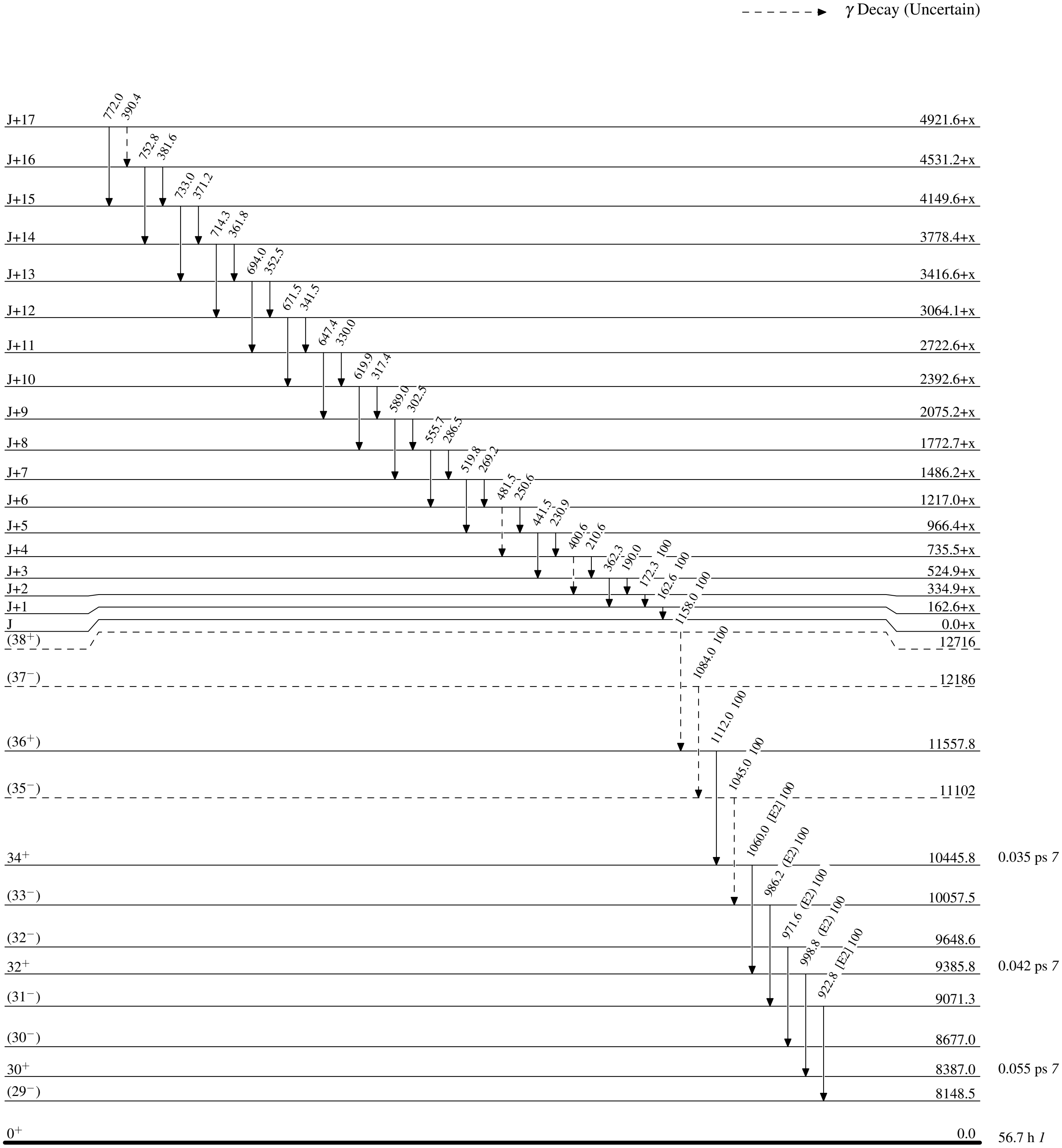
E_i(level)	J_i^π	E_γ‡	E_f	J_f^π	E_i(level)	J_i^π	E_γ‡	E_f	J_f^π	E_i(level)	J_i^π	E_γ‡	E_f	J_f^π
966.4+x	J+5	441.5&	524.9+x	J+3	2392.6+x	J+10	317.4&	2075.2+x	J+9	3778.4+x	J+14	714.3&	3064.1+x	J+12
1217.0+x	J+6	250.6&	966.4+x	J+5			619.9&	1772.7+x	J+8	4149.6+x	J+15	371.2&	3778.4+x	J+14
		481.5&i	735.5+x	J+4	2722.6+x	J+11	330.0&	2392.6+x	J+10			733.0&	3416.6+x	J+13
1486.2+x	J+7	269.2&	1217.0+x	J+6			647.4&	2075.2+x	J+9	4531.2+x	J+16	381.6&	4149.6+x	J+15
		519.8&	966.4+x	J+5	3064.1+x	J+12	341.5&	2722.6+x	J+11			752.8&	3778.4+x	J+14
1772.7+x	J+8	286.5&	1486.2+x	J+7			671.5&	2392.6+x	J+10	4921.6+x	J+17	390.4&i	4531.2+x	J+16
		555.7&	1217.0+x	J+6	3416.6+x	J+13	352.5&	3064.1+x	J+12			772.0&	4149.6+x	J+15
2075.2+x	J+9	302.5&	1772.7+x	J+8			694.0&	2722.6+x	J+11					
		589.0&	1486.2+x	J+7	3778.4+x	J+14	361.8&	3416.6+x	J+13					

† Relative photon intensity normalized to 100 at strongest photon deexciting each level. From (^{40}Ar,4nγ), except as noted.
‡ From ^{130}Te(^{40}Ar,4nγ), unless otherwise noted.
# From α(K)exp in (α,xnγ), except as noted.
@ From Er(α,xnγ).
& From ^{124}Sn(^{48}Ca,6nγ).
^{a} From ^{154}Sm(^{16}O,4nγ).
^{b} From ^{166}Lu ε decay (2.65 min) (1974De09).
^{c} From ^{166}Lu ε decay (1.41 min) (1974De09).
^{d} From ^{166}Lu ε decay (2.12 min) (1974De09).
^{e} Q from $\gamma(\theta)$ in (^{16}O,4nγ) and/or from DCO ratio in (^{40}Ar,4nγ) for intraband transition.
^{f} Q from DCO ratio in (^{40}Ar,4nγ); not M2 from RUL.
^{g} 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.
^{h} Multiply placed with undivided intensity.
^{i} Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

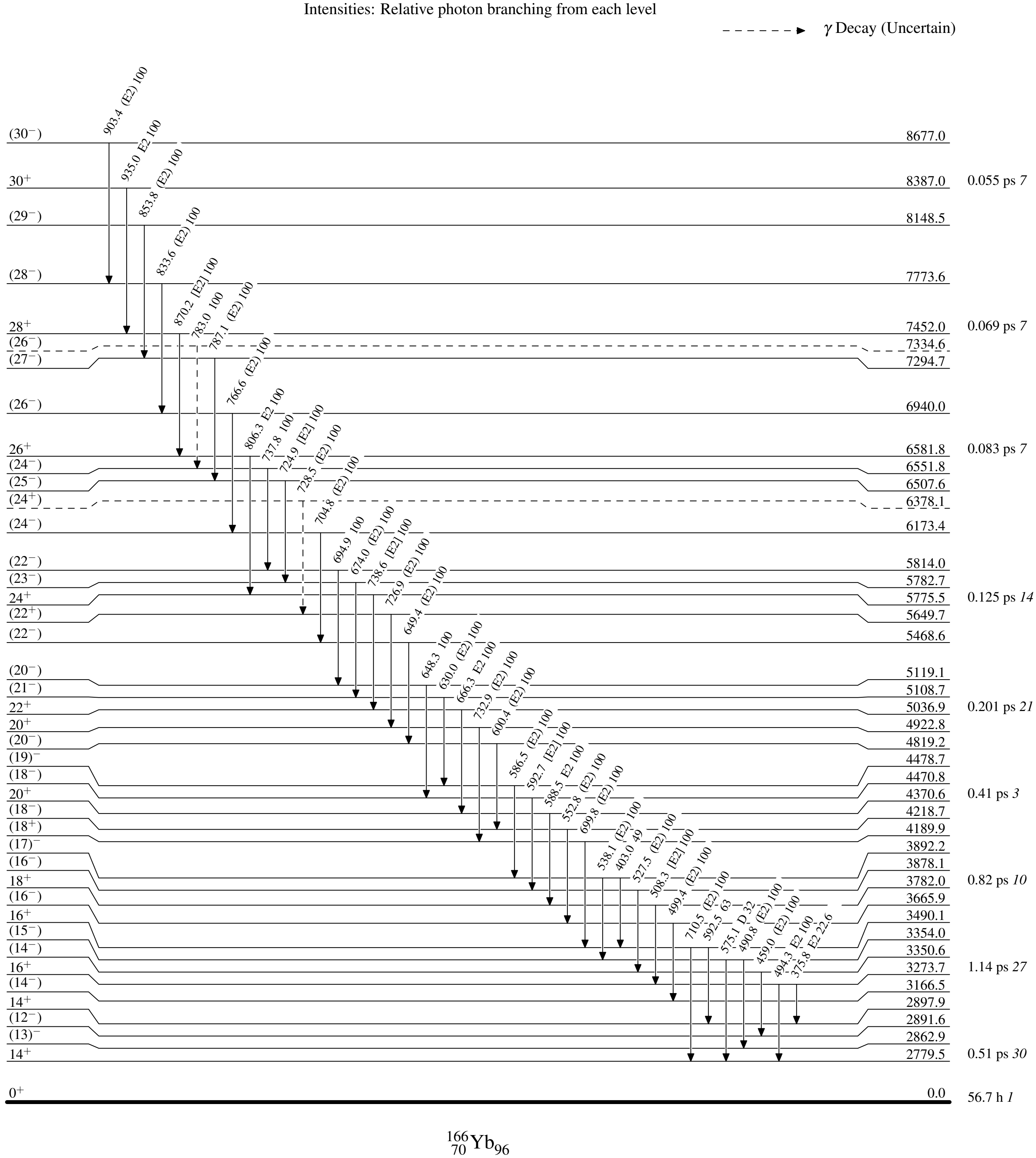


$^{166}_{70}Yb_{96}$

Adopted Levels, Gammas

Level Scheme (continued)

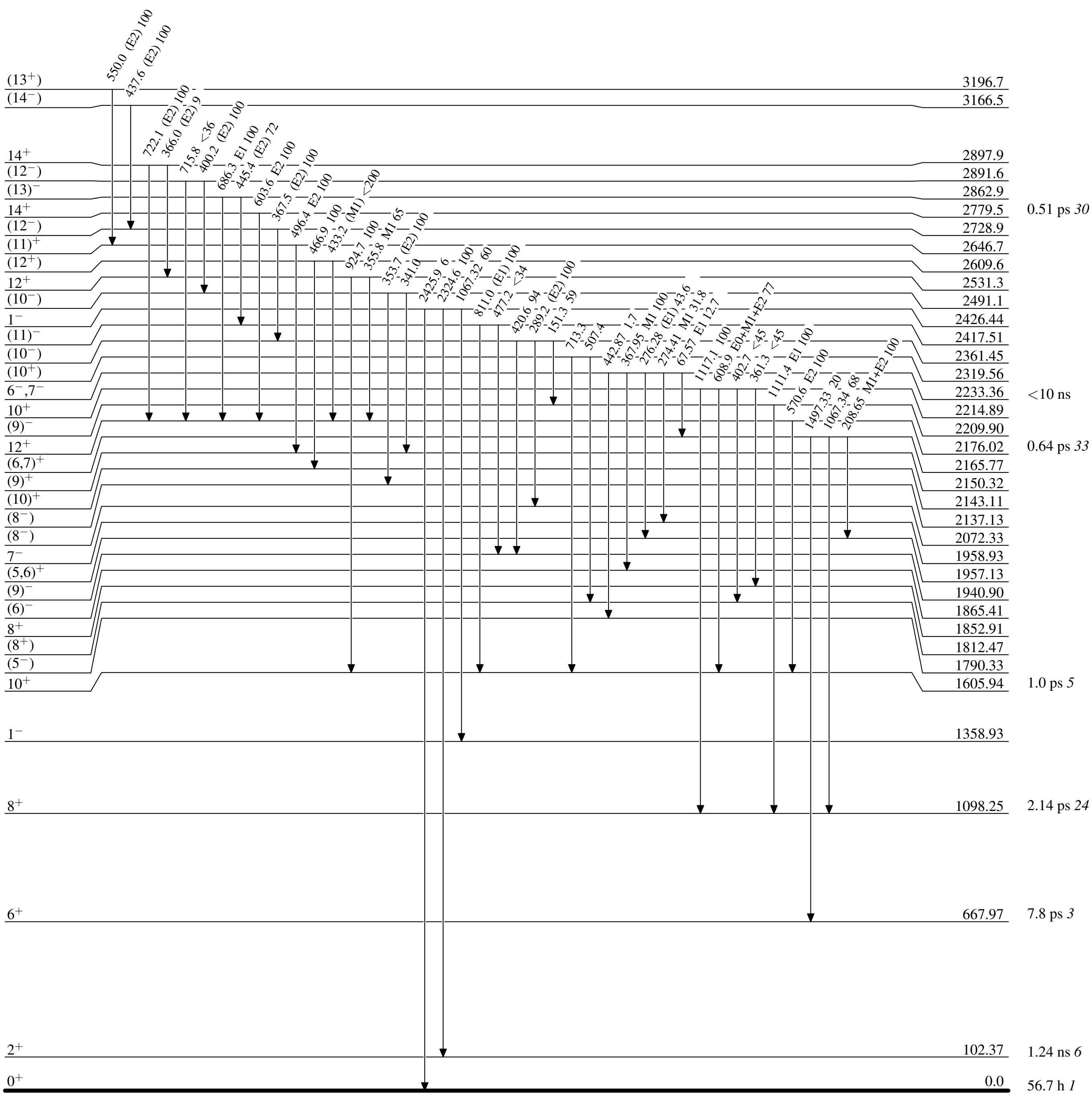
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{166}_{70}Yb_{96}$

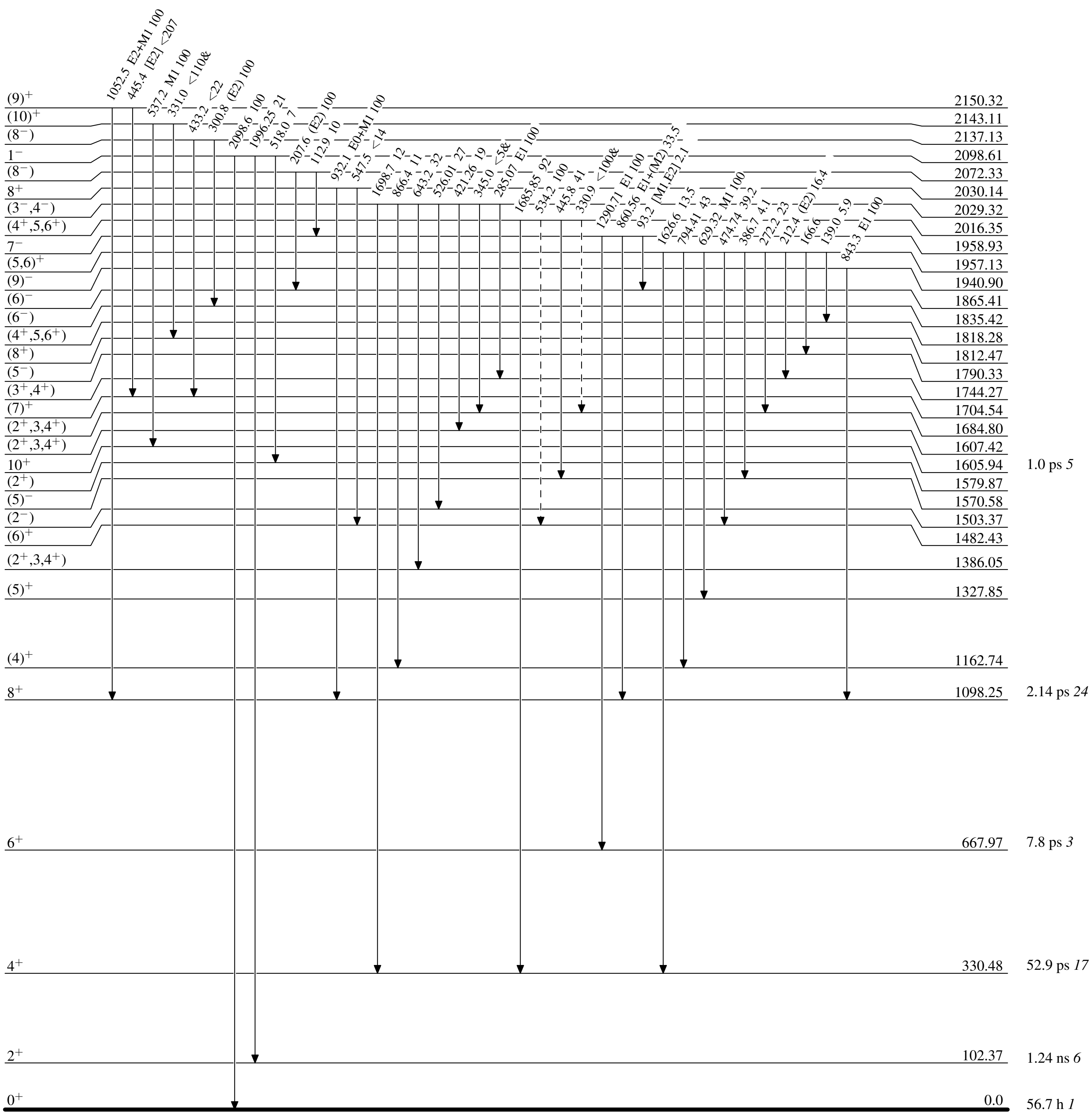
Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

γ Decay (Uncertain)

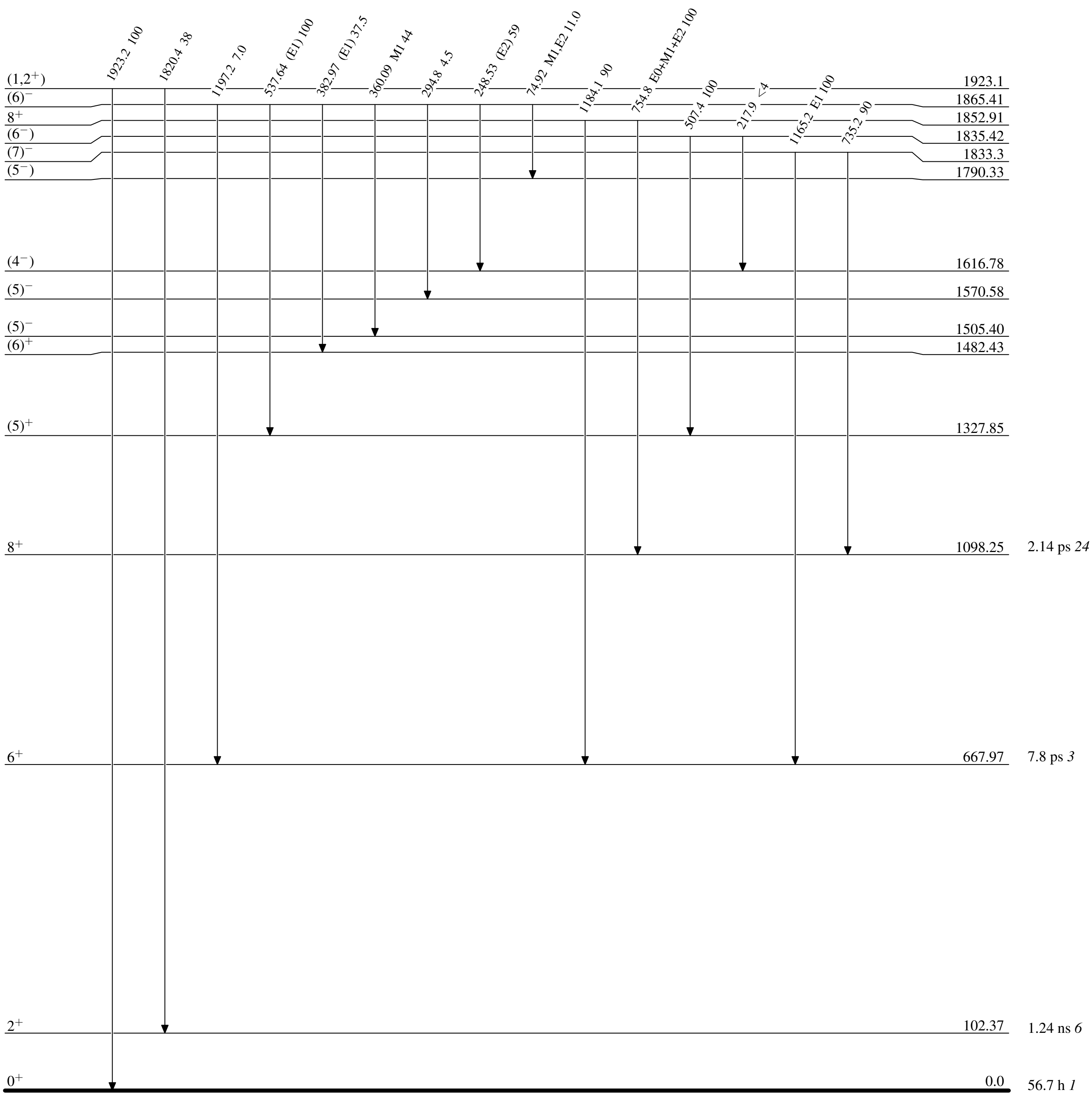


$^{166}_{70}Yb_{96}$

Adopted Levels, Gammas

Level Scheme (continued)

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

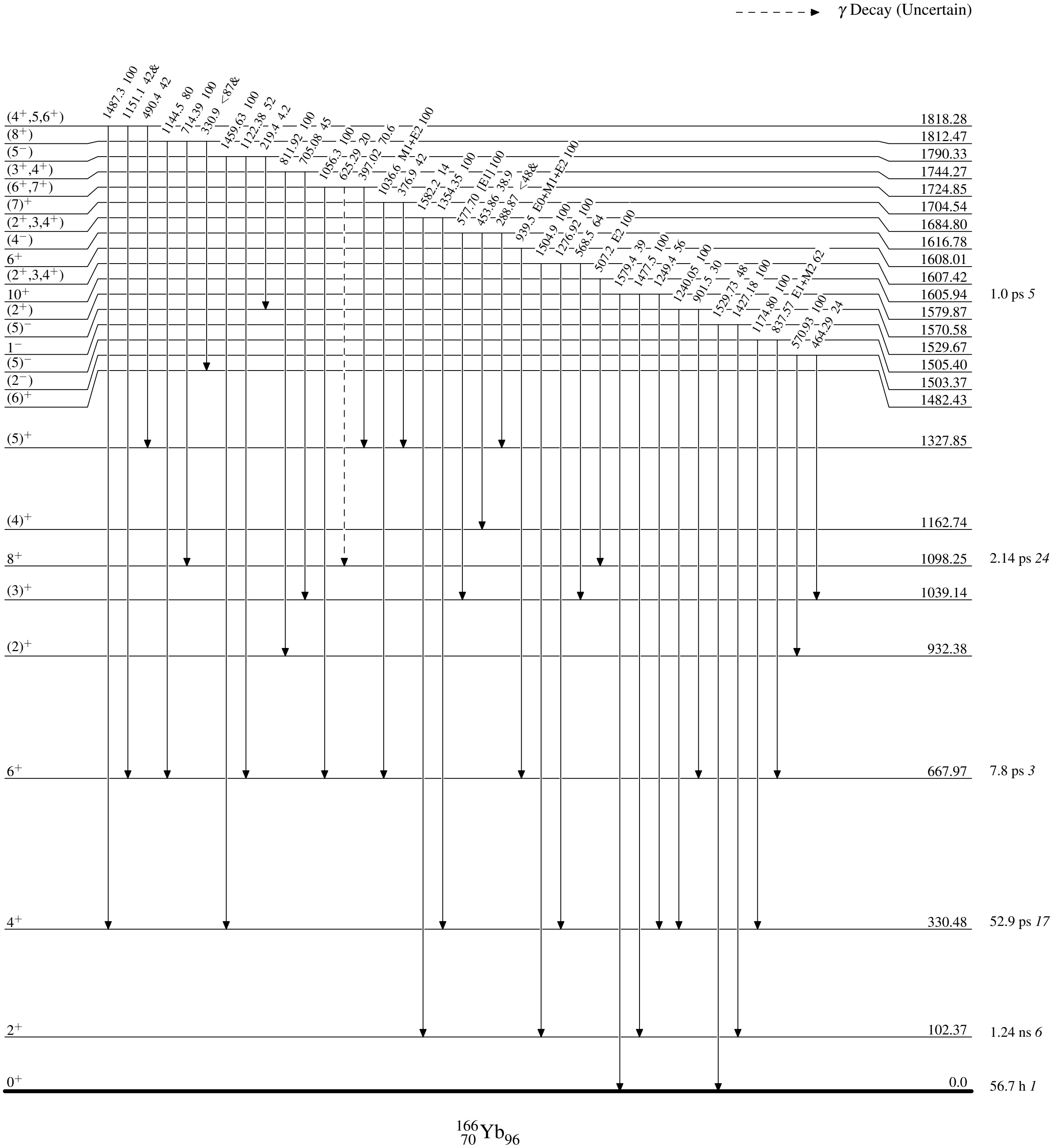


$^{166}_{70}Yb_{96}$

Adopted Levels, Gammas

Level Scheme (continued)

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

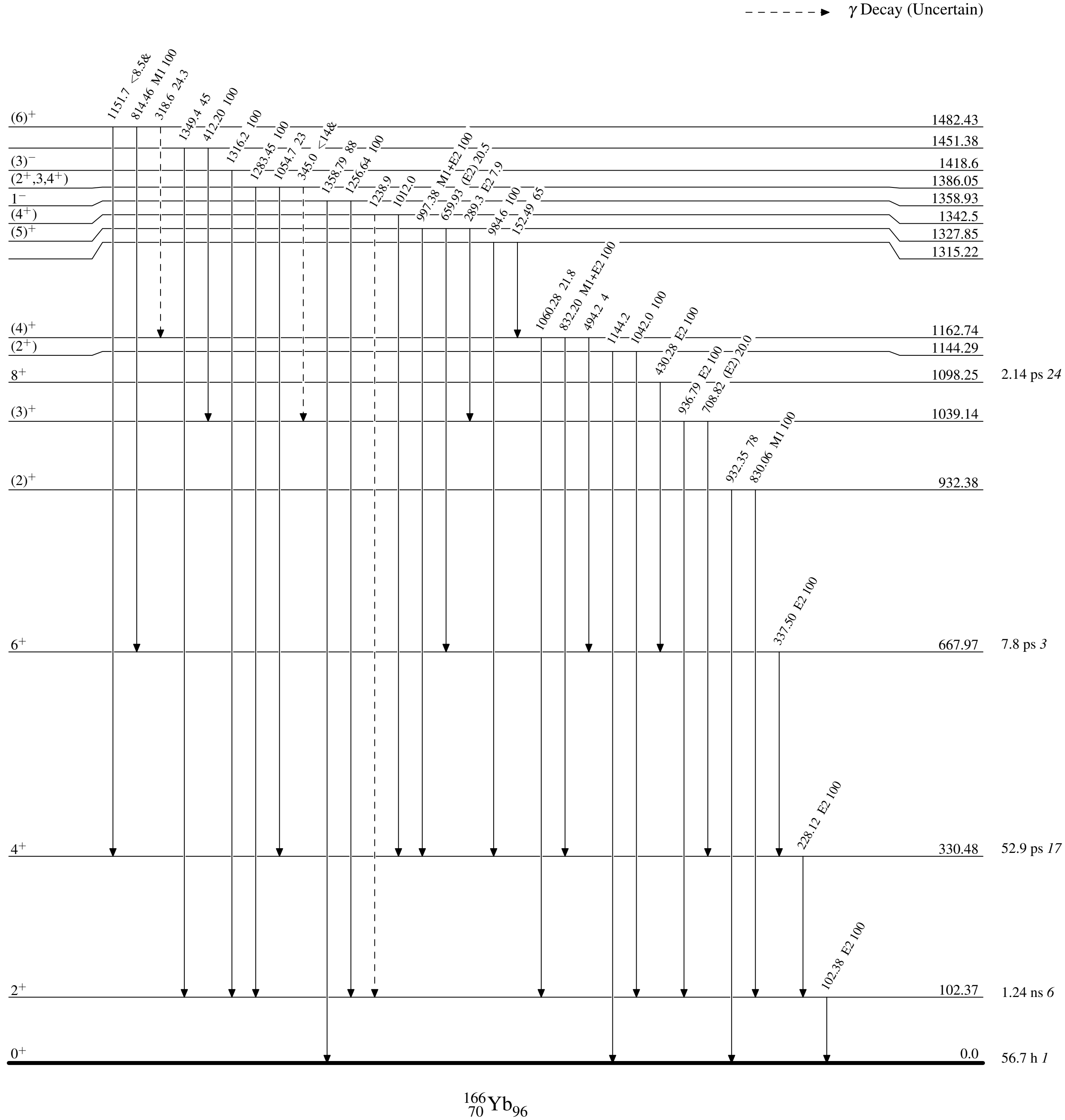


Adopted Levels, Gammas

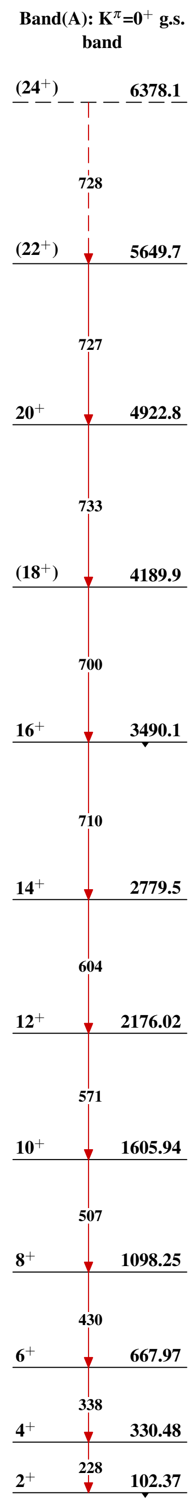
Legend

Level Scheme (continued)

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

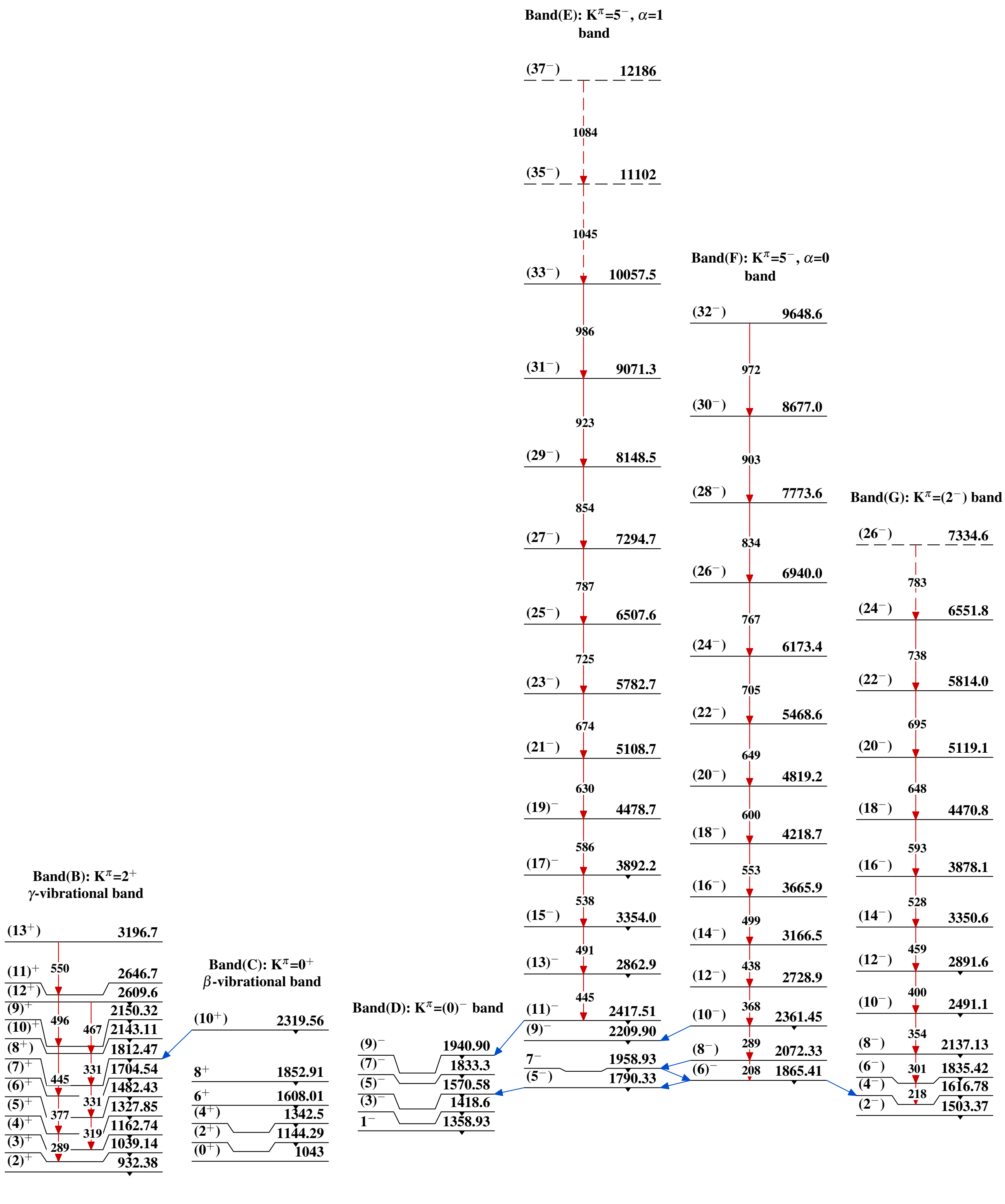


Adopted Levels, Gammas



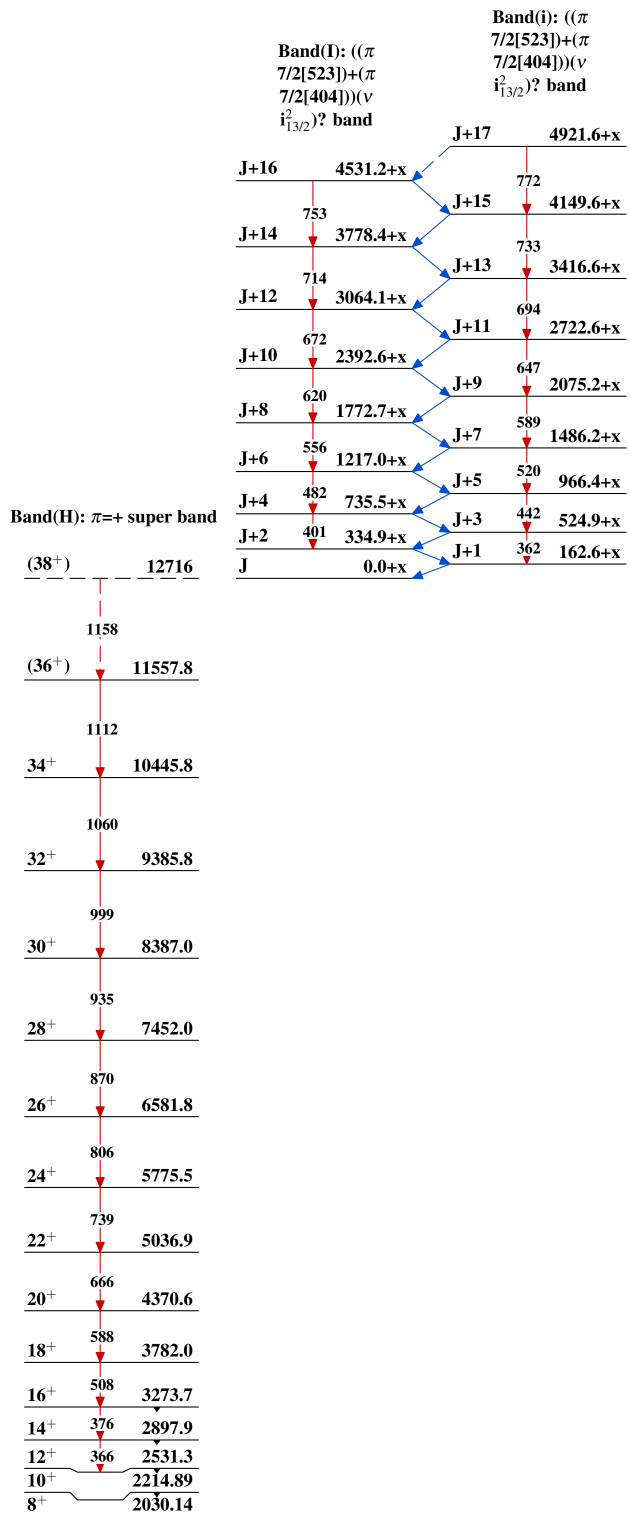
$^{166}_{70}Yb_{96}$

Adopted Levels, Gammas (continued)



$^{166}_{70}Yb_{96}$

Adopted Levels, Gammas (continued)



$^{166}_{70}Yb_{96}$

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 111,1807 (2010)	15-Jun-2010

Q(β^-)=−4.51×10^3 *4*; S(n)=9062 *4*; S(p)=6326.4 *16*; Q(α)=1935.2 *12* 2012Wa38

Note: Current evaluation has used the following Q record −4510 509052 56315 41950 4 2003Au03,2009AuZZ.

See 1982Bu21, 1985Ne09, 1991Ki14, 1991Ma48, 2002Zi04, 2003Ba90 for recent hfs and isotope shift data (^{168}Yb, with low natural abundance, barely detected).

Calculations of α-decay halflife (>10^{24} y): see, e.g., 2002Fu04. This suggests that Yb is a viable material for a large-volume solar neutrino detector.

Search for hyperdeformation in ^{168}Yb (none found): 1997Wi19.

^{168}Yb Levels

Cross Reference (XREF) Flags

A	^{168}Lu ε decay (5.5 min)	E	^{168}Yb(d,d′)	I	^{186}W(N,4p15nγ)
B	^{168}Lu ε decay (6.7 min)	F	Coulomb excitation	J	^{171}Yb(^{3}He,α2nγ)
C	(HI,xnγ)	G	^{170}Yb(p,t)		
D	^{169}Tm(p,2nγ), (d,3nγ),	H	^{168}Tm β^- decay		

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$[#]	XREF	Comments
0.0[c]	0$^+$[b]	stable	ABCDEFGHI	<r^2>$^{1/2}$(charge)=5.268 *6* (2004An14). J$^\pi$: g.s. of even-even nuclide.
87.73[c] *1*	2$^+$[b]	1.49 ns *4*	ABCDEFGHI	J$^\pi$: E2 88γ to 0$^+$ g.s.. T$_{1/2}$: deduced from B(E2)↑=5.77 *4* in Coulomb excitation and adopted properties for 87.7γ. Other: 1.4 ns *5* ($\gamma\gamma$(t) in ^{168}Lu ε decay, 1973Ch28).
286.551[c] *21*	4$^+$[b]		ABCDEFG I	J$^\pi$: L(p,t)=4.
585.25[c] *5*	6$^+$[b]		ABCDEFG I	J$^\pi$: stretched E2 intraband 299γ to 4$^+$ 287.
970.03[c] *11*	8$^+$[b]		ABCD F I	J$^\pi$: stretched E2 intraband 385γ to 6$^+$ 585.
984.00[d] *5*	2$^+$	1.03 ps *10*	ABCDEFG	J$^\pi$: L=2 in ^{170}Yb(p,t); γ′s to 0$^+$ and 4$^+$. T$_{1/2}$: deduced from B(E2)↑=0.128 *5* in Coulomb excitation and adopted properties for 984γ.
1067.15[d] *5*	(3)$^+$		ABCD G	J$^\pi$: E2 781γ to 4$^+$ 287; 980γ to 2$^+$ 88; band assignment.
1098[&] *5*			G	
1155.2[e] *8*	(0$^+$)		B DEF	J$^\pi$: E0 γ to 0$^+$; J^π uncertain due to questionable 1156γ placement.
1159.7	(1$^-$)		B G	J$^\pi$: 1159γ to 0$^+$ g.s.; 1072γ to 2$^+$ 88; the 1161-keV peak in ^{170}Yb(p,t) does not have an L=0 shape.
1171.38[d] *6*	(4)$^+$		AB DEFG	J$^\pi$: L=(4) in ^{170}Yb(p,t); E2 885γ to 4$^+$ 287; 586γ to 6$^+$ 585; 187γ to 2$^+$ 984.
1197?[f] *4*	0$^+$	1.3 ns *3*	D G	J$^\pi$: L=0 in ^{170}Yb(p,t). T$_{1/2}$: from n-ce(t) in ^{169}Tm(p,2nγ), (d,3nγ), ^{166}Er(α,2nγ) (1967Ke08).
1231.5? *3*	(1$^-$)		B G	J$^\pi$: 1231γ to 0$^+$ g.s.; the 1231-keV peak in ^{170}Yb(p,t) does not have an L=2 shape.
1233.1[e] *3*	2$^+$		B DEF	J$^\pi$: Coulomb excited with B(E2)↑=0.050 *5*.
1279.0[f] *4*	(2$^+$)		B G	J$^\pi$: L=(2) in ^{170}Yb(p,t); gammas to 0$^+$ and 2$^+$; band assignment.
1302.30[d] *8*	(5)$^+$		ABCD	J$^\pi$: E2 1016γ to 4$^+$ 287; 717γ to 6$^+$ 585; 236γ to (3)$^+$ 1067; band assignment.
1340[&] *7*	(0$^+$)		G	J$^\pi$: L=(0) in ^{170}Yb(p,t).
1390.12?[e] *3*	(4$^+$)		B DE	J$^\pi$: (E0+E2) 1103γ to 4$^+$ 287; 1302γ to 2$^+$ 88; 805γ? to 6$^+$ 585.
1407.86? *17*	(2$^-$)		B	J$^\pi$: 1320γ? to 2$^+$ 88; 176γ? to (1$^-$) 1232.

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Adopted Levels, Gammas (continued)

^{168}Yb Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
1425.45[c] 22	10^+[b]		CD I	J^{π}: stretched E2 intraband 455γ to 8^+ 970.
1433[@] 6			E	
1445.13[d] 9	$(6)^+$		A D	J^{π}: M1+E2 860γ to 6^+ 585; 1159γ? to 4^+ 287; band assignment.
1451.76[a] 5	$(3)^+$		ABC	J^{π}: E2 385γ to $(3)^+$ 1067; 1364γ to 2^+ 88; band assignment.
1472.6 5	(4^+)		B	J^{π}: 888γ to 6^+ 585; 300γ to $(4)^+$ 1171; 406γ? to $(3)^+$ 1067.
1479.99 14	3^-		B EF	J^{π}: from consistent B(E3) values at two different scattering angles in Coulomb excitation; supported by relative cross sections in ^{168}Yb(d,d′), 1392γ to 2^+ 88 and 1193γ to 4^+ 287.
1480[&f] 5	(4^+)		G	J^{π}: L=(4) in ^{170}Yb(p,t); 4^+ consistent with band assignment.
1543?[g] 4	(0^+)	≤1.1 ns	De G	J^{π}: E0 1543γ? to 0^+ g.s.. $T_{1/2}$: from n-ce(t) in ^{169}Tm(p,2nγ), (d,3nγ), ^{166}Er(α,2nγ) (1967Ke08).
1551.33[a] 5	$(4)^+$		ABC e	J^{π}: 1464γ to 2^+ 88; 249γ to $(5)^+$ 1302; E2(+M1) 854γ from $(3)^+$ 2405; band assignment.
1595[@] 6	3^-		EF	J^{π}: from consistent B(E3) values at two different scattering angles in Coulomb excitation and relative cross sections in (d,d′). Level may also Be populated in ε decay; see comment on 1597.9 level.
1597.89? 7	$(^-)$		AB	Level and deexciting transitions are not well characterized; there may be another level involved (possibly 1595 level) and, if so, which γ′s deexcite which level is unclear. J^{π}: (M2) 1013γ to 6^+ 585; (E1) 1311γ to 4^+ 287; 1510γ to 2^+.
1604.5[g] 6	(2^+)		B G	J^{π}: L=(2) in ^{170}Yb(p,t); 1605γ to 0^+ g.s..
1618.5[d] 3	(7^+)		CD	J^{π}: tentatively assigned as 7^+ member of $K^{\pi}=0^+$ β-vibration band in ^{169}Tm(p,2nγ), (d,3nγ); 1034γ to 6^+ 585; 316γ to $(5)^+$ 1302.
1650.66 9	$(2,3,4)^-$		A	J^{π}: E1 584γ to $(3)^+$.
1674.21[a] 8	(5^+)		ABC	J^{π}: 223γ to $(3)^+$ 1452; 1089γ to 6^+ 585; band assignment.
1698[&] 5			G	
1725[&g] 6	(4^+)		E G	J^{π}: L=(4) in ^{170}Yb(p,t); band assignment.
1730.48 25	$(1,2^+)$		B	J^{π}: 1730γ to 0^+ g.s.; 1642γ to 2^+ 88.
1770.18 8	5^-		A G	J^{π}: E1 1185γ to 6^+ 585; E1 1483γ to 4^+ 286.
1793[&] 5			G	
1819.04[a] 8	(6^+)		A C	J^{π}: (M1+E2) 1234γ to 6^+; 1533γ to 4^+ 287; band assignment.
1842.17[i] 11	(6^-)		A C	J^{π}: E1 540γ to $(5)^+$ 1302; 397γ to $(6)^+$ 1445; band assignment.
1860[@] 6			E G	
1904[&h] 5	(0^+)		G	J^{π}: L=(0) in ^{170}Yb(p,t).
1917.8? 4			B	J^{π}: 1631γ? to 4^+ 287.
1936.0[c] 5	12^+[b]		C I	
1945.4[m] 11	(11)		C	J^{π}: 520γ to 10^+ 1425; band assignment.
1972.7	$(5,6^+)$		A e	J^{π}: fed from $6^{(-)}$ in ε decay (5.5 min); 1388γ to 6^+ 585; 1686γ to 4^+ 287.
1972.86[h]	(2^+)		B e G	J^{π}: 375γ to (2^+) 1598; 522γ to $(3)^+$ 1452; L(p,t)=(2) for E(level)=1973 5. This second E≈1973 level is proposed to accommodate L(p,t) and inconsistent branching in 5.5-min and 6.7-min ε decays.
1986.6[a]	(7^+)		C	
1993 5			e G	
1998.74 6	$(5)^-$	82 ns 5	A e	J^{π}: M1 157γ to (6^-) 1842; 1712γ to 4^+ 287.
2002.9[d]	(9^+)		C	
2011.39 7	$(2^+,3,4^+)$		B	J^{π}: 1725γ to 4^+ 287; 1027γ to 2^+ 984.
2055.88 4	$(2^+,3^+,4^+)$		B E	J^{π}: (M1,E2) 1072γ to 2^+ 984; 675γ to (4^+) 1390.
2065.09 22	$(2^+,3,4^+)$		B	J^{π}: 1978γ to 2^+ 88; 675γ to (4^+) 1390.
2092[&] 7			G	

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Adopted Levels, Gammas (continued)

^{168}Yb Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	$T_{1/2}$[#]	XREF	Comments
2100.6[i]	(8^-)		C	
2110.6	(5^-,6^-,7^-)	0.34 ns *6*	A	J$^{\pi}$: (E2) 112γ to $(5)^-$ 1999; 1525γ to 6^+ 585; analogy with the well-known 5^- and 6^- and 7^- levels (and depopulating γ's) in ^{164}Er and their apparent counterparts in ^{168}Yb. B(E2)(W.u.)(112) seems too large for a pure E2 transition so J=7 may Be unlikely.
2122[@] *6*			E G	
2135.34 *12*	(3^+,4^+)		B	J$^{\pi}$: 2048γ to 2^+ 88; 832γ to (5^+) 1302.
2158.56 *5*	(4^+)		B	J$^{\pi}$: 2071γ to 2^+ 88; 1573γ to 6^+ 585.
2160[&] *7*	(0^+)		G	J$^{\pi}$: L=(0) in ^{170}Yb(p,t).
2173[&] *12*			G	Level is near, but probably different from, the 2174 level; it is unlikely that an 8^+ level would be excited in ^{170}Yb(p,t) (the g.s. band is observed only to 6^+, with rapidly decreasing cross section) and no other member of the postulated $K^{\pi}=3^+$ band is populated in (p,t).
2174[a]	(8^+)		C	
2180.28 *19*	4^+		B G	
2203.84 *5*	$(4)^+$	<0.14 ns	B	$T_{1/2}$: from 1220γ-x coin in ^{168}Lu ε decay (6.7 min). J$^{\pi}$: 530γ to $(5)^+$ 1674; E2(+M1) 1137γ to $(3)^+$ 1067; 2116γ to 2^+ 88. Likely configuration: $K^{\pi}=4^+$ (π 1/2[541])+(π 7/2[523]) (1999Ba65) based on allowed unhindered ε decay from (π 1/2[541])+(ν 5/2[523]) ^{168}Lu(6.7 min) and Gallagher's rule.
2222.37 *20*	($^-$)	62 ns *8*	A	J$^{\pi}$: 224γ to $(5)^-$ 1999; analogy with the well-known 5^- and 6^- and 7^- levels (and depopulating γ's) in ^{164}Er and their apparent counterparts in ^{168}Yb.
2256.03 *15*	(3^+,4^+)		B	J$^{\pi}$: 2168γ to 2^+ 99; 954γ to $(5)^+$ 1302.
2292[&] *7*			G	
2327[&] *7*			G	
2364.5 *3*	(4^+)		B G	J$^{\pi}$: 2277γ to 2^+ 88; 1780γ to 6^+ 585.
2404.87 *4*	$(3)^+$		B	J$^{\pi}$: M1+E2 1421γ to 2^+ 984; (E2) 731γ to (5^+) 1764. configuration: Probably $K^{\pi}=3^+$ (π 1/2[541])+(π 5/2[532]) (1999Ba65).
2415.3 *4*	(3,4,5)		C	J$^{\pi}$: 2129γ to 4^+ 287; 1114γ to $(5)^+$ 1302; fed from 3^+ in ε decay.
2426.5[i]	(10^-)		C	
2427.96 *23*	(2^+,3^+,4^+)		B	J$^{\pi}$: 2141γ to 4^+ 287; 2341γ to 2^+ 88; ε decay from 3^+ ^{168}Lu(6.7 min) is probably allowed. configuration: Possibly $K^{\pi}=3^+$ (π 1/2[541])-(π 7/2[523]) (1999Ba65). If so, $J^{\pi}=(3^+)$ can Be assigned.
2443.5[d]	(11^+)		C	
2464[&] *12*			G	
2475.18 *19*	(2^+,3,4^+)		B	J$^{\pi}$: 2188γ to 4^+ 287; log *ft*=6.8 from 3^+ in ε decay. Possible configuration: (π 1/2[541])-(π 5/2[532]) (1999Ba65), implying $J^{\pi}=(2^+)$.
2488.5[c] *6*	14^+[b]		C I	
2500[&] *12*			G	
2514.5[m] *15*	(13)		C	
2645.0? *8*			B	J$^{\pi}$: 2358γ to 4^+ 287.
2824.9[i]	(12^-)		C	
2846.2[j]	(13^-)		C	
2930.9[d]	(13^+)		C	
3073.1[c] *7*	16^+[b]		C	
3131.4[m] *18*	(15)		C	
3294.9[i]	(14^-)		C	

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Adopted Levels, Gammas (continued)

^{168}Yb Levels (continued)

E(level)[†]	J^{π}[‡]	XREF	E(level)[†]	J^{π}[‡]	XREF
3310.2[j]	(15⁻)	C	7516.9[c]	28+[b]	C
3447.1[d]	(15⁺)	C	7599.4[k]	(27⁻)	C
3532.2[n] 10	(15⁺)	C	7727[d]	(27⁺)	C
3613.2[k] 10	(15⁻)	C	7791.7[n] 23	(27⁺)	C
3686.9[c] 8	18+[b]	C	7912[l]	(28⁺)	C
3797.5[m] 21	(17)	C	7917[j]	(29⁻)	C
3821.1[j]	(17⁻)	C	7984[i]	(28⁻)	C
3827.5[i]	(16⁻)	C	8453.4[k]	(29⁻)	C
3981.9[d]	(17⁺)	C	8475.2[c]	30+[b]	C
4092.2[n] 10	(17⁺)	C	8669[d]	(29⁺)	C
4133.8[l]	(18⁺)	C	8697.7[n] 25	(29⁺)	C
4165.1[k]	(17⁻)	C	8801.3[l]	(30⁺)	C
4336.9[c] 8	20+[b]	C	8825.6[j]	(31⁻)	C
4373.9[j]	(19⁻)	C	8880[i]	(30⁻)	C
4410.0[i]	(18⁻)	C	9372.2[k]	(31⁻)	C
4514.3[m] 23	(19)	C	9496[c]	32+[b]	C
4579.5[d]	(19⁺)	C	9748.3[l]	(32⁺)	C
4721.1[n] 11	(19⁺)	C	9803[j]	(33⁻)	C
4763[k]	(19⁻)	C	9841[i]	(32⁻)	C
4786.1[l]	(20⁺)	C	10353[k]	(33⁻)	C
4968.5[j]	(21⁻)	C	10575[c]	34+[b]	C
5032[i]	(20⁻)	C	10760[l]	(34⁺)	C
5036.9[c]	22+[b]	C	10848[j]	(35⁻)	C
5255.9[d]	(21⁺)	C	10861[i] 4	(34⁻)	C
5287.1[m] 25	(21)	C	11388[k]	(35⁻)	C
5400.5[k]	(21⁻)	C	11703[c]	36+[b]	C
5404.6[n] 15	(21⁺)	C	11841[l]	(36⁺)	C
5511.1[l]	(22⁺)	C	11931[i] 4	(36⁻)	C
5612.3[j]	(23⁻)	C	11959[j]	(37⁻)	C
5686.9[i]	(22⁻)	C	12864[c]	(38⁺)[b]	C
5797.4[c]	24+[b]	C	12985[l]	(38⁺)	C
6009.0[d]	(23⁺)	C	13023[i] 4	(38⁻)	C
6080.6[k]	(23⁻)	C	13128[j]	(39⁻)	C
6122[m] 3	(23)	C	14033[c] 4	(40⁺)[b]	C
6143.3[n] 18	(23⁺)	C	14138[i] 4	(40⁻)	C
6276.0[l]	(24⁺)	C	14190[l] 4	(40)	C
6314.7[j]	(25⁻)	C	14362[j]	(41⁻)	C
6391.9[i]	(24⁻)	C	15228[c] 4	(42⁺)[b]	C
6623.9[c]	26+[b]	C	15269[i] 4	(42⁻)	C
6809.6[k]	(25⁻)	C	15578[j]	(43⁻)	C
6835[d]	(25⁺)	C	16457?[c] 4	(44⁺)[b]	C
6938.7[n] 21	(25⁺)	C	16846?[j] 4	(45⁻)	C
7024[m] 3	(25)	C	0.0+x[o]	(20)	C
7072.5[l]	(26⁺)	C	625.7+x[o]	(22)	C
7081.9[j]	(27⁻)	C	1289.2+x[o]	(24)	C
7156[i]	(26⁻)	C	2019.0+x[o]	(26)	C

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{168}Yb Levels (continued)

E(level)[†]	J^{π}[‡]	XREF	E(level)[†]	J^{π}[‡]	XREF
2802.1+x[o]	(28)	C	368.6+y[p] *15*	J+2	C
3644.5+x[o]	(30)	C	584.1+y[p] *18*	J+3	C
4548.9+x[o]	(32)	C	820.2+y[p] *19*	J+4	C
5514.4+x[o]	(34)	C	1075.4+y[p] *19*	J+5	C
6542+x[o]	(36)	C	1349.8+y[p] *20*	J+6	C
7629+x[o]	(38)	C	1642.3+y[p] *21*	J+7	C
8772+x[o]	(40)	C	1952.2+y[p] *21*	J+8	C
0.0+y[p]	J	C	2279.3+y[p] *22*	J+9	C
173.8+y[p] *10*	J+1	C	2616.7+y?[p] *24*	J+10	C

[†] From least-squares fit to Eγ, assigning 1 keV uncertainty to data for which the authors gave no uncertainty, except where noted.
[‡] Values given without further comment are based on band structure deduced in (HI,xnγ) reactions.
[#] From γγ(t) in ^{168}Lu ε decay, except where noted.
[@] From ^{168}Yb(d,d′).
[&] From ^{170}Yb(p,t).
[a] Band(A): K^{π}=(3)$^{+}$ band. A=12.6, B=−8.9 (J=3, 4, 5, 6 levels). Likely configuration: $K^{\pi}=3^{+}$ (π 7/2[404])-(π 1/2[411]) (1999Ba65).
[b] Smooth progression of level energies within g.s. band, established $J^{\pi}=0^{+}$ for g.s. and multipolarity of E2 for the J=2 to J=0 88γ enable assignment of definite J^{π} to J≤20 band members.
[c] Band(B): $K^{\pi}=0^{+}$ g.s. band. A=14.7, B=−17.9 (J=0, 2, 4, 6 levels).
[d] Band(C): $K^{\pi}=2^{+}$ γ-vibration band. A=13.7, B=−17.6 (J=2, 3, 4, 5 levels).
[e] Band(D): $K^{\pi}=(0^{+})$ β^{-}vibration band. A=11.7 (J=0, 2, 4 levels).
[f] Band(E): $K^{\pi}=0^{+}$ band. A=14.2 (J=0, 2, 4 levels).
[g] Band(F): $K^{\pi}=0^{+}$ band. A=9.1 (J=0, 2, 4 levels).
[h] Band(G): $K^{\pi}=(0^{+})$ band.
[i] Band(H): π=−, α=0 band. High-excitation band (feeds into 2^{+} γ-vibration band).
[j] Band(I): π=−, α=1 band 2. High-excitation band feeding into g.s. band.
[k] Band(J): π=−, α=1 band 1. High-excitation band feeding into g.s. band.
[l] Band(K): α=(0) band. High-excitation band feeding into g.s. band. Tentative π=+ for this band is taken from 1993Ol02.
[m] Band(L): α=1 band. High-excitation band. Note that 1993Ol02 suggest J values that are two units higher.
[n] Band(M): π=(+), α=1 band. High-excitation band.
[o] Band(N): α=0 band. Feeds into g.s. band, but connecting transitions unknown. J assignments for this band are taken from 1993Ol02.
[p] Band(O): M1 band (1994Ol04).

Adopted Levels, Gammas (continued)

$\gamma(^{168}Yb)$

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[†]	α[c]	Comments
87.73	2^+	87.733 *9*	100	0.0	0^+	E2	5.35	B(E2)(W.u.)=209 *7* E_γ: weighted average from β^- decay, (p,2nγ), ε decay (5.5 min) and ε decay (6.7 min).
286.551	4^+	198.84 *3*	100	87.73	2^+	E2	0.274	E_γ: weighted average from (p,2nγ), ε decay (5.5 min) and ε decay (6.7 min).
585.25	6^+	298.74 *4*	100	286.551	4^+	E2	0.0749	E_γ: weighted average from (p,2nγ), ε decay (5.5 min) and ε decay (6.7 min). Mult.: from K/L in (p,2nγ).
970.03	8^+	384.75 *10*	100	585.25	6^+	E2	0.0359	E_γ: from (p,2nγ); doublet in ε decay (5.5 min). Mult.: from K/L in (p,2nγ).
984.00	2^+	697.6 *4*	0.93 *25*	286.551	4^+			B(E2)(W.u.)≈1.8
		896.261 *24*	100	87.73	2^+	E2	0.00465	B(E2)(W.u.)=9.2 *10*
		983.99 *4*	86[#] *7*	0.0	0^+	(E2)	0.00383	B(E2)(W.u.)=5.0 *7*
1067.15	$(3)^+$	84.0 *6*	0.19 *11*	984.00	2^+	[M1,E2]	6.0 *5*	
		780.61 *5*	20.7[#] *18*	286.551	4^+	E2	0.00625	
		979.379 *24*	100[#] *7*	87.73	2^+	(E2)	0.00387	
1155.2	(0^+)	1066.8 *9*	100	87.73	2^+			
		1156[g] *3*		0.0	0^+	E0		E_γ: from (p,2nγ).
1159.7	(1^-)	1071.9[g] *10*	<100	87.73	2^+			
		1159.2[g] *7*	<20	0.0	0^+			
1171.38	$(4)^+$	104.8 *9*	0.10 *8*	1067.15	$(3)^+$	[M1,E2]	2.82 *17*	
		187.34 *19*	0.51 *13*	984.00	2^+	[E2]	0.335	
		586.4 *9*	0.40 *24*	585.25	6^+			
		884.807 *24*	100[#] *7*	286.551	4^+	E2	0.00478	
		1083.58 *3*	48[#] *3*	87.73	2^+	(E2)	0.00315	
1197?	0^+	1197[g] *4*		0.0	0^+	E0[&]		
1231.5?	(1^-)	1231.3[g] *4*	100	0.0	0^+			
1233.1	2^+	74.0[g] *5*	<13	1159.7	(1^-)			
		166.3 *5*	7 *3*	1067.15	$(3)^+$			
		1144.9 *6*	20 *10*	87.73	2^+	(E0+E2)		ρ^2=0.030 *7* (1999Wo07).
		1233.46[f] *7*	10×10[1][f] *10*	0.0	0^+	[E2]	0.00245	B(E2)(W.u.)=1.8 *2* B(E2)(W.u.) deduced from B(E2)↑=0.050 *5* for 1233.2 level (Coulomb excitation, 1982Ro07) and B(E2)(single particle)=0.0275.
1279.0	(2^+)	1191.2 *8*	100 *31*	87.73	2^+			
		1279.0 *4*	46 *23*	0.0	0^+			
1302.30	$(5)^+$	130.90 *6*	11.4 *20*	1171.38	$(4)^+$	[M1,E2]	1.37 *20*	
		235.6 *5*	2.0 *14*	1067.15	$(3)^+$	[E2]	0.1571 *25*	
		717.28 *20*	20.2[#] *22*	585.25	6^+			
		1015.86 *7*	100[#] *8*	286.551	4^+	E2	0.00359	

$^{168}_{70}Yb_{98}$-6

Adopted Levels, Gammas (continued)

$\gamma(^{168}Yb)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[†]	α[c]	Comments
1390.12?	(4^+)	405.9[e] *5*	<26[e]	984.00	2^+			
		804.90[g] *16*	49 *13*	585.25	6^+			
		1102.9[g] *3*	100 *21*	286.551	4^+	(E0+E2)		
		1302.4 *3*	84 *21*	87.73	2^+			
1407.86?	(2^-)	176.3[g] *3*	7 *3*	1231.5?	(1^-)			
		1320.12[g] *18*	100 *20*	87.73	2^+			
1425.45	10^+	455.4 *2*	100	970.03	8^+	E2[&]	0.0227	
1445.13	$(6)^+$	860.0 *2*	100 *15*	585.25	6^+	M1+E2	0.008 *3*	
		1158.5 *3*	26 *4*	286.551	4^+			
1451.76	$(3)^+$	280.5 *3*	1.7 *4*	1171.38	$(4)^+$	[M1,E2]	0.14 *5*	
		384.80 *7*	30 *5*	1067.15	$(3)^+$	E2	0.0359	
		467.90 *5*	26[#] *3*	984.00	2^+	M1,E2	0.035 *14*	
		1165.21 *16*	22[#] *4*	286.551	4^+			
		1363.90 *4*	100[#] *9*	87.73	2^+			
1472.6	(4^+)	300.2 *8*	29 *16*	1171.38	$(4)^+$			
		405.9[e] *5*	<55[e]	1067.15	$(3)^+$			
		887.6 *5*	100 *44*	585.25	6^+			
1479.99	3^-	27.1 *5*	10 *5*	1451.76	$(3)^+$	[E1]	2.23 *13*	
		89.6 *4*	9 *3*	1390.12?	(4^+)	[E1]	0.456 *9*	
		1193.4 *3*	64 *12*	286.551	4^+			
		1392.19 *13*	100 *18*	87.73	2^+			
		(1480)		0.0	0^+	E3		B(E3)(W.u.)=19 *3* E_γ: from level energy difference; γ unobserved but must exist. B(E3)(W.u.),Mult.: From observed B(E3)↑=0.22 *4* in Coulomb excitation.
1543?	(0^+)	1543[g] *5*		0.0	0^+	E0[&]		
1551.33	$(4)^+$	99.60 *3*	18[#] *3*	1451.76	$(3)^+$	[M1,E2]	3.34 *10*	
		248.7 *3*	3.2 *10*	1302.30	$(5)^+$			
		380.11 *6*	33[#] *4*	1171.38	$(4)^+$	[M1,E2]	0.060 *24*	
		484.32[e] *18*	<13.1[e]	1067.15	$(3)^+$			
		567.41 *15*	16 *3*	984.00	2^+			
		1264.68 *5*	100[#] *8*	286.551	4^+			
		1463.47 *10*	72[#] *9*	87.73	2^+			
1595	3^-	(1595)		0.0	0^+	E3		B(E3)(W.u.)=7.7 *17* E_γ: from level energy difference; γ unobserved but must exist. B(E3)(W.u.),Mult.: From observed B(E3)↑=0.09 *2* in Coulomb excitation.
1597.89?	$(^-)$	530.1[e] *7*	<28[e]	1067.15	$(3)^+$			
		1012.9 *3*	10 *4*	585.25	6^+	(M2)	0.01728	I_γ: from ε decay (6.7 min). Other $I\gamma$: 22 *3* in ε decay (5.5 min).
		1311.27 *11*	100 *15*	286.551	4^+	(E1)	9.91×10^{-4}	

$^{168}_{70}Yb_{98}$-7

Adopted Levels, Gammas (continued)

γ(^{168}Yb) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[†]	α[c]	Comments
1597.89?	$(^-)$	1510.00 *13*	92 *15*	87.73	2^+			I_γ: from ε decay (6.7 min). Other Iγ: 13 *3* in ε decay (5.5 min).
1604.5	(2^+)	1516.7 *6*	100 *30*	87.73	2^+			
		1605.2 *20*	24 *12*	0.0	0^+			
1618.5	(7^+)	316		1302.30	$(5)^+$			
		1033.7 *3*		585.25	6^+	[a]		Mult.: D(+Q) from $\gamma(\theta)$ for doubly-placed γ in (p,2nγ).
1650.66	$(2,3,4)^-$	348.3[dg] *2*		1302.30	$(5)^+$			E_γ: from ε decay (5.5 min) for doublet, little of whose Iγ belongs with this placement.
		479.4 *4*	31[#] *6*	1171.38	$(4)^+$			
		583.50 *21*	100[#] *12*	1067.15	$(3)^+$	E1	0.00435	
1674.21	(5^+)	122.95 *6*	18 *3*	1551.33	$(4)^+$	[M1,E2]	1.67 *20*	
		222.55 *17*	13 *3*	1451.76	$(3)^+$	[E2]	0.189	
		371.8[g] *4*	20 *3*	1302.30	$(5)^+$			E_γ,I_γ: from ε decay (5.5 min). Placement shown as tentative because similar Eγ is placed instead from 2428 level in ε decay (6.7 min), and γ is absent in (HI,xnγ).
		1089.0 *10*	4 *4*	585.25	6^+			Other Iγ: 33 *6* in ε decay (5.5 min), but line may Be complex there. γ is absent in (HI,xnγ).
		1387.43 *12*	100 *16*	286.551	4^+			I_γ: from ε decay (6.7 min). Eγ also fits a 1973 to 585 placement (see 1972Ch44), but 1999Ba65, in ε decay (6.7 min), placed it from 1674 level only, even though they observed a 1973 level; I(123γ)/I(1387γ)=0.14 *3* and 0.18 *4* in the respective studies, allows a single placement, but this placement alone is not consistent with $\gamma\gamma$ coin data (1970Ch28) in 5.5-min decay.
1730.48	$(1,2^+)$	497.40 *20*	100 *50*	1233.1	2^+			
		1642.1 *12*	55 *21*	87.73	2^+			
		1730.8[g] *6*	75 *38*	0.0	0^+			
1770.18	5^-	1184.94 *8*	64 *6*	585.25	6^+	E1	1.12×10^{-3}	
		1483.65 *8*	100 *13*	286.551	4^+	E1	9.26×10^{-4}	
1819.04	(6^+)	145.1 *3*	52 *9*	1674.21	(5^+)			
		268[g]	[@]	1551.33	$(4)^+$			
		374.2 *5*	53 *10*	1445.13	$(6)^+$			
		1233.5 *2*	100 *55*	585.25	6^+	[M1,E2]	0.0034 *10*	
		1533.3 *5*	32 *10*	286.551	4^+			
1842.17	(6^-)	397.2 *6*	16 *3*	1445.13	$(6)^+$			
		539.8 *2*	100 *11*	1302.30	$(5)^+$	E1	0.00413	
1917.8?		1631.2[g] *4*	100	286.551	4^+			
1936.0	12^+	510.5 *5*	100	1425.45	10^+	(E2)[a]	0.01692	
1945.4	(11)	520 *1*	100	1425.45	10^+			
1972.7	$(5,6^+)$	1387.5 *2*	<80	585.25	6^+			E_γ,I_γ: from ε decay (5.5 min); data are for doubly-placed γ, Iγ suitably divided.
		1686.0 *5*	100 *20*	286.551	4^+			

$^{168}_{70}$Yb$_{98}$-8

$\gamma(^{168}Yb)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[†]	α[c]	Comments
1972.86	(2+)	375.0 4	100 36	1597.89?	(−)			
		521.7 7	57 32	1451.76	(3)+			Absent in ε decay (5.5 min).
		1686.3[g] 3	38 38	286.551	4+			
1986.6	(7+)	166	63[@]	1819.04	(6+)			
		311	100[@]	1674.21	(5+)			
1998.74	(5)−	156.6 2	44 6	1842.17	(6−)	M1	0.943	B(M1)(W.u.)=6.5×10^{-6} 13
		179.6 2	36 4	1819.04	(6+)	(E1)	0.0733	B(E1)(W.u.)=3.5×10^{-8} 6
		228.6 2	100 10	1770.18	5−	(M1)	0.329	B(M1)(W.u.)=4.7×10^{-6} 8
		324.7 2	43 4	1674.21	(5+)	(E1+M2)	0.26 24	
		348.3[d] 2	≈94	1650.66	(2,3,4)−	E2	0.0476	
		401.1 3	37 4	1597.89?	(−)	M1	0.0727	B(M1)(W.u.)=3.2×10^{-7} 6
		1413.5 3	23.4 26	585.25	6+			
		1712.0 5	≈2.9	286.551	4+			
2002.9	(9+)	384.3	100.0 10	1618.5	(7+)	(E2)[a]	0.0360	
		1033 1	8.51 18	970.03	8+	(M1+E2)[a]	0.0050 16	
2011.39	(2+,3,4+)	621.6 8	14 7	1390.12?	(4+)			
		944.42 25	64 21	1067.15	(3)+			
		1027.44 20	100 21	984.00	2+			
		1724.6 7	30 9	286.551	4+			
2055.88	(2+,3+,4+)	884.8 5	6 3	1171.38	(4)+			
		988.96 18	40 7	1067.15	(3)+			
		1071.94 5	100 16	984.00	2+	(M1,E2)	0.0046 15	
		1967.7 14	3.8 19	87.73	2+			
2065.09	(2+,3,4+)	53.2[g] 5	<110	2011.39	(2+,3,4+)			
		147.08[e] 8	68[e] 28	1917.8?				
		674.6[e] 5	100[e] 44	1390.12?	(4+)			
		998.7 7	67 3	1067.15	(3)+			
		1977.6 9	77 23	87.73	2+			
2100.6	(8−)	258 1	100 35	1842.17	(6−)			
		482.2 10		1618.5	(7+)			
2110.6	(5−,6−,7−)	112.4	≈100	1998.74	(5)−	(E2)	2.06	B(E2)(W.u.)≈540
		1525.1 5	9.2 20	585.25	6+			
2135.34	(3+,4+)	683.4 6	13 4	1451.76	(3)+			
		832.1 3	26 9	1302.30	(5)+			
		964.19 15	100 17	1171.38	(4)+			
		1068.0 9	28 17	1067.15	(3)+			
		1151.0 9	10 4	984.00	2+			
		1848.74 25	62 11	286.551	4+			
		2047.6 4	40 9	87.73	2+			
2158.56	(4+)	147.08[e] 8	<10[e]	2011.39	(2+,3,4+)			

$^{168}_{70}Yb_{98}$-9

$\gamma(^{168}Yb)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[†]	δ[†]	α[c]	Comments
2158.56	(4^+)	484.32[e] 18	<23[e]	1674.21	(5^+)				
		560.0 5	5.4 26	1597.89?	$(^-)$				
		607.22 9	100 16	1551.33	$(4)^+$				
		706.83 17	36 7	1451.76	$(3)^+$				
		768.4 7	7.3 27	1390.12?	(4^+)				
		856.3 10	9 4	1302.30	$(5)^+$				
		987.34 15	96 16	1171.38	$(4)^+$				
		1091.58 19	35 8	1067.15	$(3)^+$				
		1573.0 20	6 6	585.25	6^+				
		1871.8 4	22 5	286.551	4^+				
		2070.9 4	24 5	87.73	2^+				
2174	(8^+)	189[g]	100	1986.6	(7^+)				
2180.28	4^+	449.7 4	34 12	1730.48	$(1,2^+)$				
		1113.6[e] 8	<47[e]	1067.15	$(3)^+$				
		1594.2 4	74 16	585.25	6^+				
		1894.1 10	19 11	286.551	4^+				
		2093.1 4	100 21	87.73	2^+				
2203.84	$(4)^+$	68.0[g] 5	<0.4	2135.34	$(3^+,4^+)$				
		148.16 4	5.0 8	2055.88	$(2^+,3^+,4^+)$	[M1,E2]		0.93 18	
		231.3 5	0.20 11	1972.86	(2^+)				
		473.6 4	0.9 3	1730.48	$(1,2^+)$				
		530.1[e] 7	<2.0[e]	1674.21	(5^+)				
		605.8 3	2.0 6	1597.89?	$(^-)$				
		652.75 9	6.2 11	1551.33	$(4)^+$				
		723.4 7	0.58 27	1479.99	3^-				
		752.33 8	9.8 16	1451.76	$(3)^+$				
		901.6 10	9.1 16	1302.30	$(5)^+$				
		1032.61 4	68 10	1171.38	$(4)^+$	M1,E2		0.0050 16	
		1136.83 4	100 15	1067.15	$(3)^+$	E2(+M1)	≥1.0		
		1219.94 5	82 13	984.00	2^+	E2		0.00250	B(E2)(W.u.)>0.0070
		1619.0 10	<0.5	585.25	6^+				
		1917.28 10	12.0 19	286.551	4^+				
		2116.24 20	13.9 26	87.73	2^+				
2222.37	$(^-)$	111.4	≈100	2110.6	$(5^-,6^-,7^-)$	[M1]		2.48	
		223.59 19	≤82	1998.74	$(5)^-$	[E2]		0.186	B(E2)(W.u.)=0.03 +4−3
2256.03	$(3^+,4^+)$	191.24 23	9.3 26	2065.09	$(2^+,3,4^+)$				
		200.2[g] 8	64 23	2055.88	$(2^+,3^+,4^+)$	[M1,E2]		0.37 11	
		283.5 5	4.0 21	1972.86	(2^+)				
		659.0 5	9 5	1597.89?	$(^-)$				
		953.3[e] 3	<47[e]	1302.30	$(5)^+$				
		1084.9 4	15 8	1171.38	$(4)^+$				

Adopted Levels, Gammas (continued)

$\gamma(^{168}$Yb) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[†]	δ[†]	α[c]
2256.03	(3$^+$,4$^+$)	1188.31 *21*	15 *13*	1067.15	(3)$^+$			
		1969.5 *5*	100 *21*	286.551	4$^+$			
		2168.4 *5*	19 *6*	87.73	2$^+$			
2364.5	(4$^+$)	1380.0 *6*	47 *18*	984.00	2$^+$			
		1779.5 *8*	26 *11*	585.25	6$^+$			
		2276.8 *4*	100 *24*	87.73	2$^+$			
2404.87	(3)$^+$	201.01 *15*	18 *3*	2203.84	(4)$^+$	[M1,E2]		0.37 *11*
		246.33 *4*	8.4 *13*	2158.56	(4$^+$)	[M1,E2]		0.20 *7*
		269.48[e] *11*	<2.4[e]	2135.34	(3$^+$,4$^+$)			
		339.2 *4*	0.8 *3*	2065.09	(2$^+$,3,4$^+$)			
		348.99 *4*	15.3 *24*	2055.88	(2$^+$,3$^+$,4$^+$)	[E2]		0.0473
		393.50 *7*	8.2 *13*	2011.39	(2$^+$,3,4$^+$)	[M1,E2]		0.055 *22*
		674.6[e] *5*	<2.2[e]	1730.48	(1,2$^+$)			
		730.73 *7*	15.3 *24*	1674.21	(5$^+$)	(E2)		0.00723
		806.95 *11*	7.7 *18*	1597.89?	($^-$)			
		853.57 *4*	44 *6*	1551.33	(4)$^+$	E2(+M1)		0.008 *3*
		924.93 *24*	3.7 *8*	1479.99	3$^-$			
		953.3[e] *3*	<4.0[e]	1451.76	(3)$^+$			
		1233.46[f] *7*	27[f] *4*	1171.38	(4)$^+$	(M1,E2)		0.0034 *10*
		1337.65 *5*	40 *6*	1067.15	(3)$^+$	E2		0.00211
		1420.79 *5*	100 *16*	984.00	2$^+$	M1+E2		0.0025 *6*
		2118.1 *10*	2.3 *13*	286.551	4$^+$			
		2317.18 *24*	4.4 *10*	87.73	2$^+$			
2415.3	(3,4,5)	1113.6[e] *8*	<56[e]	1302.30	(5)$^+$			
		2128.7 *4*	100 *19*	286.551	4$^+$			
2426.5	(10$^-$)	325.8 *10*	100[b] *22*	2100.6	(8$^-$)	(E2)[a]		0.0578 *10*
		423.7 *10*	83[b] *5*	2002.9	(9$^+$)	(E1+M2)[a]		0.11 *11*
2427.96	(2$^+$,3$^+$,4$^+$)	24.0 *5*	6 *3*	2404.87	(3)$^+$	[M1(+E2)]	<0.38	1.8×10^2 *14*
		224.15 *17*	4.29 *9*	2203.84	(4)$^+$	[M1,E2]		0.27 *9*
		269.48[e] *11*	<6.9[e]	2158.56	(4$^+$)			
		372.17 *18*	6.2 *14*	2055.88	(2$^+$,3$^+$,4$^+$)			
		830.3 *4*	8.1 *19*	1597.89?	($^-$)			
		947.85 *12*	11 *5*	1479.99	3$^-$			
		1256.36 *12*	23 *4*	1171.38	(4)$^+$	[M1,E2]		0.0032 *9*
		1360.7 *6*	6.2 *14*	1067.15	(3)$^+$			
		1445.5[g] *6*	3.8 *14*	984.00	2$^+$			
		2141.39 *8*	100 *14*	286.551	4$^+$			
		2340.6 *11*	2.9 *14*	87.73	2$^+$			
2443.5	(11$^+$)	440.4	86 *6*	2002.9	(9$^+$)			
		1018 *1*	100 *3*	1425.45	10$^+$	(M1+E2)[a]		0.0052 *7*

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Adopted Levels, Gammas (continued)

$\gamma(^{168}Yb)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[†]	α[c]
2475.18	$(2^+,3,4^+)$	271.4 3	13 6	2203.84	$(4)^+$	[M1,E2]	0.15 6
		294.90 9	100 20	2180.28	4^+		
		2187.9 7	43 11	286.551	4^+		
2488.5	14^+	552.6 3	100	1936.0	12^+	(E2)[a]	0.01389
2514.5	(13)	569.1	100	1945.4	(11)		
2645.0?		2358.4[g] 8	100	286.551	4^+		
2824.9	(12^-)	381.3 10	100	2443.5	(11^+)		
		398.6 10	79 5	2426.5	(10^-)	(E2)[a]	0.0325
2846.2	(13^-)	910.4 10	100	1936.0	12^+	(E1+M2)[a]	0.012 11
2930.9	(13^+)	487.3	91 5	2443.5	(11^+)	(E2)[a]	0.0190
		995 1	100.0 23	1936.0	12^+		
3073.1	16^+	584.5 3	100	2488.5	14^+	(E2)[a]	0.01212
3131.4	(15)	616.9	100	2514.5	(13)		
3294.9	(14^-)	470.0 10	100	2824.9	(12^-)	(E2)[a]	0.0209
3310.2	(15^-)	464.0 10	93 6	2846.2	(13^-)		
		821.6 10	100 11	2488.5	14^+	(E1+M2)[a]	0.016 15
3447.1	(15^+)	516.2	100	2930.9	(13^+)	(E2)[a]	0.01645
3532.2	(15^+)	1044 1	100	2488.5	14^+		
3613.2	(15^-)	1125 1	100	2488.5	14^+		
3686.9	18^+	613.8 4	100	3073.1	16^+	(E2)[a]	0.01079
3797.5	(17)	666.1	100	3131.4	(15)		
3821.1	(17^-)	511.0 10		3310.2	(15^-)	(E2)[a]	0.0169
		747.9 10		3073.1	16^+	(E1+M2)[a]	0.021 19
3827.5	(16^-)	532.6 10	100	3294.9	(14^-)	(E2)[a]	0.01522
3981.9	(17^+)	534.8	100	3447.1	(15^+)	(E2)[a]	0.01506
4092.2	(17^+)	560.4	100 27	3532.2	(15^+)		
		1019 1		3073.1	16^+		
4133.8	(18^+)	447 1		3686.9	18^+		
		1060 1	100 20	3073.1	16^+		
4165.1	(17^-)	552.0 5	100.0 10	3613.2	(15^-)		
		1092[g] 1	2.9 4	3073.1	16^+		
4336.9	20^+	650.0 3	100	3686.9	18^+	(E2)[a]	0.00943
4373.9	(19^-)	552.8 10	100.0 10	3821.1	(17^-)	(E2)[a]	0.01388
		686.8 10	5.3 6	3686.9	18^+	(E1+M2)[a]	0.027 24
4410.0	(18^-)	582.5 10	100	3827.5	(16^-)	(E2)[a]	0.01222
4514.3	(19)	716.8		3797.5	(17)		
4579.5	(19^+)	597.6	100	3981.9	(17^+)	(E2)[a]	0.01149
4721.1	(19^+)	629.1	100 15	4092.2	(17^+)		
		1034 1	68 4	3686.9	18^+		
4763	(19^-)	598.1 10	100 13	4165.1	(17^-)		

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Adopted Levels, Gammas (continued)

γ(^{168}Yb) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f	Mult.[†]	α[c]
4763	(19$^-$)	1076[g] *1*		3686.9	18$^+$		
4786.1	(20$^+$)	450 *1*		4336.9	20$^+$		
		651.8	100 *25*	4133.8	(18$^+$)		
		1099 *1*	51 *7*	3686.9	18$^+$		
4968.5	(21$^-$)	594.4 *10*	100[b] *6*	4373.9	(19$^-$)	(E2)[a]	0.01164
		631.8 *10*	43[b] *4*	4336.9	20$^+$	(E1+M2)[a]	0.03 *3*
5032	(20$^-$)	620.3 *10*	100	4410.0	(18$^-$)	(E2)[a]	0.01052
5036.9	22$^+$	699.9 *10*	100	4336.9	20$^+$	(E2)[a]	0.00796
5255.9	(21$^+$)	676.4	100	4579.5	(19$^+$)	(E2)[a]	0.00861
5287.1	(21)	772.8	100	4514.3	(19)		
5400.5	(21$^-$)	638.4 *10*	100 *11*	4763	(19$^-$)		
		1063 *1*		4336.9	20$^+$		
5404.6	(21$^+$)	683.5		4721.1	(19$^+$)		
5511.1	(22$^+$)	725.3	100 *8*	4786.1	(20$^+$)		
		1174 *1*	78 *14*	4336.9	20$^+$		
5612.3	(23$^-$)	575.3 *10*	11.7 *15*	5036.9	22$^+$		
		643.9 *10*	100 *4*	4968.5	(21$^-$)	(E2)[a]	0.00964
5686.9	(22$^-$)	656.6 *10*	100	5032	(20$^-$)	(E2)[a]	0.00922
5797.4	24$^+$	760.5 *10*	100	5036.9	22$^+$	(E2)[a]	0.00662
6009.0	(23$^+$)	753.1	100	5255.9	(21$^+$)		
6080.6	(23$^-$)	680.1 *10*	100	5400.5	(21$^-$)		
6122	(23)	835.2	100	5287.1	(21)		
6143.3	(23$^+$)	738.7	100	5404.6	(21$^+$)		
6276.0	(24$^+$)	764.9	100	5511.1	(22$^+$)		
6314.7	(25$^-$)	702.4 *10*	100	5612.3	(23$^-$)	(E2)[a]	0.00790
6391.9	(24$^-$)	705.0 *5*	100	5686.9	(22$^-$)	(E2)[a]	0.00783
6623.9	26$^+$	826.5 *10*	100	5797.4	24$^+$		
6809.6	(25$^-$)	729.0 *10*	100	6080.6	(23$^-$)		
6835	(25$^+$)	826.2	100	6009.0	(23$^+$)	(E2)[a]	0.00553
6938.7	(25$^+$)	795.4	100	6143.3	(23$^+$)		
7024	(25)	902 *1*		6122	(23)		
7072.5	(26$^+$)	796.5	100	6276.0	(24$^+$)		
7081.9	(27$^-$)	767.2 *10*	100	6314.7	(25$^-$)	(E2)[a]	0.00649
7156	(26$^-$)	764.0 *10*	100	6391.9	(24$^-$)	(E2)[a]	0.00655
7516.9	28$^+$	893.0 *10*	100	6623.9	26$^+$	(E2)[a]	0.00469
7599.4	(27$^-$)	789.8 *10*	100	6809.6	(25$^-$)		
7727	(27$^+$)	891.4	100	6835	(25$^+$)	(E2)[a]	0.00470
7791.7	(27$^+$)	853 *1*	100	6938.7	(25$^+$)		
7912	(28$^+$)	839.5	100	7072.5	(26$^+$)		
7917	(29$^-$)	836.3	100	7081.9	(27$^-$)	(E2)[a]	0.00539

Adopted Levels, Gammas (continued)

$\gamma(^{168}Yb)$ (continued)

E_i(level)	J^{π}_i	E_{γ}[†]	I_{γ}[‡]	E_f	J^{π}_f	Mult.[†]	α[c]
7984	(28^-)	828.5 *10*	100	7156	(26^-)		
8453.4	(29^-)	854.0 *10*	100	7599.4	(27^-)		
8475.2	30^+	958.3 *10*	100	7516.9	28^+	(E2)[a]	0.00405
8669	(29^+)	944.2	100	7727	(27^+)		
8697.7	(29^+)	906 *1*	100	7791.7	(27^+)		
8801.3	(30^+)	889.3	100	7912	(28^+)		
8825.6	(31^-)	907.4 *10*	100	7917	(29^-)	(E2)[a]	0.00453
8880	(30^-)	896.0 *10*	100	7984	(28^-)		
9372.2	(31^-)	918.8 *10*	100	8453.4	(29^-)		
9496	32^+	1020.4 *10*	100	8475.2	30^+		
9748.3	(32^+)	947 *1*	100	8801.3	(30^+)		
9803	(33^-)	977.2 *10*	100	8825.6	(31^-)	(E2)[a]	0.00389
9841	(32^-)	960.5 *10*	100	8880	(30^-)		
10353	(33^-)	980.7 *10*	100	9372.2	(31^-)		
10575	34^+	1079.1 *10*	100	9496	32^+	(E2)[a]	0.00318
10760	(34^+)	1012 *1*	100	9748.3	(32^+)		
10848	(35^-)	1045.7 *10*	100	9803	(33^-)	(E2)[a]	0.00339
10861	(34^-)	1020.0 *10*	100	9841	(32^-)		
11388	(35^-)	1035.2 *10*	100	10353	(33^-)		
11703	36^+	1128.6 *10*	100	10575	34^+		
11841	(36^+)	1081 *1*	100	10760	(34^+)		
11931	(36^-)	1070 *1*	100	10861	(34^-)		
11959	(37^-)	1110.3 *10*	100	10848	(35^-)	(E2)[a]	0.00300
12864	(38^+)	1161 *1*	100	11703	36^+		
12985	(38^+)	1144 *1*	100	11841	(36^+)		
13023	(38^-)	1092 *1*	100	11931	(36^-)		
13128	(39^-)	1169.7 *10*	100	11959	(37^-)		
14033	(40^+)	1169 *1*	100	12864	(38^+)		
14138	(40^-)	1115 *1*	100	13023	(38^-)		
14190	(40)	1205 *1*	100	12985	(38^+)		
14362	(41^-)	1234 *1*	100	13128	(39^-)		
15228	(42^+)	1195 *1*	100	14033	(40^+)		
15269	(42^-)	1131 *1*	100	14138	(40^-)		
15578	(43^-)	1215 *1*	100	14362	(41^-)		
16457?	(44^+)	1229[g] *1*	100	15228	(42^+)		
16846?	(45^-)	1268[g]	100	15578	(43^-)		
625.7+x	(22)	625.7	100	0.0+x	(20)		
1289.2+x	(24)	663.5	100	625.7+x	(22)		
2019.0+x	(26)	729.8	100	1289.2+x	(24)		
2802.1+x	(28)	783.1	100	2019.0+x	(26)		
3644.5+x	(30)	842.4	100	2802.1+x	(28)		

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Adopted Levels, Gammas (continued)

$\gamma(^{168}Yb)$ (continued)

E_i(level)	J^π_i	E_γ†	I_γ‡	E_f	J^π_f
4548.9+x	(32)	904.4	100	3644.5+x	(30)
5514.4+x	(34)	965 *1*	100	4548.9+x	(32)
6542+x	(36)	1025 *1*	100	5514.4+x	(34)
7629+x	(38)	1084 *1*	100	6542+x	(36)
8772+x	(40)	1143	100	7629+x	(38)
173.8+y	J+1	173.8	100	0.0+y	J
368.6+y	J+2	194.8		173.8+y	J+1
		368.6[g]		0.0+y	J
584.1+y	J+3	215.5	100	368.6+y	J+2
820.2+y	J+4	236.1	100	584.1+y	J+3
1075.4+y	J+5	255.2		820.2+y	J+4
1075.4+y	J+5	491.3		584.1+y	J+3
1349.8+y	J+6	274.4		1075.4+y	J+5
		529.6		820.2+y	J+4
1642.3+y	J+7	292.5		1349.8+y	J+6
		566.9		1075.4+y	J+5
1952.2+y	J+8	309.9		1642.3+y	J+7
		602.4		1349.8+y	J+6
2279.3+y	J+9	327.1		1952.2+y	J+8
		637.0		1642.3+y	J+7
2616.7+y?	J+10	337.4[g]	100	2279.3+y	J+9

† From ^{168}Lu ε decay (6.7 min) except as noted.

‡ Relative photon branching from each level; from ^{168}Lu ε decay (6.7 min) except as noted. Upper limits are given for photon branchings affected by multiple placement.

Weighted average from ε decay (5.5 min) and ε decay (6.7 min).

@ From relative photon branchings in ^{166}Er(α,2nγ) (1982Wa19).

& From ^{169}Tm(p,2nγ), (d,3nγ), ^{168}Yb(d,d$'\gamma$).

[a] From (HI,xnγ), Er(α,xnγ).

[b] From relative photon branchings in ^{124}Sn(^{48}Ca,4nγ) (1985Ba47).

[c] 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.

[d] Multiply placed.

[e] Multiply placed with undivided intensity.

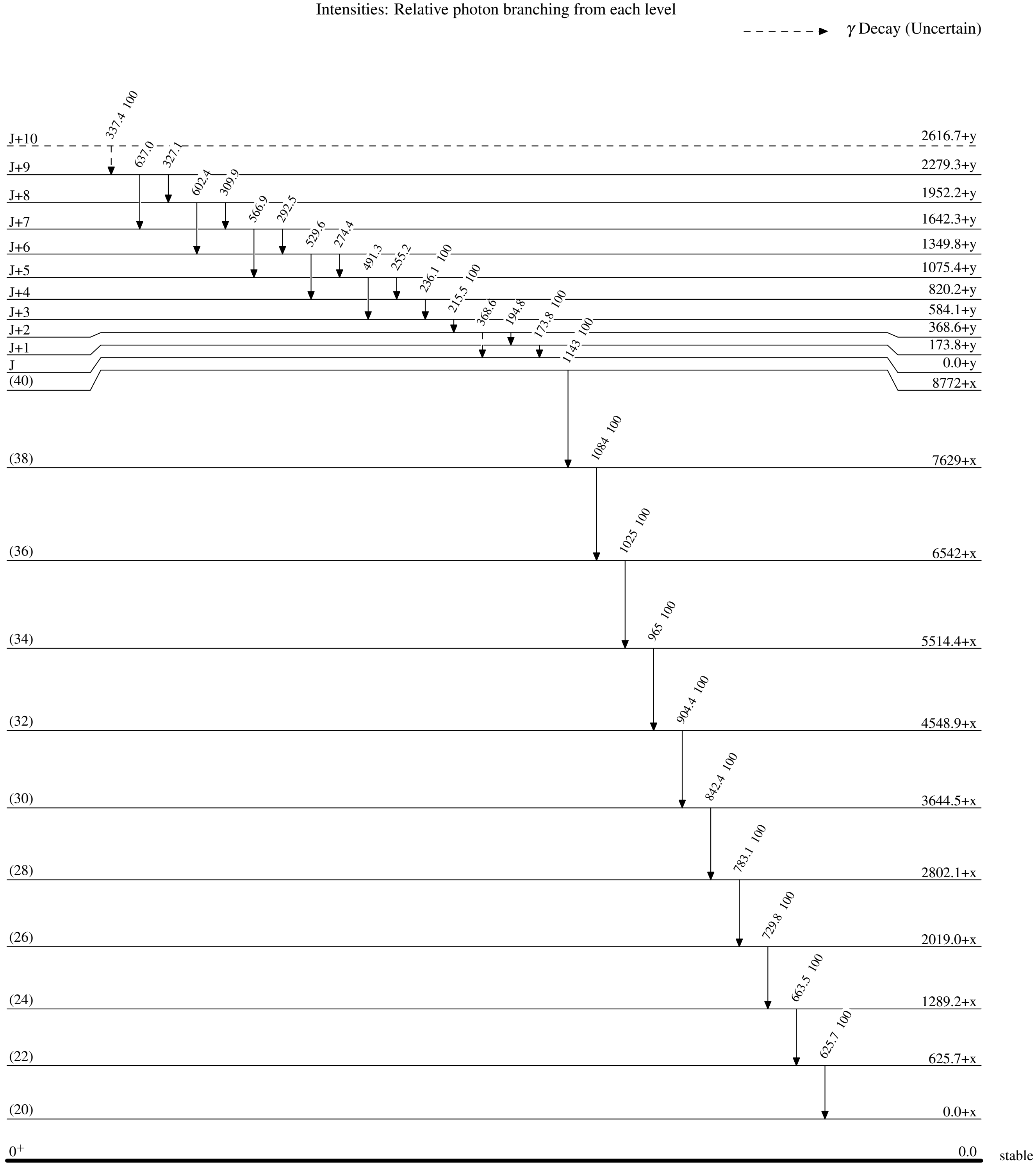
[f] Multiply placed with intensity suitably divided.

[g] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{168}_{70}Yb_{98}$

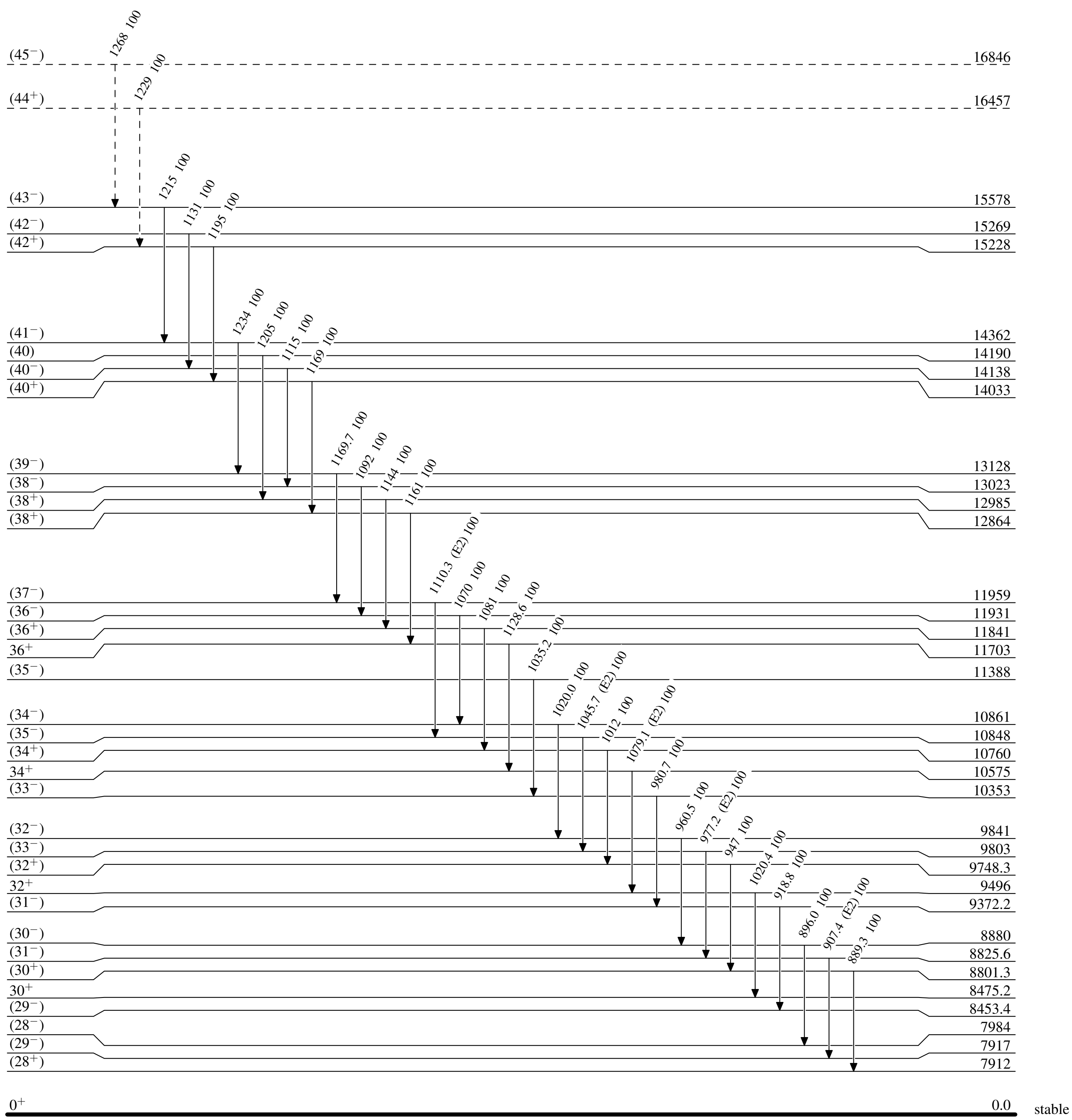
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

Legend

γ Decay (Uncertain)



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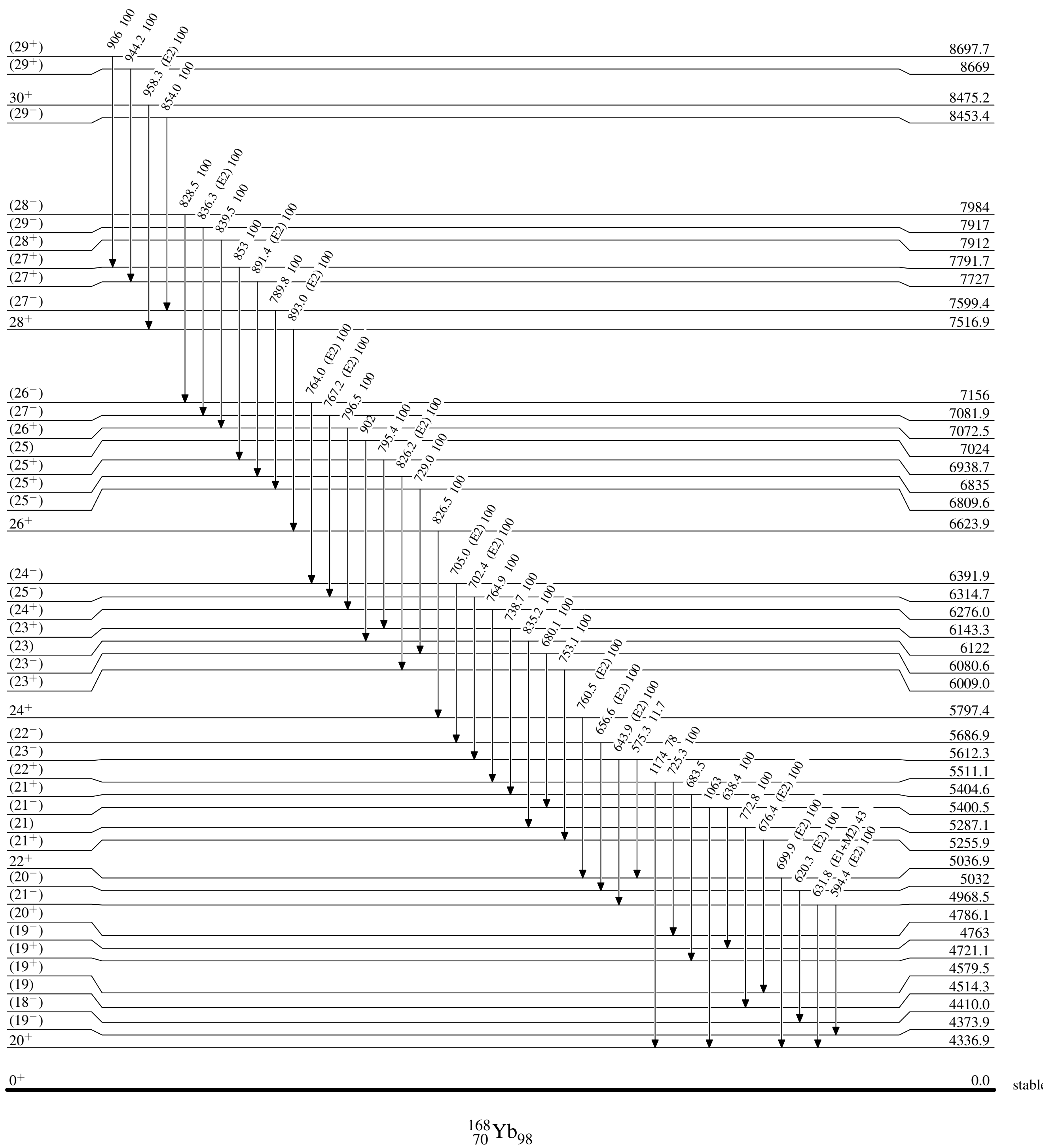
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



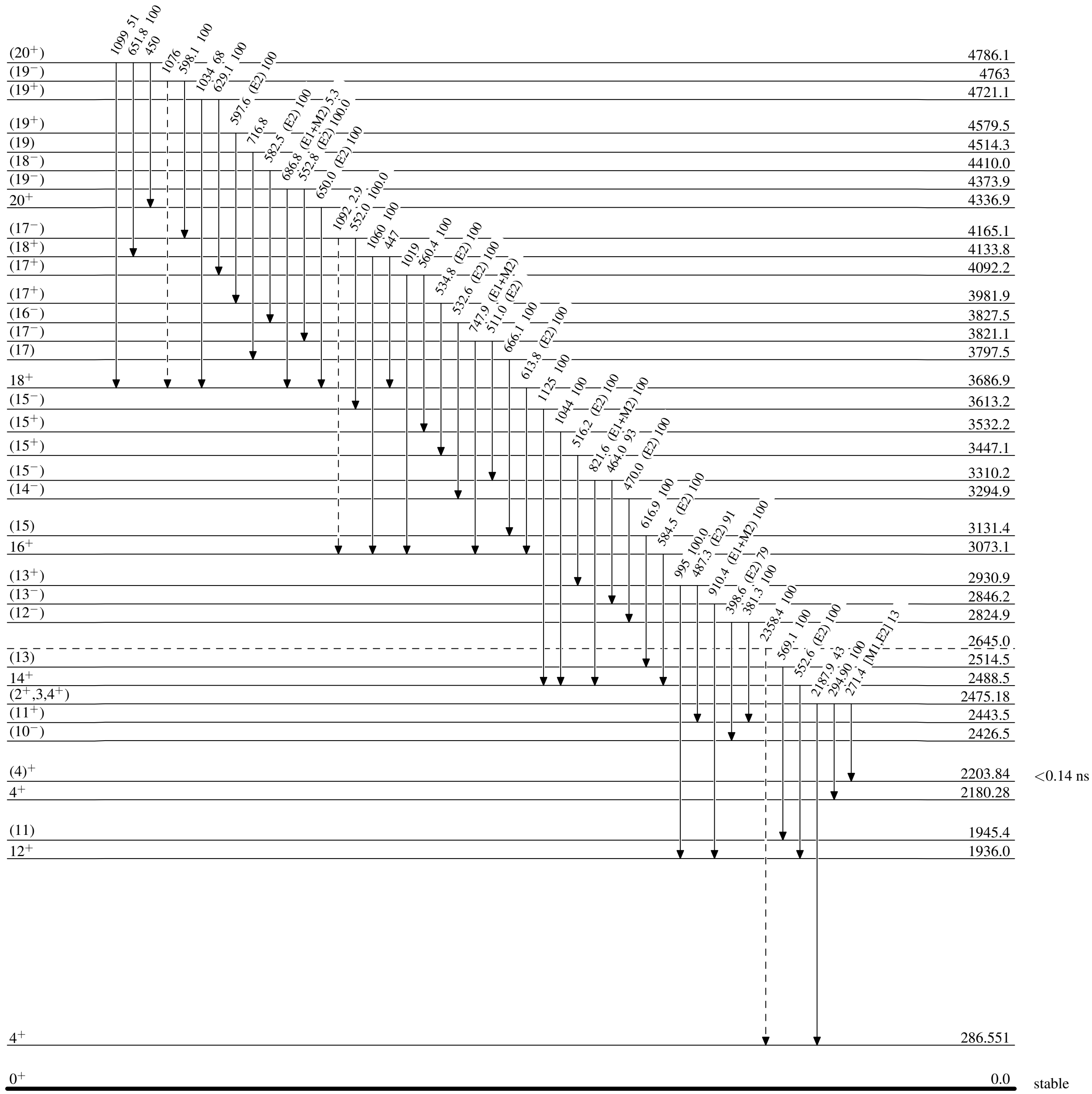
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



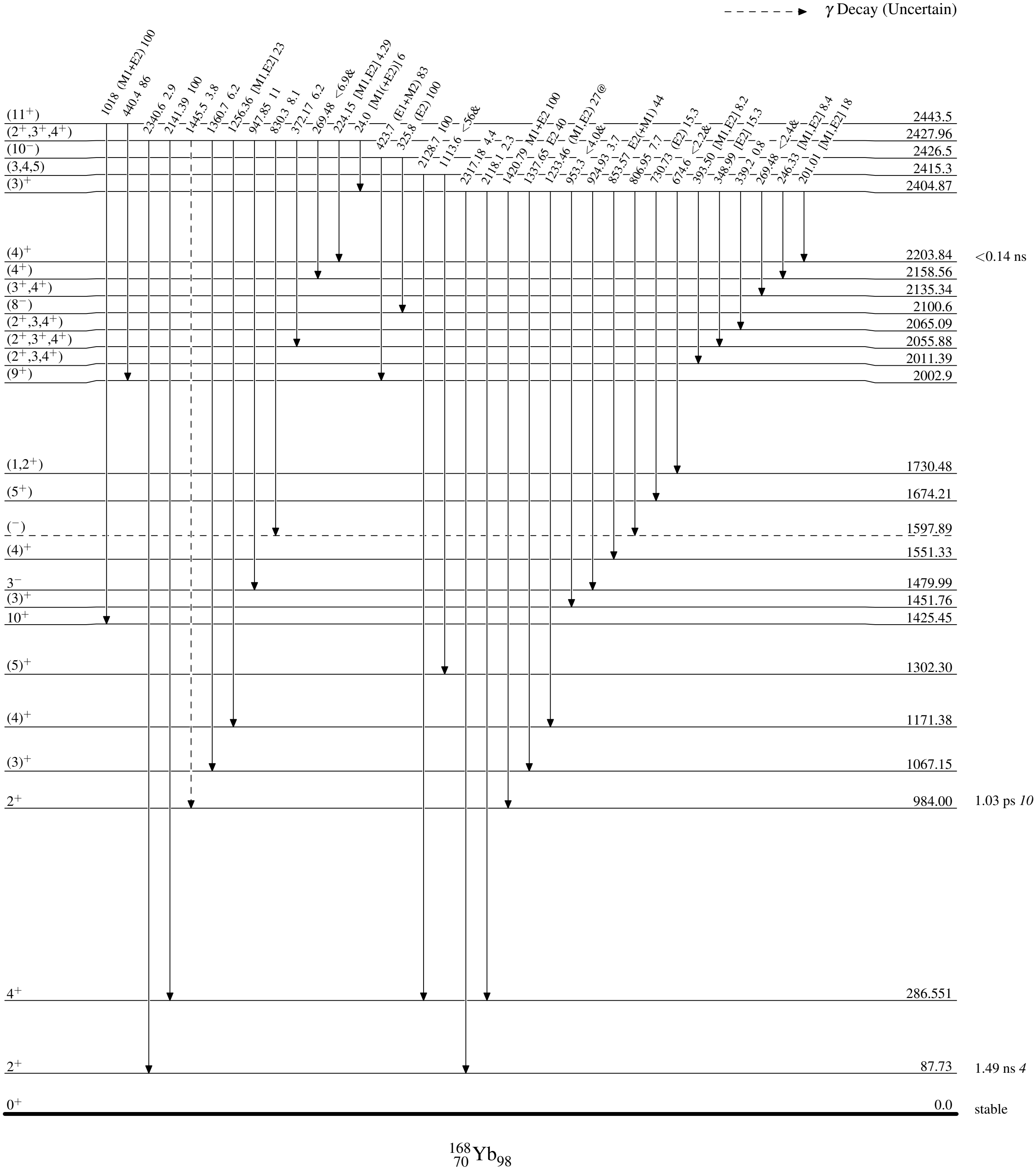
$^{168}_{70}Yb_{98}$

Adopted Levels, Gammas

Level Scheme (continued)

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

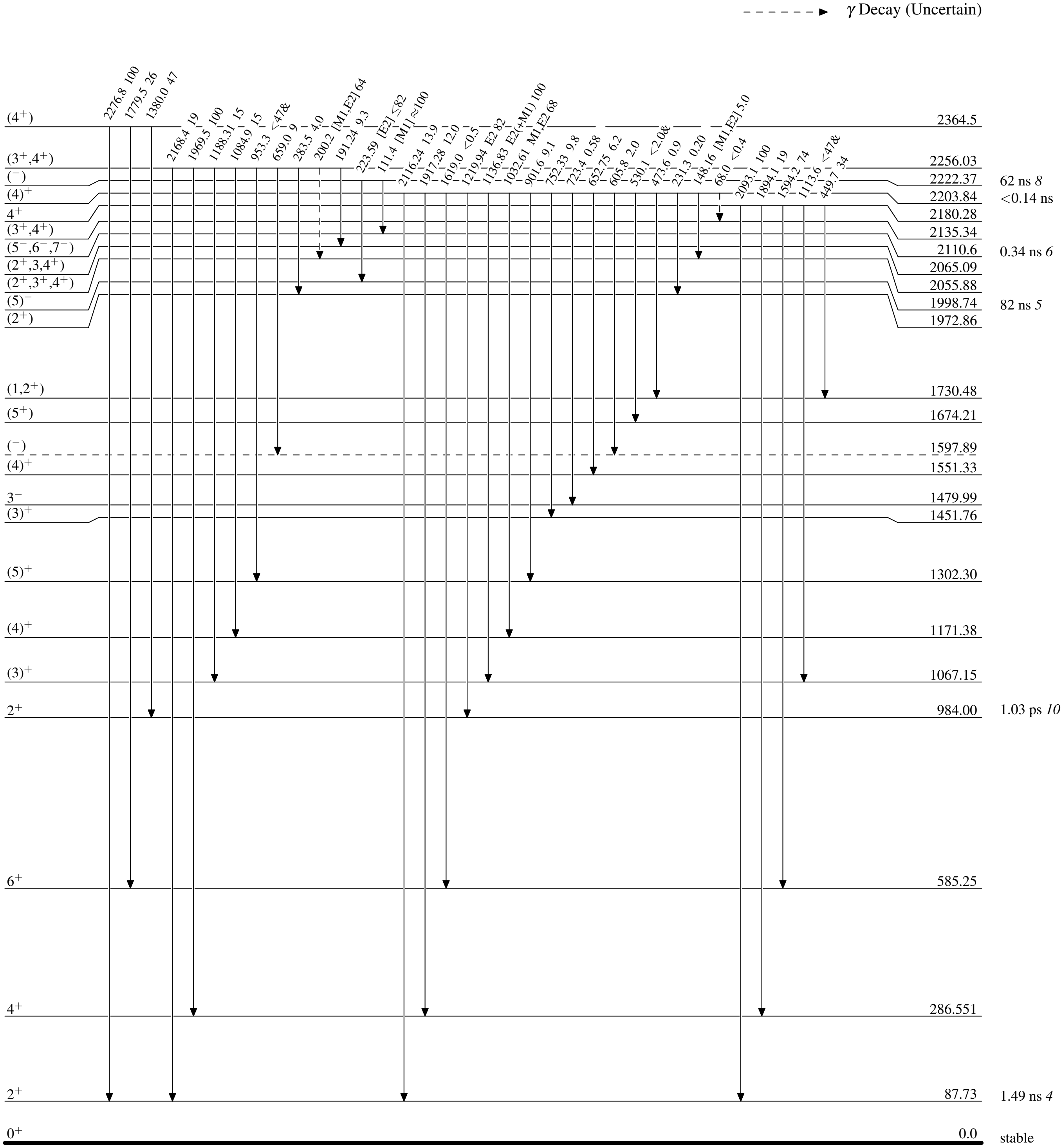
Legend



Adopted Levels, Gammas

Level Scheme (continued)

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

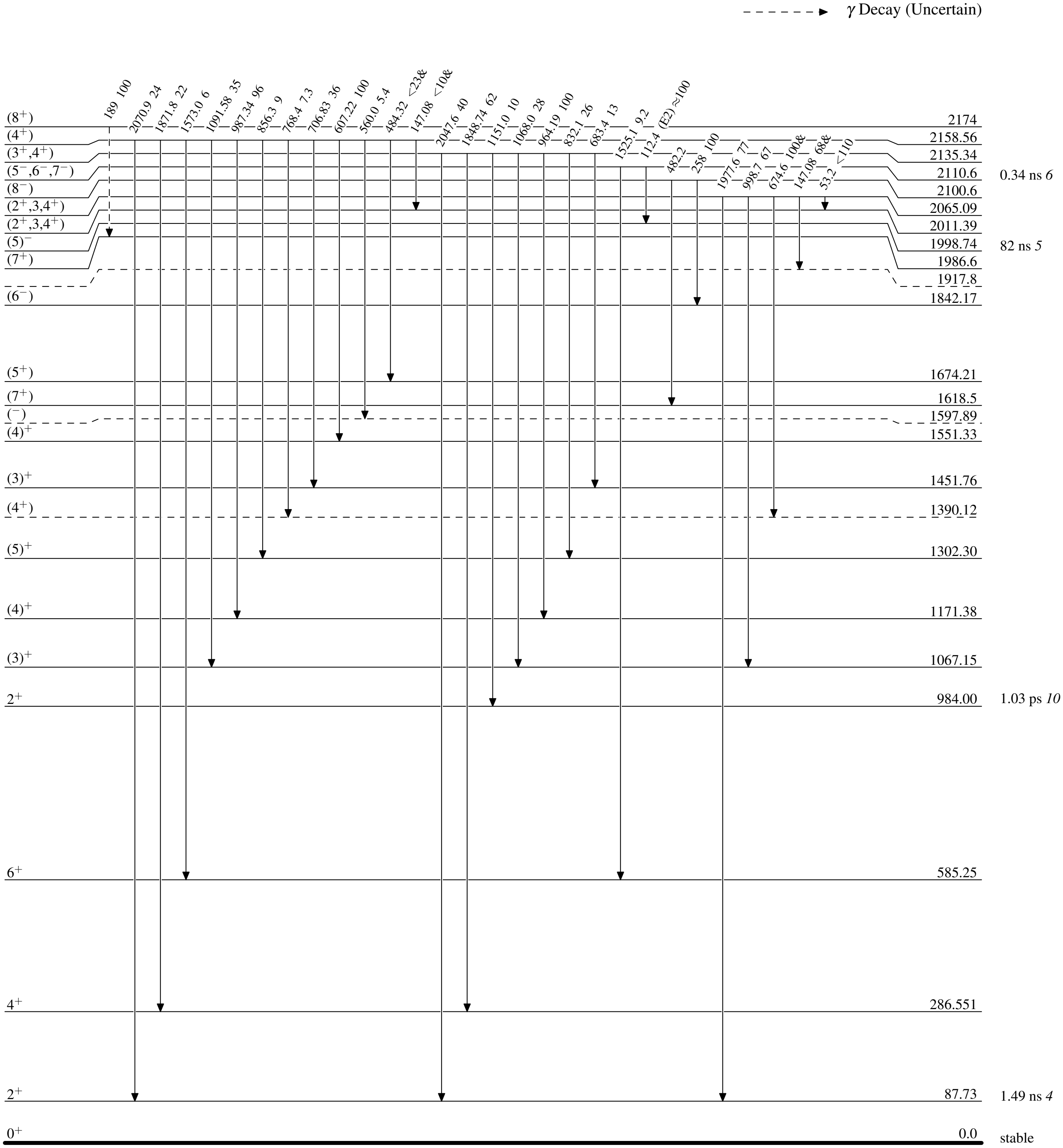


$^{168}_{70}Yb_{98}$

Adopted Levels, Gammas

Level Scheme (continued)

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

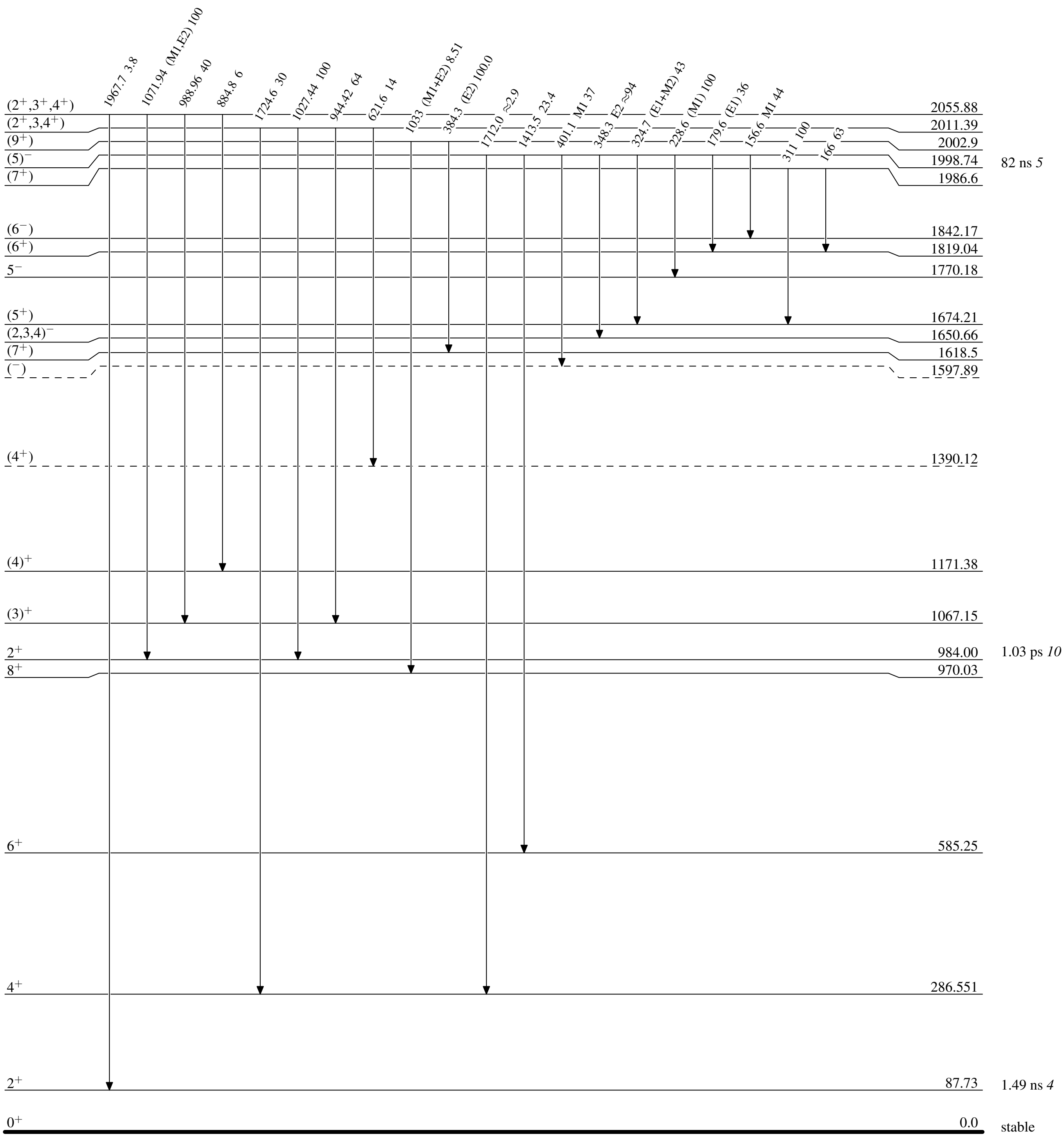


$^{168}_{70}Yb_{98}$

Adopted Levels, Gammas

Level Scheme (continued)

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



$^{168}_{70}Yb_{98}$

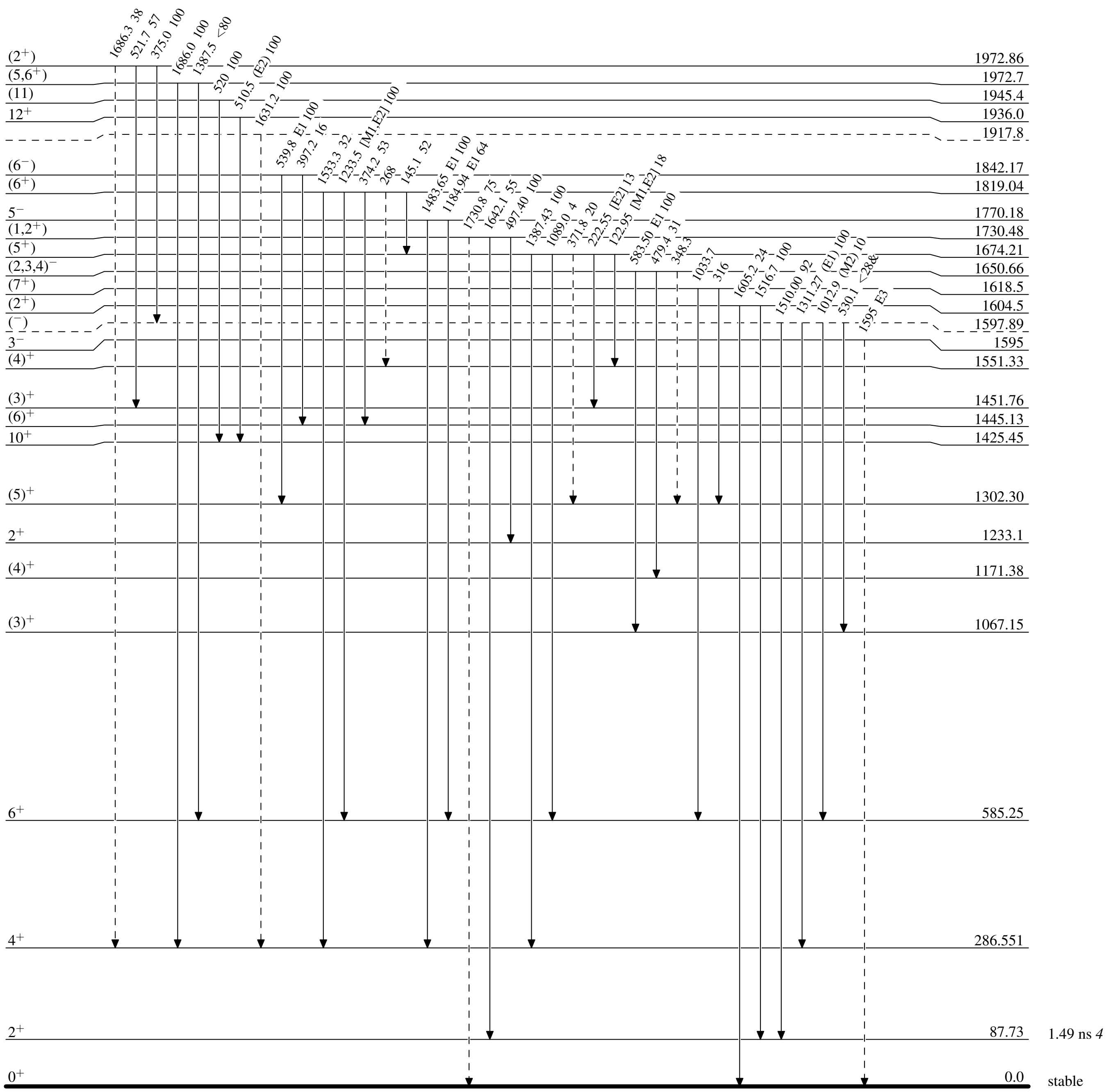
Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

γ Decay (Uncertain)

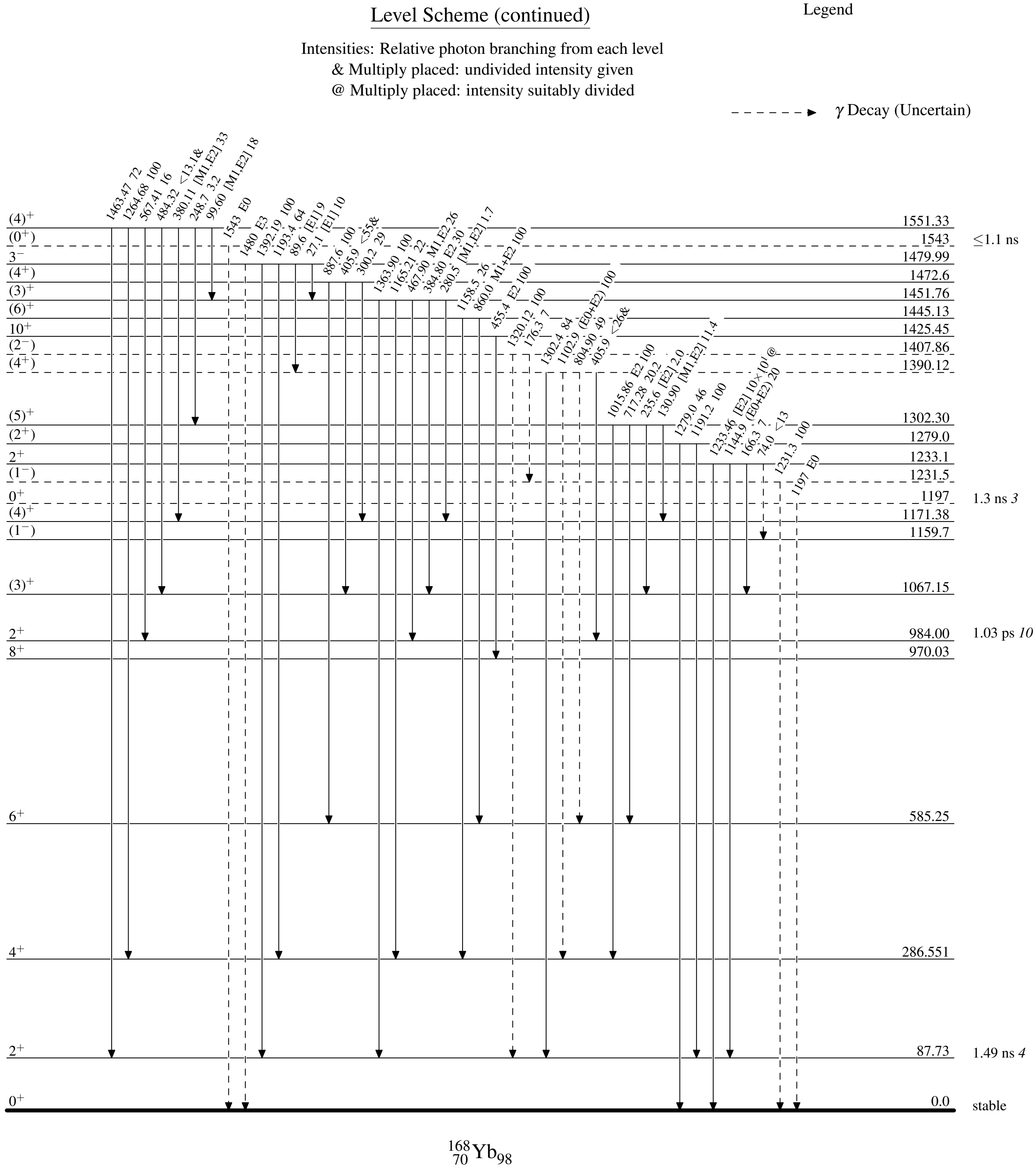


$^{168}_{70}Yb_{98}$

Adopted Levels, Gammas

Level Scheme (continued)

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

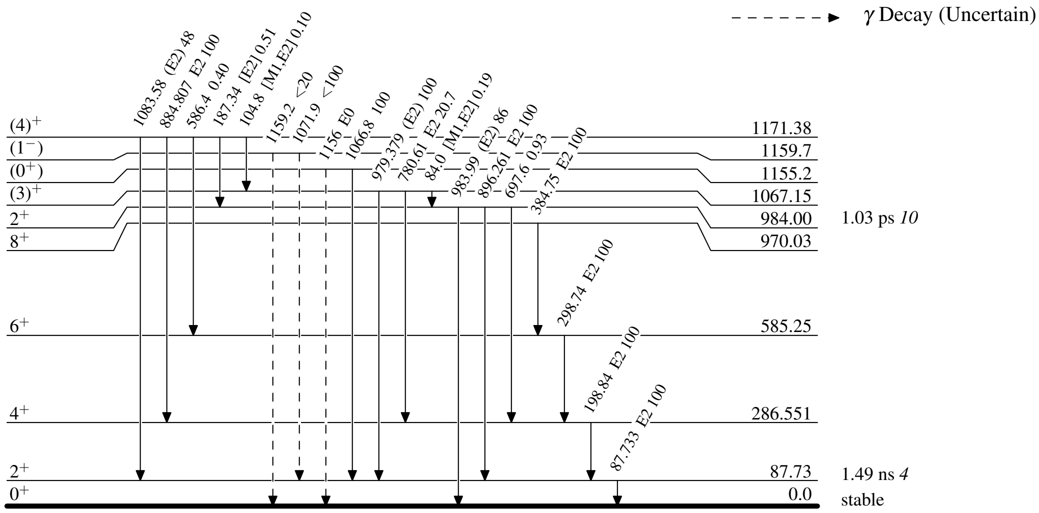


Adopted Levels, Gammas

Level Scheme (continued)

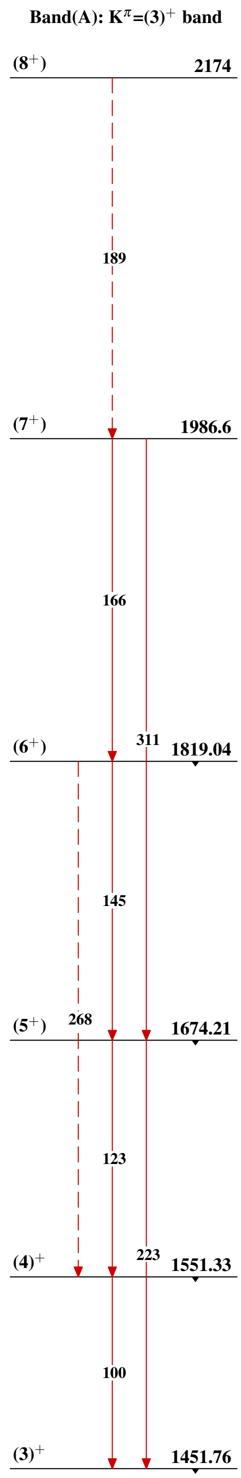
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

Legend



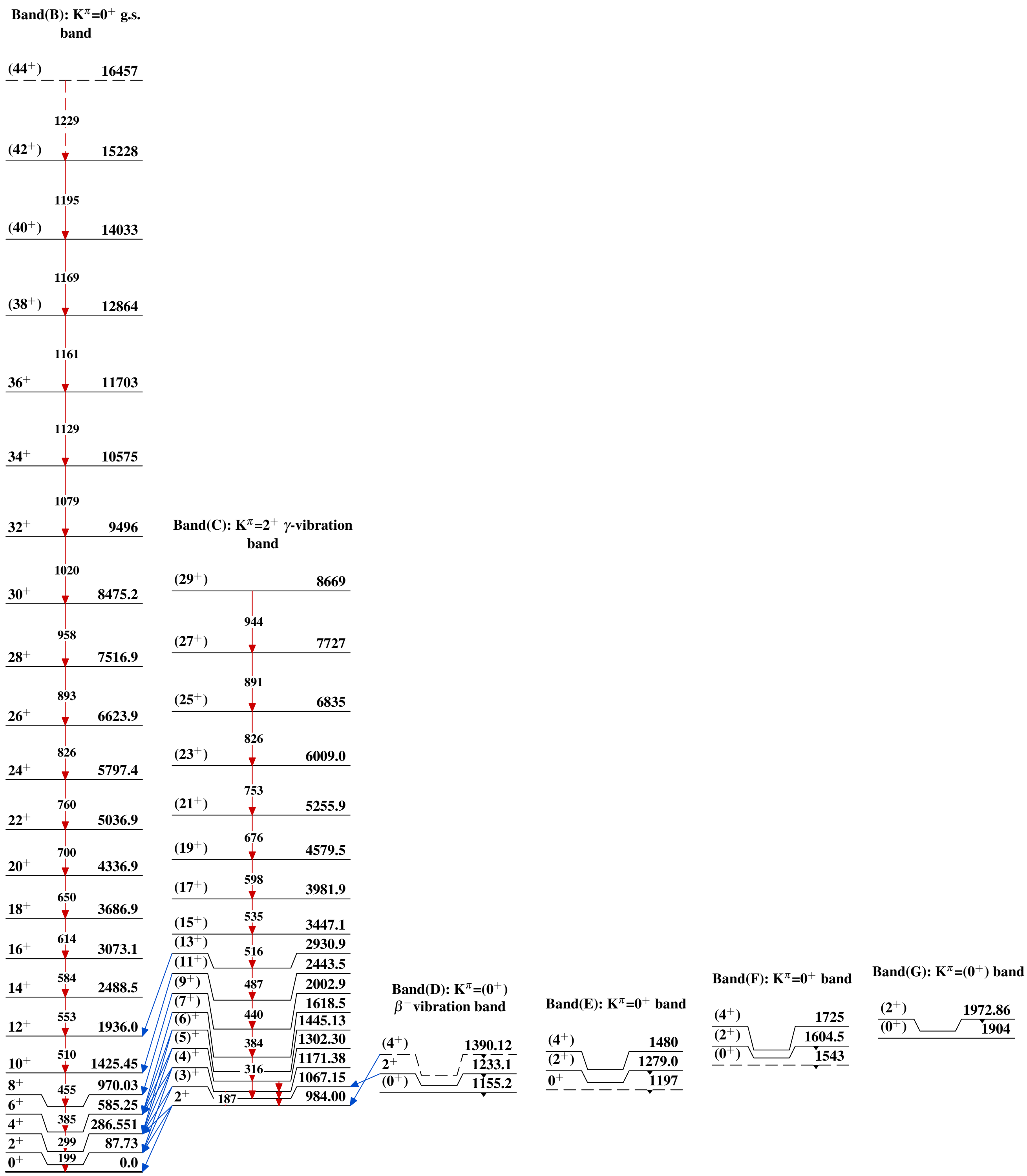
$^{168}_{70}Yb_{98}$

Adopted Levels, Gammas



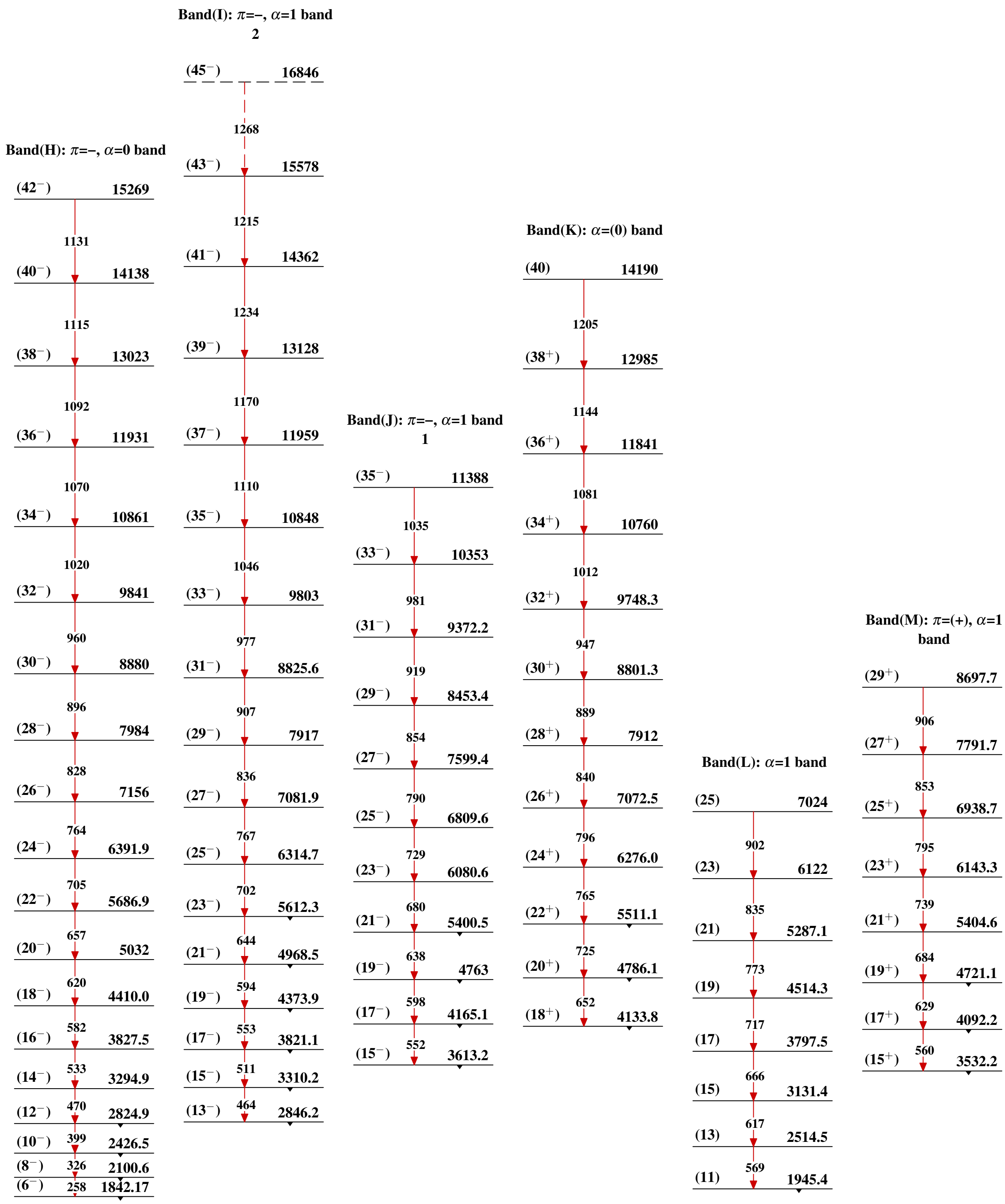
$^{168}_{70}Yb_{98}$

Adopted Levels, Gammas (continued)



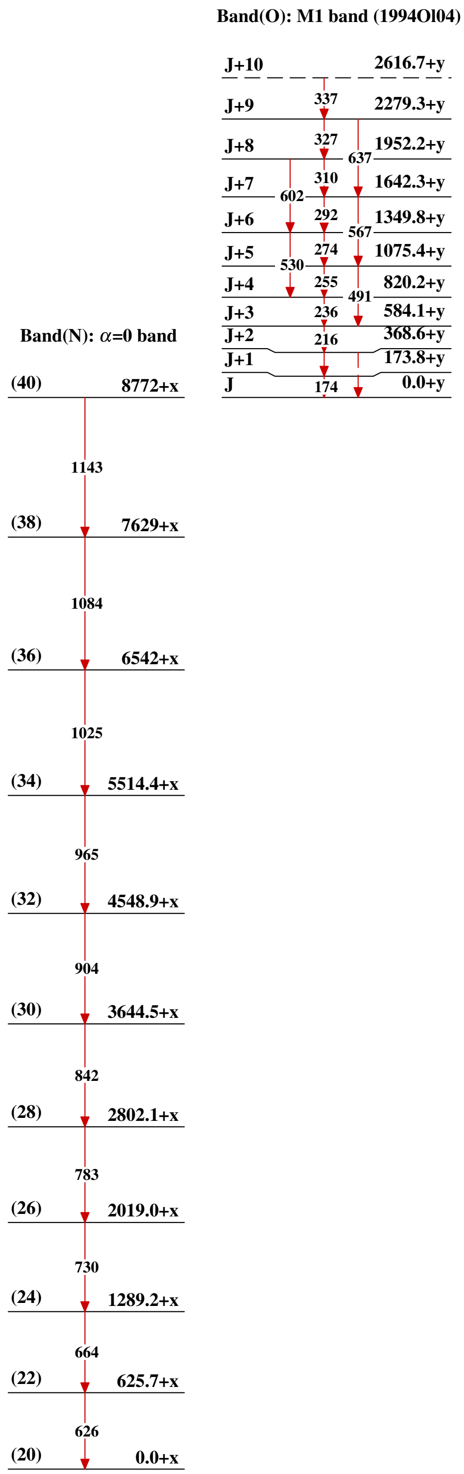
$^{168}_{70}Yb_{98}$

Adopted Levels, Gammas (continued)



$^{168}_{70}Yb_{98}$

Adopted Levels, Gammas (continued)



$^{168}_{70}Yb_{98}$

Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. M. Baglin[1], E. A. Mccutchan[2], S. Basunia[1]	NDS 153, 1 (2018)	1-Oct-2018

Q(β^-)=−3458 *17*; S(n)=8457.7 *12*; S(p)=6777.7 *8*; Q(α)=1737.2 *12* 2017Wa10
S(2n)=15324.7 *12*; S(2p)=12350.7 *12* (2017Wa10).
% Abundance: 2.982 *6* (from compilation by 2008De16).
Other Reactions:
^{186}W(n,4p13nγ): 2000Ya22: E(n)=250-600 MeV; 4 HPGe detectors; measured Eγ, $\gamma\gamma$ coin; tentatively observed 296γ and 390γ cascade connecting J=2, 4 and 6 members of g.s. band.
Muonic atoms: 1975Ze04: Measured muonic x ray spectra; deduced isotope shift and intrinsic Q=7.80 *30* (which implies Q(84 level)=2.23 *9*, based on rotational model).
Isotope shifts, hfs: see, e.g., 2003Ba90, 2002Zi04, 2001Lo30, 1991Ji06, 1991Ki14, 1991Ma48.
Study of order-to-chaos transition In ^{170}Yb: 2006Le41.
Measurement of level density and radiative strength function: 2004Ag05.

^{170}Yb Levels

For discussions of rotational band configurations see, e.g., 1972Ca21, 1981Wa14, 1985SuZX, 1994Go29, 1998Ar08.

Cross Reference (XREF) Flags

A	^{170}Tm β^- decay	E	^{168}Er(α,2nγ)	I	Coulomb excitation
B	^{170}Lu ε decay	F	^{169}Yb(n,γ) E=res	J	^{171}Yb(d,t)
C	^{174}Hf α decay	G	^{170}Er(α,4nγ)	K	^{171}Yb(^{3}He,$\alpha\gamma$)
D	^{160}Gd(^{14}C,4nγ)	H	^{170}Yb(d,d′)	L	^{172}Yb(p,t)

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$[#]	XREF	Comments
0.0[a]	0$^+$[b]	stable	ABCDE GHIJ L	
84.25468[a] *8*	2$^+$[b]	1.61 ns *2*	AB DE GHIJ L	μ=+0.675 *12* (1968Mu01); Q=2.1 *4* (1971Pl03) μ: from 1968Mu01, Mossbauer effect. Other: +0.67 *4* (1965Ti02). Q: from Q(^{172}Yb)/Q(^{170}Yb)=1.020 *12* (1971Pl03, Mossbauer effect). J$^\pi$: E2 84γ to 0$^+$. T$_{1/2}$: weighted average of 1.60 ns *2* (1972Gr05), 1.8 ns *3* (1967Ba27), and 1.62 ns *2* (2017Ka10). Others: 1.58 ns *5* (Coulomb excitation), 1.66 ns *9* from B(E2), 1.58 ns *7* from $\gamma\gamma$(t) in ^{170}Lu ε decay.
277.43[a] *4*	4$^+$[b]	98[@] ps *4*	B DE GHIJ L	J$^\pi$: stretched E2 193γ to 2$^+$; band assignment.
573.30[a] *8*	6$^+$[b]	13[@] ps *3*	DE GHIJ L	J$^\pi$: stretched E2 296γ to 4$^+$; band assignment.
963.32[a] *10*	8$^+$[b]	2.97 ps *25*	DE G I	J$^\pi$: stretched E2 390γ to 6$^+$; band assignment.
1069.35[c] *6*	0$^+$		B J L	J$^\pi$: E2 985γ to 2$^+$; J=0 from $\gamma\gamma(\theta)$ in ^{170}Lu ε decay; L(p,t)=0.
1138.55[c] *3*	2$^+$	2.1 ps *4*	B I	J$^\pi$: E2 1139γ to 0$^+$. T$_{1/2}$: from B(E2)=0.030 *6* in Coulomb excitation and adopted branching.
1145.72[d] *5*	2$^+$	0.83 ps *16*	B HIJ L	J$^\pi$: E2 1146γ to 0$^+$. T$_{1/2}$: from B(E2)=0.077 *15* in Coulomb excitation and adopted branching.
1225.35[e] *6*	(3)$^+$		B J L	J$^\pi$: E2 1141γ to 2$^+$; E2,M1 948γ to 4$^+$; E1,E2 1921γ from 1$^+$; J=3 from band assignment.
1228.84 *10*	0$^+$	0.51 ps *10*	B I	J$^\pi$: E0 1228γ to 0$^+$; L(p,t)=0.
1258.46[h] *14*	4$^-$[i]	370 ns *15*	E G	J$^\pi$: E2+M1 87γ from 5$^-$; $\gamma(\theta)$ of E1 981G to 4$^+$ in (α,2nγ). T$_{1/2}$: from γ(t) measurement in (α,2nγ).
1292.4[c] *7*	(4)$^+$		E GH J	XREF: H(1300). J$^\pi$: M1(+E2) 1015γ to 4$^+$; band structure in (α,2nγ) and (α,4nγ).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{170}Yb Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	XREF	Comments
1306.39 *5*	2^+		B I	Jπ: 1222γ to 2^+ has E0 component; E2 1029γ to 4^+.
1329.31[d] *20*	$(4)^+$		E GHIJ L	Jπ: E2(+M1) 1052γ to 4^+; band assignment.
1345.18[j] *9*	5^-[i]		E G J L	Jπ: E1 1068γ to 4^+ and E1 772γ to 6^+.
1364.53[q] *4*	1^-		B J L	Jπ: E1 1365γ to 0^+.
1397.05[q] *13*	$(3)^-$		B H J L	Jπ: E1 1119γ to 4^+; M1,E2 967γ from 1^-. Jπ supported by σ for E=1398 *5* doublet In (p,t) and E=1400 or 1398 levels In (d,d′) and (d,t). However, log *ft*=9.5 from 0^+ is too low for a ΔJ=3 branch.
1408.73[o] *20*	$(4)^+$		E G	Jπ: E2(+M1) 1132γ to 4^+; $K^\pi=(4)^+$ bandhead.
1425.24[r] *4*	$(2)^-$		B	Jπ: $1^-,2^-$ based on E1 287γ to 2^+ and M1 938γ from 1^-; band assignment (1999GrZV) requires J=2.
1437.53[a] *13*	10^+[b]	1.16 ps *8*	DE G I	Jπ: stretched E2 474γ to 8^+; band assignment.
1450.35[h] *13*	6^-[i]		E G	Jπ: E2 192γ to 4^-; D+Q 105γ to 5^-; D+Q 123γ from 7^-.
1459.75[e] *18*	$(5)^+$		E G J	Jπ: E2(+M1) 1182γ to 4^+; possible γ to 6^+; band structure.
1479.91 *6*	0^+		B J L	Jπ: J=0 from γγ(θ) in ^{170}Lu ε decay; E2 1397γ to 2^+; L(p,t)=0.
1510.2[q] *5*	(5^-)		E G	Jπ: γ to 4^+; $K^\pi=1^-$ band assignment.
1512.37 *4*	1^-		B J L	Jπ: E1 1512γ to 0^+.
1521.31[c] *14*	6^+		E G	Jπ: M1 948γ to 6^+; stretched E2 1244γ to 4^+.
1528.74[p] *18*	5^+		E G	Jπ: M1(+E2) 955γ to 6^+ from γ(θ) in (α,2nγ); M1+E2 1251γ to 4^+.
1534.57 *4*	2^+		B J L	Jπ: E2 1534γ to 0^+.
1552			J	
1566.38 *8*	0^+		B J L	Jπ: E0 transitions to 0^+; L(p,t)=0.
1572.73[j] *11*	7^-[i]		E GH	Jπ: 228γ E2 to 5^-; E1 609γ to 8^+.
1573.10[r] *20*	(4^-)		G	
1601.33[d] *17*	6^+		E G L	Jπ: ΔJ=0 E2(+M1) 1028γ to 6^+ from γ(θ) in (α,2nγ).
1634.84 *8*	(1^+)		B L	Jπ: 1635γ to 0^+ g.s. is M1(+E2) or E1 based on separate α(K)exp data; Δπ=no 1551γ to 2^+, but γ may be a doublet (see ^{170}Lu ε decay dataset).
1658.06 *9*	$(2)^+$		B J l	Jπ: 1381γ to 4^+; M1 865γ from 1^+.
1660.26[f] *14*	(5^-)		E G l	Jπ: (E1) 1087γ to 6^+; D 1383γ to 4^+ from γ(θ) in (α,2nγ). However, (4^+) suggested in (p,t).
1669.03[o] *17*	6^+		E G	Jπ: ΔJ=0 E2(+M1) 1096γ to 6^+; 260γ to $(4)^+$.
1690			J	
1712.41[q] *21*	(7^-)		E G L	Jπ: ΔJ=1 1139γ to 6^+; band assignment in (α,2nγ), (α,4nγ).
1715.95[h] *4*	8^-[i]		E G	Jπ: E2 265γ to 6^-; D+Q 143γ to 7^-; band assignment.
1717.95 *4*	$(2)^-$		B	Jπ: E1 572γ to 2^+; log *ft*=9.4 from 0^+; E1 493γ to $(3)^+$.
1762.63[g] *22*	(6^-)		E G J	XREF: J(1774). Jπ: ΔJ=1 102γ to $5^{(-)}$; band assignment.
1780.55[e] *15*	$(7)^+$		E G	Jπ: M1(+E2) 817γ to 8^+; 321γ to $(5)^+$.
1783	(3^-)[&]		H L	E(level): from (d,d′); 1780 *5* for doublet in (p,t).
≈1789	(3^-)[&]		J	E(level): may be same level as seen in (d,d′) at 1783 and in (p,t) at 1780 *5*; however, E from (d,t) is, typically,≈6 keV low, so it does not appear to be consistent with those.
1793.37[r] *18*	(6^-)		G	
1803.39[c] *14*	$(8)^+$		E G	Jπ: M1 840γ to 8^+; 1230γ to 6^+; band assignment.
1835.06[p] *21*	$7^{(+)}$		E G	Jπ: D 1261γ to 6^+; D 872γ to 8^+; band assignment.
1838.2 *3*	$(2)^+$		B J L	XREF: J(1829). Jπ: M1(+E2+E0) 1754γ TO 2^+. However, log *ft* is only≈10.0 from 0^+.
1851.23[k] *16*	6^-	<0.2 ns	E G	Jπ: ΔJ=1 for M1+E2 506γ to 5^-; M1+E2 401γ to 6^-. $T_{1/2}$: from γ(t) measurement in (α,2nγ).
1871 *5*			L	
1872.09[j] *14*	9^-[i]		E G	Jπ: E1 909γ to 8^+; E2 299γ to 7^-; 434γ to 10^+; band assignment.
1903.14[f] *14*	7^-		E G	Jπ: E1 939γ to 8^+; E1 1330γ to 6^+.

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Adopted Levels, Gammas (continued)

^{170}Yb Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	XREF	Comments
1911			J	
1954.13[d] *17*	8^+		E G	J^{π}: ΔJ=0 M1+E2 991γ to 8^+.
1964.64[l] *22*	(7^-)		E GH	J^{π}: intraband ΔJ=1 D+Q 113γ to 6^-; $K^{\pi}=6^-$ band member in (α,2nγ), (α,4nγ).
1971 *10*			J L	XREF: J(1963). E(level): from (p,t).
1983.36[a] *17*	12^+[b]	0.77 ps *6*	DE G I	J^{π}: stretched E2 546γ to 10^+; $K^{\pi}=0^+$ g.s. band member.
1985.64 *9*	$1^-,2^-$		B	J^{π}: E1 1901γ to 2^+; log *ft*=9.2 from 0^+.
2001 *10*			J L	XREF: J(2000). E(level): for doublet in (p,t).
2005.43[q] *18*	$(9)^-$		E G	J^{π}: $\gamma(\theta)$ of E1 1043γ to 8^+ in (α,2nγ) favors ΔJ=1; band assignment.
2009.35[o] *17*	8^+		E G	J^{π}: E2(+M1), ΔJ=0 1046γ to 8^+.
2039.85 *8*	1^+		B	J^{π}: M1 2040γ to 0^+.
2044.64[g] *17*	(8^-)		E G	J^{π}: ΔJ=(1) 142$\gamma(\theta)$ to 7^-; (Q) intraband 282γ to (6^-); band assignment.
2047 *7*			L	
2052.59 *7*	$0^-,1^-,2^-$		B	J^{π}: M1 540γ to 1^-.
2056.73[h] *15*	10^-[i]		E G	J^{π}: stretched E2 341γ to 8^-; 185γ to 9^-; band structure.
2088	0^+		L	J^{π}: L(p,t)=0.
2096.81[r] *18*	(8^-)		G	
2098.5[k] *3*	(8^-)		E G	J^{π}: ΔJ=1 from 134$\gamma(\theta)$ to (7^-); band assignment.
2115.90 *7*	1^-		B H J	J^{π}: (E1) 2116γ to 0^+; E1 2032γ to 2^+; log *ft*=9.1 from 0^+.
2126.14 *5*	1^-		B	J^{π}: E1 2126γ to 0^+.
2135.33[c] *15*	10^+		E G	J^{π}: M1 698γ to 10^+; stretched Q 1172γ to 8^+; band structure.
2137 *12*			L	
2170.04[e] *19*	(9^+)		G	
2171? *7*	(2^+)[&]		L	
2186	0^+		L	J^{π}: L(p,t)=0.
2189.65[m] *17*	7^-	2.5 ns *3*	E G	J^{π}: ΔJ=1 M1(+E2) 338γ to 6^-; stretched E2 845γ to 5^-; E2(+M1) 739γ to 6^-; band structure. $T_{1/2}$: from γ(t) in (α,2nγ).
2200.91 *9*	$1^-,2^-$		B	J^{π}: E1 2117γ to 2^+; log *ft*=8.8 from 0^+.
2220.69[f] *15*	$(9)^-$		E G	J^{π}: ΔJ=1 1258γ to 8^+; 783γ to 10^+.
2229 *7*	0^+		L	J^{π}: L(p,t)=0.
2242.00[j] *16*	11^-[i]		E G	J^{π}: stretched E2 370γ to $(9)^-$; E1 804γ to 10^+.
2249 *7*			L	
2253.5[l] *3*	(9^-)		E G	J^{π}: ΔJ=1 155$\gamma(\theta)$ to (8^-); $K^{\pi}=6^-$ band assignment.
2268.08 *17*	1^-		B	J^{π}: E1 2268γ to 0^+.
2275.49 *5*	1^-		B l	XREF: l(2281). J^{π}: E1 2275γ to 0^+.
2289.37 *10*	1^+		B l	XREF: l(2281). J^{π}: M1 γ to 0^+.
2328.0? *4*	(0^+)		B L	J^{π}: possible E0 2328-keV transition to 0^+ g.s.; possible γ to 2^+; log *ft*≈9.7 from 0^+.
2341.6[n] *3*	(8^-)		E G	J^{π}: ΔJ=1 152γ to 7^-; band assignment.
2351.71 *6*	$0^-,1^-,2^-$		B L	J^{π}: M1 987γ to 1^-; log *ft*=8.0, log $f^{1u}t$=8.65 *4* from 0^+.
2364.06 *4*	1^-		B	J^{π}: E1 2364γ to 0^+.
2367.65 *5*	$(1)^-$		B	J^{π}: M1 242γ to 1^-; log $f^{1u}t$<8.5 from 0^+; 1061γ to 2^+.
2372.83[d] *19*	10^+		E G	J^{π}: stretched Q 418γ to 8^+; M1+E2 935γ to 10^+.
2388.06[q] *18*	$(11)^-$		E G	J^{π}: ΔJ=1 E1 951γ to 10^+; band assignment.
2398.51[g] *19*	(10^-)		E G	J^{π}: ΔJ=1 178γ to $(9)^-$; intraband 354γ to (8^-).
2399	0^+		L	J^{π}: L(p,t)=0.
2400.10 *6*	1^-		B L	XREF: L(2390). J^{π}: E1 2400γ to 0^+.

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Adopted Levels, Gammas (continued)

^{170}Yb Levels (continued)

E(level)[†]	J^{π}[‡]	XREF	Comments
2412.39[o] 19	(10)$^+$	E G	J^{π}: M1,E2 975γ to 10$^+$; ΔJ=0,2 404γ to 8$^+$; band assignment.
2429.0[k] 3	(10$^-$)	E G	J^{π}: 175.4γ to (9$^-$), 330.7γ to (8$^-$); band structure.
2429.05 11	1$^+$,2$^+$	B	J^{π}: M1 2345γ to 2$^+$; M1 712γ from 1.
2436.01 11	(2,3)$^-$	B L	J^{π}: E1 2352γ to 2$^+$; 2158γ to 4$^+$.
2460.55 23	(10$^-$)	G	
2473.69[h] 19	12$^-$[i]	E G	J^{π}: E2 417γ to 10$^-$; γ to 11$^-$; band structure in (α,2nγ).
2477.8[r] 3	(10$^-$)	G	
2496.20 5	1$^-$	B L	J^{π}: E1 2496γ to 0$^+$.
2498.19 7	0$^-$,1$^-$,2$^-$	B	J^{π}: M1 1134γ to 1$^-$.
2501	0$^+$	L	J^{π}: L(p,t)=0.
2523.07 14	1$^+$	B	J^{π}: M1 2523γ to 0$^+$.
2524.27[c] 17	12$^+$	E G	J^{π}: M1(+E2) 541γ to 12$^+$; stretched Q 1087γ to 10$^+$.
2525.1[m] 3	(9$^-$)	E G	J^{π}: 183.6γ to (8$^-$), 335.4γ to 7$^-$; band assignment.
2536.97 6	1$^-$	B L	J^{π}: E1 2537γ to 0$^+$; π supported by E2 612γ from 1$^-$ and M1(+E2) 587γ from 1$^-$. However, M1 498γ to 1$^+$.
2560	0$^+$	L	J^{π}: L(p,t)=0.
2580.35[a] 24	14$^+$[b]	DE G	J^{π}: stretched E2 597γ to 12$^+$; band structure in (α,2nγ), (α,4nγ).
2595 7		L	
2603.60[f] 21	(11$^-$)	E G	J^{π}: 205γ to (10$^-$); 382γ to (9)$^-$; band assignment.
2603.8[e] 3	(11$^+$)	E G	J^{π}: Q 433.8γ to (9$^+$); K^{π}=2$^+$ band assignment.
2661.02 12	1$^+$	B	J^{π}: M1,E2 2661γ to 0$^+$; log *ft*=8.7 from 0$^+$.
2667.19 4	1$^{(+)}$	B	J^{π}: M1 1598γ to 0$^+$; π supported by mult for 1010γ, 1438γ, 1522γ. However, E1 2583γ to 2$^+$ and (M1) 152γ from π=− 2819.
2678 7		L	
2680.75[j] 19	13$^-$[i]	E G L	J^{π}: E2 439γ to (11)$^-$; D 698γ to 12$^+$; band structure in (α,xnγ).
2732.3[n] 3	(10$^-$)	E G	J^{π}: 207γ to (9$^-$); 391γ to (8$^-$); K$^{\pi}$=7$^-$ band assignment.
2748.08 5	1$^-$	B	J^{π}: E1 2748γ to 0$^+$.
2768.34 8	0$^-$,1$^-$	B	J^{π}: M1 1404γ to 1$^-$; log *ft*=7.9, log $f^{1u}t$=8.1 from 0$^+$.
2775.66 8	1$^-$	B	J^{π}: E1 2691γ to 2$^+$; log *ft*=7.6, log $f^{1u}t$=7.7 from 0$^+$.
2783.12 10	1$^+$	B	J^{π}: M1 2783γ to 0$^+$; M1 2699γ to 2$^+$; however, M1 1419γ to 1$^-$.
2815.73[g] 23	(12$^-$)	E G	J^{π}: 417γ to (10$^-$); 212γ to (11$^-$); band structure.
2819.77 4	0$^-$,1$^-$	B	J^{π}: M1 324γ to 1$^-$; (M2) 2736γ to 2$^+$ favors J=0; mixed multipolarity for 531γ and possibly for the 1308γ and 1565γ favor J=1.
2826.8[d] 3	(12$^+$)	E G	J^{π}: stretched Q 454γ to 10$^+$; K$^{\pi}$=2$^+$ band assignment.
2847.0?[k] 11	(12$^-$)	G	
2854	0$^+$	L	J^{π}: L(p,t)=0.
2855.61[q] 21	(13$^-$)	E G	J^{π}: 873γ to 12$^+$; band assignment.
2859.2[o] 3	(12$^+$)	G	
2927.2[r] 4	(12$^-$)	G	
2929.60 8	1$^-$	B	J^{π}: E1 2930γ to 0$^+$; E1 1860γ to 0$^+$.
2938.6 3	12$^{(-)}$	G	
2939.73 5	1$^-$	B	J^{π}: E1 1405γ to 2$^+$; however, 1305γ to (1$^+$) is M1,E2.
2945	0$^+$	L	J^{π}: L(p,t)=0.
2947.84 6	1$^-$	B	J^{π}: E1 2948γ to 0$^+$; E1 1810γ to 2$^+$.
2956.55 11	1$^+$	B	J^{π}: log *ft*=8.0 from 0$^+$; 2957γ to 0$^+$; M1 2873γ to 2$^+$.
2959.4[m] 3	(11$^-$)	E G	J^{π}: 227γ to (10$^-$); stretched Q 434γ to (9$^-$); band assignment.
2965.66 8	1$^+$	B	J^{π}: M1 2966γ to 0$^+$; however, M1 467γ to π=− 2498 and M1,E2 1601γ to π=− 1365.
2966.42[h] 22	14$^-$[i]	E G	J^{π}: E2 493γ to 12$^-$; K$^{\pi}$=4$^-$ band member.
2969.45 13	1$^-$	B	J^{π}: 2970γ to 0; M1 917γ to π=− 2053.
2975.32 11	1$^-$	B	J^{π}: M1 1611γ to 1$^-$; M1(+E0) 859γ to 1$^-$. However, weak M1(+E2) 1746γ to 0$^+$.
2986.67[c] 21	(14$^+$)	G	J^{π}: stretched Q intraband 462γ to (12)$^+$; 1003γ to 12$^+$.
2995	0$^+$	L	J^{π}: L(p,t)=0.
3007.6 3	1$^-$	B	J^{π}: E1 2923γ to 2$^+$; log *ft*=8.2, log $f^{1u}t$=8.0 from 0$^+$.

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Adopted Levels, Gammas (continued)

^{170}Yb Levels (continued)

E(level)[†]	J^π[‡]	XREF	Comments
3027	0^+	L	J^π: L(p,t)=0.
3042.46 *17*	1^+	B	J^π: M1 3043γ to 0^+.
3049.95[f] *24*	(13^-)	E G	J^π: 234γ to (12^-); 446γ to (11^-); band assignment.
3065.36 *12*	1^+	B	J^π: E2,M1 1996γ to 0^+.
3067.0[e] *4*	(13^+)	G	
3067.62 *10*	1^-	B	J^π: 3067.0γ to 0^+; M1 1703γ to 1^-.
3070.52 *19*	0,1	B	J^π: log *ft*=8.1, log $f^{1u}t$=7.75 from 0^+.
3077	0^+	L	J^π: L(p,t)=0.
3091.93 *11*	1	B	J^π: M1 596γ to 1^-; M1 692γ to 1^-. Inconsistent with (E2(+M1)) 3008γ to 2^+ and E2(+M1) or E1+M2 3092γ to 0^+.
3099.64 *9*	$1^{(-)}$	B	J^π: E1 2030γ to 0^+; however, π=+ based on E2 3100γ to 0^+ g.s. and (M1) 1620γ and (M1) 1954γ to 2^+.
3108	0^+	L	J^π: L(p,t)=0.
3115.58 *11*	1^-	B	J^π: E1 3115γ to 0^+.
3123.94 *12*	1^-	B	J^π: E1 2054γ to 0^+.
3131.10 *16*	1^+	B	J^π: log *ft*=7.9, log $f^{1u}t$=7.4 from 0^+; (M1) 3046.9γ to 0^+; E2,M1 1993γ to 2^+.
3140.60 *13*	(1)	B	J^π: weak 3140γ to 0^+, M1 712γ to $1^+,2^+$, and M1+E2 480γ to 1^+; inconsistent with M1 1776γ to 1^-.
3146.03 *9*	1^+	B	J^π: M1,E2 3146γ to 0^+.
3149.09 *9*	1^-	B	J^π: E1 3149γ to 0^+.
3150	0^+	L	J^π: L(p,t)=0.
3153	0^+	L	J^π: L(p,t)=0.
3161.02 *17*	(1^-)	B	J^π: (E1) 3161γ to 0^+.
3165.59 *9*	1^-	B	J^π: E1 3165γ to 0^+. However, (M1,E2) 1686γ to 0^+.
3169.59 *12*	1^-	B	J^π: 3169.6γ to 0^+, M1 401.3γ to $0^-,1^-$ 2783.
3179.76 *16*	1^-	B	J^π: E1 3096γ to 2^+.
3186.2[j] *4*	15^-[i]	E G	J^π: E2 505γ to 13^-; 4^- band member.
3186.66 *13*	(1^-)	B	J^π: M1 1061γ to 1^-; 3102γ to 2^+; doubly-placed 751γ to $(2,3)^-$. However, M1 758γ TO π=+ 2429.
3195.1[a] *3*	16^+[b]	DE G	J^π: E2 615γ to (14^+); band assignment.
3195.58 *8*	1^-	B	J^π: E1,E2 3196γ to 0^+; M1 448γ to 1^-; log *ft*=7.3, log $f^{1u}t$=6.6 from 0^+. However, (M1) 1967γ to 0^+.
3202.1[n] *4*	(12^-)	E G	J^π: 242.5γ to (11^-), 469.9γ to (10^-); band structure.
3202.94 *13*	1^+	B	J^π: M1 3202γ to 0^+.
3213.27 *13*	1^-	B	J^π: E1 2144γ to 0^+.
3258.18 *10*	1^+	B	J^π: M1 3173γ to 2^+; however, M1 822γ to $(2,3)^-$.
3268.91 *15*	$1^{(+)}$	B	J^π: M1 3184γ to 2^+; however, M1 449γ to $0^-,1^-$.
3274.17 *14*	1^-	B	J^π: E1 3274γ to 0^+, E1 3190γ to 2^+, and E1 1235γ to 1^+. The J^π assignment, however, is in disagreement with M1(+E2) 491γ to 1^+.
3291.82 *21*	1^+	B	J^π: E2,M1 2063γ to 0^+; however, weak E1 3291γ to 0^+ g.s.
3296.5[g] *3*	(14^-)	G	
3301.95 *11*	1^+	B	J^π: M1 2232.7γ to 0^+, M1 518.9γ to 1^+. J^π assignment is, however, in disagreement with M1 806γ 1^-.
3307.3[d] *4*	(14^+)	E G	J^π: stretched Q 481γ to (14^+); band structure in (α,2nγ), (α,4nγ).
3314.42 *11*	1	B	J^π: (M1) 3314γ to 0^+ and (M1) 1748γ to 0^+ give 1^+; however, π=− from E1 3230γ TO 2^+, and M1+E2+E0 963γ TO $1^-,2^-$.
3325	0^+	L	J^π: L(p,t)=0.
3333.2?[o] *11*	(14^+)	G	
3366.40 *11*	1	B	J^π: log *ft*=6.5, log $f^{1u}t$=5.3 from 0^+; 1799γ to 0^+. M1 301γ to 1^+, E2 598γ to $0^-,1^-$ give conflicting π assignments.
3384.87 *17*	1^-	B	J^π: E1 2315γ to 0^+.
3401.7[q] *3*	(15^-)	E G	J^π: band structure in (α,4nγ).
3423.2? *8*	(0^-)	B	J^π: possible M1+E2+E0 or M2 3339γ to 2^+.
3437.8[r] *6*	(14^-)	G	

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Adopted Levels, Gammas (continued)

^{170}Yb Levels (continued)

E(level)[†]	J$^\pi$[‡]	XREF	Comments
3466.8?[m] 8	(13$^-$)	G	
≈3500		L	J$^\pi$: E and excitation probability fit systematics for 5$^-$ and 7$^-$ doublets observed to be strongly excited in (p,t) for neighboring nuclei.
3533.8[h] 3	16$^-$[i]	E G	J$^\pi$: E2 567γ to 14$^-$; 4$^-$ band member.
3547.3[c] 3	(16$^+$)	G	J$^\pi$: intraband 561γ to (14$^+$); band assignment.
3558.1[e] 4	(15$^+$)	G	
3567.4[f] 3	(15$^-$)	G	
3742.1[n] 4	(14$^-$)	G	
3756.5[j] 4	(17$^-$)[i]	E G	J$^\pi$: E2 570γ to (15$^-$); band structure.
3806.8[a] 4	18$^+$[b]	DE G	J$^\pi$: E2 612γ to (16$^+$); band assignment.
3833.3[d] 4	(16$^+$)	G	
3842.3[g] 6	(16$^-$)	G	
3844.2?[o] 15	(16$^+$)	G	
4011.8[r] 12	(16$^-$)	G	
4017.6[q] 6	(17$^-$)	G	
4065.1?[e] 11	(17$^+$)	G	
4174.0[h] 4	18$^-$[i]	G	
4207.1[c] 5	(18$^+$)	G	J$^\pi$: intraband 659γ to (16$^+$); 1012γ to 16$^+$; band assignment.
4390.3[j] 5	19$^-$[i]	G	
4436.5[a] 7	20$^+$[b]	E G	J$^\pi$: (E2) 631γ to 18$^+$; K$^\pi$=0$^+$ g.s. band assignment.
4885.9[h] 7	20$^-$[i]	G	
5084.8[j] 5	21$^-$[i]	G	

[†] From least-squares fit to adopted Eγ.

[‡] For levels observed only in (α,4nγ), J$^\pi$ is based on DCO ratio data and probable band structure deduced in that reaction.

[#] From Doppler-broadened lineshape analyses in Coulomb excitation, unless noted otherwise.

[@] from $\gamma\gamma$(t) in (α,2nγ).

[&] Based on measured $\sigma(\theta)$, comparison to Nilsson-model prediction, and band configuration analysis in ^{170}Er(d,d′), ^{171}Yb(d,t) or ^{172}Yb(p,t).

[a] Band(A): K$^\pi$=0$^+$ g.s. band. Rotational parameters: α=14.1, β=−0.012.

[b] Definite J$^\pi$ assigned to members of g.s. band based on smooth progression of level energies and independently-established J$^\pi$(g.s.)=0$^+$ and E2 multipolarity for J=2 to 0 84γ.

[c] Band(B): K$^\pi$=0$^+$, α=0 β band. Rotational parameters: α=11.6, β=−0.021. Sharp rise in alignment at low rotational frequency probably indicates a change from vibrational to two-quasiparticle character as states gradually mix with low-spin members of (ν i$_{13/2}$)^2 band. However, 2001Ga02 suggest that the J=0, 1069 level is not a good β-vibration candidate.

[d] Band(C): K$^\pi$=2$^+$, α=0 γ band. Rotational parameters: α=13.0, β=−0.011. Small alignment at low spin. At higher frequencies, vibrational states probably mix with two-quasiparticle (ν 5/2[512])⊗(ν 1/2[521]) band.

[e] Band(c): K$^\pi$=2$^+$, α=1 γ band. Rotational parameters: α=13.6, β=−0.016. Small alignment at low spin. At higher frequencies, vibrational states probably mix with two-quasiparticle (ν 5/2[512])⊗(ν 1/2[521]) band.

[f] Band(d): K$^\pi$=(3)$^-$, α=1. Rotational parameters: α=9.3, β=−0.0003. Signature partner of K$^\pi$=3$^-$, α=0 band. See comments on that band. J=3 member not yet identified.

[g] Band(D): K$^\pi$=(3)$^-$, α=0. Rotational parameters: α=9.5, β=−0.0014. Bandhead energy very close to that calculated for the (ν 7/2[633])-(ν 1/2[521]) configuration; assignment supported by absence of a (ν i$_{13/2}$)^2 crossing in kinematic moment of inertia and by in-band transition strength ratios (B(M1)(cascade)/B(E2)(crossover)) (1998Ar08). Probable admixture with K$^\pi$=1$^-$ (1981Wa14). J=4 member not yet identified.

[h] Band(E): K$^\pi$=4$^-$, α=0. Rotational parameters: α=8.7, β=+0.0024. Configuration (ν 7/2[633])+(ν 1/2[521]) supported by

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Adopted Levels, Gammas (continued)

^{170}Yb Levels (continued)

two-quasiparticle plus rotor calculations, by large splitting from signature partner (as in 7/2[633] band in ^{171}Yb), by similarity of kinematic moment of inertia plot to that for (ν 7/2[633])+(ν 1/2[521]) band in ^{172}Yb, by alignment (which is close to sum of alignments for 7/2[633] and 1/2[521] bands in ^{171}Yb and ^{169}Tm), and by in-band transition strength ratios (B(M1)(cascade)/B(E2)(crossover)) (1998Ar08).

[i] Definite J$^{\pi}$ assigned to members of (ν 7/2[633])+(ν 1/2[521]) band based on smooth progression of level energies and independently-established J$^{\pi}$(1258)=4^{-} and multipolarity of M1+E2 for J=5 to 4 87γ.

[j] Band(e): K$^{\pi}$=4^{-}, α=1. Rotational parameters: α=8.7, β=+0.0008. Signature partner of K$^{\pi}$=4^{-}, α=0 band. See comments on that band.

[k] Band(F): K$^{\pi}$=6^{-}, α=0. Rotational parameters: α=8.0, β=+0.0065. Configuration (ν 7/2[633])+(ν 5/2[512]) consistent with observed alignment and with behavior of ^{172}Yb band with same configuration.

[l] Band(f): K$^{\pi}$=6^{-}, α=1. Rotational parameter: α=8.5. Configuration (ν 7/2[633])+(ν 5/2[512]) consistent with observed alignment and with behavior of ^{172}Yb band with same configuration.

[m] Band(g): K$^{\pi}$=7^{-}, α=1. Rotational parameters: α=9.6, β=+0.0063. Signature partner of K$^{\pi}$=7^{-}, α=0 band. See comments on that band.

[n] Band(G): K$^{\pi}$=7^{-}, α=0. Rotational parameters: α=10.3, β=−0.00075. Configuration (π 7/2[523])+(π 7/2[404]) consistent with observed alignment and with in-band transition strength ratios (B(M1)(cascade)/B(E2)(crossover)) for J=9, 10, 11 (1998Ar08).

[o] Band(H): K$^{\pi}$=(3)$^{+}$ band, α=0. Rotational parameters: α=12.3, β=−0.0145. Band's decay characteristics imply K≤4; probably analogous (based on comparison of kinetic moment of inertia plots) to a K$^{\pi}$=3^{+} band in ^{172}Yb which includes the (ν 5/2[512])+(ν 1/2[521]) configuration. 1998Ar08 suggest that configuration for this band also. However, postulated in 1993Wu03 to be $\gamma\gamma$ vibrational band (K=4). J=3 member not yet identified.

[p] Band(h): K$^{\pi}$=(3)$^{+}$, α=1 (1998Ar08). Signature partner of the K$^{\pi}$=(3)$^{+}$, α=0 band. See comments on that band.

[q] Band(i): K$^{\pi}$=1^{-}, α=1 octupole band. K$^{\pi}$=3^{-} admixture. Probable dominant configuration (ν 7/2[633])-(ν 5/2[512]). Assignment supported by large B(E3) for J=3 member of this band and by observed alignment relative to g.s. band of $\approx 3\hbar\omega$. Large energy splitting relative to signature partner is observed, as expected (1998Ar08).

[r] Band(I): K$^{\pi}$=(1)$^{-}$, α=0 octupole band. Possible signature partner of K$^{\pi}$=1^{-}, α=1 octupole band (1998Ar08). Large energy splitting relative to signature partner is observed, as expected.

$\gamma(^{170}Yb)$

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[c]	Comments
84.25468	2^+	84.25474 *8*	100	0.0	0^+	E2	6.28	B(E2)(W.u.)=201 *6* E_γ: from ^{170}Tm β^- decay. Mult.: from α(K)exp and subshell ratios in ^{170}Tm β^- decay.
277.43	4^+	193.13 *5*	100	84.25468	2^+	E2	0.302	
573.30	6^+	295.86 *9*	100	277.43	4^+	E2[&]	0.0771	E_γ: weighted average from (α,4nγ) and (α,2nγ).
963.32	8^+	390.06 *9*	100	573.30	6^+	E2[&]	0.0345	B(E2)(W.u.)=3.6×10^2 *3* E_γ: weighted average from (α,4nγ) and (α,2nγ).
1069.35	0^+	985.10 *10*	100	84.25468	2^+	E2		
		1069.4		0.0	0^+	E0		
1138.55	2^+	1054.28 *5*	100 *3*	84.25468	2^+	E2		
		1138.65 *10*	75.7 *23*	0.0	0^+	E2		B(E2)(W.u.)=1.08 *21*
1145.72	2^+	868.10 *20*	3.6 *4*	277.43	4^+	(E2)		B(E2)(W.u.)=0.48 *11*
		1061.39 *10*	100 *3*	84.25468	2^+	E2		B(E2)(W.u.)=4.8 *10*
		1145.80 *20*	83 *3*	0.0	0^+	E2		B(E2)(W.u.)=2.7 *6*
1225.35	$(3)^+$	947.80 *15*	30.7 *9*	277.43	4^+	E2,M1		
		1141.30 *20*	100 *3*	84.25468	2^+	E2		
1228.84	0^+	160.2		1069.35	0^+	E0		
		1144.65 *20*	100 *3*	84.25468	2^+	E2		B(E2)(W.u.)=10.1 *21*
		1228.9		0.0	0^+	E0		ce(K)/ce=0.87. I(ce(K))/I(1145γ)=0.0027 from ^{170}Lu ε decay. ρ^2(E0)=0.027 *5* (evaluation in 1999Wo07).
1258.46	4^-	981.1[@] *2*	100	277.43	4^+	E1[&]		B(E1)(W.u.)=6.3×10^{-10} *3*
1292.4	$(4)^+$	1015.0 *7*	100	277.43	4^+	M1(+E2)[&]		E_γ: weighted average of 1014.7 *2* in (α,4nγ) and 1016.7 *5* in (α,2nγ).
1306.39	2^+	1028.80 *10*	100 *3*	277.43	4^+	E2		
		1222.3 *3*	79 *3*	84.25468	2^+	E0+E2+M1	0.013	α: estimated from α(K)exp.
		1306.30 *20*	61 *3*	0.0	0^+	(E2)		
1329.31	$(4)^+$	1051.8[a] *2*	100	277.43	4^+	E2(+M1)[&]		
1345.18	5^-	86.8[a] *2*	13 *5*	1258.46	4^-	E2+M1[&]	5.3 *3*	Iγ: unweighted average of 8.0 *8* and 18.7 *13* from (α,4nγ) and (α,2nγ), respectively. δ: −0.42 *7* or −1.63 *20* from (α,2nγ). α: for range of δ allowed by $\gamma(\theta)$.
		771.8[@] *1*	33.2[a] *16*	573.30	6^+	E1[&]		
		1067.8[@] *1*	100[a] *4*	277.43	4^+	E1[&]		
1364.53	1^-	1280.25 *10*	100 *3*	84.25468	2^+	E1		
		1364.60 *10*	56.5	0.0	0^+	E1		
1397.05	$(3)^-$	1119.40 *20*	57.1 *17*	277.43	4^+	E1		
		1312.9 *3*	100 *6*	84.25468	2^+			
1408.73	$(4)^+$	1131.3[a] *2*	100	277.43	4^+	E2(+M1)[&]		
1425.24	$(2)^-$	118.80 *15*	1.02 *10*	1306.39	2^+	[E1]	0.217	

$\gamma(^{170}Yb)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[c]	Comments
1425.24	$(2)^-$	286.60 *5*	14.3 *4*	1138.55	2^+	E1	0.0223	
		1341.20 *10*	100 *3*	84.25468	2^+	(E1)		
1437.53	10^+	474.2[a] *2*	100	963.32	8^+	E2[&]	0.0204	B(E2)(W.u.)=356 *25*
1450.35	6^-	105.2[a] *2*	89[a] *6*	1345.18	5^-	(M1+E2)	2.78 *15*	Mult.: D+Q from $\gamma(\theta)$ in (α,2nγ); δ larger than typical for E1+M2. δ: −0.41 *5* or −1.75 *15* from (α,2nγ).
		191.9[a] *2*	100[a] *6*	1258.46	4^-	E2[&]	0.308	
1459.75	$(5)^+$	887.0 *5*	33 *9*	573.30	6^+			E_γ,I_γ: weighted average from (α,2nγ) and (α,4nγ).
		1182.2[a] *2*	100[a] *18*	277.43	4^+	E2+M1		Mult.: E2(+M1) from (α,2nγ); D from (α,4nγ).
1479.91	0^+	251.0		1228.84	0^+	E0		ce(K)/ce=0.87. I(ce(K))/I(1396γ)=0.0051 from ^{170}Lu ε decay.
		410.5		1069.35	0^+	E0		ce(K)/ce=0.87. I(ce(K))/I(1396γ)=0.00103 from ^{170}Lu ε decay.
		1395.65 *10*	100 *3*	84.25468	2^+	E2		
		1479.9		0.0	0^+	E0		ce(K)/ce=0.87. I(ce(K))/I(1396γ)=0.0133 from ^{170}Lu ε decay.
1510.2	(5^-)	1232.8[a] *5*	100	277.43	4^+	(D)[b]		
1512.37	1^-	1428.08 *10*	100 *3*	84.25468	2^+	E1		
		1512.50 *10*	73.2 *20*	0.0	0^+	E1		
1521.31	6^+	228.2[af] *5*	11[a] *4*	1292.4	$(4)^+$			
		948.0[a] *2*	79 *17*	573.30	6^+	M1[&]		I_γ: weighted average of 52 *15* from (α,2nγ) and 96 *13* from (α,4nγ).
		1243.6[a] *2*	100 *20*	277.43	4^+	E2[&]		I_γ: weighted average from (α,2nγ) and (α,4nγ).
1528.74	5^+	955.3 *4*	41 *10*	573.30	6^+	M1(+E2)[&]		E_γ,I_γ: weighted average from (α,2nγ) and (α,4nγ).
		1251.3[a] *2*	100[a] *21*	277.43	4^+	M1+E2[&]		
1534.57	2^+	228.05 *15*	2.29 *14*	1306.39	2^+	E0+M1+E2	≈0.65	α: adopted value estimated from α(K)exp in ^{170}Lu ε decay.
		388.80 *10*	5.71 *17*	1145.72	2^+	M1(+E0+E2)	0.081	α: if M1.
		395.95 *10*	12.0 *3*	1138.55	2^+	M1(+E0+E2)	0.077	α: if M1.
		1257.20 *10*	87 *3*	277.43	4^+			
		1450.20 *10*	100 *3*	84.25468	2^+	E0+M1+E2		
		1534.55 *10*	58.3 *17*	0.0	0^+	E2		
1566.38	0^+	201.75 *15*	2.59 *22*	1364.53	1^-	[E1]	0.0542	
		337.5		1228.84	0^+	E0		ce(K)/ce=0.87. I(ce(K))/I(1482γ)=0.00111 from ^{170}Lu ε decay.
		497.0		1069.35	0^+	E0		ce(K)/ce=0.87. I(ce(K))/I(1482γ)=0.0032 from ^{170}Lu ε decay.
		1482.15 *10*	100 *4*	84.25468	2^+	(E2)		
		1566.4		0.0	0^+	E0		ce(K)/ce=0.87. I(ce(K))/I(1482γ)=0.0061 from ^{170}Lu ε decay.
1572.73	7^-	122.6[a] *5*	6.5[a] *14*	1450.35	6^-	(M1+E2)	1.69 *20*	I_γ: other: 10.2 *17* in (α,2nγ). Mult.: D+Q from $\gamma(\theta)$ in (α,2nγ); δ larger than typical for E1+M2. δ: −0.37 *7* or −1.95 *25* from (α,2nγ).
		227.5[a] *2*	21.0[a] *14*	1345.18	5^-	E2[&]	0.176	

$^{170}_{70}Yb_{100}$-9

$\gamma(^{170}Yb)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[#]	α[c]	Comments
1572.73	7⁻	609.2[a] 2	34.1[a] 22	963.32	8⁺	E1[&]			I_γ: other: 20 3 in (α,2nγ).
		999.5[@] 1	100[a] 4	573.30	6⁺	(E1)[&]			
1573.10	(4⁻)	1295.7[a] 2	100	277.43	4⁺				
1601.33	6⁺	271.6[a] 5	7[a] 4	1329.31	(4)⁺				
		1028.1[a] 2	100[a] 21	573.30	6⁺	E2(+M1)[&]	>1.5		
1634.84	(1⁺)	1550.55 10	100 3	84.25468	2⁺	(M1)			
		1634.8 3	21.0 8	0.0	0⁺	(M1)			
1658.06	(2)⁺	1380.80 20	100 13	277.43	4⁺				
		1573.60 25	74 4	84.25468	2⁺				
1660.26	(5⁻)	1086.8[a] 2	100[a] 10	573.30	6⁺	(E1)[&]			
		1382.9[a] 2	100[a] 12	277.43	4⁺	(E1)			Mult.: D from (α,2nγ); $\Delta\pi$ from level scheme.
1669.03	6⁺	260.4[a] 5	15[a] 7	1408.73	(4)⁺				
		1095.8[a] 2	100[a] 19	573.30	6⁺	E2(+M1)[&]			
1712.41	(7⁻)	1139.1[a] 2	100	573.30	6⁺	D[b]			
1715.95	8⁻	143.2[a] 2	42[a] 3	1572.73	7⁻	(M1+E2)		1.03 19	I_γ: other: 28.3 22 in (α,2nγ). Mult.: D+Q from $\gamma(\theta)$ in (α,2nγ); δ larger than typical for E1+M2. δ: −0.51 6 or −1.50 20 from (α,2nγ).
		265.4[a] 2	100.0[a] 9	1450.35	6⁻	E2[&]		0.1077	
1717.95	(2)⁻	205.55 20	0.63 5	1512.37	1⁻	(M1+E2)		0.34 10	
		292.55[e] 20	<0.43[e]	1425.24	(2)⁻	[M1,E2]		0.12 5	
		492.58 5	45.4 14	1225.35	(3)⁺	E1			
		572.20 5	100 3	1145.72	2⁺	E1			
		579.40 5	35.7 11	1138.55	2⁺	E1			
1762.63	(6⁻)	102.4[a] 5	100	1660.26	(5⁻)	(M1)			Mult.: D from (α,2nγ); $\Delta\pi$=(No) from level scheme.
1780.55	(7)⁺	320.7 4	6.4 23	1459.75	(5)⁺				E_γ,I_γ: weighted average from (α,2nγ) and (α,4nγ).
		817.1[a] 2	18.1[a] 25	963.32	8⁺	M1(+E2)[&]			
		1207.0[a] 2	100[a] 13	573.30	6⁺	D[b]			
1793.37	(6⁻)	132.9[a] 2	23[a] 7	1660.26	(5⁻)				
		220.5[a] 5	27[a] 10	1573.10	(4⁻)	Q[b]			
		1220.2 5	100 33	573.30	6⁺				
1803.39	(8)⁺	281.8[a] 2	18[a] 5	1521.31	6⁺				
		840.1[a] 2	100[a] 10	963.32	8⁺	M1[&]		0.01101	
		1230.3[a] 2	63[a] 9	573.30	6⁺				I_γ: other: 91 18 in (α,2nγ).
1835.06	7⁽⁺⁾	306.1[a] 5	10 6	1528.74	5⁺				
		871.8[aa] 2	100[a] 11	963.32	8⁺	D[b]			Eγ=870.6 5 in (α,2nγ). I(872γ)/I(1261γ)=2.3 3 in (α,4nγ) but 0.35 13 in (α,2nγ).
		1261[a] 1	31[a] 7	573.30	6⁺	D[b]			I_γ: see comment on 870.6γ.
1838.2	(2)⁺	1753.9[f] 3	100 5	84.25468	2⁺	M1(+E2+E0)			

From ENSDF

$^{170}_{70}Yb_{100}$-10

Adopted Levels, Gammas (continued)

$\gamma(^{170}Yb)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[#]	α[c]	Comments
1838.2	(2)$^+$	1838.2[e,f] 5	<97[e]	0.0	0$^+$				
1851.23	6$^-$	400.9[a] 2	46[a] 5	1450.35	6$^-$	M1+E2[&]	0.7 +6−4	0.059 13	B(M1)(W.u.)>1.5×10^{-4} I_γ: other: 20.4 20 from (α,2nγ).
		505.9[a] 2	100[a] 10	1345.18	5$^-$	M1+E2[&]	0.9 +6−4	0.030 6	B(M1)(W.u.)>0.00012; B(E2)(W.u.)>0.12
1872.09	9$^-$	156.4[a] 2	11.7[a] 14	1715.95	8$^-$	D[b]			
		299.2[a] 2	60.0[a] 21	1572.73	7$^-$	E2[&]		0.0745	
		434.2[@,f] 5	8 3	1437.53	10$^+$				I_γ: from (α,2nγ); γ absent in (α,4nγ).
		908.8[a] 2	100[a] 3	963.32	8$^+$	E1[&]			
1903.14	7$^-$	141.0[a] 5	4.9[a] 24	1762.63	(6$^-$)				
		234.4[@,f] 5	14 7	1669.03	6$^+$				I_γ: from (α,2nγ); γ absent in (α,4nγ).
		243.3 4	24[a] 7	1660.26	(5$^-$)	Q[b]			E_γ: weighted average from (α,2nγ) and (α,4nγ).
		939.6[a] 2	43[a] 7	963.32	8$^+$	E1[&]			I_γ: weighted average of 36 7 from (α,2nγ) and 49 7 from (α,4nγ).
		1329.8[a] 2	100[a] 12	573.30	6$^+$	E1[&]			
1954.13	8$^+$	352.8[a] 2	27[a] 7	1601.33	6$^+$	Q[b]			
		990.8[a] 2	100[a] 11	963.32	8$^+$	M1+E2[&]			
1964.64	(7$^-$)	113.6[a] 5	54 8	1851.23	6$^-$	(M1+E2)			I_γ: weighted average of 50 17 from (α,4nγ) and 55 9 from (α,2nγ). Mult.: D+Q from (α,2nγ); $\Delta\pi$=(No) from level scheme.
		514.3[a] 2	100[a] 17	1450.35	6$^-$				
1983.36	12$^+$	545.7[a] 2	100	1437.53	10$^+$	E2		0.01433	B(E2)(W.u.)=268 21 Mult.: Q from (α,4nγ); not M2 from RUL.
1985.64	1$^-$,2$^-$	560.55 15	2.8 4	1425.24	(2)$^-$	M1		0.0305	
		621.40[e] 15	<8.1[e]	1364.53	1$^-$	[M1]		0.0235	
		1901.35 15	100 4	84.25468	2$^+$	E1			
		1985.5[e] 3	<13.3[e]	0.0	0$^+$				
2005.43	(9)$^-$	292.9[a] 5	5.8[a] 19	1712.41	(7$^-$)				
		1042.1[a] 2	100[a] 9	963.32	8$^+$	E1[&]			
2009.35	8$^+$	340.4[a] 2	20[a] 4	1669.03	6$^+$				I_γ: other: 50 20 in (α,2nγ).
		1046.0[a] 2	100[a] 11	963.32	8$^+$	E2(+M1)[&]			
2039.85	1$^+$	675.45 20	0.42 3	1364.53	1$^-$				
		901.40[e] 20	<2.8[e]	1138.55	2$^+$				
		970.20[e] 20	<4.5[e]	1069.35	0$^+$	(M1)			
		1955.65 15	52.5 18	84.25468	2$^+$	M1+E2			
		2040.00 15	100 4	0.0	0$^+$	M1			
2044.64	(8$^-$)	141.5[a] 2	88[a] 8	1903.14	7$^-$	(D+Q)			I_γ: other: 30 10 in (α,2nγ).
		281.9[a] 2	100[a] 13	1762.63	(6$^-$)	(Q)			
2052.59	0$^-$,1$^-$,2$^-$	540.15 10	100 4	1512.37	1$^-$	M1		0.0336	
		688.00 8	96 3	1364.53	1$^-$	M1		0.0181	

Adopted Levels, Gammas (continued)

$\gamma(^{170}Yb)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[#]	α[c]	Comments
2056.73	10^-	184.6[a] *2*	17.8[a] *18*	1872.09	9^-	D[&]			
		341.0[@] *1*	100.0[a] *18*	1715.95	8^-	E2[&]		0.0506	
2096.81	(8^-)	303.3[a] *2*	100[a] *19*	1793.37	(6^-)	Q[b]			
		334.4[a] *5*	<16[a]	1762.63	(6^-)				
		1133.6[a] *2*	69[a] *9*	963.32	8^+				
2098.5	(8^-)	133.9[a] *2*	100[a] *12*	1964.64	(7^-)	D[&]			
		247.0[a] *5*	29[a] *12*	1851.23	6^-				
2115.90	1^-	457.90 *15*	5.9 *5*	1658.06	$(2)^+$	(E1+M2)	0.36 *7*	0.026 *7*	Mult.: α(K)exp In ε decay implies E2(+M1) or E1+M2 with δ=0.36 *7*; level scheme requires $\Delta\pi$=yes.
		970.20[e] *20*	<32[e]	1145.72	2^+				
		2031.70 *20*	100 *3*	84.25468	2^+	E1			
		2116.0	43 *5*	0.0	0^+	E1			
2126.14	1^-	614.00[e] *20*	<0.16[e]	1512.37	1^-				
		645.80 *20*	0.23 *1*	1479.91	0^+				
		700.80 *20*	0.530 *15*	1425.24	$(2)^-$	M1		0.01732	
		819.50 *20*	0.530 *15*	1306.39	2^+				
		980.30 *20*	2.20 *23*	1145.72	2^+				α(K)exp in Lu ε decay is inconsistent with placement.
		988.5	2.27 *23*	1138.55	2^+				
		2041.88 *10*	100 *3*	84.25468	2^+	E1			
		2126.11 *10*	84 *3*	0.0	0^+	E1			
2135.33	10^+	331.9[a] *2*	44[a] *12*	1803.39	$(8)^+$	Q[b]			
		697.8[a] *2*	100[a] *18*	1437.53	10^+	M1[&]		0.01751	Mult.: possible E0 component suggested in (α,2nγ).
		1172.3[a] *2*	53[a] *15*	963.32	8^+	Q[b]			I_γ: other: Iγ(1172γ):Iγ(698γ)=117 *33*:100 *33* in (α,2nγ).
2170.04	(9^+)	389.1[a] *2*	100[a] *18*	1780.55	$(7)^+$				
		732.9[a] *2*	7.3[a] *18*	1437.53	10^+				
2189.65	7^-	338.3[a] *2*	100[a] *6*	1851.23	6^-	M1(+E2)[&]		0.08 *4*	
		739.2[a] *5*	18 *6*	1450.35	6^-	E2(+M1)[&]	≥1.1	0.0089 *19*	B(M1)(W.u.)<1.6×10^{-6}; B(E2)(W.u.)>0.00076 I_γ: average of 12 *6* in (α,4nγ), 23 *6* in (α,2nγ).
		844.6[a] *2*	35 *12*	1345.18	5^-	E2[&]			B(E2)(W.u.)=0.0020 *8* I_γ: 35 *12* for γ possibly contaminated by ^{27}Al(n,n′γ) line in (α,2nγ); however, Iγ=110 *10* from (α,4nγ). Reason for discrepancy has not been identified. Mult.: M1,E2 from α(K)exp in (α,2nγ), Q from DCO ratio in (α,4nγ).
2200.91	$1^-,2^-$	1055.23	45 *9*	1145.72	2^+	E1			
		2116.60 *15*	100 *4*	84.25468	2^+	E1			
		2200.9 *3*	10.9 *5*	0.0	0^+				
2220.69	$(9)^-$	175.9[a] *2*	23[a] *3*	2044.64	(8^-)				I_γ: other: 11 *5* in (α,2nγ).
		317.5[a] *2*	25[a] *3*	1903.14	7^-	Q[b]			
		783.1[a] *2*	25[a] *3*	1437.53	10^+	(D)[b]			

$\gamma(^{170}Yb)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[#]	α[c]	Comments
2220.69	(9)$^-$	1257.6[a] *2*	100[a] *7*	963.32	8$^+$	D[b]			
2242.00	11$^-$	185.3[a] *2*	10.7[a] *10*	2056.73	10$^-$	D[b]			
		369.9[a] *2*	100[a] *3*	1872.09	9$^-$	E2[&]		0.0401	
		804.3[a] *2*	94[a] *3*	1437.53	10$^+$	E1[&]			
2253.5	(9$^-$)	154.9[a] *2*	100[a] *13*	2098.5	(8$^-$)	(M1)			Mult.: D from.
		288.8[a] *2*	73[a] *20*	1964.64	(7$^-$)				
2268.08	1$^-$	1122.5 *3*	8.33 *24*	1145.72	2$^+$				
		2183.9 *5*	21.0 *12*	84.25468	2$^+$				
		2268.2 *3*	100 *3*	0.0	0$^+$	E1			
2275.49	1$^-$	850.05 *15*	2.96 *14*	1425.24	(2)$^-$				
		910.8 *3*	2.59 *14*	1364.53	1$^-$				
		969.05[e] *20*	<3.8[e]	1306.39	2$^+$				
		1046.60[e] *25*	<5.8[e]	1228.84	0$^+$				
		1137.1 *3*	9.9 *3*	1138.55	2$^+$	(E1+M2)	0.57 *16*		Mult.: α(K)exp In ε decay implies E2(+M1) or E1+M2 (δ=0.57 *16*); level scheme requires $\Delta\pi$=yes.
		1206.30 *20*	8.5 *4*	1069.35	0$^+$	E1			
		2191.15 *15*	100 *3*	84.25468	2$^+$	E1			
		2275.40 *10*	54.6 *17*	0.0	0$^+$	E1			
2289.37	1$^+$	249.95[e] *20*	<11.6[e]	2039.85	1$^+$	[M1,E2]		0.19 *7*	
		2205.3 *4*	80 *3*	84.25468	2$^+$				
		2289.2 *4*	100 *5*	0.0	0$^+$	M1			
2328.0?	(0$^+$)	1181.5[ef] *3*	<149[e]	1145.72	2$^+$				
		2243.7[f] *4*	100 *7*	84.25468	2$^+$				
		2327.5[f] *3*		0.0	0$^+$	E0			
2341.6	(8$^-$)	152.0[a] *2*	100	2189.65	7$^-$				
2351.71	0$^-$,1$^-$,2$^-$	225.45[e] *20*	<0.40[e]	2126.14	1$^-$	[M1,E2]		0.26 *8*	
		235.55[e] *15*	<2.6[e]	2115.90	1$^-$	[M1,E2]		0.23 *8*	
		311.80 *20*	0.43 *4*	2039.85	1$^+$	[E1]		0.0181	
		366.35[e] *15*	<1.51[e]	1985.64	1$^-$,2$^-$				
		633.75 *25*	0.54 *3*	1717.95	(2)$^-$				
		839.30 *10*	42.4 *12*	1512.37	1$^-$	M1		0.01104	
		926.40 *15*	15.7 *5*	1425.24	(2)$^-$	E2			
		987.25 *10*	100 *3*	1364.53	1$^-$	M1			
2364.06	1$^-$	238.25[e] *15*	<0.38[e]	2126.14	1$^-$	[M1,E2]		0.22 *8*	
		829.30 *10*	10.1 *3*	1534.57	2$^+$	E1			
		851.45 *20*	1.67 *9*	1512.37	1$^-$	M1		0.01065	
		884.10 *15*	7.1 *4*	1479.91	0$^+$	E1			
		938.75 *8*	32.6 *9*	1425.24	(2)$^-$	M1			
		966.85 *20*	2.96 *9*	1397.05	(3)$^-$	(E2)			Mult.: M1,E2 from α(K)exp In ε decay; ΔJ=2 from level scheme.
		999.60 *10*	31.5 *9*	1364.53	1$^-$	M1			

$^{170}_{70}Yb_{100}$-13

$\gamma(^{170}Yb)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[c]	Comments
2364.06	1^-	1057.70 15	4.40 14	1306.39	2^+	E1		
		1135.2		1228.84	0^+			
		1218.50 20	28.2 9	1145.72	2^+	E1		
		1225.65 10	100 3	1138.55	2^+	E1		
		1294.70 10	58.8 19	1069.35	0^+	E1		
		2279.9 2	3.94 14	84.25468	2^+	E1		
		2364.10 15	30.0 9	0.0	0^+	E1		
2367.65	$(1)^-$	166.70[e] 20	<0.20[e]	2200.91	$1^-,2^-$	[M1,E2]	0.64 15	
		241.50 5	6.62 19	2126.14	1^-	M1	0.283	
		251.75 10	1.36 6	2115.90	1^-	[M1,E2]	0.19 7	
		649.60[e] 15	<1.38[e]	1717.95	$(2)^-$	[M1]	0.0210	
		855.15 15	27.8 8	1512.37	1^-	M1	0.01054	
		942.45 15	6.10 19	1425.24	$(2)^-$	E2		
		1003.20 10	100 3	1364.53	1^-	M1,E2		
		1061.35	6.5 13	1306.39	2^+			
2372.83	10^+	418.7[a] 2	92[a] 15	1954.13	8^+	Q[b]		
		935.3[a] 2	100[a] 23	1437.53	10^+	M1+E2[&]		
2388.06	$(11)^-$	382.6[a] 2	13[a] 3	2005.43	$(9)^-$			
		950.5[a] 2	100[a] 10	1437.53	10^+	E1[&]		
2398.51	(10^-)	177.8[a] 2	67[a] 5	2220.69	$(9)^-$	(M1+E2)		I_γ: other: 33 11 in (α,2nγ). Mult.: intraband D+Q from (α,2nγ).
		353.9[a] 2	100[a] 5	2044.64	(8^-)	Q[b]		
2400.10	1^-	741.50 20	10.7 3	1658.06	$(2)^+$			
		1330.7[e] 3	<9.2[e]	1069.35	0^+			
		2315.9 2	50.8 17	84.25468	2^+	E1		
		2400.15 20	100 3	0.0	0^+	E1		
2412.39	$(10)^+$	403.1[a] 2	100[a] 19	2009.35	8^+	Q[b]		
		974.8[a] 2	56[a] 13	1437.53	10^+	M1,E2[&]		I_γ: $I\gamma(975\gamma)/I\gamma(403\gamma)$=1.7 9 in ($\alpha$,2n$\gamma$).
2429.0	(10^-)	175.4[a] 2	93[a] 13	2253.5	(9^-)			
		330.7[a] 2	100[a] 13	2098.5	(8^-)			
2429.05	$1^+,2^+$	303.20[e] 20	<4.5[e]	2126.14	1^-	[E1]	0.0194	
		916.65	100 9	1512.37	1^-	[E1]		
		1290.9 4	86 16	1138.55	2^+	(E2)		Mult.: E1 or E2 from α(K)exp In ε decay; level scheme requires $\Delta\pi$=No.
		2344.9 5	45.5 18	84.25468	2^+	M1		
		2429.0 4	48 5	0.0	0^+	(M1,E2)		
2436.01	$(2,3)^-$	235.55[e] 15	<87[e]	2200.91	$1^-,2^-$	[M1,E2]	0.23 8	
		801.25 20	73 4	1634.84	(1^+)			
		901.40[e] 20	<143[e]	1534.57	2^+			
		1211.2 3	73 4	1225.35	$(3)^+$	E1		
		2157.7 5	20.0 9	277.43	4^+			

$^{170}_{70}Yb_{100}$-14

γ(^{170}Yb) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[#]	α[c]	Comments
2436.01	(2,3)$^-$	2352.3 *5*	100 *4*	84.25468	2$^+$	E1			
2460.55	(10$^-$)	1023.0[a] *2*	100	1437.53	10$^+$				Mult.: transition interpreted as D (ΔJ=0) in (α,4nγ).
2473.69	12$^-$	231.6[a] *2*	13.1[a] *21*	2242.00	11$^-$				
		417.0[a] *2*	100.0[a] *21*	2056.73	10$^-$	E2[&]		0.0287	
2477.8	(10$^-$)	381.0[a] *2*	100	2096.81	(8$^-$)	Q[b]			
2496.20	1$^-$	220.90 *15*	2.37 *8*	2275.49	1$^-$	[M1,E2]		0.28 *9*	
		369.80 *15*	3.24 *17*	2126.14	1$^-$				
		983.67 *20*	39 *3*	1512.37	1$^-$	M1			
		1070.9 *3*	6.54 *22*	1425.24	(2)$^-$	M1			
		1426.72	56 *6*	1069.35	0$^+$	E1			
		2411.90 *15*	100 *3*	84.25468	2$^+$	E1			
		2496.15 *15*	92 *3*	0.0	0$^+$	E1			
2498.19	0$^-$,1$^-$,2$^-$	222.40[e] *15*	<4.0[e]	2275.49	1$^-$	[M1]		0.355	
		371.90 *15*	2.96 *17*	2126.14	1$^-$	(M1)		0.0887	
		382.35 *10*	5.65 *22*	2115.90	1$^-$	(M1)		0.0825	
		1133.60 *10*	100 *3*	1364.53	1$^-$	M1			
2523.07	1$^+$	864.85 *25*	26.7 *13*	1658.06	(2)$^+$	M1		0.01024	
		1158.5[e] *3*	<16.2[e]	1364.53	1$^-$				
		1217.30[e] *20*	<155[e]	1306.39	2$^+$				
		2438.6 *3*	77 *3*	84.25468	2$^+$	M1			
		2523.0 *3*	100 *3*	0.0	0$^+$	M1			
2524.27	12$^+$	389.2[a] *2*	56[a] *6*	2135.33	10$^+$	Q[b]			E_γ: not reported in (α,2nγ).
		540.6[a] *2*	91[a] *16*	1983.36	12$^+$	M1(+E2)[&]	≤1.0	0.029 *5*	I_γ: other: 47 *7* in (α,2nγ).
		1086.80[a] *20*	100[a] *16*	1437.53	10$^+$	(E2)			Mult.: stretched Q from DCO in (α,4nγ); α(K)exp(1087 doublet) in (α,2nγ) consistent with E1+E2 doublet.
2525.1	(9$^-$)	183.6[a] *2*	100[a] *8*	2341.6	(8$^-$)				
		335.4[a] *5*	15[a] *8*	2189.65	7$^-$				
2536.97	1$^-$	497.50 *15*	10.3 *3*	2039.85	1$^+$				Mult.: M1 from α(K)exp in ^{170}Ly ε decay, but E1 is required by level scheme.
		1002.3	100 *10*	1534.57	2$^+$				
		1173.2[e] *4*	<33[e]	1364.53	1$^-$				
		1230.2 *3*	83 *3*	1306.39	2$^+$				
		1307.97	87 *10*	1228.84	0$^+$				
		1398.30 *20*	50 *10*	1138.55	2$^+$				
		1467.50	50 *5*	1069.35	0$^+$				
		2452.7 *3*	100 *3*	84.25468	2$^+$				Mult.: M1,E2 from α(K)exp in ^{170}Lu ε decay is inconsistent with placement.
		2536.9 *4*	47 *3*	0.0	0$^+$	E1			
2580.35	14$^+$	597.0[a] *2*	100	1983.36	12$^+$	E2[&]		0.01152	
2603.60	(11$^-$)	205.1[a] *2*	46[a] *3*	2398.51	(10$^-$)	D[b]			I_γ: other: 100 *33* in (α,2nγ).
		382.9[a] *2*	100[a] *5*	2220.69	(9)$^-$				

Adopted Levels, Gammas (continued)

$\gamma(^{170}Yb)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[c]	Comments
2603.8	(11$^+$)	433.8[a] *2*	100	2170.04	(9$^+$)	Q[b]		E_γ: doubly placed in (α,2nγ).
2661.02	1$^+$	225.45[e] *20*	<3.0[e]	2436.01	(2,3)$^-$	[E1]	0.0407	
		296.70[e] *20*	<3.7[e]	2364.06	1$^-$	[E1]	0.0205	
		621.40[e] *15*	<21[e]	2039.85	1$^+$	[M1]	0.0235	
		1181.5[e] *3*	<24[e]	1479.91	0$^+$			
		2576.8 *4*	34 *6*	84.25468	2$^+$	M1,E2		
		2661.0 *3*	100 *6*	0.0	0$^+$	(M1)		
2667.19	1$^{(+)}$	231.15[e] *20*	<4.7[e]	2436.01	(2,3)$^-$	[E1]	0.0382	
		238.25[e] *15*	<13.2[e]	2429.05	1$^+$,2$^+$	[M1,E2]	0.22 *8*	
		303.20[e] *20*	<3.2[e]	2364.06	1$^-$	[E1]	0.0194	
		1009.5 *3*	28.4 *16*	1658.06	(2)$^+$	M1		
		1132.86	48 *5*	1534.57	2$^+$			
		1187.5 *3*	32.3 *16*	1479.91	0$^+$			
		1241.95 *20*	35.5 *16*	1425.24	(2)$^-$	(E1)		Mult.: E1 or E2 from α(K)exp In ε decay; $\Delta\pi$=(yes) from level scheme.
		1361.1 *3*	81 *8*	1306.39	2$^+$	(E2)		Mult.: E1 or E2 from α(K)exp In ε decay; $\Delta\pi$=(No) from level scheme.
		1438.1 *3*	35.5 *16*	1228.84	0$^+$	M1		
		1521.7 *3*	26 *6*	1145.72	2$^+$	M1,E2		
		1529.0 *3*	52 *5*	1138.55	2$^+$			
		1597.6 *3*	52 *3*	1069.35	0$^+$	M1		
		2582.9 *3*	100 *3*	84.25468	2$^+$			Mult.: E1 from α(K)exp in ^{170}Lu ε decay inconsistent with this placement.
		2667.4 *5*	58 *4*	0.0	0$^+$			Mult.: two α(K)exp measurements In ε decay are mutually inconsistent; they imply mult=E1 (1988DzZW) or M1 (1972Ca21).
2680.75	13$^-$	206.9[a] *5*	4.7[a] *19*	2473.69	12$^-$			
		438.7[a] *2*	100[a] *3*	2242.00	11$^-$	E2[&]	0.0251	
		697.5[a] *2*	49.5[a] *19*	1983.36	12$^+$	D[b]		
2732.3	(10$^-$)	207.3[a] *2*	100[a] *10*	2525.1	(9$^-$)			
		390.5[a] *2*	42[a] *7*	2341.6	(8$^-$)			
2748.08	1$^-$	249.95[e] *20*	<0.23[e]	2498.19	0$^-$,1$^-$,2$^-$	[M1,E2]	0.19 *7*	
		472.50 *15*	0.54 *2*	2275.49	1$^-$	M1	0.0474	
		547.25 *15*	1.86 *9*	2200.91	1$^-$,2$^-$	M1(+E2)	0.023 *10*	
		762.55 *15*	1.34 *4*	1985.64	1$^-$,2$^-$	M1	0.01402	
		1113.10 *20*	4.86 *22*	1634.84	(1$^+$)			
		1181.5[e] *3*	<2.6[e]	1566.38	0$^+$			
		1213.65 *20*	2.48 *13*	1534.57	2$^+$			
		1235.90 *10*	11.0 *3*	1512.37	1$^-$	M1		
		1268.30 *20*	5.62 *22*	1479.91	0$^+$			
		1323.00 *20*	8.4 *7*	1425.24	(2)$^-$	M1		
		1383.60 *20*	9.1 *3*	1364.53	1$^-$			
		1518.9 *3*	2.81 *11*	1228.84	0$^+$			

$\gamma(^{170}Yb)$ (continued)

E_i(level)	J^{π}_i	E_γ[†]	I_γ[†]	E_f	J^{π}_f	Mult.[‡]	δ[#]	α[c]	Comments
2748.08	1^-	1602.2 3	4.97 22	1145.72	2^+	E1			
		1609.40 20	10.4 5	1138.55	2^+	E1			
		1678.60 20	10.8 3	1069.35	0^+	E1			
		2663.95 20	59.0 22	84.25468	2^+	E1			
		2748.15 20	100 4	0.0	0^+	E1			
2768.34	$0^-,1^-$	231.15[e] 20	<0.66[e]	2536.97	1^-	[M1,E2]		0.24 8	
		339.45[e] 20	<0.37[e]	2429.05	$1^+,2^+$				
		368.30 20	0.91 5	2400.10	1^-	[M1,E2]		0.07 3	
		416.50 20	0.61 7	2351.71	$0^-,1^-,2^-$	(M1,E2)		0.047 19	
		1050.40 10	100 3	1717.95	$(2)^-$	E2			
		1110.7 3	1.23 7	1658.06	$(2)^+$				
		1403.79	20.5 23	1364.53	1^-	M1			
2775.66	1^-	279.40 15	0.95 6	2496.20	1^-	[M1,E2]		0.14 5	
		649.60[e] 15	<2.1[e]	2126.14	1^-	[M1]		0.0210	
		659.70 20	0.48 3	2115.90	1^-	(M1)		0.0202	
		723.05 20	0.89 4	2052.59	$0^-,1^-,2^-$				
		1263.45 20	13.9 4	1512.37	1^-	M1			
		1350.5 3	2.59 12	1425.24	$(2)^-$				
		1469.10 20	4.04 20	1306.39	2^+	E1			
		2691.45 20	100 4	84.25468	2^+	E1			
		2775.7 3	4.95 20	0.0	0^+				
2783.12	1^+	656.65[e] 20	<1.32[e]	2126.14	1^-				
		1418.7 3	3.13 18	1364.53	1^-				Mult.: M1 from α(K)exp in ^{170}Lu ε decay is inconsistent with this placement.
		1636.9[e] 3	<5.5[e]	1145.72	2^+				
		1714.4[e] 4	<2.15[e]	1069.35	0^+				
		2698.8 3	58.9 22	84.25468	2^+	M1			
		2783.00 20	100 4	0.0	0^+	M1			
2815.73	(12^-)	212.1[a] 2	47[a] 3	2603.60	(11^-)	D[b]			
		417.2[a] 2	100[a] 6	2398.51	(10^-)	Q[b]		0.0287	
2819.77	$0^-,1^-$	152.60 3	23.9 8	2667.19	$1^{(+)}$	[E1]		0.1123	Mult.: α(K)exp In ε decay implies M1, inconsistent with placement.
		283.05 10	17.5 6	2536.97	1^-	M1		0.184	
		323.57 5	30.2 10	2496.20	1^-	M1		0.1285	
		390.40[e] 15	4.90[e] 20	2429.05	$1^+,2^+$	[E1]		0.01061	
		419.65 5	43.9 12	2400.10	1^-	M1		0.0646	
		455.50 10	11.4 4	2364.06	1^-	M1		0.0521	
		530.50 10	8.2 4	2289.37	1^+	(E1+M2)	0.28 +6−7	0.013 4	Mult.: E2 or E1+M2 (δ=0.28 +6−7) from α(K)exp In ε decay; $\Delta\pi$=yes from level scheme. Mixed multipolarity inconsistent with level scheme if J(2820)=0.
		544.24 5	72.5 20	2275.49	1^-	M1(+E2)		0.024 10	Mult.: E2 component inconsistent with decay scheme if J(2820)=0.

$^{170}_{70}Yb_{100}$-17

Adopted Levels, Gammas (continued)

$\gamma(^{170}Yb)$ (continued)

E_i(level)	J^{π}_i	E_γ[†]	I_γ[†]	E_f	J^{π}_f	Mult.[‡]	α[c]	Comments
2819.77	$0^-,1^-$	618.95[e] *10*	<6.7[e]	2200.91	$1^-,2^-$	[M1,E2]	0.017 *7*	
		693.55 *20*	2.08 *20*	2126.14	1^-	M1	0.01778	
		703.85 *15*	6.67 *20*	2115.90	1^-	M1	0.01713	
		834.45[e] *10*	<9.1[e]	1985.64	$1^-,2^-$			
		1101.70 *10*	83.5 *24*	1717.95	$(2)^-$	E2		
		1307.55 *10*	94 *4*	1512.37	1^-	M1+E2		Mult.: M1+E2 from α(K)exp In ε decay; mixed multipolarity inconsistent with level scheme if J(2820)=0.
		1455.25 *10*	100 *3*	1364.53	1^-	E2(+M1)		Mult.: mixed multipolarity inconsistent with level scheme if J(2820)=0.
		2735.6 *6*	2.16 *20*	84.25468	2^+	(M2)		Mult.: M1(+E2+E0) or M2 from α(K)exp In ε decay; $\Delta\pi$=yes from level scheme.
2826.8	(12^+)	454.0[a] *2*	100	2372.83	10^+	Q[b]		
2847.0?	(12^-)	418[af] *1*	100	2429.0	(10^-)			
2855.61	(13^-)	467.5[a] *2*	43[a] *10*	2388.06	$(11)^-$	Q[b]		
		872.3[a] *2*	100[a] *14*	1983.36	12^+	D[b]		
2859.2	(12^+)	446.8[a] *2*	100	2412.39	$(10)^+$			
2927.2	(12^-)	449.4[a] *2*	100	2477.8	(10^-)	Q[b]		
2929.60	1^-	406.25[e] *15*	<1.48[e]	2523.07	1^+	[E1]	0.00968	
		500.50 *15*	0.59 *3*	2429.05	$1^+,2^+$			Mult.: α(K)exp In ε decay favors mult=M1, but large uncertainty may render result unreliable. Placement requires E1.
		728.85 *20*	2.6 *5*	2200.91	$1^-,2^-$			
		813.55[e] *20*	<2.66[e]	2115.90	1^-			
		876.80 *25*	1.61 *8*	2052.59	$0^-,1^-,2^-$	M1	0.00990 *14*	
		1294.74	2.7 *3*	1634.84	(1^+)			
		1395.03	24 *3*	1534.57	2^+			
		1449.64	8.1 *11*	1479.91	0^+			
		1503.9[e] *4*	<0.59[e]	1425.24	$(2)^-$			
		1564.97	5.4 *5*	1364.53	1^-			
		1700.90[e] *20*	<8.3[e]	1228.84	0^+			
		1783.3 *4*	1.45 *13*	1145.72	2^+			
		1791.7 *4*	2.10 *5*	1138.55	2^+			
		1860.30 *15*	32.5 *13*	1069.35	0^+	E1		
		2845.30 *20*	100 *5*	84.25468	2^+	E1		
		2929.50 *20*	34.9 *17*	0.0	0^+	E1		
2938.6	$12^{(-)}$	478.0[a] *2*	100[a] *11*	2460.55	(10^-)			
		955.3[a] *5*	56[a] *22*	1983.36	12^+			Mult.: transition interpreted as D (ΔJ=0) in (α,4nγ).
2939.73	1^-	119.90 *20*	0.27 *3*	2819.77	$0^-,1^-$	[M1,E2]	1.81 *20*	
		272.40 *15*	0.36 *4*	2667.19	$1^{(+)}$	[E1]	0.0253	
		443.40 *15*	1.61 *5*	2496.20	1^-	M1,E2	0.040 *16*	
		575.95 *25*	0.77 *4*	2364.06	1^-	M1	0.0285	
		813.55[ef] *20*	<1.75[e]	2126.14	1^-			

$\gamma(^{170}$Yb) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[c]	Comments
2939.73	1^-	954.30[e] *15*	<9.1[e]	1985.64	$1^-,2^-$			
		1304.85 *20*	3.89 *14*	1634.84	(1^+)			Mult.: α(K)exp implies mult=M1,E2, inconsistent with placement.
		1373.50 *20*	6.6 *6*	1566.38	0^+	E1		
		1405.15 *10*	100 *3*	1534.57	2^+	E1		
		1427.27	12.9 *14*	1512.37	1^-			
		1459.85 *10*	41.6 *13*	1479.91	0^+	E1		
		1514.60 *20*	21.6 *9*	1425.24	$(2)^-$	M1		
		1575.10 *20*	19.8 *5*	1364.53	1^-	M1		
		1633.3[e] *3*	<2.4[e]	1306.39	2^+			
		1714.4[e] *4*	<0.85[e]	1225.35	$(3)^+$			
		2855.4 *3*	12.6 *5*	84.25468	2^+	E1		
		2939.65 *20*	59 *4*	0.0	0^+	E1		
2947.84	1^-	199.65[e] *15*	<1.28[e]	2748.08	1^-	[M1]	0.478	
		410.55 *15*	1.3 *3*	2536.97	1^-			
		746.90 *20*	3.95 *12*	2200.91	$1^-,2^-$	M1	0.01476	
		895.00 *25*	3.14 *17*	2052.59	$0^-,1^-,2^-$	(M1,E2)		
		1313.03	5.8 *6*	1634.84	(1^+)			
		1413.20 *20*	28.5 *20*	1534.57	2^+			
		1435.40 *20*	32.0 *12*	1512.37	1^-	M1		
		1467.93	11.6 *12*	1479.91	0^+	E1		
		1583.3 *3*	7.6 *3*	1364.53	1^-	M1		
		1641.30 *20*	40.1 *12*	1306.39	2^+	E1		
		1719.10 *20*	18.9 *6*	1228.84	0^+	E1		
		1802.25 *15*	20.4 *6*	1145.72	2^+	E1		
		1809.50 *15*	100 *3*	1138.55	2^+	E1		
		1878.65 *15*	71.5 *23*	1069.35	0^+	E1		
		2863.6 *3*	16.7 *6*	84.25468	2^+	E1		
		2947.80 *20*	75 *4*	0.0	0^+	E1		
2956.55	1^+	1531.30 *20*	100 *4*	1425.24	$(2)^-$			
		1592.05 *20*	77.5 *25*	1364.53	1^-	(E1)		Mult.: E1, E2 from α(K)exp In ε decay; $\Delta\pi$=yes from level scheme.
		1731.3[e] *4*	<5.8[e]	1225.35	$(3)^+$			
		1818.8 *5*	11.8 *13*	1138.55	2^+	M1		
		1887.1[e] *5*	<21[e]	1069.35	0^+			
		2872.5 *4*	42.0 *20*	84.25468	2^+	M1		
		2956.6 *4*	47.5 *15*	0.0	0^+	(M1)		
2959.4	(11^-)	227.0[a] *2*	57[a] *4*	2732.3	(10^-)			
		434.4[a] *2*	100[a] *13*	2525.1	(9^-)	Q[b]		
2965.66	1^+	467.35 *15*	1.76 *9*	2498.19	$0^-,1^-,2^-$	[E1]		Mult.: M1 from α(K)exp In ε decay; inconsistent with placement.
		565.80[e] *15*	<1.05[e]	2400.10	1^-			
		614.00[e] *20*	<0.76[e]	2351.71	$0^-,1^-,2^-$			
		1330.7[e] *3*	<3.0[e]	1634.84	(1^+)			
		1486.0 *3*	3.58 *18*	1479.91	0^+			

$^{170}_{70}$Yb$_{100}$-19

$\gamma(^{170}Yb)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[c]	Comments
2965.66	1^+	1540.4 3	6.8 4	1425.24	$(2)^-$			
		1601.2 3	9.3 4	1364.53	1^-			Mult.: M1,E2 from α(K)exp In ε decay; placement requires E1.
		1659.9 5		1306.39	2^+			
		1736.6[e] 3	<3.6[e]	1228.84	0^+			
		1820.7 5	1.25 14	1145.72	2^+	M1		
		1896.5[e] 3	<4.6[e]	1069.35	0^+			
		2881.40 20	58 3	84.25468	2^+	M1		
		2965.6 2	100 5	0.0	0^+	M1		
2966.42	14^-	285.7[a] 2	15.2[a] 25	2680.75	13^-			
		492.7[a] 2	100[a] 4	2473.69	12^-	E2[b]	0.0185	
2969.45	1^-	916.90	23.1 23	2052.59	$0^-,1^-,2^-$	M1		
		1457.12 15	58 6	1512.37	1^-	(E2)		Mult.: E1 or E2 from α(K)exp In ε decay; $\Delta\pi$=No from level scheme.
		1662.8 3	22.0 12	1306.39	2^+	(E1)		Mult.: E1 or E2 from α(K)exp In ε decay; $\Delta\pi$=yes from level scheme.
		2885.1 3	100 4	84.25468	2^+	(E1)		Mult.: E1 or E2 from α(K)exp In ε decay; $\Delta\pi$=yes from level scheme.
		2969.7 5	9.2 11	0.0	0^+			
2975.32	1^-	539.05[e] 15	<6.1[e]	2436.01	$(2,3)^-$			
		859.45 20	13.5 10	2115.90	1^-	M1(+E0)		
		1463.3 3	16.7 21	1512.37	1^-	M1		
		1549.92	26 3	1425.24	$(2)^-$			
		1610.70 15	100 5	1364.53	1^-	M1		
		1746.3 3	7.1 4	1228.84	0^+			Mult.: M1(+E2) from α(K)exp In ε decay, inconsistent with level scheme.
		1836.7[e] 5	<14.9[e]	1138.55	2^+			
		2976.4 11		0.0	0^+			
2986.67	(14^+)	462.4[a] 2	43[a] 7	2524.27	12^+	Q[b]		
		1003.3[a] 2	100[a] 12	1983.36	12^+			
3007.6	1^-	955.22[d] 24		2052.59	$0^-,1^-,2^-$			
		1021.5[d] 3		1985.64	$1^-,2^-$			
		1778.8[e] 4	<14.75[e]	1228.84	0^+			
		2923.3 3	100 5	84.25468	2^+	E1		
		3007.5[e] 3	76[e] 4	0.0	0^+			
3042.46	1^+	1507.80 20	67 10	1534.57	2^+			
		1736.6[e] 3	<66[e]	1306.39	2^+			
		1896.5[e] 3	<86[e]	1145.72	2^+			
		1904.6[e] 5	<31[e]	1138.55	2^+			
		2958.1 4	67 3	84.25468	2^+			
		3042.8 4	100 5	0.0	0^+	M1		
3049.95	(13^-)	234.3[a] 2	45[a] 5	2815.73	(12^-)			
		446.4[a] 2	100[a] 9	2603.60	(11^-)	Q[b]		
3065.36	1^+	296.70[e] 20	<10[e]	2768.34	$0^-,1^-$	[E1]	0.0205	
		404.00[e] 15	<18[e]	2661.02	1^+	[M1]	0.0714	

$^{170}_{70}Yb_{100}$-20

Adopted Levels, Gammas (continued)

γ(^{170}Yb) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[c]	Comments
3065.36	1+	863.7 3		2200.91	1−,2−			
		1012.3[e] 3	<16[e]	2052.59	0−,1−,2−			
		1498.8 3	42.2 22	1566.38	0+			
		1585.8[e] 4	<11[e]	1479.91	0+			
		1700.90[e] 20	<167[e]	1364.53	1−			
		1758.95 20	100 3	1306.39	2+	E2		
		1836.7[e] 5	<79[e]	1228.84	0+			
		1995.8 3	100 4	1069.35	0+	(M1)		Mult.: E2,M1 from α(K)exp In ε decay; not ΔJ=2 from level scheme.
		2981.5 5	39 4	84.25468	2+			
3067.0	(13+)	463.2[a] 2	100	2603.8	(11+)	Q[b]		
3067.62	1−	406.25[e] 15	<19[e]	2661.02	1+	[E1]	0.00968 14	
		700.15 20	16.3 5	2367.65	(1)−	(M1)	0.01736	
		792.00 15	82 4	2275.49	1−	E2		
		1082.1 3	20.0 21	1985.64	1−,2−	M1		
		1410.4 4	100 11	1658.06	(2)+			
		1703.3 3	66.7 21	1364.53	1−	M1		
		1761.4[e] 3	<37[e]	1306.39	2+			
		1838.2[e] 5	<34[e]	1228.84	0+			
		1998.4[e] 5	<17.5[e]	1069.35	0+			
		2983.1 4	60 4	84.25468	2+			Mult.: α(K)exp In ε decay implies M2 or M1+E2+E0, neither of which is consistent with level scheme.
		3067.0 3	91 7	0.0	0+			
3070.52	0,1	574.2 3		2496.20	1−			
		670.35[e] 20	<73[e]	2400.10	1−			
		802.40[e] 20	<64[e]	2268.08	1−			
		954.30[e] 15	<430[e]	2115.90	1−			
		1558.4 3		1512.37	1−			
		1645.4[e] 4	<37[e]	1425.24	(2)−			
		1706.0[e] 3	<100[e]	1364.53	1−			
		1925.1 7		1145.72	2+			
		1932.6[d] 7		1138.55	2+			
		2985.9 4	100 7	84.25468	2+			
3091.93	1	595.70 15	20.6 6	2496.20	1−	M1	0.0261	
		691.75 20	10.9 4	2400.10	1−	M1	0.0179	
		802.40[e] 20	<23[e]	2289.37	1+			
		965.52[d] 26		2126.14	1−			
		3007.5[e] 3	<94[e]	84.25468	2+			Mult.: E2(+M1) from α(K)exp for doubly-placed γ In ε decay is inconsistent with both placements.
		3091.9 3	100 6	0.0	0+			Mult.: E2(+M1) or E1+M2 from α(K)exp In ε decay; adopted level scheme requires pure ΔJ=1.

$^{170}_{70}Yb_{100}$-21

Adopted Levels, Gammas (continued)

$\gamma(^{170}Yb)$ (continued)

E_i(level)	J^{π}_i	E_{γ}[†]	I_{γ}[†]	E_f	J^{π}_f	Mult.[‡]	α[c]	Comments
3099.64	$1^{(-)}$	134.05 *15*	4.4 *5*	2965.66	1^+	[E1]	0.1579	
		670.35[e] *20*	<13.7[e]	2429.05	$1^+,2^+$	[E1]		
		1565.08	70 *3*	1534.57	2^+			
		1619.7 *3*	31.3 *16*	1479.91	0^+			Mult.: M1(+E2) from α(K)exp In ε decay; however, level scheme requires E1.
		1793.8 *3*	31.3 *16*	1306.39	2^+	E1		
		1954.0 *3*	56 *3*	1145.72	2^+			Mult.: (M1) from α(K)exp In ε decay; however, level scheme requires E1.
		1960.8 *3*	100 *3*	1138.55	2^+	(E1)		
		2030.15 *20*	100 *6*	1069.35	0^+	E1		
		3015.1 *3*	86 *4*	84.25468	2^+	E1		
		3099.55 *25*	67 *4*	0.0	0^+			Mult.: E2 from α(K)exp In ε decay; inconsistent with adopted J^{π}.
3115.58	1^-	339.45[e] *20*	<0.28[e]	2775.66	1^-			
		618.95[e] *10*	<5.9[e]	2496.20	1^-	[M1,E2]	0.017 *7*	
		678.8[d] *3*		2436.01	$(2,3)^-$			
		752.3 *3*		2364.06	1^-			
		1603.8[d] *5*		1512.37	1^-			
		1887.1[e] *5*	<3.0[e]	1228.84	0^+			
		1977.4[e] *5*	<3.0[e]	1138.55	2^+			
		2046.5 *5*	<2.1	1069.35	0^+			
		3030.95 *20*	100 *5*	84.25468	2^+	E1		
		3115.20 *25*	57 *3*	0.0	0^+	E1		
3123.94	1^-	166.70[e] *20*	<5.4[e]	2956.55	1^+	[E1]	0.0890	
		340.90[e] *15*	<12.7[e]	2783.12	1^+	[E1]	0.01461	
		587.15 *15*	24 *4*	2536.97	1^-	M1(+E2)	0.020 *8*	
		756.15 *20*	16.1 *7*	2367.65	$(1)^-$	M1	0.01431	
		834.45[e] *10*	<83[e]	2289.37	1^+			
		1985.5[e] *3*	<63[e]	1138.55	2^+			
		2054.4 *3*	100 *4*	1069.35	0^+	E1		
		3123.0 *6*	15.0 *14*	0.0	0^+			
3131.10	1^+	695.2 *3*		2436.01	$(2,3)^-$			
		1078.3 *4*	100 *27*	2052.59	$0^-,1^-,2^-$			
		1651.4 *4*	91 *3*	1479.91	0^+	(M1)		
		1706.0[e] *3*	<160[e]	1425.24	$(2)^-$			
		1824.6 *5*	91 *9*	1306.39	2^+			
		1985.5[e] *3*	<235[e]	1145.72	2^+			
		1992.7 *5*	53.3 *27*	1138.55	2^+	E2,M1		
		2061.3 *5*	41.3 *20*	1069.35	0^+	(M1)		
		3046.9 *5*	100 *11*	84.25468	2^+	(M1)		Mult.: α(K)exp In ε decay exceeds α(K)(M1) significantly; level scheme inconsistent with M1+E0 or M2.
		3130.9 *7*	33 *5*	0.0	0^+	(M1)		Mult.: M1(+E2) from α(K)exp In ε decay; E2 component is inconsistent with level scheme.

Adopted Levels, Gammas (continued)

γ(^{170}Yb) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[c]	Comments
3140.60	(1)	479.50 15	11.7 5	2661.02	1^+	M1+E2	0.033 13	
		711.65 15	27.8 9	2429.05	$1^+,2^+$	M1	0.01667	
		1776.1 3	100 3	1364.53	1^-	M1		
		3139.6 8	1.13 26	0.0	0^+			
3146.03	1^+	170.80[e] 20	<3.2[e]	2975.32	1^-			
		478.80 10	50 6	2667.19	$1^{(+)}$	M1	0.0458	
		622.75 20	22.0 16	2523.07	1^+	M1	0.0233	
		709.9 4		2436.01	$(2,3)^-$			
		1107.1 5		2039.85	1^+	(M1+E2+E0)		
		1633.3[e] 3	<54[e]	1512.37	1^-			
		1667.1[e] 4	<29[e]	1479.91	0^+			
		1917.7 5	20.0 10	1228.84	0^+			
		1920.7 3	84 3	1225.35	$(3)^+$	(E2)		Mult.: E1,E2 from α(K)exp In ε decay; not E1 from level scheme.
		2007.3 5	11.2 16	1138.55	2^+	(E2)		Mult.: E1,E2 from α(K)exp In ε decay; not E1 from level scheme.
		3062.1 3	92 8	84.25468	2^+	M1,E2		
		3146.1 4	100 8	0.0	0^+	(M1)		Mult.: M1,E2 from α(K)exp In ε decay; not E2 from level scheme.
3149.09	1^-	329.3 2	4.5 4	2819.77	$0^-,1^-$	M1	0.1226	
		366.35[e] 15	<10.0[e]	2783.12	1^+			
		612.15 15	16.6 5	2536.97	1^-	E2	0.01086	
		652.65 20	6.6 5	2496.20	1^-	M1	0.0207	
		873.85[e] 25	<5.9[e]	2275.49	1^-			
		1614.7 3	14.6 7	1534.57	2^+			
		1636.9[e] 3	<22.1[e]	1512.37	1^-			
		1784.7 4	16 3	1364.53	1^-	M1(+E2)		
		1842.8 5	20.5 13	1306.39	2^+	(E1)		Mult.: E1,E2 from α(K)exp In ε decay; not E2 from level scheme.
		3064.8 3	100 4	84.25468	2^+	E1		
		3149.4 4	40 4	0.0	0^+	E1		
3161.02	(1^-)	340.90[e] 15	<35.5[e]	2819.77	$0^-,1^-$	[M1]	0.1118	
		809.25 20	62 3	2351.71	$0^-,1^-,2^-$			
		1503.9[e] 4	<22[e]	1658.06	$(2)^+$			
		1648.7[e] 3	<36[e]	1512.37	1^-			
		1736.6[e] 3	<99[e]	1425.24	$(2)^-$			
		1796.3 5	40.0 20	1364.53	1^-			
		1855.0 5	35 4	1306.39	2^+			
		1932.6[d] 7		1228.84	0^+			
		3076.8 11		84.25468	2^+			
		3161.1 5	100 10	0.0	0^+	(E1)		
3165.59	1^-	1630.5 3	46.3 11	1534.57	2^+	(E1)		Mult.: E1,E2 from α(K)exp In ε decay; not E2 from level scheme.
		1653.2 4	9.9 5	1512.37	1^-	M1+E2+E0		
		1685.6 3	27 3	1479.91	0^+			Mult.: α(K)exp In ε decay favors M1,E2; level scheme requires Δπ=yes.
		1740.7 3	37.9 13	1425.24	$(2)^-$	E2(+M1)		

$^{170}_{70}Yb_{100}$-23

$\gamma(^{170}Yb)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[c]	Comments
3165.59	1⁻	1859.20 *20*	95 *15*	1306.39	2⁺			
		1936.9 *3*	100 *3*	1228.84	0⁺	E1		
		2019.7 *3*	28.4 *21*	1145.72	2⁺	(E1)		
		2027.2 *3*	77 *3*	1138.55	2⁺	(E1)		
		2096.3 *2*	65.3 *21*	1069.35	0⁺	E1		
		3165.3 *4*	46 *4*	0.0	0⁺	E1		
3169.59	1⁻	386.45 *20*	40 *3*	2783.12	1⁺	[E1]	0.01087	
		401.30 *20*	38 *12*	2768.34	0⁻,1⁻	M1	0.0726	
		674.1 *3*		2496.20	1⁻			
		802.40[e] *20*	<154[e]	2367.65	(1)⁻			
		879.65 *25*	100 *5*	2289.37	1⁺			
		901.40[e] *20*	<314[e]	2268.08	1⁻			
		1603.8[d] *5*		1566.38	0⁺			
		3085.4 *6*	66 *4*	84.25468	2⁺			
		3169.6 *8*	20 *3*	0.0	0⁺			
3179.76	1⁻	404.00[e] *15*	<4.7[e]	2775.66	1⁻	[M1]	0.0714	
		656.65[e] *20*	<4.1[e]	2523.07	1⁺			
		681.50 *25*	2.43 *14*	2498.19	0⁻,1⁻,2⁻	(M1)	0.0186	
		1053.7	35 *7*	2126.14	1⁻			
		1645.4[e] *4*	<6.2[e]	1534.57	2⁺			
		1667.1[e] *4*	<10.1[e]	1512.37	1⁻			
		3095.50 *20*	100 *6*	84.25468	2⁺	E1		
		3179.8 *7*	5.3 *6*	0.0	0⁺			
3186.2	15⁻	220[af] *1*	<4.2[a]	2966.42	14⁻			
		505.4 *3*	100 *4*	2680.75	13⁻	E2[&]	0.01736	E_γ: unweighted average of 505.1 *1* in (α,2nγ) and 505.7 *2* in (α,4nγ).
3186.66	(1⁻)	750.95[e] *20*	<15.6[e]	2436.01	(2,3)⁻	[M1,E2]	0.011 *4*	
		757.60 *15*	46.4 *18*	2429.05	1⁺,2⁺			Mult.: M1 from α(K)exp In ε decay is inconsistent with placement.
		1060.58 *20*	100 *9*	2126.14	1⁻	M1		
		1674.2 *3*	63.6 *18*	1512.37	1⁻	M1,E2		
		1761.4[e] *3*	<19.1[e]	1425.24	(2)⁻			
		3102.1 *6*	6.0 *6*	84.25468	2⁺			
3195.1	16⁺	614.8[a] *2*	100	2580.35	14⁺	E2[&]	0.01075	
3195.58	1⁻	427.20 *20*	4.9 *8*	2768.34	0⁻,1⁻	M1(+E2+E0)	≈0.114	α: adopted value estimated from α(K)exp in ^{170}Lu ε decay.
		447.65 *10*	40.3 *13*	2748.08	1⁻	M1	0.0546	
		534.65 *15*	5.64 *26*	2661.02	1⁺			
		658.20 *20*	5.6 *5*	2536.97	1⁻			
		1068.8 *4*	3.08 *26*	2126.14	1⁻			
		1155.3[e] *3*	<20.5[e]	2039.85	1⁺			
		1682.7 *3*	31 *10*	1512.37	1⁻			
		1770.4 *4*	6.4 *6*	1425.24	(2)⁻	M1		

From ENSDF

$^{170}_{70}Yb_{100}$-24

Adopted Levels, Gammas (continued)

γ(^{170}Yb) (continued)

E$_i$(level)	J^π_i	E$_γ$[†]	I$_γ$[†]	E$_f$	J^π_f	Mult.[‡]	α[c]	Comments
3195.58	1$^-$	1888.7[e] 5	<21.5[e]	1306.39	2$^+$			
		1966.8 5	16.7 13	1228.84	0$^+$			Mult.: E2,M1 from α(K)exp In ε decay; inconsistent with adopted level scheme.
		2057.1[e] 4	<22.7[e]	1138.55	2$^+$			
		3111.5 3	100 5	84.25468	2$^+$	(E1)		
		3195.3 4	51 5	0.0	0$^+$	(E1)		Mult.: Possible doublet; α(K)exp lies midway between α(K)(E1) and α(K)(E2); adopted Δπ=yes.
3202.1	(12$^-$)	242.5[a] 2	100[a] 13	2959.4	(11$^-$)			
		469.9[a] 2	60[a] 13	2732.3	(10$^-$)			
3202.94	1$^+$	535.95 15	12.7 6	2667.19	1$^{(+)}$			
		678.8[d] 3		2523.07	1$^+$			
		706.5 5	100 9	2496.20	1$^-$	E1		
		802.40[e] 20	<47[e]	2400.10	1$^-$			
		1086.9[e] 3	<47[e]	2115.90	1$^-$			
		1162.4 3	55 3	2039.85	1$^+$	M1,E2		
		1217.30[e] 20	<273[e]	1985.64	1$^-$,2$^-$			
		1636.9[e] 3	<75[e]	1566.38	0$^+$			
		1838.2[e] 5	<59[e]	1364.53	1$^-$			
		1896.5[e] 3	<78[e]	1306.39	2$^+$			
		1977.4[e] 5	<52[e]	1225.35	(3)$^+$			
		2057.1[e] 4	<54[e]	1145.72	2$^+$			
		3119.2 6	27 9	84.25468	2$^+$			
		3202.4 5	91 9	0.0	0$^+$	M1		
3213.27	1$^-$	170.80[e] 20	<5.0[e]	3042.46	1$^+$			
		238.25[e] 15	<26[e]	2975.32	1$^-$	[M1,E2]	0.22 8	
		465.50 15	15.0 13	2748.08	1$^-$	M1+E0		
		861.8[d] 4		2351.71	0$^-$,1$^-$,2$^-$			
		1012.3[e] 3	<20.0[e]	2200.91	1$^-$,2$^-$			
		1086.9[e] 3	<49[e]	2126.14	1$^-$			
		1173.2[e] 4	<63[e]	2039.85	1$^+$			
		1700.90[e] 20	<194[e]	1512.37	1$^-$			
		1847.7 7		1364.53	1$^-$			
		1983.9 5	35.6 19	1228.84	0$^+$			
		2143.5 3	100 4	1069.35	0$^+$	E1		
		3128.1 5	56 6	84.25468	2$^+$	E1		
		3212.2 8	9.4 9	0.0	0$^+$			
3258.18	1$^+$	142.50 15	8.6 8	3115.58	1$^-$	[E1]	0.1344	
		292.55[e] 20	<4.9[e]	2965.66	1$^+$	[M1,E2]	0.12 5	
		301.85 20	5.3 6	2956.55	1$^+$	[M1]	0.1548	
		590.85[e] 15	<34[e]	2667.19	1$^{(+)}$			
		822.30 15	100 4	2436.01	(2,3)$^-$			Mult.: M1 from α(K)exp In ε decay; E1 required by placement.

$^{170}_{70}$Yb$_{100}$-25

Adopted Levels, Gammas (continued)

γ(^{170}Yb) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[c]	Comments
3258.18	1^+	858.1 3		2400.10	1^-			
		969.05[e] 20	<56[e]	2289.37	1^+			
		1204.8 3	16.3 8	2052.59	$0^-,1^-,2^-$			
		1692.0 4		1566.38	0^+			
		1832.4[e] 4	<22.5[e]	1425.24	$(2)^-$			
		1893.7 5	38.8 20	1364.53	1^-			
		3173.4 7	12.2 12	84.25468	2^+	M1		
		3258.2 8	10.2 10	0.0	0^+	M1,E2		
3268.91	$1^{(+)}$	449.25 20	7.4 7	2819.77	$0^-,1^-$	[E1]		Mult.: M1 from α(K)exp In ε decay; level scheme requires E1.
		1633.3[e] 3	<63[e]	1634.84	(1^+)			
		1734.4 5		1534.57	2^+			
		1904.6[e] 5	<21[e]	1364.53	1^-			
		1962.5 3	100 3	1306.39	2^+	E2(+M1)		
		3183.6 5	65 7	84.25468	2^+	M1		
3274.17	1^-	490.95 15	40.0 12	2783.12	1^+	[E1]		Mult.: M1(+E2) from α(K)exp In ε decay; level scheme requires E1.
		750.95[e] 20	<69[e]	2523.07	1^+			
		873.85[e] 25	<26[e]	2400.10	1^-			
		1158.5[e] 3	<39[e]	2115.90	1^-			
		1234.5 3	40.0 20	2039.85	1^+	E1		
		1761.4[e] 3	<84[e]	1512.37	1^-			
		1909.7 5	36.0 20	1364.53	1^-	M1,E2		
		3190.3 5	100 10	84.25468	2^+	E1		
		3274.2 5	80 8	0.0	0^+	E1		
3291.82	1^+	199.65[e] 15	<14[e]	3091.93	1	[E1]	0.0557	
		861.8[d] 4		2429.05	$1^+,2^+$			
		1252.1 4		2039.85	1^+			
		1633.3[e] 3	<85[e]	1658.06	$(2)^+$			
		1778.8[e] 4	<37[e]	1512.37	1^-			
		1985.5[e] 3	<111[e]	1306.39	2^+			
		2063.2 3	100 3	1228.84	0^+	(M1)		Mult.: M1,E2 from α(K)exp In ε decay; pure ΔJ=1 required by adopted level scheme.
		2152.9 5	27.2 13	1138.55	2^+			
		3206.8 8	19.0 19	84.25468	2^+	M1,E2		
		3291.4 7	6.3 6	0.0	0^+			Mult.: E1 from α(K)exp In ε decay; level scheme requires M1.
3296.5	(14^-)	246.7[a] 2	23[a] 5	3049.95	(13^-)			
		480.7[a] 2	100[a] 9	2815.73	(12^-)			
3301.95	1^+	209.90 20	5.1 5	3091.93	1			
		518.90 15	6.8 3	2783.12	1^+	M1	0.0372	
		805.85 25	12 3	2496.20	1^-			Mult.: α(K)exp In ε decay favors M1; decay scheme requires E1.
		901.40[e] 20	<48[e]	2400.10	1^-			
		1034.2 3	18 6	2268.08	1^-			
		1667.1[e] 4	<22[e]	1634.84	(1^+)			

$\gamma(^{170}$Yb) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[c]	Comments
3301.95	1^+	1767.2 *3*	55 *3*	1534.57	2^+	M1,E2		
		1876.2 *3*	100 *6*	1425.24	$(2)^-$	E1		
		2232.7 *5*	10.8 *5*	1069.35	0^+	M1		
		3218.4 *9*	1.5 *3*	84.25468	2^+			
		3302.4 *7*	8.0 *8*	0.0	0^+	(M1)		
3307.3	(14^+)	480.5[a] *2*	100	2826.8	(12^+)	Q[b]		
3314.42	1	222.40[e] *15*	<207[e]	3091.93	1	[M1]	0.355	
		339.45[e] *20*	<18[e]	2975.32	1^-			
		366.35[e] *15*	<124[e]	2947.84	1^-			
		374.55 *20*	22.2 *22*	2939.73	1^-			
		384.85 *15*	71 *3*	2929.60	1^-	M1(+E2+E0)		
		539.05[e] *15*	<131[e]	2775.66	1^-			
		565.80[e] *15*	<66[e]	2748.08	1^-			
		962.85 *25*	38 *4*	2351.71	$0^-,1^-,2^-$	M1+E2+E0		
		1046.60[e] *25*	<456[e]	2268.08	1^-			
		1747.8 *4*	56 *6*	1566.38	0^+	(M1)		
		1888.7[e] *5*	<187[e]	1425.24	$(2)^-$			
		2086.4 *5*	100 *4*	1228.84	0^+			
		3229.5 *8*	33 *3*	84.25468	2^+	E1		
		3314.1 *7*	62 *7*	0.0	0^+	(M1)		Mult.: M1,E2 from α(K)exp In ε decay; E2 not consistent with ε feeding of parent level.
3333.2?	(14^+)	474[af] *1*	100	2859.2	(12^+)			
3366.40	1	300.60 *20*	13.9 *14*	3065.36	1^+	M1	0.1565	
		390.40[e] *15*	<181[e]	2975.32	1^-			
		590.85[e] *15*	<116[e]	2775.66	1^-			
		598.15 *15*	100 *4*	2768.34	$0^-,1^-$	E2	0.01147	
		965.52[d] *26*		2400.10	1^-			
		1240.7 *3*	51 *3*	2126.14	1^-			
		1648.7[e] *3*	<49[e]	1717.95	$(2)^-$			
		1731.3[e] *4*	<32[e]	1634.84	(1^+)			
		1799.3 *5*	40 *3*	1566.38	0^+			
		1832.4[e] *4*	<76[e]	1534.57	2^+			
		1887.1[e] *5*	<118[e]	1479.91	0^+			
		2219.4 *6*		1145.72	2^+			
		2228.6 *3*		1138.55	2^+			
		3282.1 *8*	6.9 *14*	84.25468	2^+	E1,E2		
3384.87	1^-	636.80 *20*	63 *10*	2748.08	1^-	M1,E2	0.016 *6*	
		861.8[d] *4*		2523.07	1^+			
		955.22[d] *24*		2429.05	$1^+,2^+$			
		1021.5[d] *3*		2364.06	1^-			

$^{170}_{70}$Yb$_{100}$-27

Adopted Levels, Gammas (continued)

γ(^{170}Yb) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[c]	Comments
3384.87	1⁻	1667.1[e] *4*	<91[e]	1717.95	(2)⁻			
		1904.6[e] *5*	<58[e]	1479.91	0⁺			
		2246.8 *5*	31.3 *19*	1138.55	2⁺			
		2315.1 *4*	100 *5*	1069.35	0⁺	E1		
		3385.0 *8*	5.0 *13*	0.0	0⁺			
3401.7	(15⁻)	546.1[a] *5*	53[a] *26*	2855.61	(13⁻)			E_γ: other: 543.1 *5* in (α,2nγ).
		821.4[a] *2*	100[a] *16*	2580.35	14⁺	D[b]		
3423.2?	(0⁻)	1155.3[ef] *3*	71[e] *5*	2268.08	1⁻			Mult.: (M1) for doubly-placed line.
		1585.8[ef] *4*	19.1[e] *19*	1838.2	(2)⁺			
		1706.0[ef] *3*	100[e] *14*	1717.95	(2)⁻			Mult.: (M1) for multiply-placed line.
		1998.4[ef] *5*	38[e] *10*	1425.24	(2)⁻			Mult.: (M1,E2) for doubly-placed line.
		3338.9[f] *8*	3.8 *10*	84.25468	2⁺	(M2)		Mult.: M1+E2+E0 or M2 from α(K)exp In ε decay; ε feeding of parent level favors the latter.
3437.8	(14⁻)	510.6[a] *5*		2927.2	(12⁻)			
3466.8?	(13⁻)	265[af] *1*	50[a] *20*	3202.1	(12⁻)			
		507[af] *1*	100[a] *20*	2959.4	(11⁻)			
3533.8	16⁻	567.4[a] *2*	100	2966.42	14⁻	E2[b]	0.01302	E_γ: other: 565.1 *5* for weak γ in (α,2nγ).
3547.3	(16⁺)	560.6[a] *5*	56[a] *31*	2986.67	(14⁺)			
		966.9[a] *2*	100[a] *13*	2580.35	14⁺			
3558.1	(15⁺)	491.1[a] *2*	100	3067.0	(13⁺)			
3567.4	(15⁻)	270.8[a] *2*	36[a] *9*	3296.5	(14⁻)			
		517.4[a] *2*	100[a] *18*	3049.95	(13⁻)			
3742.1	(14⁻)	540.0[a] *2*	100	3202.1	(12⁻)			
3756.5	(17⁻)	570.3[a] *2*	100	3186.2	15⁻	E2[b]	0.01286	
3806.8	18⁺	611.7[a] *2*	100	3195.1	16⁺	E2[&]	0.01087	
3833.3	(16⁺)	526.0[a] *2*	100	3307.3	(14⁺)			
3842.3	(16⁻)	545.8[a] *5*	100	3296.5	(14⁻)			
3844.2?	(16⁺)	511[af] *1*	100	3333.2?	(14⁺)			
4011.8	(16⁻)	574[a] *1*	100	3437.8	(14⁻)			
4017.6	(17⁻)	616.0[a] *5*	100[a] *50*	3401.7	(15⁻)			
		822[a] *1*	<50[a]	3195.1	16⁺			
4065.1?	(17⁺)	507.0[af] *10*	100	3558.1	(15⁺)			
4174.0	18⁻	640.2[a] *2*	100	3533.8	16⁻			
4207.1	(18⁺)	659.4[a] *5*	50[a] *33*	3547.3	(16⁺)			
		1012.4[a] *5*	100[a] *33*	3195.1	16⁺			
4390.3	19⁻	633.8[a] *2*	100	3756.5	(17⁻)			
4436.5	20⁺	629.7[a] *5*	100	3806.8	18⁺	(E2)[&]	0.01016	
4885.9	20⁻	711.9[a] *5*	100	4174.0	18⁻			
5084.8	21⁻	694.5[a] *2*	100	4390.3	19⁻			

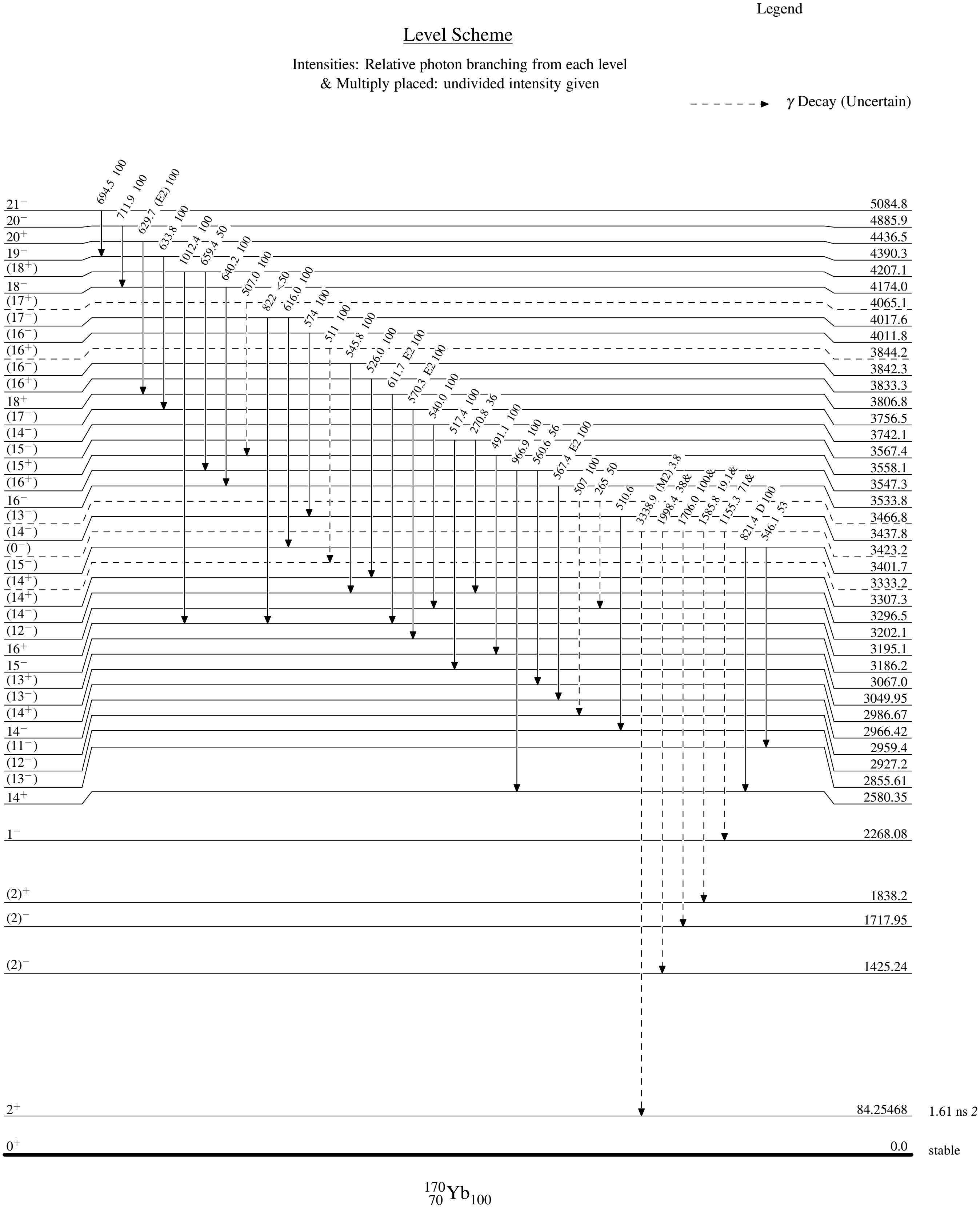
$^{170}_{70}$Yb$_{100}$-28

$\gamma(^{170}Yb)$ (continued)

† From ^{170}Lu ε decay, unless noted otherwise.
‡ From α(K)exp in ^{170}Lu ε decay, except as noted.
# From (α,2nγ), except as noted.
@ From ^{168}Er(α,2nγ).
& From α(K)exp and/or $\gamma(\theta)$ in (α,2nγ). RUL has been used to eliminate M2 for some stretched Q transitions, assuming $T_{1/2}\leq 5$ ns (1981Wa14) (based on observation of prompt $\gamma\gamma$ coin).
[a] From ^{168}Er(α,4nγ).
[b] From (α,4nγ). Based on $\gamma(\theta)$ for transitions detected in prompt coin in 1981Wa14 ($T_{1/2}\leq 5$ ns) and/or measured DCO ratios.
[c] 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.
[d] Multiply placed.
[e] Multiply placed with undivided intensity.
[f] Placement of transition in the level scheme is uncertain.

$^{170}_{70}Yb_{100}$-29

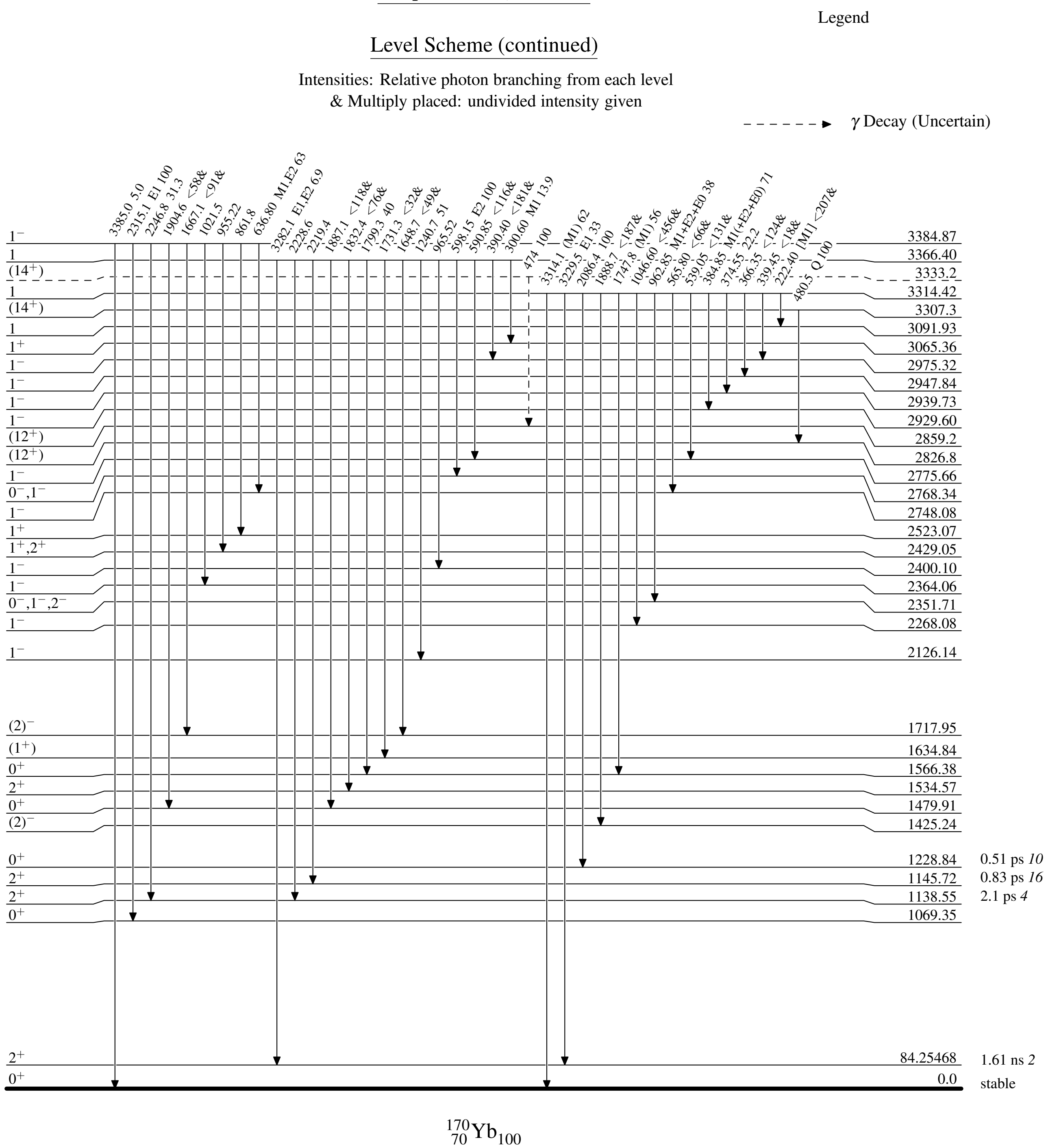
Adopted Levels, Gammas



Adopted Levels, Gammas

Level Scheme (continued)

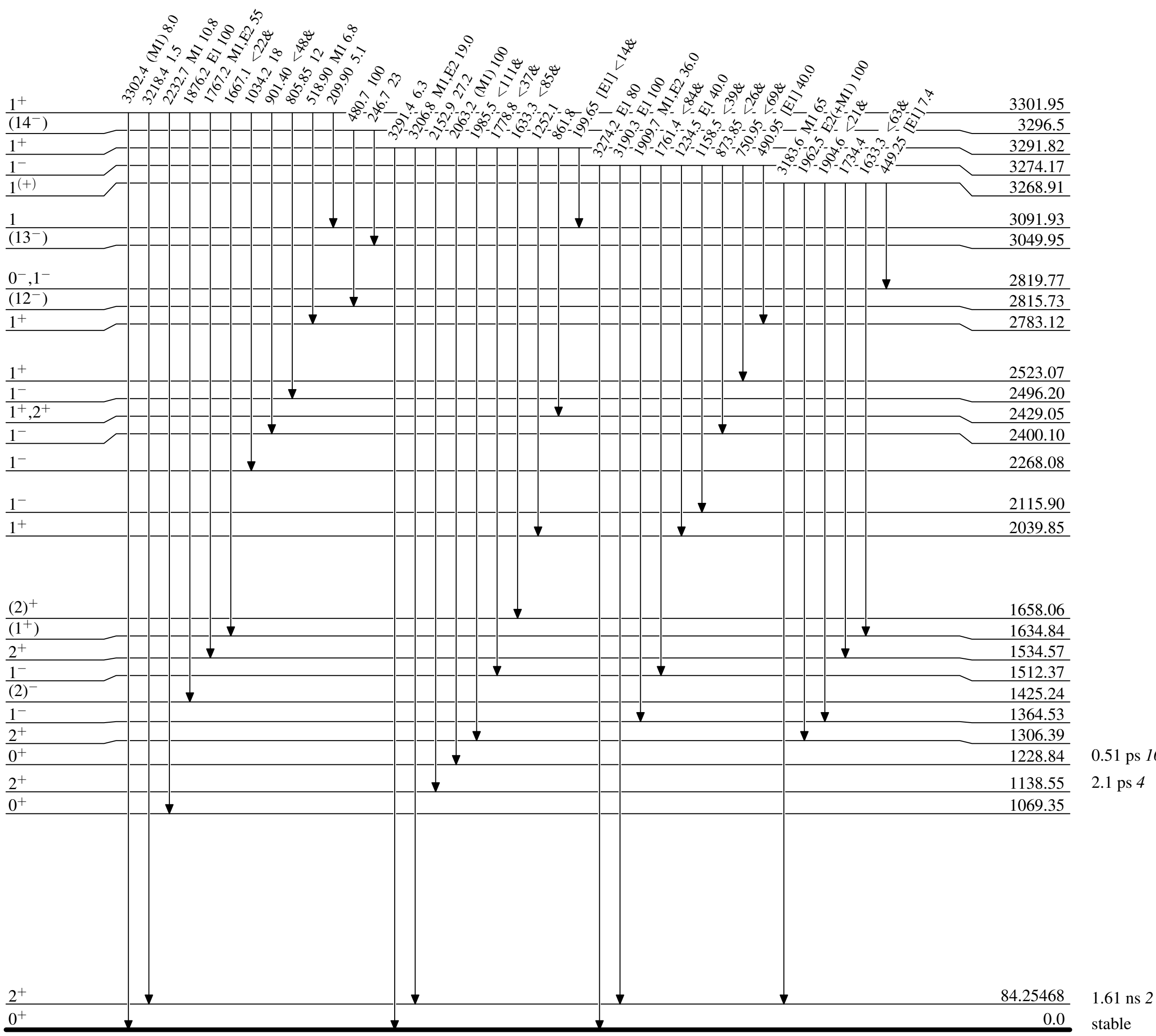
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



Adopted Levels, Gammas

Level Scheme (continued)

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

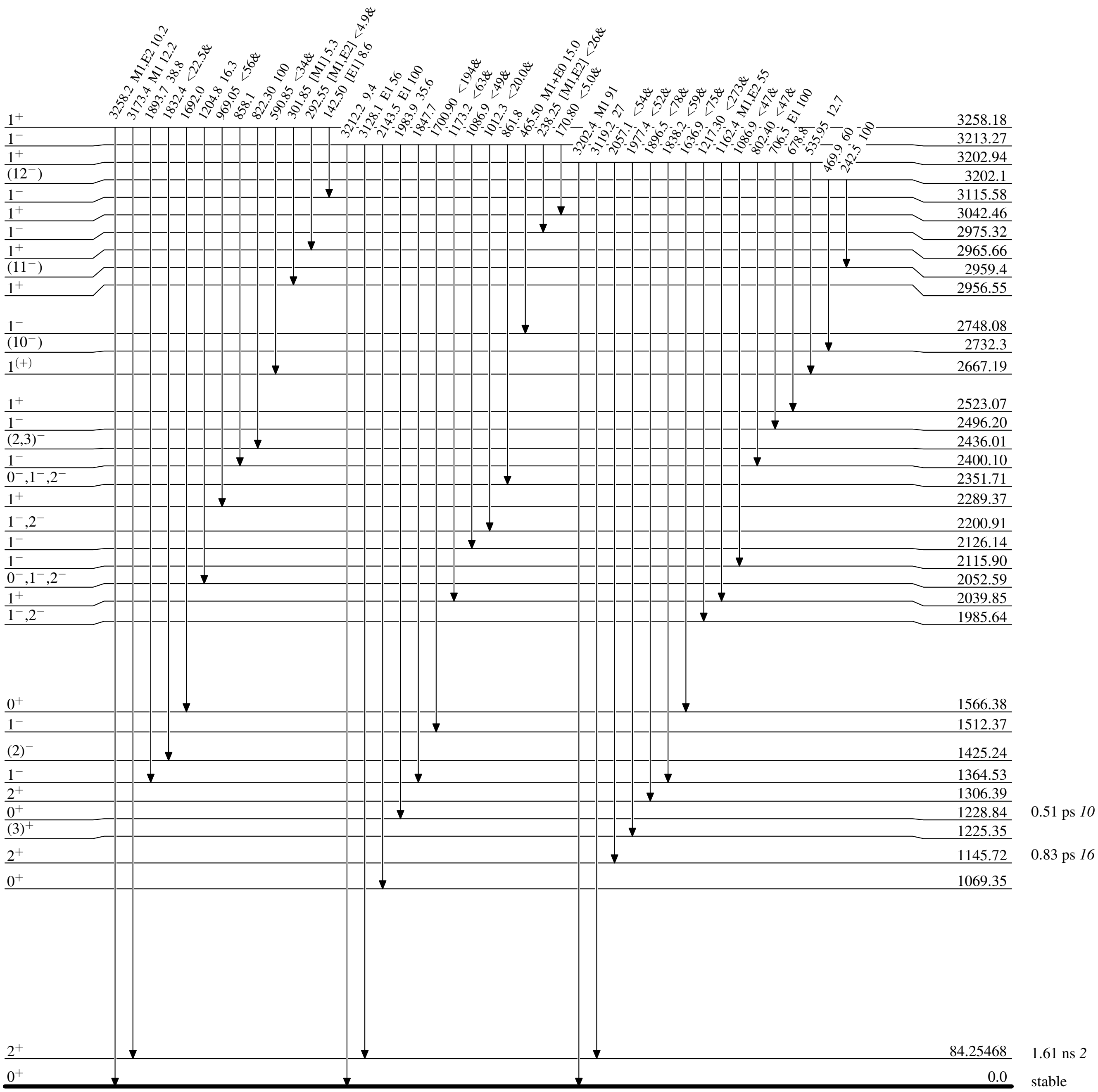


$^{170}_{70}Yb_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

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

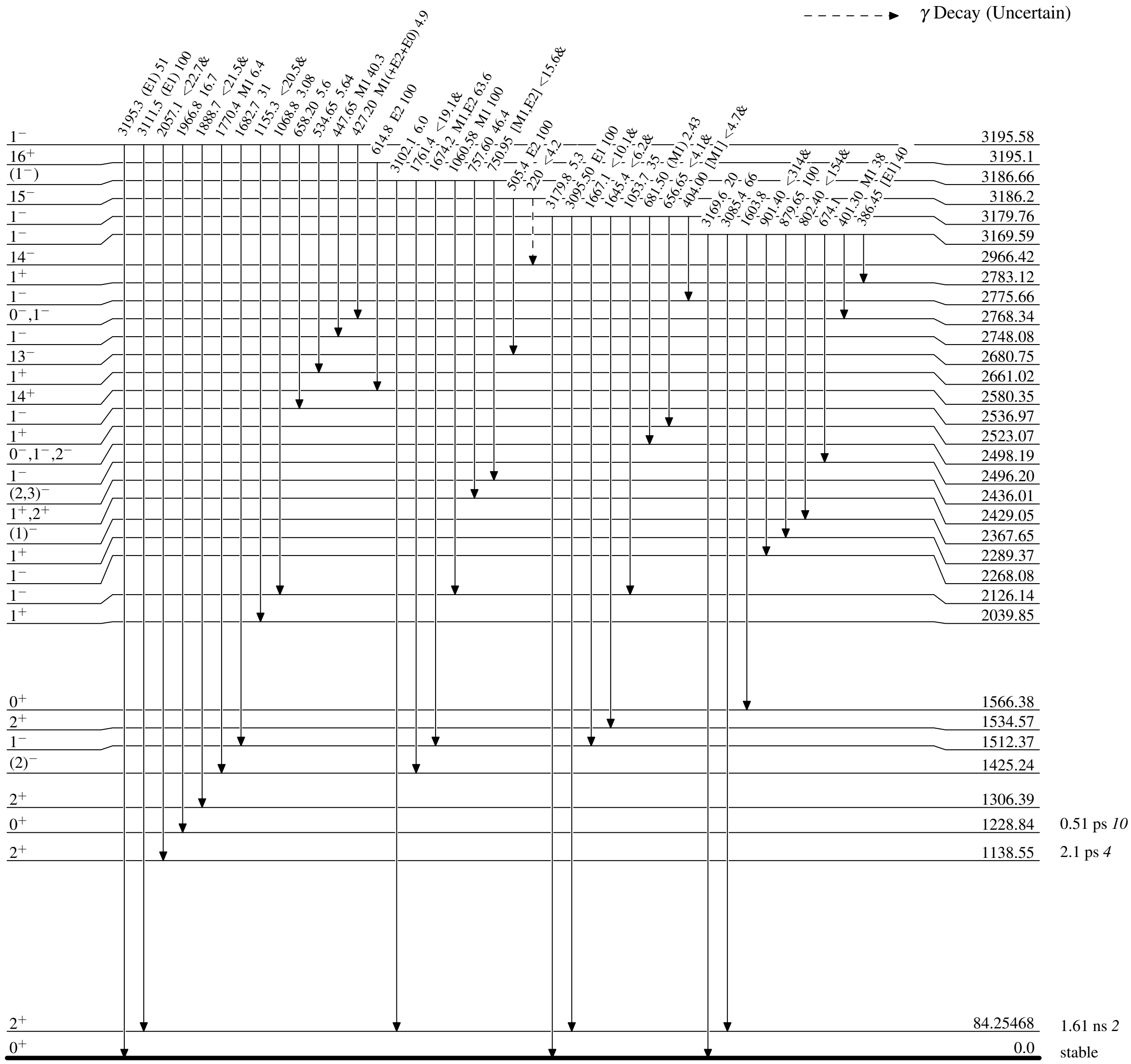


$^{170}_{70}Yb_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

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

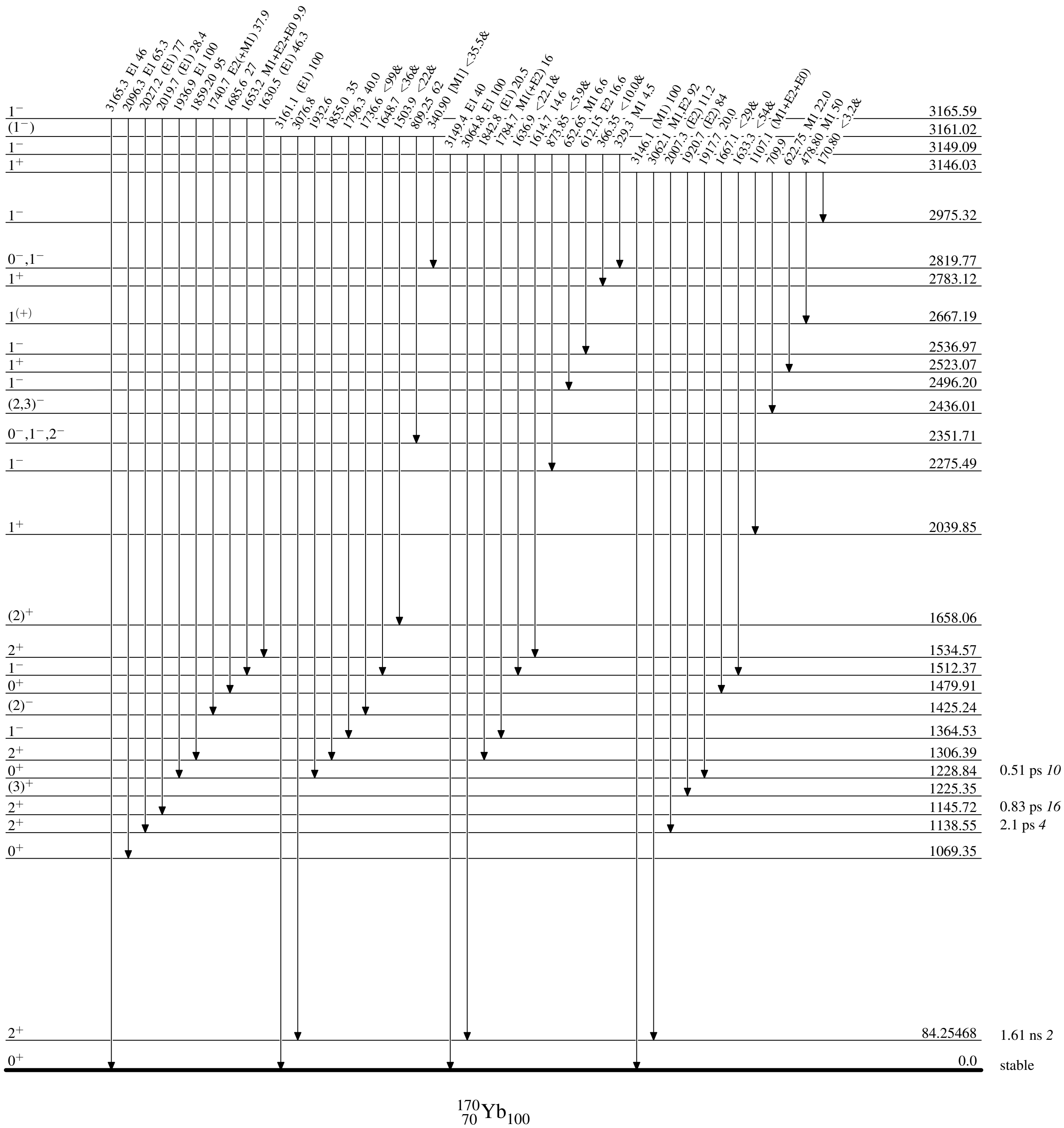


$^{170}_{70}Yb_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

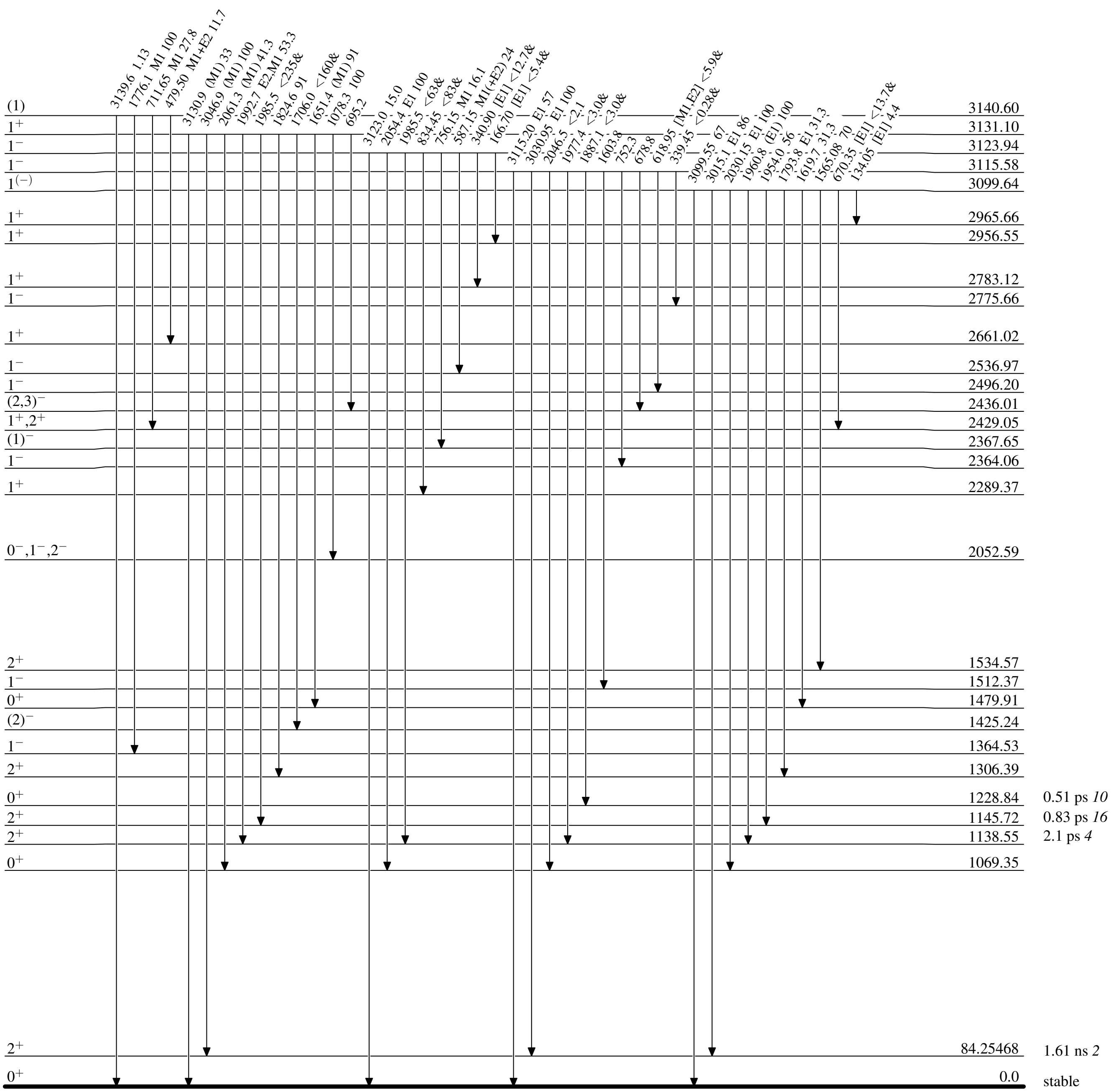
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



Adopted Levels, Gammas

Level Scheme (continued)

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



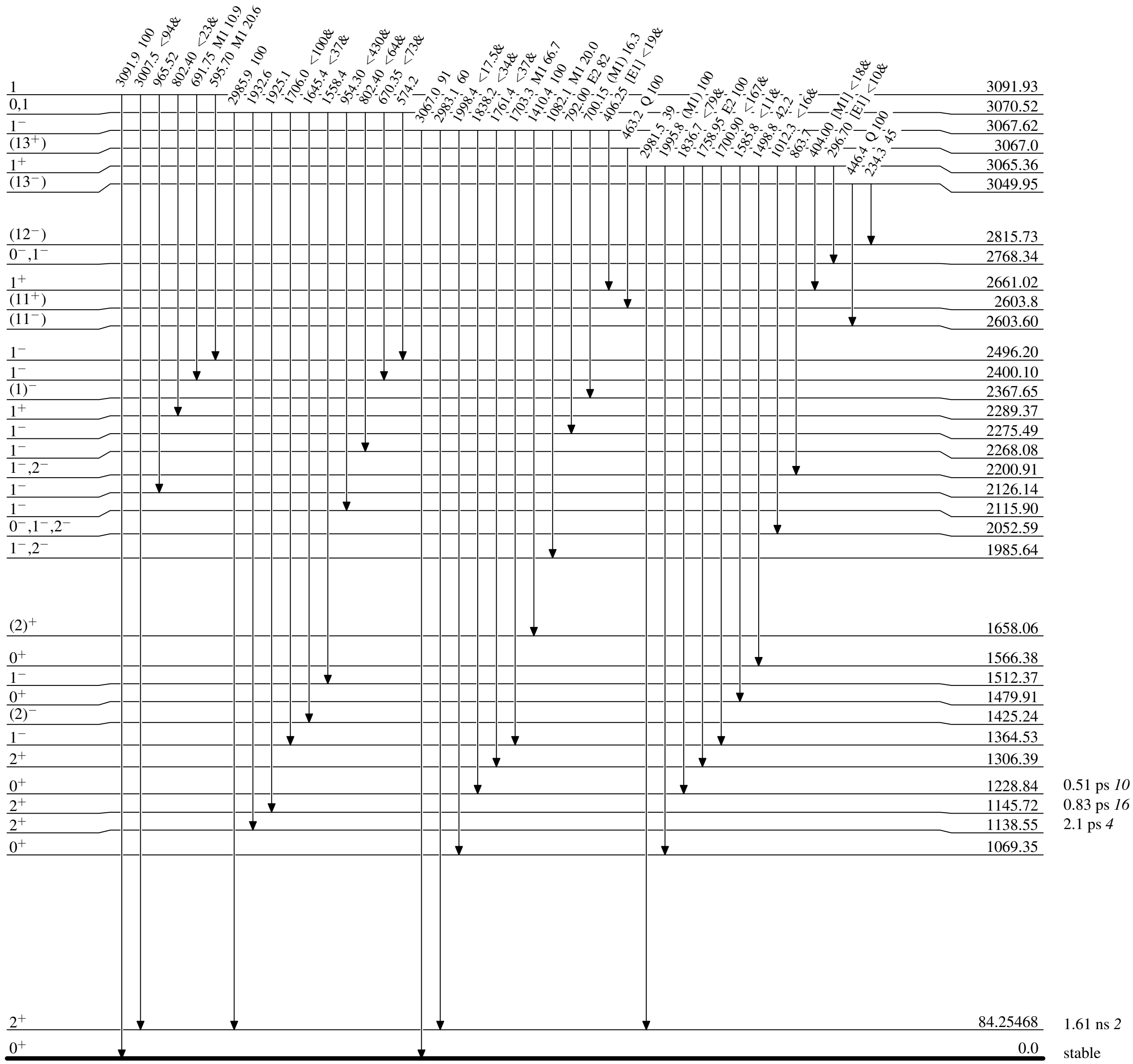
$^{170}_{70}Yb_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

& Multiply placed: undivided intensity given

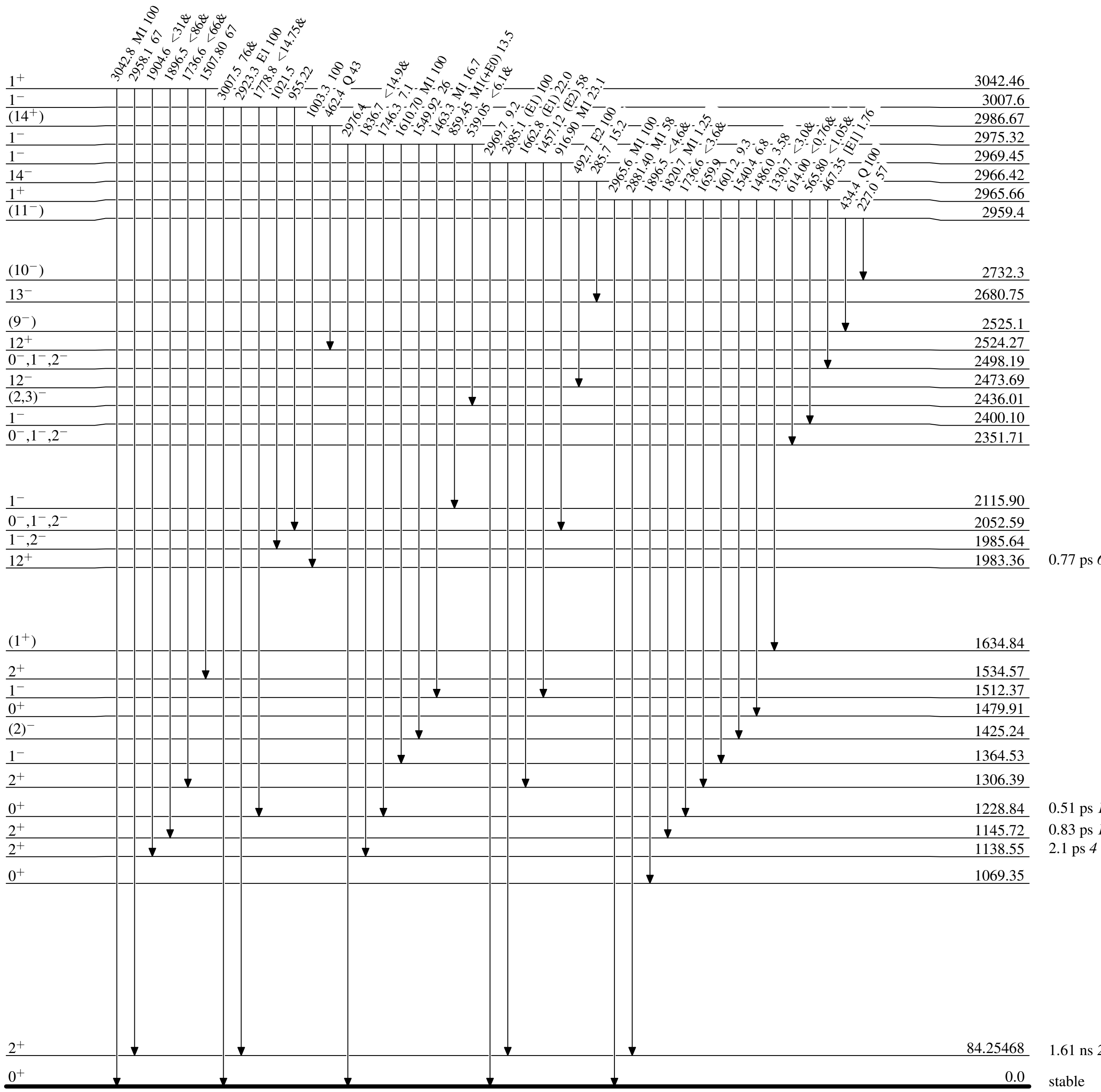


$^{170}_{70}Yb_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

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



$^{170}_{70}Yb_{100}$

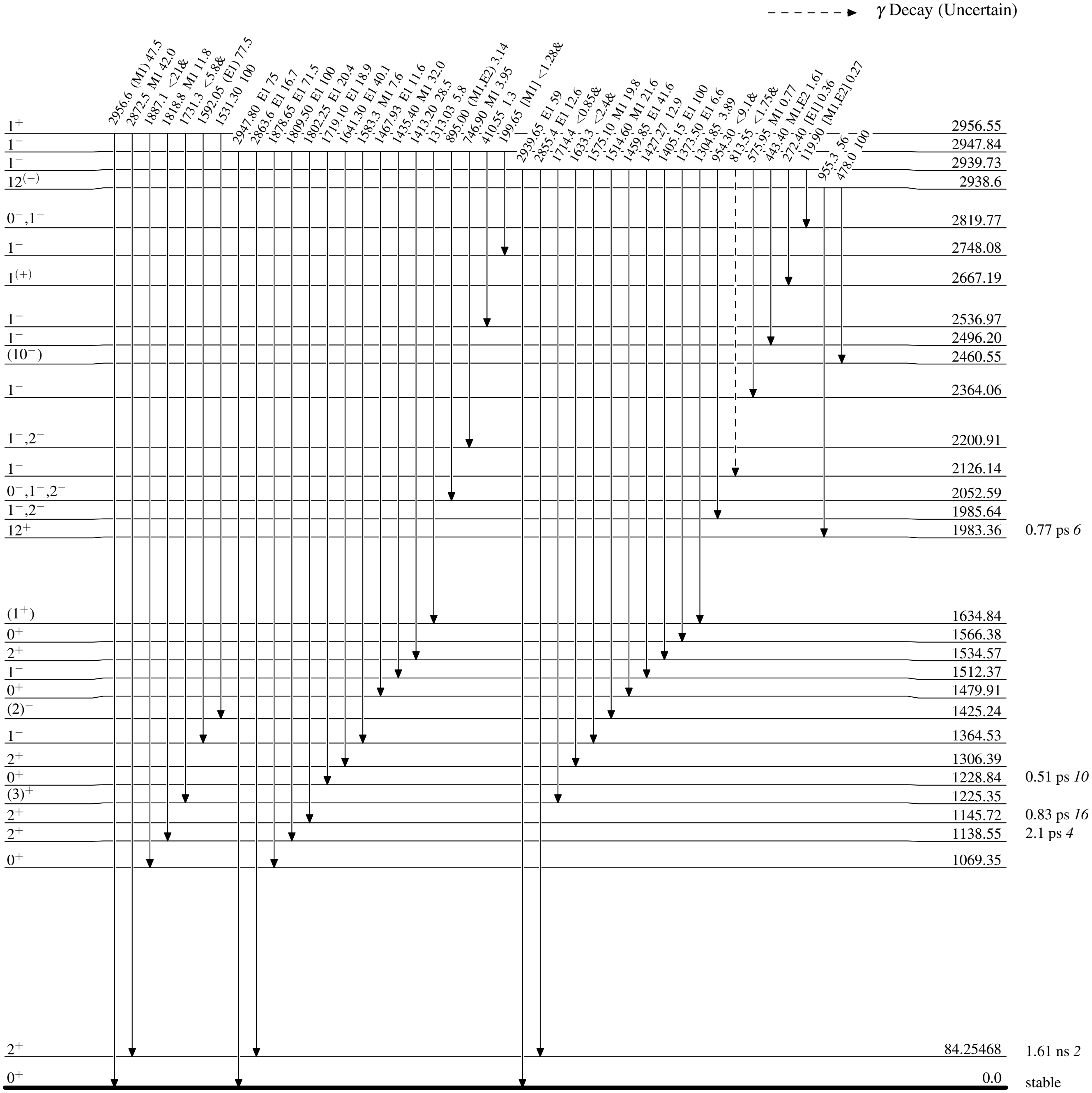
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

& Multiply placed: undivided intensity given

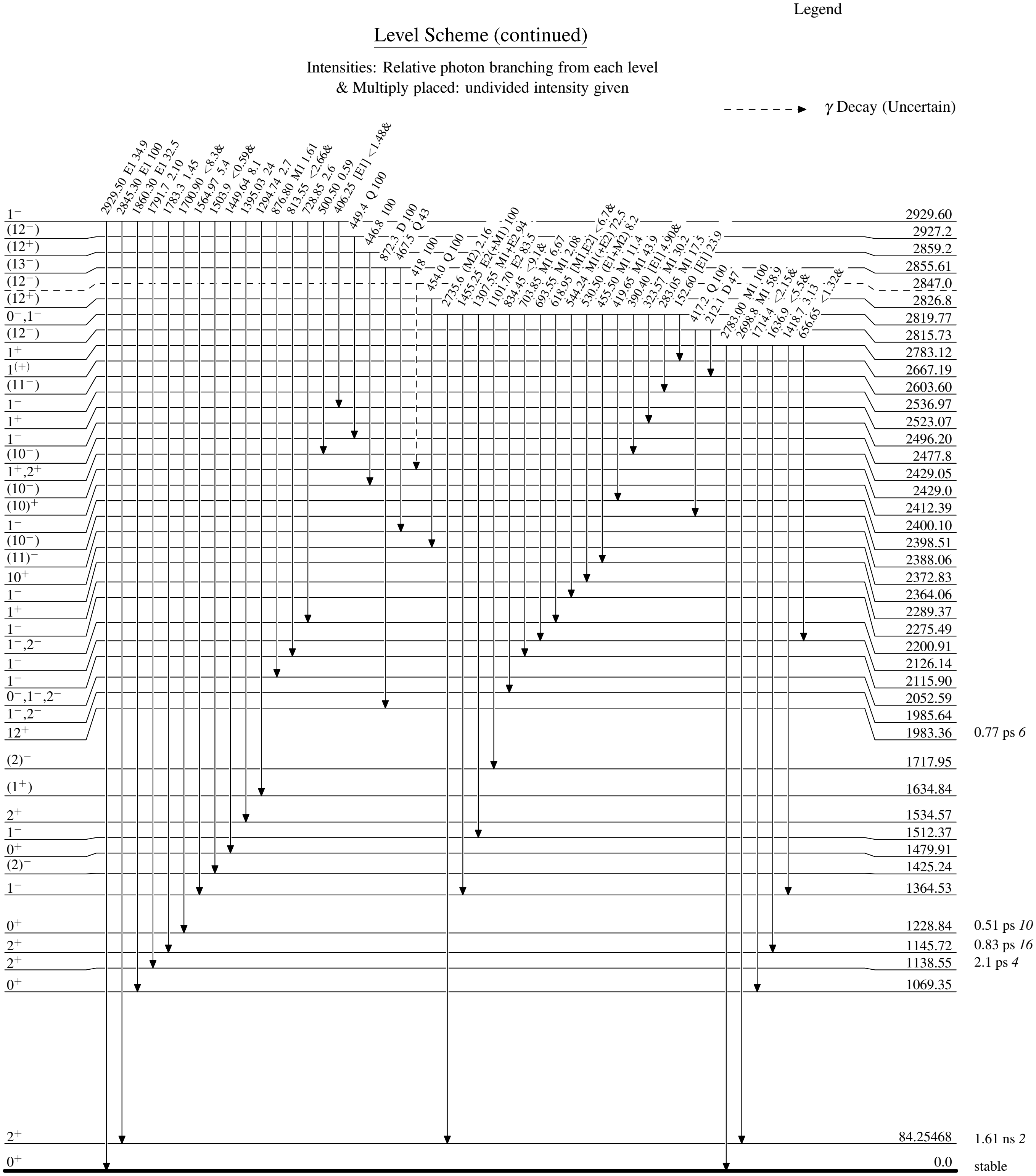


$^{170}_{70}Yb_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

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

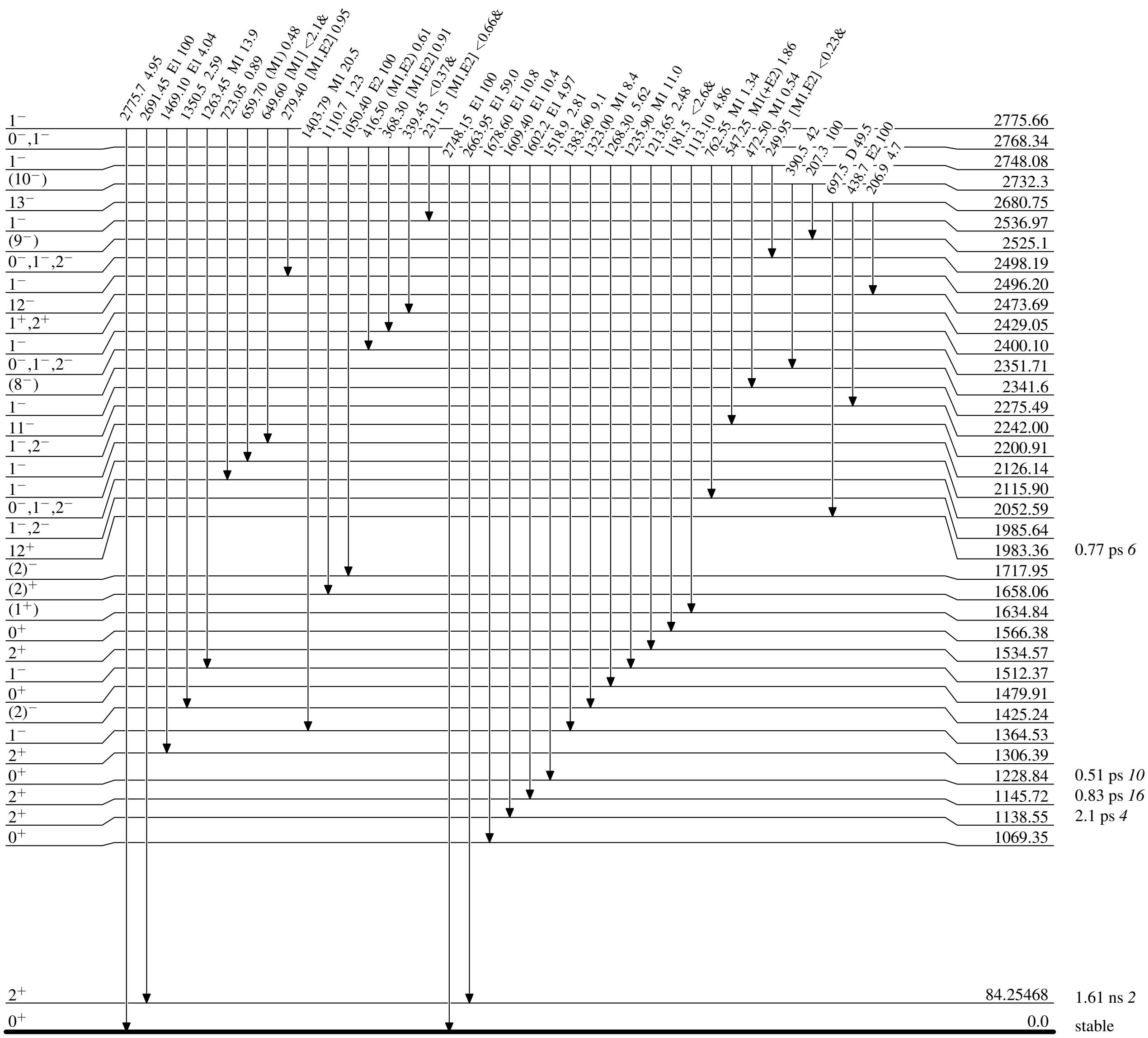


$^{170}_{70}Yb_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

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

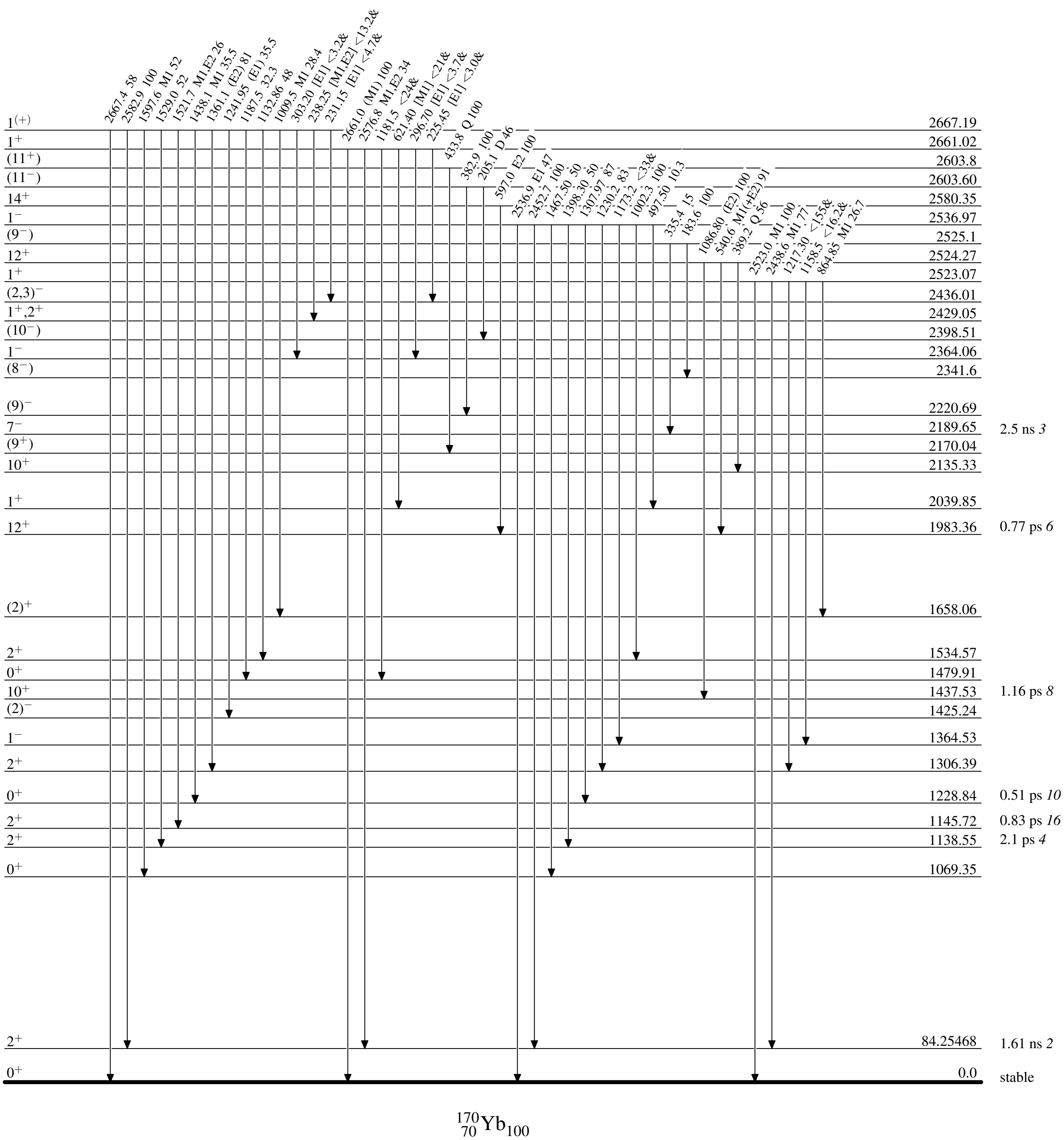


$^{170}_{70}Yb_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

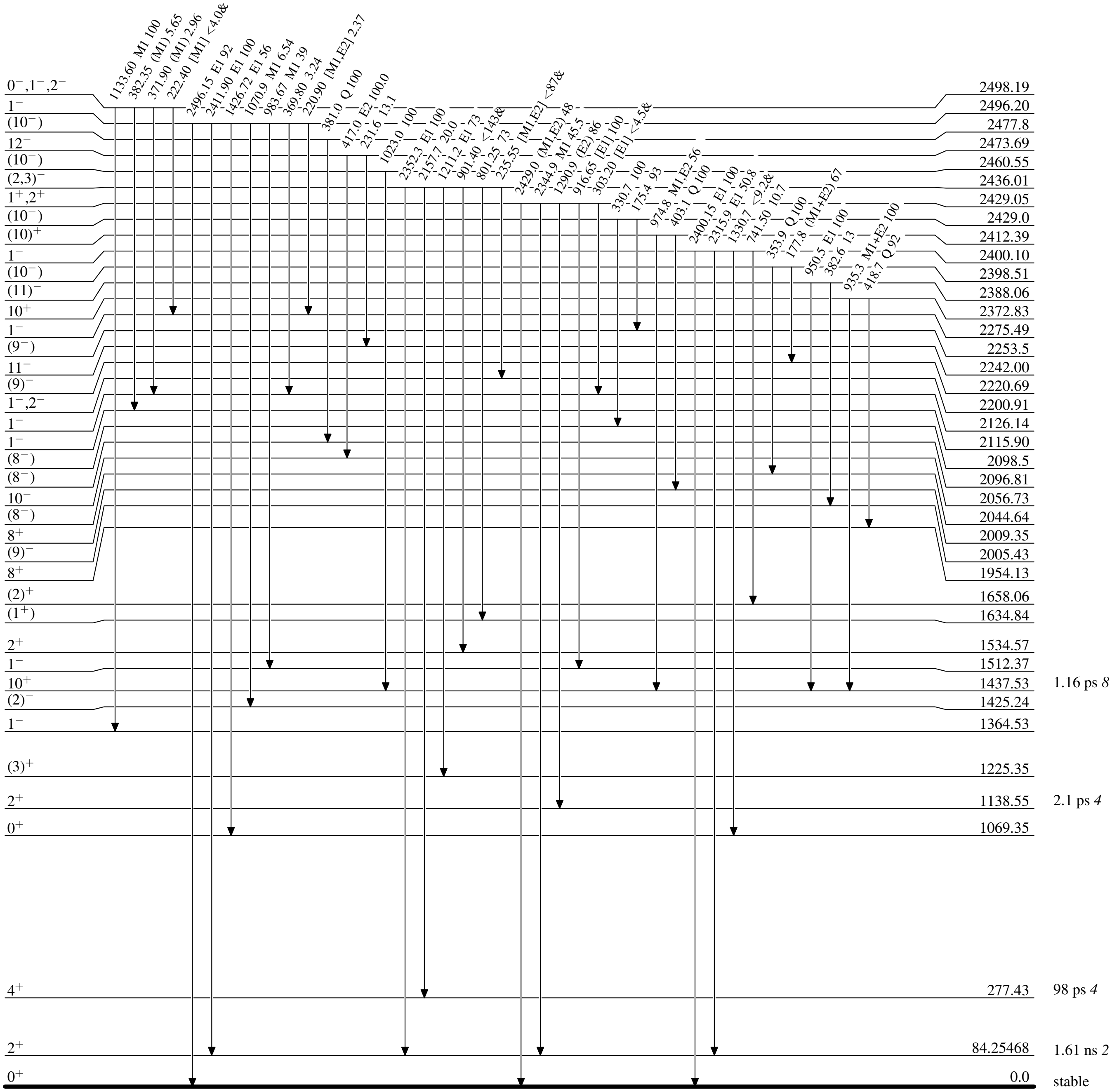
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



Adopted Levels, Gammas

Level Scheme (continued)

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



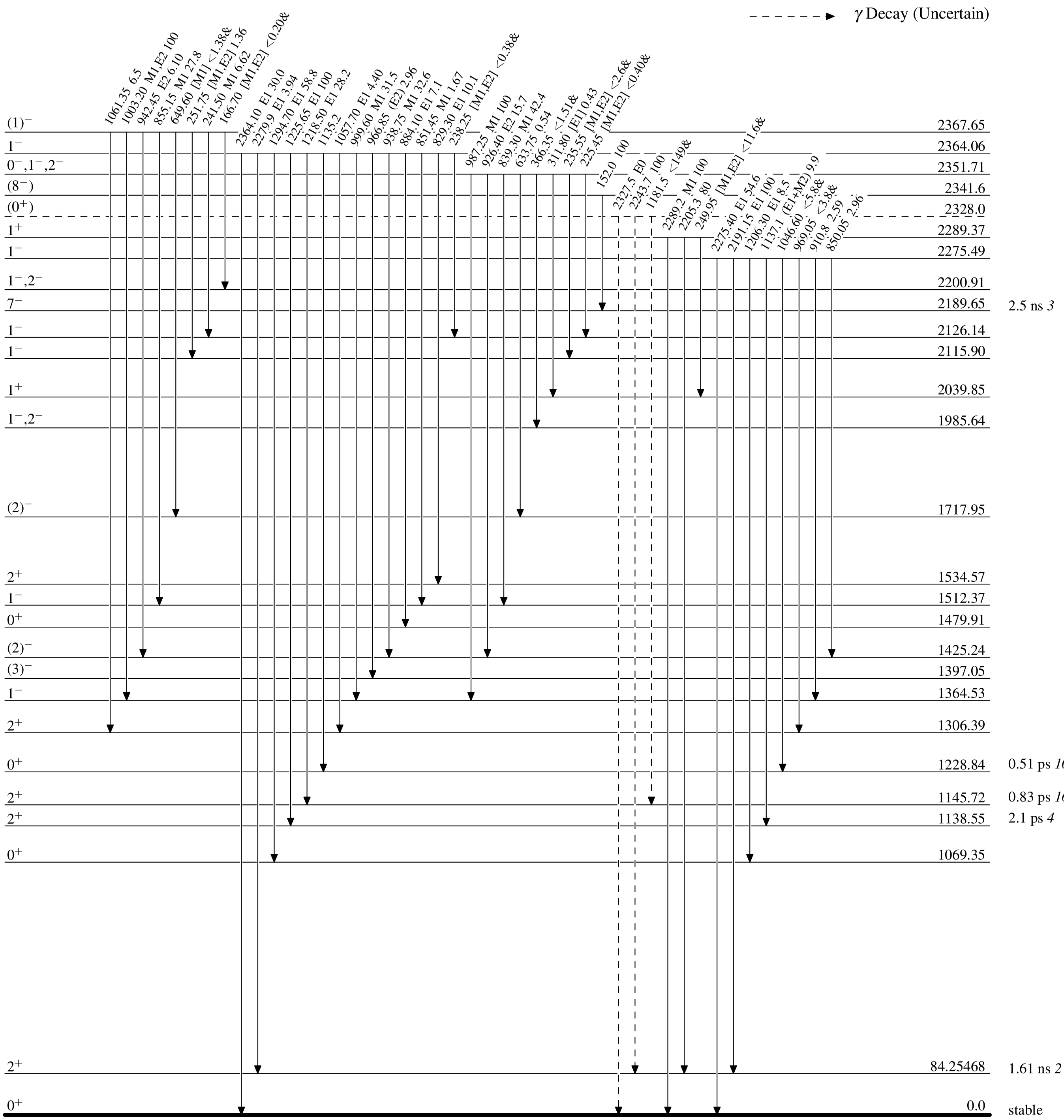
$^{170}_{70}Yb_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

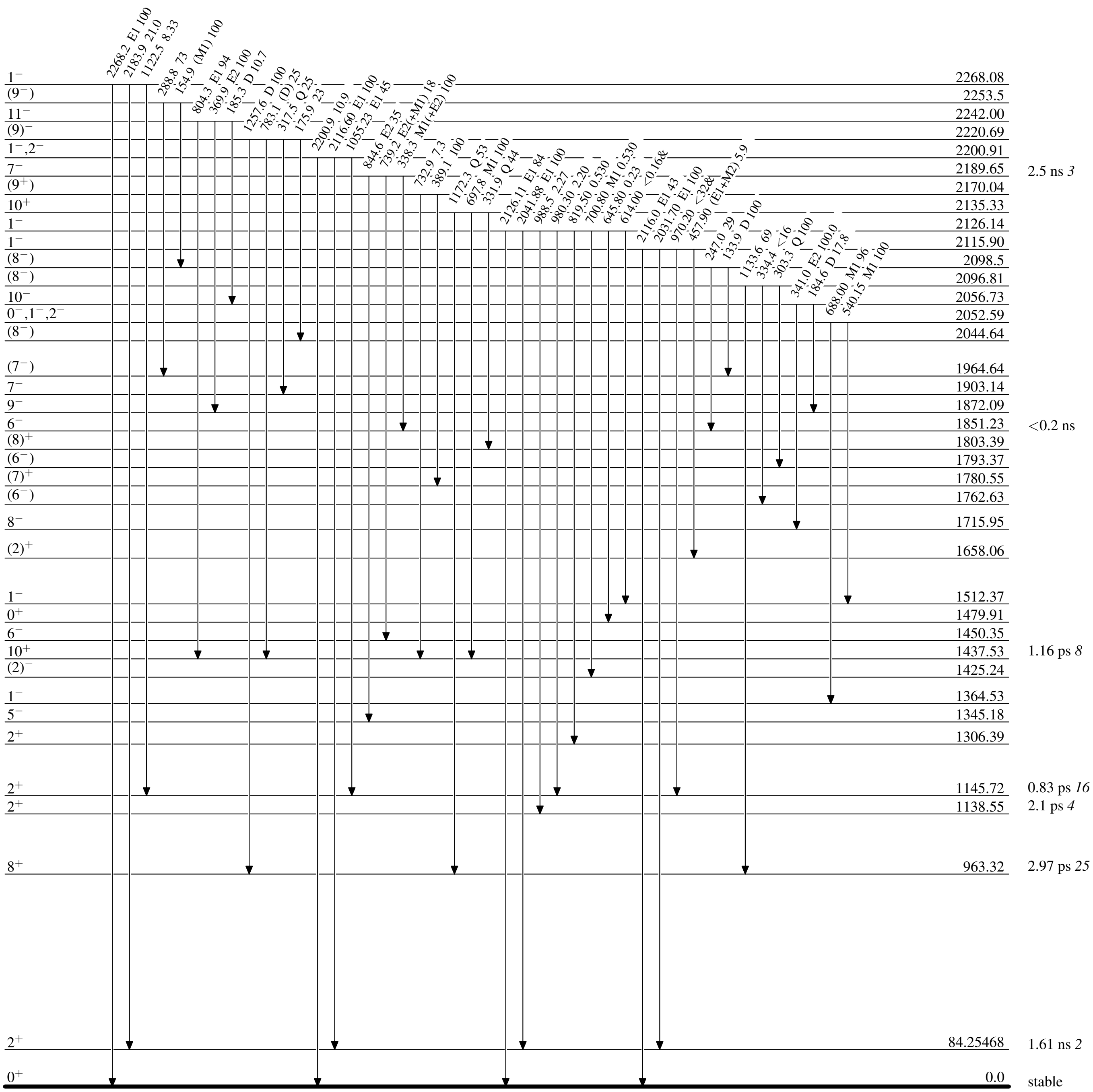


$^{170}_{70}Yb_{100}$

Adopted Levels, Gammas

Level Scheme (continued)

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



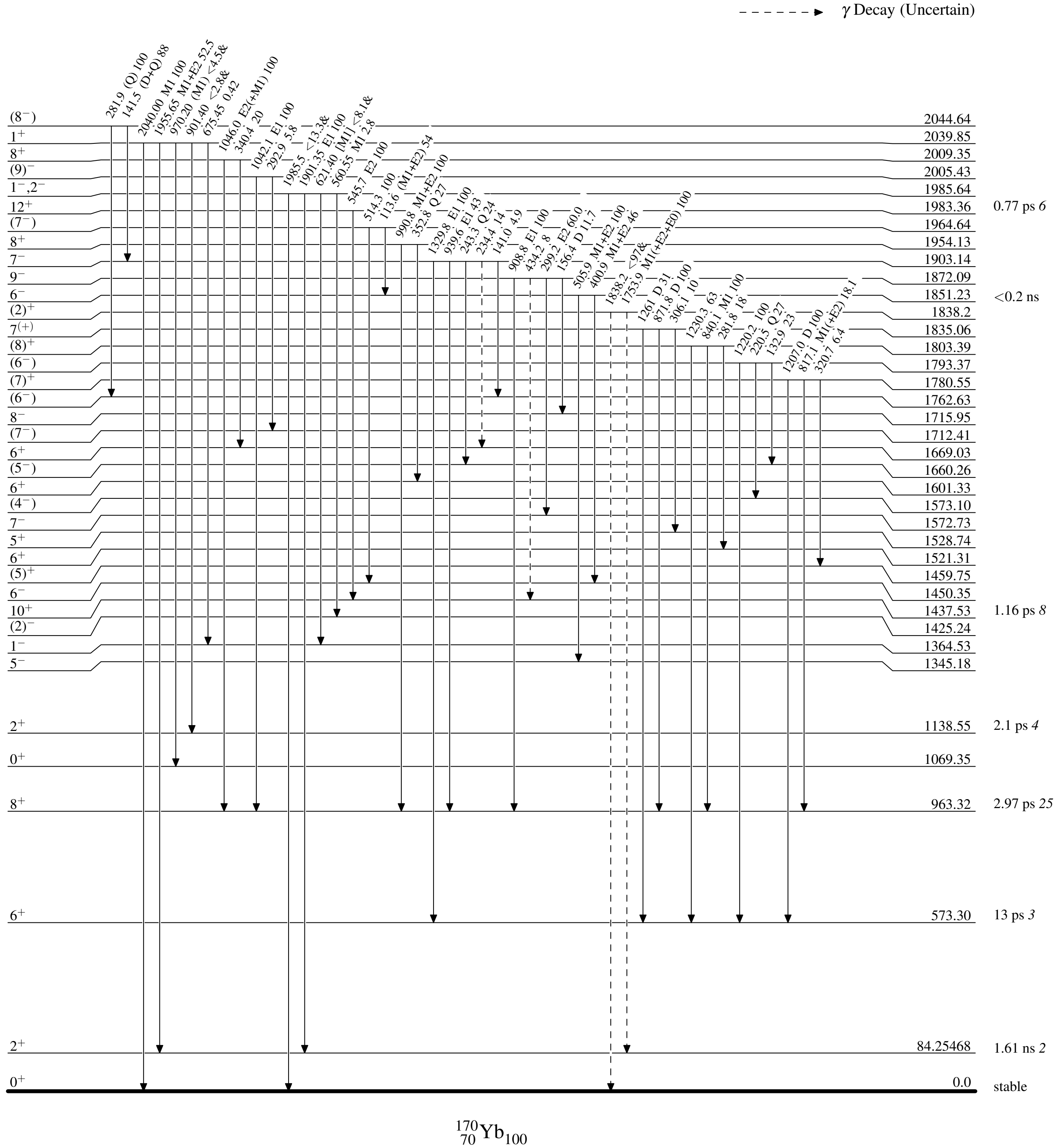
$^{170}_{70}Yb_{100}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)

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



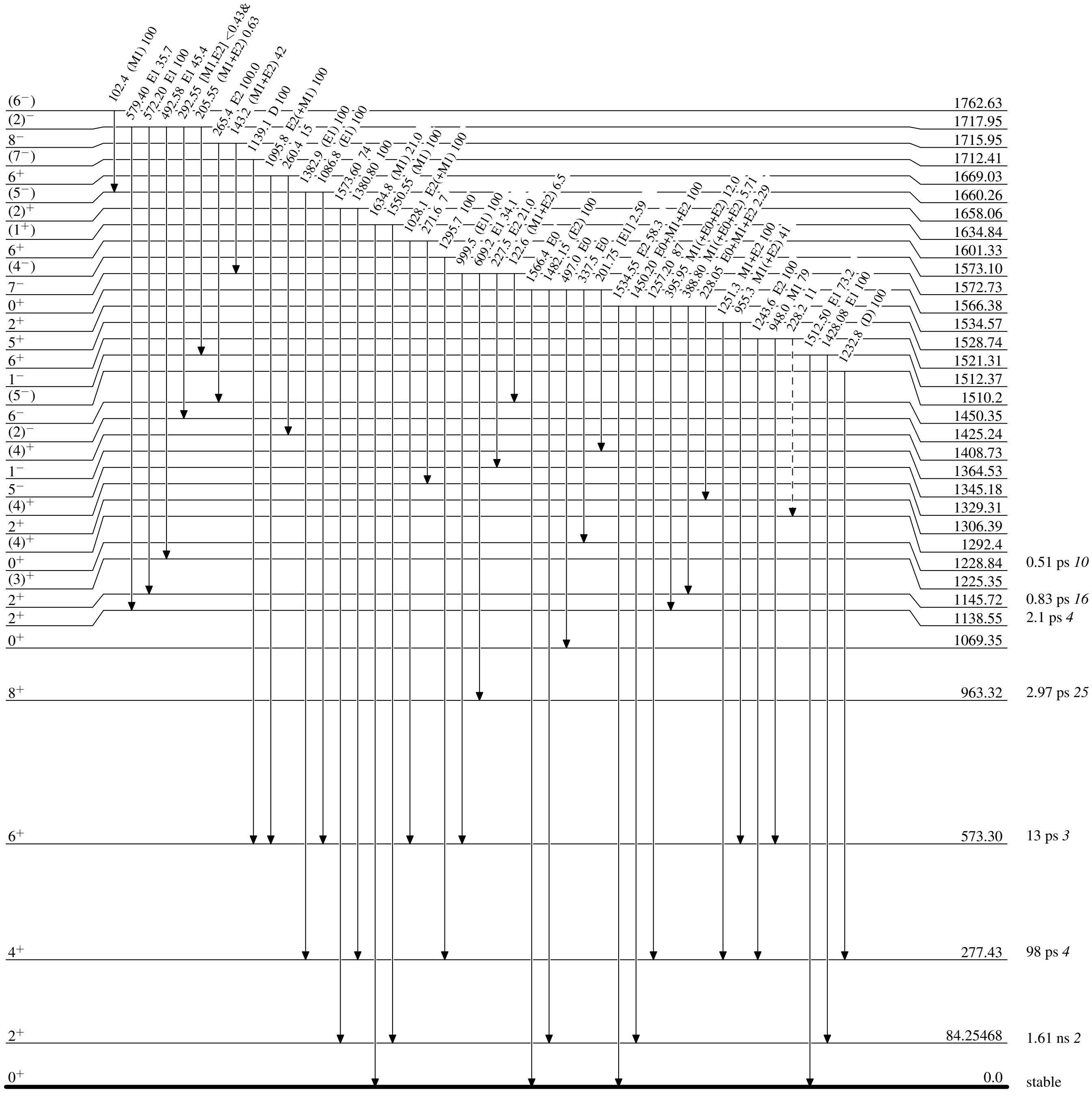
Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

γ Decay (Uncertain)

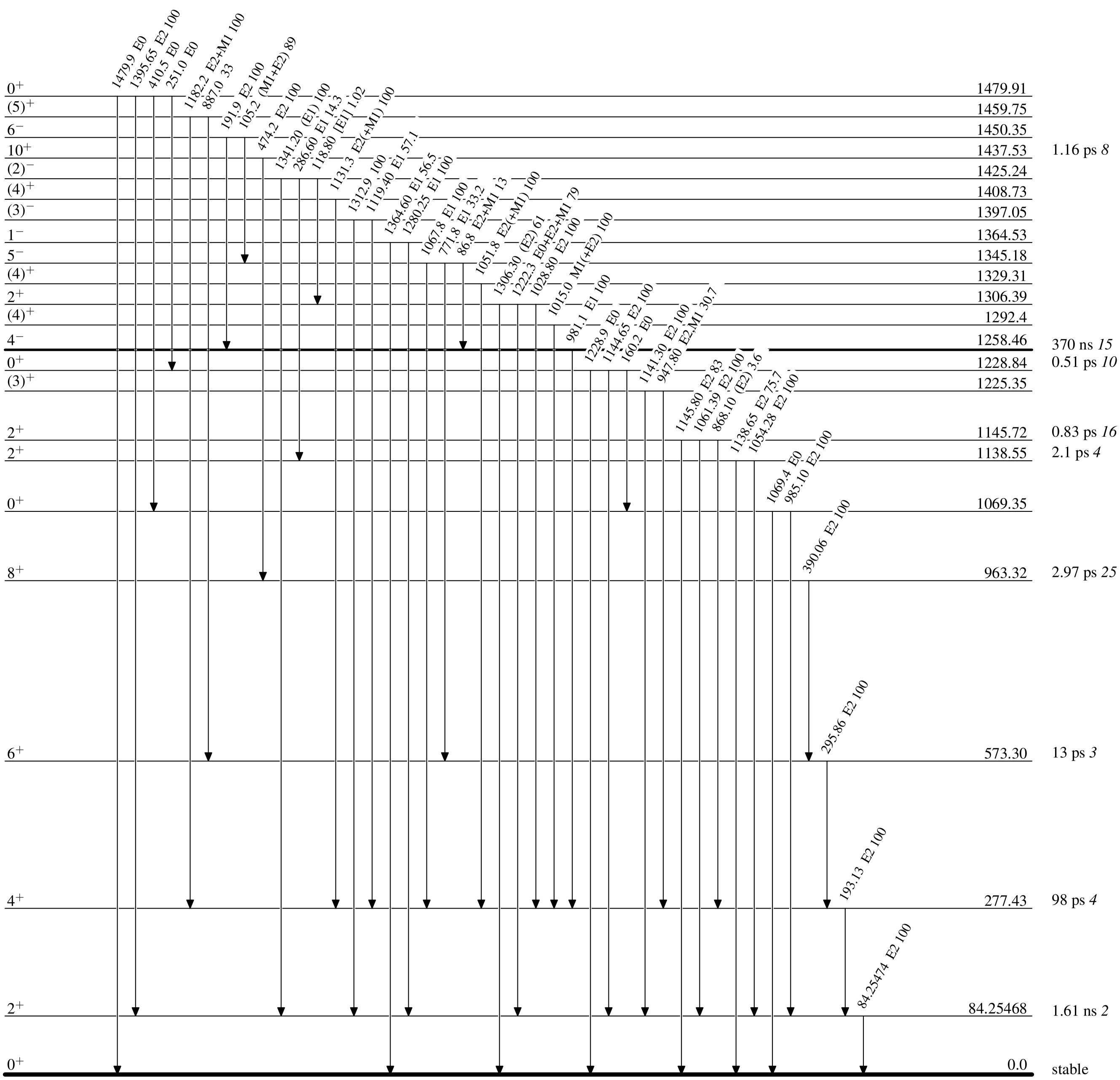


$^{170}_{70}Yb_{100}$

Adopted Levels, Gammas

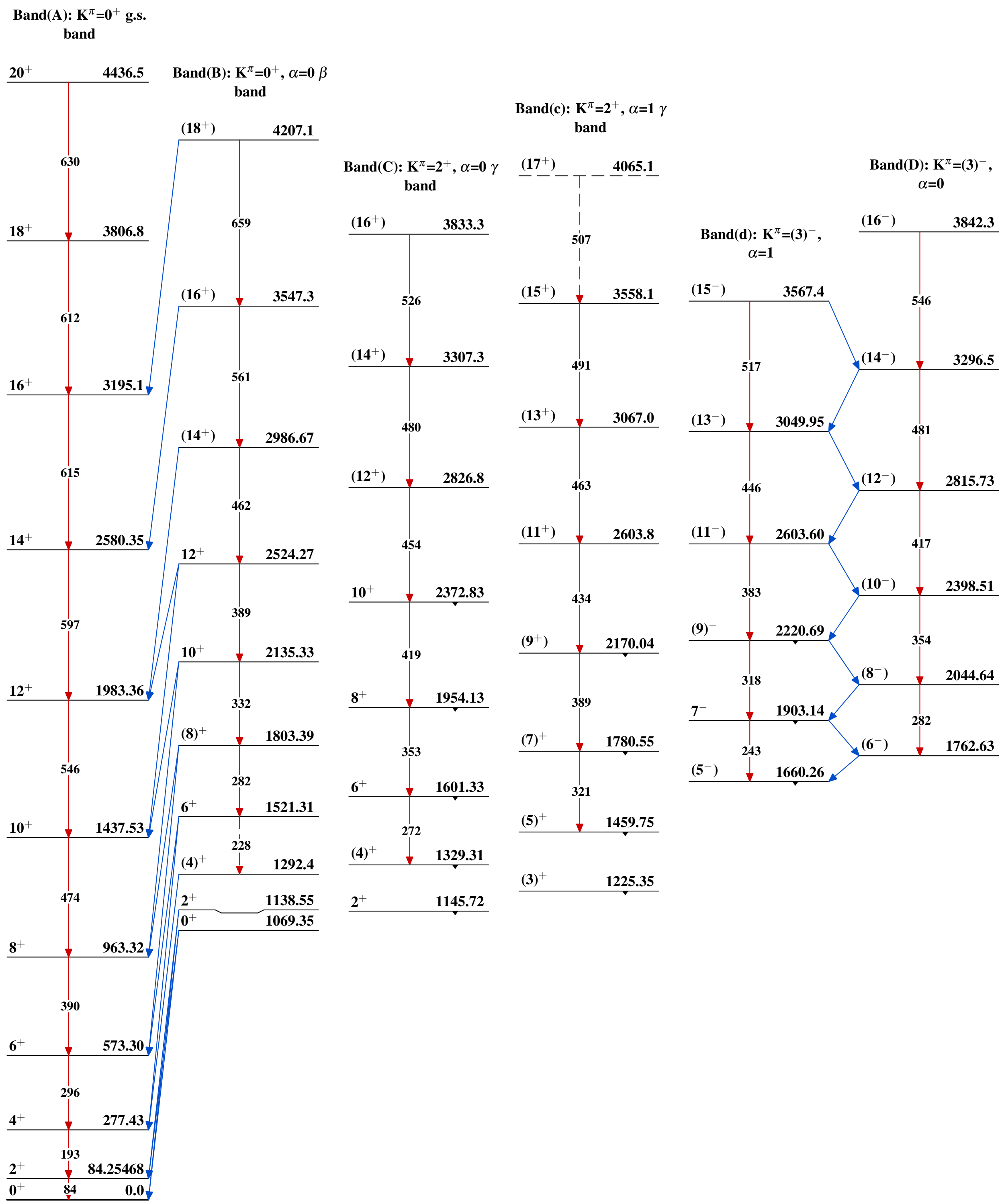
Level Scheme (continued)

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



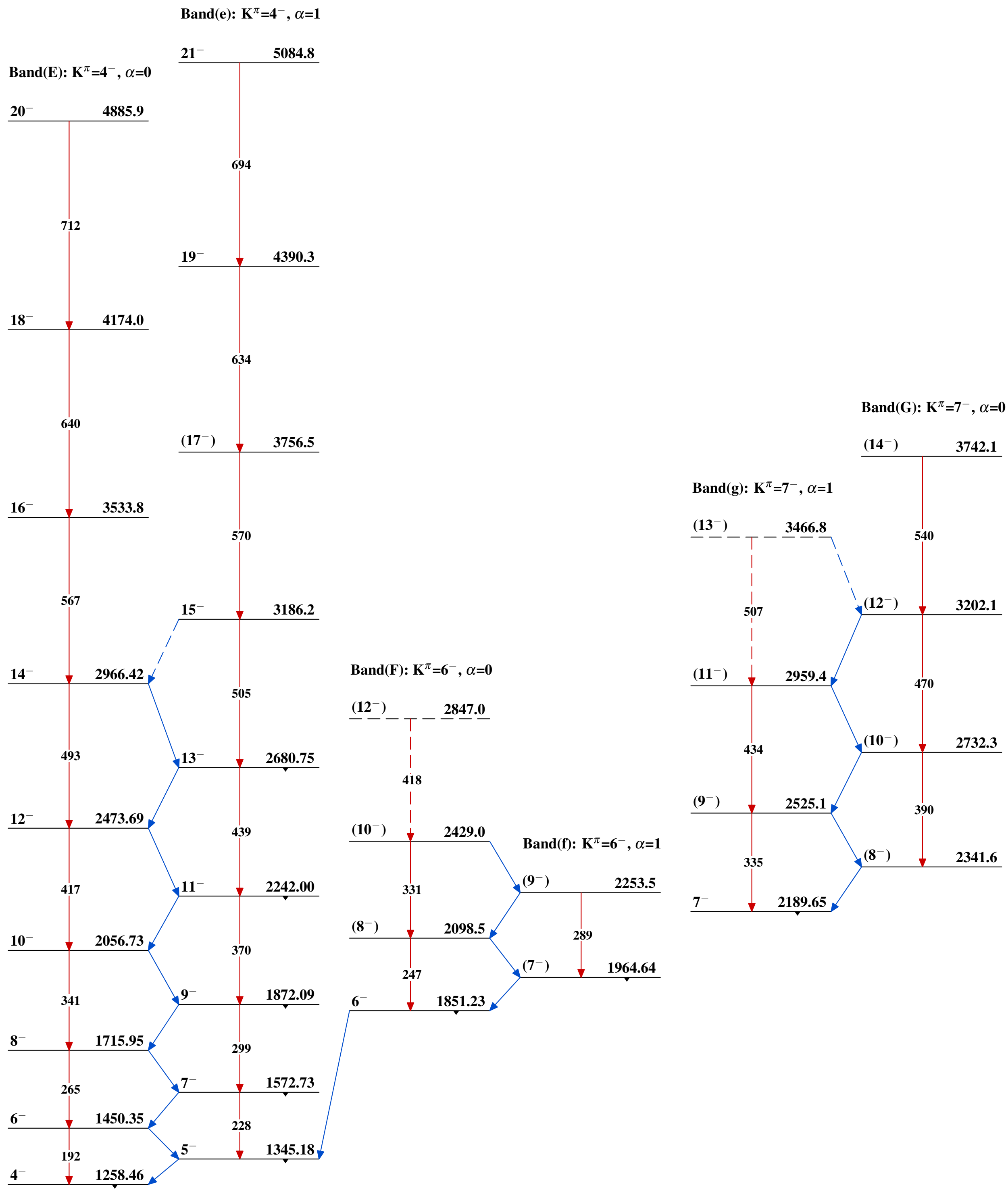
$^{170}_{70}Yb_{100}$

Adopted Levels, Gammas



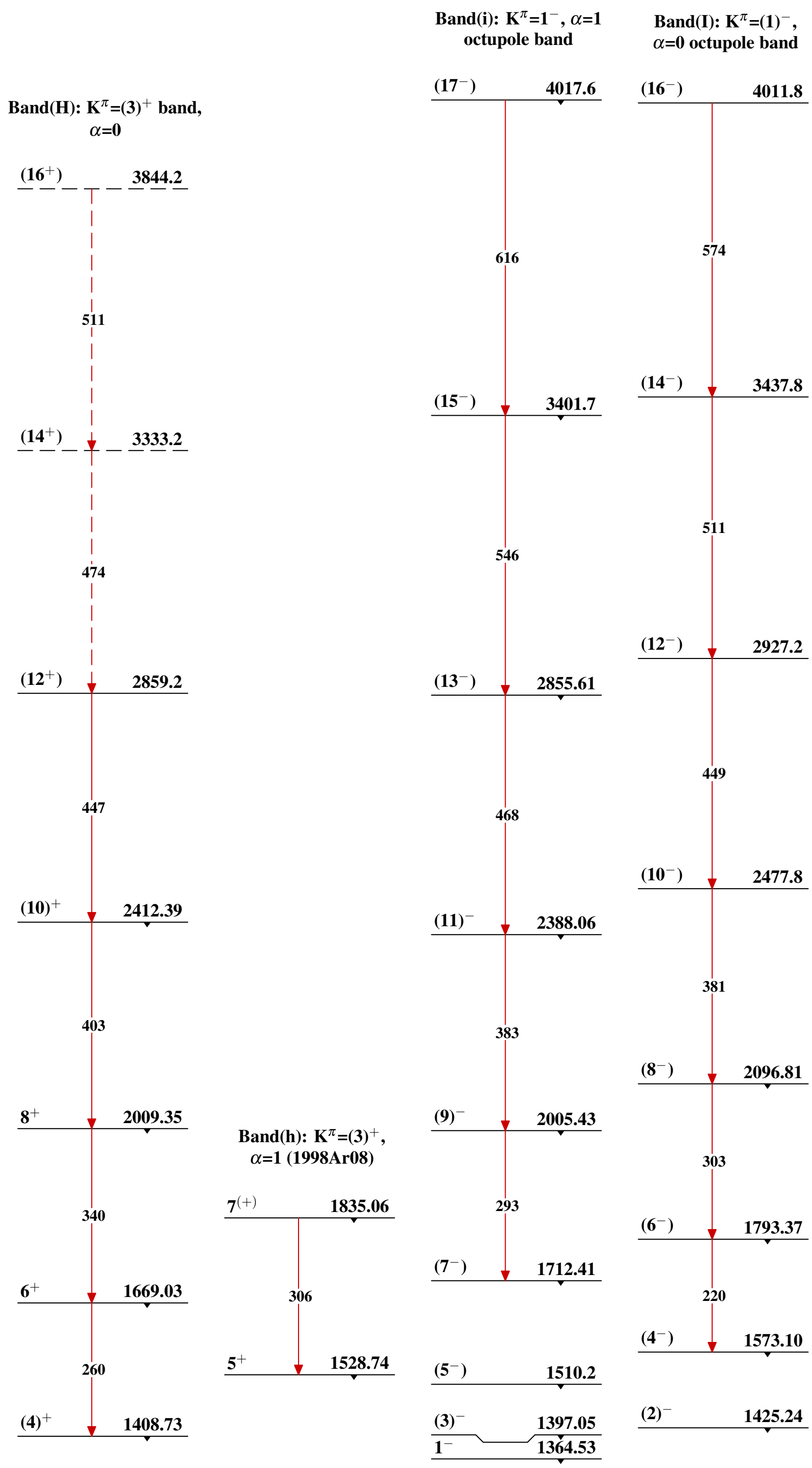
$^{170}_{70}Yb_{100}$

Adopted Levels, Gammas (continued)



$^{170}_{70}Yb_{100}$

Adopted Levels, Gammas (continued)



$^{170}_{70}Yb_{100}$

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 75,199 (1995)	31-May-1995

Q(β^-)=−2518.0 *24*; S(n)=8019.47 *14*; S(p)=7333.7 *10*; Q(α)=1309.6 *13* 2012Wa38

Note: Current evaluation has used the following Q record −2519.3 24 *8019.7 3* 7333.8 *10* 1310.2 *14* 1993Au05,1993Au07.

Other reaction: (n,n): 1986Ko07 at E=0.5 milliev. Measured cross section and neutron scattering lengths.

Hyperfine structure studies: 1992Ku21, 1991Ma48, 1991Ki14, 1991Ji06, 1991Ho27, 1990Sp05, 1990Bi08, 1985Ne09, 1983Ma49, 1982Bu21, 1979Gr17, 1973Le16.

Nuclear structure calculations (levels, moments, deformation, etc.):
1994Ze07, 1994Vo19, 1994Al23, 1994Mi14, 1994Co20, 1994Tr04, 1994Ku01, 1993El03, 1993Kn01, 1993Sa08, 1993Ba17, 1992Wo11, 1992Vo02, 1992So22, 1992Ch21, 1992Ca08, 1991Su08, 1991So11, 1991Ch09, 1990Zi05, 1990So16, 1990Sa42, 1989So11, 1988Pe06, 1988Du15, 1987Li11, 1986So09, 1986Ba56, 1985An12, 1982Zh03, 1981Ma17, 1979Si13, 1976Ne05, 1975Dz03, 1975An03, 1974Ma05, 1974Ha54, 1972Mo05, 1971Ha56, 1971Fr02, 1970Wa03, 1970Ne02, 1963Ya06.

Additional information 1.

^{172}Yb Levels

Levels marked with XREF=O correspond to the following reactions and level energies therein:

^{175}Lu(p,α): 0, 79, 261, 543, 1172, 1263, 1375, 1510, 1662, 1701, 1749, 1800, 1860, 1924, 2002, 2073, 2154, 2190, 2213, 2274, 2298, 2333, 2409, 2467, 2547, 2628, 2667, 2720, 2740, 2819, 2844.

^{173}Yb(p,d): 78, 260, 540, 1118, 1173, 1222, 1263, 1287, 1331, 1353, 1376, 1467, 1477, 1496, 1510, 1540, 1551, 1609, 1635, 1663, 1672, 1701, 1751, 1759, 1778, 1804, 1811, 1926, 1966, 2010.

^{172}Yb(d,d′): 0, 79, 260, 543, 1116, 1222, 1262, 1355, 1465, 1605, 1631, 1660, 1708, 1747, 1789, 1820, 2032, 2050.

^{170}Yb(t,p): 0, 78, 260, 1043, 1118, 1263, 1287, 1466, 1654, 1823, 1853, 2046, 2177, 2228, 2466.

Muonic atom: 0, 79, 260, 1043, 1118, 1155, 1172, 1757, 1821.

^{172}Yb(γ,γ) Mossbauer: 0, 79.

Cross Reference (XREF) Flags

A	^{172}Tm β^- decay (63.6 h)	I	^{172}Yb(^{3}He,^{3}He′γ)	Q	^{172}Yb(d,d′)
B	^{172}Lu ε decay (6.70 d)	J	^{172}Yb(α,α')	R	^{170}Yb(t,p)
C	^{170}Er(α,2nγ)	K	Coulomb excitation	S	Muonic atom
D	^{171}Yb(n,γ) E=thermal	L	^{173}Yb(d,t)	T	^{172}Yb(γ,γ):Mossbauer
E	^{171}Yb(n,γ) E=2 keV	M	^{173}Yb(^{3}He,α), (^{3}He,$\alpha\gamma$)	U	^{171}Yb(n,γ) E=res
F	^{171}Yb(d,p)	N	^{174}Yb(p,t)	V	^{172}Yb(pol p,p), (p,p′)
G	^{172}Yb(γ,γ')	O	^{175}Lu(p,α)		
H	^{172}Yb(n,n′γ)	P	^{173}Yb(p,d)		

E(level)†	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0#	0$^+$	stable	ABCDEFGHIJKL NO QRST	
78.7427# *6*	2$^+$	1.65 ns *5*	ABCDEFGHIJKLMNOPQRST	μ=+0.669 *16* (1989Ra17,1968Mu01) Q=2.16 *37* (1989Ra17,1970WaZS) μ: Mossbauer effect (1968Mu01,1966Mu04). Other: 1966Ti01. Q: DPAC method (1970WaZS). Other: −2.32 (1979Ho23). β_2=+0.21 *1* (α,α'); 0.284 (Coul. ex.). J$^\pi$: E2 γ to 0$^+$. T$_{1/2}$: from B(E2)=6.03 *6* in Coul. ex. (1975Wo08). Others: B(E2): 1.67 ns *14* (1970Sa09), 1.69 ns *7* (1960El07). γ(t) method: 1.80 ns *5* (1970Ra18), 1.61 ns *3* (1970He17), 1.69 ns *4* (1969FuZX), 1.67 ns *8* (1969Fo07), 1.58 ns *6* (1969Be34), 1.6 ns *4* (1968Ka01), 1.71 ns 5 (1966Ti01), 1.57 ns *4* (1964Gu01), 1.5 ns *1* (1963He01), 1.66 ns *14* (1962Bi05).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{172}Yb Levels (continued)

E(level)[†]	J^π	$T_{1/2}$	XREF	Comments
				B(E2)(IS)=7.5 *9* (α,α').
260.268[#] *5*	4^+	0.122 ns *8*	ABCDEF HIJKLMNOPQRS	μ=+1.37 *5* (1989Ra17,1972Be94) Q=−2.3 *12* (1989Ra17,1970McZQ) μ: IPAC method (1972Be94). Q: Coulomb excitation (1970McZQ). β_4=−0.028 *4* (α,α'); −0.006 (Coul. ex.). B(E4)(IS)<0.010 (α,α'). B(E4)=0.05 *+7−4* (Coul. ex.). J^π: ΔJ=2, E2 γ to 2^+ and member of g.s. band. $T_{1/2}$: from B(E2)=3.24 *23* in Coul. ex. (1970Sa09).
539.977[#] *6*	6^+	16.6 ps *15*	ABCD F HIJKLMNOPQ	J^π: ΔJ=2, E2 γ to 4^+ and member of g.s. band. $T_{1/2}$: B(E2) in Coul. ex. B(E6)(IS)<0.086 (α,α').
912.12[#] *7*	8^+	3.5 ps *3*	C IJKL N	J^π: ΔJ=2, E2 γ to 6^+ and member of g.s. band. $T_{1/2}$: Doppler broadening in Coul. ex. (1977Ke06).
1042.914[@] *18*	0^+	3.3 ps *9*	A CDEF HIJKL N RS	J^π: L(p,t)=L(t,p)=0. $T_{1/2}$: B(E2) in Coul. ex.
1117.874[@] *5*	2^+	3.7 ps *4*	ABCDEF HIJKLMN PQRS	J^π: E2 γ to 0^+. $T_{1/2}$: B(E2)=0.0067 *3* in Coul. ex. B(E2)(IS)=0.0015 *5* (α,α').
1154.935[&] *6*	1^-		A CDE HIJK N S	J^π: E1 γ to 0^+.
1172.385[a] *6*	3^+	8.14 ns *17*	ABCDEF HI LMNOP S	μ=+0.65 *4* (1989Ra17,1965Gu01) Q=2.87 *41* (1989Ra17,1970Wa25) μ: DPAC method (1965Gu01). Q: DPAC method (1970Wa25). Others: 1970Ra18, 1969Li08. J^π: M1+E2 γ's to 2^+ and 4^+. $T_{1/2}$: weighted average of 8.33 ns *8* ($\gamma\gamma$(t) in ^{172}Lu ε,1980En01) and 7.95 ns *9* ($\gamma\gamma$(t) in ^{172}Tm β^-,1970He17). Others: 8.3 ns *3* (γ(t) in (α,2nγ),1980Wa15); 8.14 ns *22* ($\gamma\gamma$(t) in ^{172}Lu ε,1969Be34).
1198.472[&] *7*	2^-		A CDE HI L	J^π: E1 γ to 2^+ and band member.
1221.720[&] *7*	3^-		BCDE HIJKL N PQ	β_3=0.0132; B(E3)(IS)=0.016 *3* (α,α'). B(E3)(Coul. ex.)=0.045 *3*. J^π: E1 γ's to 2^+ and 4^+.
1263.028[a] *6*	4^+	0.49 ns *3*	ABCD F HIJ LmN PQR	J^π: E2 γ's to 2^+ and 6^+. $T_{1/2}$: $\gamma\gamma$(t) in ^{172}Lu ε (1969Be34). Other: 0.50 ns *10* γ(t) in (α,2nγ) (1980Wa15). B(E4)(IS)=0.036 *7* (α,α').
1286.54[@] *3*	4^+		ABCD H LmN P R	J^π: M1+E2 γ to 4^+ and γ's to 2^+ and 6^+.
1330.693[&] *14*	4^-		BCDE H LM P	J^π: E1 γ to 4^+, γ to 2^- and band member.
1352.95[&] *9*	(5^-)		CD F H JKLMN PQ	J^π: γ to 4^+, ΔJ=1 γ to 6^+ and band member.
1370.07[#] *10*	10^+	1.32 ps *8*	C K	J^π: ΔJ=2, E2 γ to 8^+ and band member. $T_{1/2}$: Doppler broadening in Coul. ex. (1977Ke06).
1375.815[a] *7*	5^+	0.21 ns *6*	BCD F HI LM OP	ΔJ=2, E2 γ to 3^+ and γ's to 4^+ and 6^+. $T_{1/2}$: γ(t) in (α,2nγ) (1980Wa15,1983Ko28).
1405.008[b] *6*	0^+	0.42 ns *6*	CDE H N	J^π: E0 transition to 0^+. $T_{1/2}$: centroid-shift method in (n,γ) E=th (1986An14).
1465.875[c] *4*	2^+	0.47 ps *3*	ABCDEF HIJKL N PQR	J^π: E2 γ to 0^+. $T_{1/2}$: B(E2)=0.038 *3* in Coul. ex. B(E2)(IS)=0.041 *9* (α,α').
1476.784[b] *17*	2^+	48 ps *11*	ABCDE H KL P	J^π: E2 γ to 0^+. $T_{1/2}$: B(E2)=0.00021 *4* in Coul. ex.

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Adopted Levels, Gammas (continued)

^{172}Yb Levels (continued)

E(level)[†]	J^π	$T_{1/2}$	XREF	Comments
1496.1 *10*			P	
1510.179[a] *8*	6^+		BC F HI L NOP	J^π: ΔJ=2, E2 γ to 4^+ and M1+E2 γ to 5^+.
1537.50[@] *6*	6^+		C N	J^π: ΔJ=0, M1+E2 γ to 6^+.
1540.61[&] *6*	6^-		C Lm P	J^π: ΔJ=2, (E2) γ to 4^- and γ to 6^+.
1549.150[c] *16*	3^+		ABCDEF H Lmn p	J^π: M1+E2 γ's to 2^+ and 4^+.
1550.43[d] *6*	6^-	3.6 μs *1*	C mn p	J^π: ΔJ=0, E1+M2 γ to 6^+. $T_{1/2}$: γ(t) in (α,2nγ) (1969No05).
1550.8 *7*			I mn p	
1557.58[&] *6*	7^-		C Lmn	J^π: ΔJ=1, E1 γ to 6^+ and γ to 8^+.
1599.870[e] *12*	1^-	11 fs *3*	CDE GH	J^π: ΔJ=1, E1 γ to 2^+ and ΔJ=1 γ to 0^+. $T_{1/2}$: from $\Gamma_{\gamma 0}$ in (γ,γ′). B(E1)(↑)=10.7×10^{-5} *32* (γ,γ′).
1608.490[f] *11*	2^+	1.1 ps *2*	ABCDEF H JKL N PQ	XREF: N(1604). J^π: E2 γ to 0^+. $T_{1/2}$: from B(E2)=0.0109 *20* in Coul. ex. Other: 0.93 ps *25* from B(E2)(IS)=0.012 *3* (α,α′).
1633.14[b] *6*	$(4)^+$		BCD F H l N PQ	J^π: M1,E2 γ's to 2^+ and 4^+.
1640.557[g] *8*	4^-	0.5 ns *2*	BCD H l	J^π: ΔJ=0, dipole γ to 4^+ and E1 γ's to 4^+ and 5^+. $T_{1/2}$: αγ(t) in (α,2nγ) (1983Ko28).
1657.790[c] *24*	$(4)^+$	0.05 ps *3*	BC F IJK n QR	J^π: E2 γ to 2^+, M1+E2 γ to 4^+ and band member. $T_{1/2}$: B(E2) in Coul. ex. B(E4)(IS)=0.006 *2* (α,α′).
1662.810[h] *8*	3^+		ABCD H LmnOP	J^π: M1 γ's to 3^+ and 4^+; E2 γ's to 2^+ and 4^+. J=4 not allowed by γ(θ,t) in ^{172}Lu ε.
1666.12[a] *5*	(7^+)		C	J^π: ΔJ=2, (E2) γ to 5^+ and ΔJ=1 γ to 6^+.
1670.55[d] *11*	(7^-)		C Lm P	J^π: ΔJ=1, D+Q γ to 6^-.
1700.639[f] *9*	3^+		ABCD F H LMnOP	J^π: M1 γ's to 3^+ and 4^+; E2 γ's to 2^+ and 4^+ and ΔJ=0 γ to 3^+.
1706.447[g] *13*	5^-		BC n	J^π: E1 γ's to 6^+ and 4^+.
1707.8? *3*			C	
1710.480[e] *18*	$3^{(-)}$		CD H JK Q	β_3=0.0092; B(E3)(IS)=0.0078 *16* (α,α′). B(E3)=0.025 *6* (Coul. ex.). J^π: ΔJ=1, dipole γ's to 2^+ and 4^+ and band member.
1720 *5*			L	
1749.205[h] *9*	4^+		BC F H LM OPQ	J^π: E2 γ to 2^+ and γ to 6^+.
1757.367[i] *5*	$(2)^-$		CDE HI L N P S	Q=−3.44 *10* (1989Ra17,1979Ho23) Q: muonic atom x-ray study (1979Ho23). J^π: M1+E2 γ to 1^- and M1 γ to 2^-. Probable γ to 3^+.
1778.86[c] *5*	5^+		BC L P	J^π: 1239γ M1(+E2) to 6^+, 1519γ M1,E2 to 4^+.
1789 *5*	(4^+)		F Q	J^π: from comparison between theoretical and experimental cross sections in (d,p) and (d,d′).
1794.08[j] *5*	0^+	<0.15 ns	CDE H N	XREF: N(1791). J^π: L(p,t)=0. $T_{1/2}$: centroid-shift method in (n,γ) E=th (1986An14).
1802.65[g] *5*	6^-		C	J^π: from γ(θ) and band member.
1803.108[f] *8*	4^+		BC HIJ Lm OP	J^π: 1263γ E2 to 6^+, 1724γ E2 to 2^+. B(E4)(IS)≤0.012 (α,α′).
1810.32[d] *12*	(8^-)		C Lm P	J^π: ΔJ=(2) γ to 6^-.
1821.583[i] *9*	3^-		BCD HIJKl N QRS	Q=1.97 *10* (1989Ra17,1979Ho23) Q: muonic atom x-ray study (1979Ho23).

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Adopted Levels, Gammas (continued)

^{172}Yb Levels (continued)

E(level)[†]	J^π	$T_{1/2}$	XREF	Comments
				β_3=0.023; B(E3)(IS)=0.065 *13* (α,α'). B(E3)=0.033 *7* (Coul. ex.). J^π: band member.
1828.76[&] *15*	8^-		C lM	XREF: M(1838). J^π: ΔJ=2, (E2) to 6^-, ΔJ=1, E1 to 8^+.
1839.80[&] *11*	9^-		C	J^π: ΔJ=1, E1 γ to 8^+, γ to 10^+.
1841.84[a] *8*	(8^+)		C	J^π: ΔJ=2, (E2) to 6^+, γ to 7^+.
1849.173[j] *22*	2^+	0.8 ps *5*	CDEF H K N R	XREF: R(1853). J^π: M1+E2+E0 γ to 2^+. $T_{1/2}$: B(E2)=0.0041 *21* in Coul. ex.
1853.46[@] *11*	8^+		C	J^π: ΔJ=0, (M1) γ to 8^+, γ to 10^+.
1862.799[h] *15*	$(5)^+$		BC L O	J^π: E2 to 3^+ and 6^+; probable band assignment.
1869.634 *12*	$(4,5)^-$		BC	J^π: M1(+E2) γ's to 4^- and 5^-.
1887 *5*			LM	XREF: M(1879).
1894.616[k] *25*	0^+	<0.15 ns	DEF N	XREF: N(1892). J^π: L(p,t)=0. $T_{1/2}$: centroid-shift method in (n,γ) E=th (1986An14).
1899.30? *20*			C	
1907.48[#] *14*	(12^+)	0.52 ps *7*	C K	$T_{1/2}$: Doppler broadening in Coul. ex. (1977Ke06). J^π: ΔJ=2, E2 γ to 10^+.
1919.84 *8*	(5,6)		C F lMN	XREF: M(1916). Population in (d,t) is uncertain. J^π: γ's to 6^+ and 4^+.
1921.80[g] *20*	(7^-)		C l	Population in (d,t) is uncertain. J^π: $\gamma(\theta)$ in (α,2nγ).
1927.016[f] *12*	5^+		BC L OP	J^π: M1 γ to 6^+ and 4^+, E2+M1 γ to 4^+.
1956.351[k] *25*	2^+	0.29 ps *15*	CDE KL N	J^π: M1+E2+E0 γ to 2^+. $T_{1/2}$: from B(E2)=0.0095 *49* in Coul. ex.
1968.20[d] *14*	(9^-)		C F LM P	J^π: ΔJ=1 γ to 8^-, γ to 7^-.
1975.63[j] *14*	(4^+)		C	J^π: γ's to 2^+ and 6^+.
2007.98[h] *14*	(6^+)		C no	J^π: γ's to 4^+ and 6^+ and band member.
2009.80[l] *3*	1^+		CDE LMnoP	XREF: L(2009)M(2007). J^π: E2 γ to 2^+ and (M1) γ to 0^+.
2030 *5*	3^-		J N Q	J^π: from comparison of experimental cross sections in (α,α') with calculated cross sections and shapes of $\sigma(\theta)$ distributions. β_3=0.0194; B(E3)(IS)=0.058 *12* (α,α').
2039.38[a] *22*	(9^+)		C	J^π: ΔJ=2, (E2) γ to 7^+, γ to 8^+.
2046.99[l] *3*	$(2)^+$		CDE H LMN QR	XREF: M(2055)N(2041). J^π: E2 γ to 2^+, γ's to 4^+ and 1^-.
2064.04[g] *20*	(8^-)		C	J^π: γ's to 7^+, 7^-, and 6^-. Band member.
2073.114[m] *7*	4^+		BC NO	XREF: N(2060). J^π: M1 γ's to 5^+ and 3^+.
2075.27[f] *11*	(6^+)		C L	XREF: L(2075). J^π: γ's to 4^+ and 6^+.
2076.172 *13*	$(1)^-$		DE	J^π: E2 γ to 3^-, γ's to 1^-, 2^-, 2^+.
2084.81? *20*			C	
2100.22[k] *17*	(4^+)		C f l N	XREF: N(2098). J^π: γ's to 4^+ and 6^+; probable band assignment.
2102.944 *24*	1^-		DEf l	J^π: E1 γ to 2^+, γ to 0^+.
2108[l] *5*	(3^+)		LM	J^π: comparison between experimental and theoretical cross sections in (d,t) and (^{3}He,α). Also band member.

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Adopted Levels, Gammas (continued)

^{172}Yb Levels (continued)

E(level)[†]	J^π	$T_{1/2}$	XREF	Comments
2115.8 *8*	$(0^-,1^-,2^-)$		EF L	XREF: F(2121)L(2119). J^π: (M1) primary γ from 0^-, 1^- in (n,γ) E=2 keV.
2145.03[d] *22*	(10^-)		C	J^π: ΔJ=2, (E2) γ to 8^-, γ to 9^-.
2154.30 *21*	(7)	0.17 ns *10*	C o	$T_{1/2}$: γ(t) in (α,2nγ) (1980Wa15). J^π: ΔJ=1 γ to 6^-.
2156.43[j] *3*	(6^+)		C o	J^π: γ to 6^+ and band member.
2160.7 *8*	$(0^-,1^-,2^-)$		E	J^π: (M1) primary f from 0^-, 1^- in (n,γ) E=2 keV.
2175.059[n] *12*	3^+		BC f	J^π: M1+E2 to 2^+ and 4^+.
2176.20 *5*	$(1)^-$		DEf	J^π: M1+E2 γ to 1^- and possible γ to 0^+.
2180[o] *5*	(6^-)		LM	J^π: from comparison between experimental and theoretical cross sections in (d,t) and (^{3}He,α), and band member.
2181.97 *3*	$(4,5,6)^+$		B n	J^π: M1(+E2) γ to 5^+.
2184 *7*	(2^+)		J n R	XREF: R(2177). J^π: from comparison of experimental cross sections in (α,α') with calculated cross sections and shapes of $\sigma(\theta)$ distributions. B(E2)(IS)=0.0019 *4* (α,α').
2192.130[m] *11*	5^+		B O	J^π: M1 γ's to 4^+ and 6^+.
2193.02[&] *24*	(10^-)		C	J^π: ΔJ=2, (E2) γ to (8^-), 823γ to 10^+.
2193.16[l] *12*	(4^+)		C L	XREF: L(2193). J^π: γ's to 4^+ and 6^+; probable band assignment.
2194.331[p] *14*	(1^+)		DE H	XREF: H(2192.8). J^π: γ's to 2^+ and 2^-; strong primary (E1) γ from 0^-,1^-.
2195.03 *5*	$(1,2^+)$		D	J^π: γ's to 0^+, 2^+, and 2^-.
2199.47[&] *21*	(11^-)		C	J^π: ΔJ=1 γ to 10^+.
2210 *1*	$1^{(-)}$[‡]	4.6[‡] fs *9*	G o	B(E1)(↑)=10.5×10^{-5} *20* (γ,γ').
2212.52[@] *24*	(10^+)		C	J^π: γ's to 8^+ and 10^+. Band member.
2213.307 *23*	$3^+,4^+$		B f l o	J^π: M1 γ to 3^+ and log *ft*=7.9 from 4^-.
2214.06 *8*	(1^-)		DEf l o	J^π: (M1) primary γ from 0^-,1^- in (n,γ) E=2 keV, γ to 0^+.
2225.3[g] *3*	9^-		C l	J^π: ΔJ=1 γ to 8^-, γ to 7^-.
2228.63[p] *4*	2^+		DE l N R	J^π: L(t,p)=2.
2248.19 *14*			C	
2255 *5*	(2^+)		J MN	XREF: M(2249). J^π: from comparison of experimental cross sections in (α,α') with calculated cross sections and shapes of $\sigma(\theta)$ distributions. B(E2)(IS)=0.0029 *6* (α,α').
2256.3[a] *3*	(10^+)		C	J^π: ΔJ=(2) γ to 8^+ and band member.
2272			L N	
2285.399[n] *11*	4^+		B F M	J^π: M1 γ to 3^+ and M1+E2 γ to 5^+.
2293.4 *10*	$(0^-,1^-,2^-)$		E l	J^π: (M1) primary γ from 0^-, 1^- in (n,γ) E=2 keV.
2299.29 *23*		0.15 ns *10*	C l O	$T_{1/2}$: γ(t) in (α,2nγ) (1980Wa15).
2306.20 *22*	$(0^-,1^-,2^-)$		E	J^π: (M1) primary γ from 0^-,1^- in (n,γ) E=2 keV.
2307.786 *20*	$3^+,4^+$		B	J^π: M1 γ to 3^+; log *ft*=7.8 (log $f^{1u}t$=6.9) from 4^-.
2312.90 *8*	(2^+)		DE	J^π: γ's to 0^+ and 4^+.
2316.97 *10*	$1,2^{(+)}$		D L	J^π: primary γ from 0^-, 1^- in (n,γ) and possible γ's to 0^+ and 2^+.
2327.58 *7*	(2^+)		DEF L	J^π: (E2) γ to 0^+.
2333[m] *5*	(6^+)		NO	XREF: N(2337). J^π: from comparison between experimental and

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Adopted Levels, Gammas (continued)

^{172}Yb Levels (continued)

E(level)†	J^π	$T_{1/2}$	XREF	Comments
				theoretical cross sections in (p,α); and probable band assignment.
2340.7[d] 3	(11$^-$)		C	J^π: ΔJ=1 γ to (10$^-$) and band member.
2341.86 3	(0$^+$,1$^+$,2$^+$)		DEf	J^π: (E1) primary γ from 0$^-$,1$^-$ in (n,γ) E=2 keV.
2343.715[q] 15	4$^+$		B f	J^π: M1+E2 γ's to 4$^+$ and 5$^+$, γ to 2$^+$.
2346[o] 5	(7$^-$)		f LM	J^π: from comparison between experimental and theoretical cross sections in (d,t) and (^{3}He,α).
2352.6 8	(0$^-$,1$^-$,2$^-$)		E	J^π: (M1) primary γ from 0$^-$, 1$^-$ in (n,γ).
2356.59 11	(0$^-$,1$^-$,2$^-$)		E L	XREF: L(2360). J^π: (M1) primary γ from 0$^-$, 1$^-$ in (n,γ).
2367 5	(2$^+$)		J N	XREF: N(2364). J^π: from comparison of experimental cross sections in (α,α') with calculated cross sections and shapes of $\sigma(\theta)$ distributions. B(E2)(IS)=0.005 1 (α,α').
2369.2 8	(0$^-$,1$^-$,2$^-$)		Ef	J^π: (M1) primary γ from 0$^-$, 1$^-$ in (n,γ).
2375.37 3	(1$^+$,2)		DEf	J^π: γ's to 3$^+$, 1$^+$, and 1$^-$.
2387.706 15	(1$^+$,2$^+$)		DE N	XREF: N(2396). J^π: γ's to 0$^+$ and 3$^+$.
2392.3 4			C	
2404.8 10	(0$^-$,1$^-$,2$^-$)		E l O	XREF: O(2409). J^π: (M1) primary γ from 0$^-$, 1$^-$ in (n,γ).
2411.4[g] 3	(10$^-$)		C l	J^π: $\gamma(\theta)$.
2439.2 8	(0,1,2)		E n	J^π: primary γ from 0$^-$, 1$^-$ in (n,γ).
2444.2 8	(0,1,2)		E n	J^π: primary γ from 0$^-$, 1$^-$ in (n,γ).
2456			LMn	
2464.09 8	(2$^+$)		DE J nO R	J^π: from comparison of experimental cross sections in (α,α') with calculated cross sections and shapes of $\sigma(\theta)$ distributions. B(E2)(IS)=0.010 2 (α,α').
2465.22 21	(7,8)	0.13 ns 10	C	$T_{1/2}$: γ(t) in (α,2nγ) (1980Wa15). J^π: from $\gamma(\theta)$.
2480.037 20	(1$^+$,2$^+$)		DE L n	XREF: L(2476). J^π: (E2) γ to 2$^+$, γ's to 0$^+$ and 3$^+$.
2488.7 5			E n	
2492.2[a] 4	(11$^+$)		C	J^π: ΔJ=2, (E2) γ to (9$^+$).
2503.9 3			DE	
2515.1 4			E	
2518.7[#] 4	(14$^+$)	0.29 ps 4	C K	J^π: ΔJ=2, (E2) γ to (12$^+$). $T_{1/2}$: from B(E2) in Coul. ex.
2524.1 3			DE	
2534.9 3	(0$^+$)		DE N	XREF: N(2540). J^π: L(p,t)=(0).
2539.2 4			D	
2545[o] 5	(8$^-$)		LM o	J^π: from comparison between experimental and theoretical cross sections in (d,t) and (^{3}He,α).
2547.0 6			DE l o	
2554.2[d] 3	(12$^-$)		C l	J^π: from $\gamma(\theta)$ in (α,2nγ).
2559.5 3			DE L	
2567.6 5			E	
2573 1	1[‡]	12[‡] fs 3	G	This level may be the same as 2575.7 from (n,γ). B(E1)(↑)=4.3×10^{-5} 11. B(M1)(↑)=0.93 10.
2575.6 3	(2$^+$)		DE j mn	XREF: j(2580).

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Adopted Levels, Gammas (continued)

^{172}Yb Levels (continued)

E(level)[†]	J$^\pi$	T$_{1/2}$	XREF	Comments
				J$^\pi$: from comparison of experimental cross sections in (α,α') with calculated cross sections and shapes of $\sigma(\theta)$ distributions. B(E2)(IS)=0.0034 *7* (α,α').
2582.8 *4*			De j Lmn	XREF: j(2580).
2588.5 *4*			De L n	
2598.9 *5*			D	
2599.7[r] *5*	(4$^+$)		L	J$^\pi$: from a comparison between experimental and theoretical cross sections in (d,t).
2607.2[@] *4*	(12$^+$)		C	J$^\pi$: from $\gamma(\theta)$.
2607.3 *2*			DE H	
2609.2[g] *4*	(11$^-$)		C	J$^\pi$: ΔJ=2, (E2) γ to (9$^-$).
2612 *1*	1[‡]	12[‡] fs *3*	G	B(E1)(↑)=3.6×10^{-5} *10*. B(M1)(↑)=0.33 *9*.
2627.9 *3*			D L O	XREF: L(2622).
2629.8[&] *4*	(12$^-$)		C	J$^\pi$: ΔJ=2 γ to (10$^-$).
2636.1[&] *3*	(13$^-$)		C	J$^\pi$: from $\gamma(\theta)$.
2650.0 *4*	(2$^+$)		E J LM	J$^\pi$: from comparison of experimental cross sections in (α,α') with calculated cross sections and shapes of $\sigma(\theta)$ distributions. B(E2)(IS)=0.0038 *8* (α,α').
2653.3 *3*			C	
2668.1 *3*			DE LM O	
2676.0 *15*			DE L	
2689.8[s] *4*	(9$^-$)	0.7 ns *1*	C L	T$_{1/2}$: γ(t) in (α,2nγ) (1983Ko28). J$^\pi$: from $\gamma(\theta)$.
2697[r] *5*	(5$^+$)		LM	J$^\pi$: from comparison between experimental and theoretical cross sections in (d,t).
2700.3 *3*			DE	
2713.6 *7*			E l o	
2721.0 *8*			E l o	
2732.8 *3*			DE L n	
2738 *5*	(2$^+$)		J nO	J$^\pi$: from comparison of experimental cross sections in (α,α') with calculated cross sections and shapes of $\sigma(\theta)$ distributions. B(E2)(IS)=0.012 *3* (α,α').
2741[o] *5*	(9$^-$)		LM	J$^\pi$: from comparison between experimental and theoretical cross sections in (d,t) and (^{3}He,α).
2746.5[a] *5*	(12$^+$)		C	J$^\pi$: ΔJ=2 γ to (10$^+$).
2747.3 *6*			DE	
2766.3 *4*			DE L	
2776.8 *6*			DE L	
2781.4 *14*			D L n	
2786.8[d] *4*	(13$^-$)		C	J$^\pi$: from $\gamma(\theta)$.
2787[t] *5*	(8$^+$)		LM	J$^\pi$: from comparison between experimental and theoretical cross sections in (d,t) and (^{3}He,α).
2787.6 *4*			DE l n	
2795.9 *5*			E l n	
2808.0 *4*			DE L n	
2818.5[r] *7*	(6$^+$)		DE L nO	J$^\pi$: from a comparison between experimental and theoretical cross sections in (d,t).
2831 *5*			LMn	
2834.6 *5*	(2$^+$)		DE J n	XREF: J(2836). J$^\pi$: from comparison of experimental cross sections in (α,α') with calculated cross sections and shapes of $\sigma(\theta)$ distributions. B(E2)(IS)=0.0072 *15* (α,α').
2840.8[g] *5*	(12$^-$)		C	J$^\pi$: ΔJ=2, (E2) γ to (12$^-$).
2844.3 *5*			DE O	

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Adopted Levels, Gammas (continued)

^{172}Yb Levels (continued)

E(level)[†]	J$^\pi$	T$_{1/2}$	XREF	Comments
2856.4[s] *5*	(10$^-$)		C	J$^\pi$: ΔJ=1 γ to (9$^-$).
2861.8 *9*			DE l	
2864.6 *6*			E l	
2872.2 *5*			DE M	
2881.0 *6*			E L	
2887.3 *8*	(2$^+$)		DE J L	J$^\pi$: from comparison of experimental cross sections in (α,α′) with calculated cross sections and shapes of σ(θ) distributions. B(E2)(IS)=0.017 *4* (α,α′).
2904.2 *10*			E LM	
2916.4 *8*			DE L	
2943.0 *6*			DE Lm	XREF: L(2936).
2959.8 *6*			DE Lm	
2967.7 *7*			E	
2985.4 *8*			DE	
2991.7 *6*	(2$^+$)		E j lm	J$^\pi$: from comparison of experimental cross sections in (α,α′) with calculated cross sections and shapes of σ(θ) distributions. B(E2)(IS)=0.0087 *17* (α,α′).
2993.8 *9*			D j lm	
3002 *1*	1[‡]	8.7[‡] fs *24*	DE G l	B(E1)(↑)=3.7×10^{-5} *10*; B(M1)(↑)=0.34 *9* (in γ,γ′).
3012.7 *6*			E l	
3017 *1*	1[‡]	18[‡] fs *9*	G l	This level may be the same as 3020.2 from (n,γ). B(E1)(↑)=1.0×10^{-5} *5* or B(E1)(↑)=1.2×10^{-5} *5*; B(M1)(↑)=0.11 *4*.
3020.0[a] *5*	(13$^+$)		C	J$^\pi$: from γ(θ).
3020.2 *6*			DE	
3034.2[d] *4*	(14$^-$)		C	J$^\pi$: γ(θ).
3036.8 *6*			DE	
3043.9[@] *5*	(14$^+$)		C	J$^\pi$: probable band member.
3044.5[s] *6*	(11$^-$)		C	J$^\pi$: ΔJ=1 γ to (10$^-$).
3058.0 *13*			E lM	XREF: l(3067)M(3062).
3072 *1*	1$^{(-)}$[‡]	6.1[‡] fs *20*	G l	XREF: l(3067). This level may be the same as 3074.8 from (n,γ). B(E1)(↑)=3.2×10^{-5} *10* (γ,γ′).
3074.8 *6*			D L	XREF: L(3072).
3081 *6*			L	
3085 *6*			L	
3096 *1*	1[‡]	17[‡] fs *9*	G lm	This level may be the same as 3098.7 from (n,γ). B(E1)(↑)=0.9×10^{-5} *5* or B(E1)(↑)=1.0×10^{-5} *4*; B(M1)(↑)=0.09 *3*. T$_{1/2}$: 30 fs *9* for Iγ(3017)/Iγ(3096)=0.46 *12*.
3098.7 *6*			DE lm	
3106.3 *6*			E L	
3118 *1*	1$^{(-)}$[‡]	8[‡] fs *4*	G l	This level may be the same as 3120.1 from (n,γ). B(E1)(↑)=2.2×10^{-5} *10*.
3120.1 *6*			DE l	
3130.6 *6*			D L	XREF: L(3127).
3134.6[&] *5*	(14$^-$)		C	J$^\pi$: probable band member.
3141.3 *6*			D Lm	XREF: L(3138).
3146 *5*			Lm	
3155.9 *7*			E	
3160 *1*	1$^{(-)}$[‡]	3.4[‡] fs *10*	G	B(E1)(↑)=4.3×10^{-5} *13*.
3170.8 *7*			E	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{172}Yb Levels (continued)

E(level)[†]	J^π	$T_{1/2}$	XREF	Comments
3174 *1*	$1^{(-)}$[‡]	3.7[‡] fs *11*	G	This level may be the same as 3175.6 from (n,γ). B(E1)(↑)=3.4×10^{-5} *10*. $T_{1/2}$: 4.8 fs *14* for Iγ(3096)/Iγ(3174)=1.86 *40*.
3175.6 *7*			D	
3198.4[#] *6*	(16^+)		C	J^π: probable band member.
3205.5 *7*			D	
3246 *1*	$1^{(-)}$[‡]	5.6[‡] fs *23*	G	B(E1)(↑)=2.9×10^{-5} *12*.
3251.6 *11*			E	
3252.9[s] *7*	(12^-)		C	J^π: probable band member.
3253 *1*	1[‡]	12[‡] fs *4*	G	This level may be the same as 3251.6 from (n,γ). B(E1)(↑)=2.1×10^{-5} *7*. B(M1)(↑)=0.19 *6*.
3254.4 *7*			D	
3258.4 *8*			E	
3260.2 *5*			D	
3283.6 *6*			DE	
3289.2 *8*			D	
3300.2 *6*			DE	
3308.5 *7*			DE	
3309.5[a] *6*	(14^+)		C	J^π: probable band member.
3332.6 *5*			E	
3334.6 *9*			D	
3346.6 *5*			D	
3360.7 *7*			DE	
3366.7 *7*			DE	
3381.5 *5*			DE	
3387.6 *5*			D	
3393 *1*	$1^{(-)}$[‡]	2.7[‡] fs *7*	G	B(E1)(↑)=4.5×10^{-5} *11*.
3404.6 *6*			E	
3407.9 *9*			D	
3426.4 *7*			D	
3437.0 *7*			E	
3465.1 *6*			D	
3481.6[s] *8*	(13^-)		C	J^π: probable band member.
3490.3 *12*			D	
3494.7 *6*			DE	
3506.0 *6*			D	
3543.4 *6*			DE	
3545 *1*	$1^{(-)}$[‡]	1.6[‡] fs *5*	G	This level may be the same as 3543.4 from (n,γ). B(E1)(↑)=5.1×10^{-5} *17*.
3557.3 *5*			DE	
3570.0 *6*			DE	
3586.9 *7*			DE	
3604 *1*	1[‡]	2.9[‡] fs *8*	G	B(E1)(↑)=5.4×10^{-5} *14*. B(M1)(↑)=0.49 *12*.
3607.6 *7*			E	
3620.8 *6*			E	
3627.5 *9*			D	
3634.3 *7*			D	
3635 *1*	$1^{(-)}$[‡]	1.3[‡] fs *3*	G	This level may be the same as 3634.3 from (n,γ). B(E1)(↑)=8.1×10^{-5} *19*.
3640.4 *6*			D	
3657.0 *6*			D	
3669.7 *6*			D	
3680.9 *6*			D	
3714.2 *6*			D	

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Adopted Levels, Gammas (continued)

^{172}Yb Levels (continued)

E(level)[†]	J^π	$T_{1/2}$	XREF	Comments
3719.2 *6*			D	
3740.9 *5*			D	
3747.6 *5*			D	
3754.7 *10*			D	
3766.5 *7*			D	
3777.0 *6*			E	
3786.3 *7*			D	
3799.0 *6*			D	
3819.5 *9*			D	
3829.1 *7*			E	
3856.3 *6*			D	
3863 *1*	1[‡]	2.1[‡] fs *6*	G	B(E1)(↑)=5.0×10^{-5} *15*. B(M1)(↑)=0.45 *14*.
3876.4 *6*			D	
3880.5 *7*			E	
3901.6 *8*			E	
3908.3 *7*			DE	
3917.3 *6*			DE	
3927.6 *6*			DE	
3955.7 *7*			D	
3963.0 *7*			D	
3984.9 *7*			D	
3990.7 *7*			D	
4008.8 *7*			D	
4020.8 *7*			D	
4043.4 *7*			D	
4056.2 *11*			D	
4062.1 *6*			D	
4078.2 *7*			D	
4162.8 *6*			D	
4251.5 *6*			D	
4351.5 *7*			D	

[†] From least-squares fit to Eγ′s for levels populated in γ-ray studies. For other levels weighted averages are taken from different reaction studies.

[‡] Spin is from $\gamma\gamma(\theta)$ data in (γ,γ′). Parity is from a comparison of reduced transition probabilities with Alaga′s rules. $T_{1/2}$(level) is deduced from $\Gamma_{\gamma 0}$ (1990Zi01) and branching ratio. It is assumed that the level deexcites only to g.s. and first 2$^+$ level.

[#] Band(A): K^π=0$^+$ g.s. band. variations in g factors are deduced from γ(θ,H) data in Coul. ex. for levels of J^π=2$^+$ to 10$^+$ (1979Wa15). Deviation from rotational behavior is expressed in terms of g factor variation: $g(J)=g(0)(1+\alpha J^2)$. 1979Wa15 deduce α=+0.0010 *15* from γ(θ,H) data.

[@] Band(B): K^π=0$^+$ β-band. Configuration=((ν 5/2[512])(ν 5/2[512]))(44%) + ((ν 1/2[521]) (ν 1/2[521]))(18%) + ((ν 7/2[633])(ν 7/2[633]))(13%). The 5/2[512] and 1/2[521] components are seen in (d,t), (^{3}He,α), and (d,p). The 7/2[633] component and the % amplitudes are quoted by 1980Wa15 from a calculation by Grigoriev and Soloviev.

[&] Band(C): K^π=1$^-$ octupole band. Configuration=((ν 7/2[633])(ν 5/2[512])) (94%). The amplitude is quoted by 1972On01 from a calculation by Neergard. Cross section data in (d,t) and (^{3}He,α) are consistent with this configuration as the dominant (almost pure) component.

[a] Band(D): K^π=3$^+$ band. Configuration=((ν 5/2[512])(ν 1/2[521]))(81%) + ((π 7/2[404])(π 1/2[411])) (19%) (1980Wa15,1972On01,1967Bu21). From (p,α); 1982Bu23 suggest 27% *10* admixture of the latter configuration. Strong population of 4$^+$ member (1263 level) of this band in (d,d′) suggests hexadecapole vibrational nature.

[b] Band(E): K^π=0$^+$ band.

[c] Band(F): K^π=2$^+$ γ band.

[d] Band(G): K^π=(6$^-$) band. probable configuration=((ν 7/2[633])(ν 5/2[512])) (1972On01).

[e] Band(H): K^π=0$^-$ octupole band.

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Adopted Levels, Gammas (continued)

^{172}Yb Levels (continued)

[f] Band(I): $K^\pi=2^+$ band. Configuration=((ν 5/2[512])(ν 1/2[521])) + 26% *10* of configuration=((π 7/2[404])(π 1/2[411])) (1982Bu23).
[g] Band(J): $K^\pi=(4^-)$ band. probable configuration=((ν 7/2[633])(ν 1/2[521])) (1980Wa15).
[h] Band(K): $K^\pi=3^+$ band. Configuration=((ν 11/2[505])(ν 5/2[512])) + (26±10)% of configuration=((π 7/2[404])(π 1/2[411])) (1982Bu23).
[i] Band(L): $K^\pi=2^-$ octupole band.
[j] Band(M): $K^\pi=0^+$ band.
[k] Band(N): $K^\pi=0^+$ band.
[l] Band(O): $K^\pi=(1^+)$ band. probable configuration=((ν 5/2[512])(ν 3/2[521])).
[m] Band(P): $K^\pi=(4^+)$ band. probable configuration=((π 7/2[404])(π 1/2[411])).
[n] Band(Q): $K^\pi=(3^+)$ band member.
[o] Band(R): $K^\pi=(5^-)$ band. probable configuration=((ν 5/2[512])(ν 5/2[642])). The 5^- member is not reported.
[p] Band(S): $K^\pi=(1^+)$ band.
[q] Band(T): $K^\pi=(4^+)$ band.
[r] Band(U): $K^\pi=(4^+)$ band. probable configuration=((ν 5/2[512])(ν 3/2[521])).
[s] Band(V): $K^\pi=(9^-)$ band. Probable configuration=((ν 7/2[633])(ν 11/2[505])) (1980Wa15).
[t] Band(W): $K^\pi=(8^+)$ band. probable configuration=((ν 5/2[512])(ν 11/2[505])).

$\gamma(^{172}\mathrm{Yb})$

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[#]	α[&]	$I_{(\gamma+ce)}$	Comments
78.7427	2^+	78.7426 *6*	100	0.0	0^+	E2		8.4		B(E2)(W.u.)=212 *2*
260.268	4^+	181.528 *4*	100	78.7427	2^+	E2		0.376		B(E2)(W.u.)=301 *20*
539.977	6^+	279.717 *5*	100	260.268	4^+	E2		0.092		B(E2)(W.u.)=3.2×10^2 *3*
912.12	8^+	372.06 *10*	100	539.977	6^+	E2				B(E2)(W.u.)=4.0×10^2 *4*
1042.914	0^+	964.09 *5*	100	78.7427	2^+	[E2]				B(E2)(W.u.)=3.6 *10*
		1042.926 *22*		0.0	0^+	E0			0.173 *16*	X(E0/E2)=0.029 *2* (1988Su01). ρ(E0)=0.049 *8* (1988Su01).
1117.874	2^+	857.636 *7*	100 *3*	260.268	4^+	E2				B(E2)(W.u.)=2.5 *3*
		1039.149 *10*	100 *3*	78.7427	2^+	M1+E2+E0	+2.3 *+5−3*			B(E2)(W.u.)=0.79 *12*; B(M1)(W.u.)=0.00036 *9* δ: from (n,n′γ). Other: +5.0 *+25−16* from (α,2nγ).
		1117.94 *3*	36 *3*	0.0	0^+	E2				B(E2)(W.u.)=0.24 *1*
1154.935	1^-	1076.240 *18*	100.0 *5*	78.7427	2^+	E1				
		1154.980 *15*	18.9 *7*	0.0	0^+	E1				
1172.385	3^+	912.125 *25*	24.5 *7*	260.268	4^+	M1+E2	−2.36 *15*			B(M1)(W.u.)=1.07×10^{-7} *13*; B(E2)(W.u.)=0.000325 *15* δ: other: −3.7 *+1−3* (α,2nγ), −1.5 *4* (n,n′γ), −2.7 *7* (^{172}Tm β^-).
		1093.657 *13*	100 *2*	78.7427	2^+	M1+E2	−4.0 *3*			B(M1)(W.u.)=9.8×10^{-8} *15*; B(E2)(W.u.)=0.000591 *21* δ: others: −14.6 *+21−26* (α,2nγ), −2.7 *6* (^{172}Tm β^-), −7.2 *+9−14* (n,n′γ).
1198.472	2^-	1119.780 *13*	100	78.7427	2^+	E1				
1221.720	3^-	961.478 *12*	100 *3*	260.268	4^+	E1				
		1143.020 *15*	84 *7*	78.7427	2^+	E1				
1263.028	4^+	90.6440 *17*	89 *3*	1172.385	3^+	M1+E2	−1.64 *2*	4.72		B(M1)(W.u.)=0.00233 *21*; B(E2)(W.u.)=3.5×10^2 *3* δ: other: −2.33 *15* (^{172}Tm β^-).
		723.02 *2*	8.5 *3*	539.977	6^+	E2				B(E2)(W.u.)=0.00140 *11*
		1002.75 *2*	100 *2*	260.268	4^+	M1+E2	+13 *+76−6*			B(M1)(W.u.)<1.5×10^{-7}; B(E2)(W.u.)=0.0032 *4*
		1184.28 *3*	6.7 *24*	78.7427	2^+	E2				B(E2)(W.u.)=9.E−5 *4*
1286.54	4^+	746.60 *3*	35 *5*	539.977	6^+					
		1026.27 *6*	100 *3*	260.268	4^+	M1+E2(+E0)	+0.87 *13*			
		1208.0 *3*	29 *5*	78.7427	2^+					
1330.693	4^-	132.227 *13*	1.8 *9*	1198.472	2^-					
		1070.40 *3*	100 *2*	260.268	4^+	E1				
1352.95	(5^-)	812.96 *10*	55 *3*	539.977	6^+					
		1092.90 *25*	100 *10*	260.268	4^+					
1370.07	10^+	457.86 *10*	100	912.12	8^+	E2				B(E2)(W.u.)=375 *23*
1375.815	5^+	112.778 *3*	25 *1*	1263.028	4^+	M1+E2	1.43 *3*	2.19		B(M1)(W.u.)=0.0027 *8*; B(E2)(W.u.)=1.9×10^2 *6*

$^{172}_{70}\mathrm{Yb}_{102}$-12

Adopted Levels, Gammas (continued)

$\gamma(^{172}\mathrm{Yb})$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[#]	α[&]	$I_{(\gamma+ce)}$	Comments
1375.815	5+	203.438 5	100 2	1172.385	3+	E2		0.26		B(E2)(W.u.)=60 18
		835.85 7	10 2	539.977	6+	M1+E2	1.0 6			B(M1)(W.u.)=4.E−6 3; B(E2)(W.u.)=0.0026 18
		1115.54 5	9.3 10	260.268	4+	E2				B(E2)(W.u.)=0.0011 4
1405.008	0+	250.035 7	6.0 4	1154.935	1−	[E1]				B(E1)(W.u.)=9.7×10^{-7} 17
		287.139 3	100 14	1117.874	2+	[E2]				B(E2)(W.u.)=5.9 13
		362.1		1042.914	0+	E0			7.2 3	X(E0/E2)=15.6 12, ρ(E0)=0.043 5 (1988Su01).
		1326.10 7	88 5	78.7427	2+	[E2]				B(E2)(W.u.)=0.0025 4
		1405.04 2		0.0	0+	E0			4.5 2	X(E0/E2)=2.93 20, ρ(E0)=0.014 2 (1988Su01).
1465.875	2+	267.14 20	0.04 1	1198.472	2−	[E1]		0.027		B(E1)(W.u.)=5.4×10^{-6} 14
		293.61 6	0.20 2	1172.385	3+	[M1,E2]				B(M1)(W.u.)=0.00102 13; B(E2)(W.u.)=5.4 7
		348.04 6	0.30 2	1117.874	2+	[M1,E2]		0.08 3		B(M1)(W.u.)=0.00092 10; B(E2)(W.u.)=3.4 4
		423.04 6	0.28 2	1042.914	0+	[E2]		0.028		B(E2)(W.u.)=2.42 24
		1205.62 8	2.8 1	260.268	4+	(E2)				B(E2)(W.u.)=0.129 10
		1387.093[@] 4	100 3	78.7427	2+	M1+E2(+E0)	−5.1 +11−16			B(M1)(W.u.)=0.0094 8 δ: others: −5.0 5 (^{172}Tm β^-), −4.6 +13−20 (n,n′γ).
		1465.93 4	77 3	0.0	0+	E2				B(E2)(W.u.)=1.33 11
1476.784	2+	321.82 11	0.60 16	1154.935	1−	E1		0.017		B(E1)(W.u.)=5.5×10^{-7} 20
		358.86 6	1.22 15	1117.874	2+	(E2)		0.044		B(E2)(W.u.)=0.28 8
		1216.35 11	12 2	260.268	4+					
		1397.92 5	100 3	78.7427	2+	M1+E2(+E0)	0.8 5			B(M1)(W.u.)=7.E−5 4; B(E2)(W.u.)=0.010 7 X(E0/E2)<0.04 (1988Su01).
		1476.77 7	36 1	0.0	0+	E2				B(E2)(W.u.)=0.0071 17
1510.179	6+	134.363 18	10.5 7	1375.815	5+	M1+E2	1.3 3	1.23 6		
		247.155 6	100 4	1263.028	4+	E2		0.136		
		969.81 18	6.9 5	539.977	6+					
1537.50	6+	251.43[@] 12	8.2 19	1286.54	4+					
		625.1 5	9.4 19	912.12	8+					
		997.42 6	100 4	539.977	6+	M1+E2	+0.63 7			
1540.61	6−	187.5[b] 3	5 3	1352.95	(5−)					
		209.96 10	24.1 11	1330.693	4−	(E2)				
		1000.62 6	100 4	539.977	6+	E1				
1549.150	3+	286.30 20	0.34 6	1263.028	4+	(M1)		0.183		
		431.29 8	0.32 3	1117.874	2+	(M1)		0.062		
		1288.82 3	29 1	260.268	4+	M1+E2	2.8 +7−10			
		1470.42 3	100 3	78.7427	2+	M1+E2	−7.6 +19−36			δ: others: −7.2 +17−28 (^{172}Tm β^-); −11.4 +26−8 (α,2nγ), −7.0 +15−20 (n,n′γ).
1550.43	6−	174.7 10	100 4	1375.815	5+	(E1)		0.079		B(E1)(W.u.)=7.6×10^{-9} 5
		197.6 3	7 1	1352.95	(5−)	[M1,E2]				B(M1)(W.u.)=1.9×10^{-8} 3; B(E2)(W.u.)=0.00021 4

$^{172}_{70}\mathrm{Yb}_{102}$-13

$\gamma(^{172}$Yb) (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡	δ#	α&	Comments
1550.43	6⁻	1010.45 6	34.8 14	539.977	6⁺	E1+M2	−0.38 5		B(E1)(W.u.)=1.20×10⁻¹¹ 8; B(M2)(W.u.)=7.8×10⁻⁶ 19
1550.8		1290.5 7	100	260.268	4⁺				
1557.58	7⁻	645.41 10	45 6	912.12	8⁺				
		1017.63 6	100 4	539.977	6⁺	E1			
1599.870	1⁻	401.429 16	1.19 8	1198.472	2⁻				
		1521.114 24	100 3	78.7427	2⁺	E1			B(E1)(W.u.)=0.00122938 6
		1599.79 7	65 5	0.0	0⁺	[E1]			B(E1)(W.u.)=0.0018 5
1608.490	2⁺	131.83 4	0.20 2	1476.784	2⁺	[M1,E2]		1.4 2	
		142.56 2	2.0 1	1465.875	2⁺	[M1,E2]		1.1 2	
		436.102 16	4.9 2	1172.385	3⁺				
		565.56 5	0.81 5	1042.914	0⁺				
		1348.13 7	3.4 2	260.268	4⁺				
		1529.72 4	100 5	78.7427	2⁺	E2+M1(+E0)	+10 3		B(E2)(W.u.)=0.55 3; B(M1)(W.u.)=2.9×10⁻⁵ 15
		1608.56 15	83 5	0.0	0⁺	E2			B(E2)(W.u.)=0.35 6
1633.14	(4)⁺	1372.88 6	100 5	260.268	4⁺	M1,E2			
		1554.38 15	27 4	78.7427	2⁺	M1,E2			
1640.557	4⁻	264.738 9	22.4 6	1375.815	5⁺	E1(+M2)	−0.09 6	0.035 14	B(E1)(W.u.)=(4.2×10⁻⁶ 17); B(M2)(W.u.)=(2 3)
		377.540 8	100 2	1263.028	4⁺	E1(+M2)	−0.05 4	0.012 2	B(E1)(W.u.)=(6.E−6 3); B(M2)(W.u.)=(0.5 9)
		1380.23 10	1.2 4	260.268	4⁺	[E1]			B(E1)(W.u.)=1.6×10⁻⁹ 9
1657.790	(4)⁺	1397.50 3	100 10	260.268	4⁺	M1+E2	−1.1 +2−5		B(M1)(W.u.)=0.05 3; B(E2)(W.u.)=13 9
		1578.87 12	55 10	78.7427	2⁺	E2			B(E2)(W.u.)=7 5
1662.810	3⁺	186.11 20	0.38 13	1476.784	2⁺	[M1,E2]		0.5 1	
		197.02 6	1.04 10	1465.875	2⁺	[M1,E2]		0.4 1	
		399.750@ 15	21 1	1263.028	4⁺	M1(+E2)	−0.07 7	0.075	
		490.444 8	71 2	1172.385	3⁺	M1(+E2)	+0.04 4	0.044	δ: other: 0.8 3 (from ce in (n,γ)).
		544.82 20	0.97 21	1117.874	2⁺				
		1402.53 3	28 1	260.268	4⁺	E2(+M1)	+12 +9−4		
		1584.08 10	100 2	78.7427	2⁺	E2(+M1)	+55 +94−22		
1666.12	(7⁺)	155.99 8	15.5 17	1510.179	6⁺				
		290.28 6	100 5	1375.815	5⁺	(E2)			
1670.55	(7⁻)	120.21 10	100	1550.43	6⁻	D+Q			
1700.639	3⁺	151.55 6	0.99 17	1549.150	3⁺	[M1,E2]		0.88 18	
		437.60 2	5.8 2	1263.028	4⁺	M1(+E2)	+0.09 10	0.059	
		528.260 14	100 2	1172.385	3⁺	M1(+E2)	+0.01 3	0.037	δ: others: +0.09 7 (n,n′γ), <0.4 (n,γ).
		1440.38 3	14.8 5	260.268	4⁺	E2+M1	+6.5 +22−14		
		1621.92 3	53 1	78.7427	2⁺	E2+M1	+17 4		
1706.447	5⁻	65.8 3	6 3	1640.557	4⁻	[M1,E2]		14 3	
		196.38 4	19 1	1510.179	6⁺	(E1)		0.058	
		330.619 21	100 5	1375.815	5⁺	E1(+M2)	<0.13	0.020 4	
		443.29@ 4	26 1	1263.028	4⁺	E1			

$^{172}_{70}$Yb$_{102}$-14

Adopted Levels, Gammas (continued)

$\gamma(^{172}Yb)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[#]	α[&]	$I_{(\gamma+ce)}$	Comments
1706.447	5^-	1166.50 5	13 1	539.977	6^+	E1				
		1446.20 6	6.6 6	260.268	4^+					
1707.8?		1447.51 25	100	260.268	4^+					
1710.480	$3^{(-)}$	538.126 23	9.1 6	1172.385	3^+					
		1450.24 7	59 7	260.268	4^+	D				
		1631.67 6	100 7	78.7427	2^+	D				
1749.205	4^+	200.5[a] 4	<4[a]	1549.150	3^+	E2		0.27		
		373[b]		1375.815	5^+					
		486.160 18	58 3	1263.028	4^+	M1+E2	+0.41 14	0.041 2		
		576.835 18	26.3 12	1172.385	3^+	M1+E2	0.24 6	0.0284		
		1209.13 10	4.5 4	539.977	6^+	(E2)				
		1488.94 3	100 2	260.268	4^+	E2(+M1)	<−6			δ: other:0.0 +13−3 (α,2nγ).
		1670.49 3	46 1	78.7427	2^+	E2				
1757.367	$(2)^-$	208.305[b] 10	8.3 11	1549.150	3^+					
		291.470 4	30 4	1465.875	2^+					
		535.696 12	19.3 14	1221.720	3^-					
		558.931 10	68 5	1198.472	2^-	M1(+E2)	<0.7			
		602.472[@] 6	100 7	1154.935	1^-	M1+E2	1.0 4			
		1678.5[b] 3	42 9	78.7427	2^+					Reported in (α,2nγ) only.
1778.86	5^+	1238.73 8	100 12	539.977	6^+	M1(+E2)	<0.8			
		1518.68 6	79 6	260.268	4^+	M1,E2				
1794.08	0^+	317.04 14	0.81 17	1476.784	2^+					
		389.1		1405.008	0^+	E0			0.31 1	X(E0/E2)=0.19 2 (1988Su01).
		751.22		1042.914	0^+	E0			0.012 2	X(E0/E2)=0.043 14 (1988Su01).
		1715.37 5	100 7	78.7427	2^+	E2				B(E2)(W.u.)>0.0044
		1794.04 9		0.0	0^+	E0			0.28 1	X(E0/E2)=0.38 3 (1988Su01). Other: 0.34 4 (1978La14,1985Ge02).
1802.65	6^-	95.9 3	17 6	1706.447	5^-	D+Q				
		161.8 3	11 6	1640.557	4^-					
		292.2 3	100 11	1510.179	6^+					
		426.5 3	50 11	1375.815	5^+	D+Q				
1803.108	4^+	145.21 5	2.6 5	1657.790	$(4)^+$	M1(+E2)	<1.4	1.07 13		
		162.20[b] 25		1640.557	4^-					γ in (α,2nγ) only.
		337.85[@] 9	3.3 5	1465.875	2^+	(E2)		0.052		
		427.19 5	8.8 5	1375.815	5^+	M1+E2	1.6 6	0.037 8		
		540.187[@] 16	100 3	1263.028	4^+	M1(+E2)	−0.03 +10−8	0.035		
		630.706 17	31 1	1172.385	3^+	M1(+E2)	−0.10 +14−17	0.023		
		1263.16 9	3.1 4	539.977	6^+	(E2)				
		1542.850 23	73 2	260.268	4^+	E2(+M1)	+9 +11−3			
		1724.35 3	31 1	78.7427	2^+	E2				

$^{172}_{70}Yb_{102}$-15

$\gamma(^{172}Yb)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[#]	α[&]	$I_{(\gamma+ce)}$	Comments
1810.32	(8⁻)	139.87 *6*	100 *10*	1670.55	(7⁻)	D+Q				
		259.3 *3*	11 *1*	1550.8						
1821.583	3⁻	272.31[@] *3*	10 *5*	1549.150	3⁺					
		490 *1*		1330.693	4⁻					
		599.862 *19*	11 *1*	1221.720	3⁻					
		623.114 *7*	18 *2*	1198.472	2⁻					
		649.26 *3*	10 *1*	1172.385	3⁺					
		666.08[@] *12*	30 *6*	1154.935	1⁻					
		1743.27 *15*	100 *14*	78.7427	2⁺					
1828.76	8⁻	288.0 *3*	87 *38*	1540.61	6⁻	(E2)				
		916.66 *16*	100 *8*	912.12	8⁺	E1				
1839.80	9⁻	282.3 *2*	7 *3*	1557.58	7⁻					
		469.75 *20*	15 *5*	1370.07	10⁺					
		927.68 *10*	100 *5*	912.12	8⁺	E1				
1841.84	(8⁺)	175.2 *3*		1666.12	(7⁺)					
		331.67 *8*	100 *4*	1510.179	6⁺	(E2)				
1849.173	2⁺	1589.03 *7*	51 *5*	260.268	4⁺					
		1770.9 *4*	100 *7*	78.7427	2⁺	M1+E2+E0				
		1849.06 *3*	63 *4*	0.0	0⁺	(E2)				B(E2)(W.u.)=0.17 *11*
1853.46	8⁺	316.3 *3*	35 *8*	1537.50	6⁺					
		483.26 *12*	73 *7*	1370.07	10⁺					
		941.37 *10*	100 *6*	912.12	8⁺	(M1)				
1862.799	(5)⁺	200.5[a] *4*	<17[a]	1662.810	3⁺	E2		0.27		
		352.55 *4*	21 *3*	1510.179	6⁺	E2(+M1)	>2.7	0.050 *4*		
		599.86 *4*	46 *6*	1263.028	4⁺	E2+M1	>1			
		1322.66 *9*	33 *3*	539.977	6⁺	E2(+M1)	>1.6			
		1602.54 *3*	100 *3*	260.268	4⁺	E2(+M1)	+21 *+45−9*			
1869.634	(4,5)⁻	163.165 *20*	19 *1*	1706.447	5⁻	M1(+E2)	<0.8	0.80 *7*		
		229.080 *10*	100 *3*	1640.557	4⁻	M1(+E2)	<1.4	0.28 *6*		
		493.89 *9*	19 *4*	1375.815	5⁺					
		1329.72[b] *7*	10 *1*	539.977	6⁺					
1894.616	0⁺	739.60 *4*	1.7 *6*	1154.935	1⁻					
		776.71 *7*	2.1 *4*	1117.874	2⁺	(E2)				B(E2)(W.u.)>0.0047
		1815.70 *7*	100 *7*	78.7427	2⁺	E2				B(E2)(W.u.)>0.0032
		1894.53 *8*		0.0	0⁺	E0			0.073 *2*	X(E0/E2)=0.14 *1*(1988Su01).
1899.30?		1639.03 *20*	100	260.268	4⁺					
1907.48	(12⁺)	537.4 *1*	100	1370.07	10⁺	(E2)				B(E2)(W.u.)=4.3×10² *6*
1919.84	(5,6)	253.75 *10*	39 *7*	1666.12	(7⁺)					
		410.8[@] *3*	41 *4*	1510.179	6⁺					
		1379.76 *14*	100 *11*	539.977	6⁺					

$^{172}_{70}Yb_{102}$-16

$\gamma(^{172}Yb)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[#]	α[&]	Comments
1919.84	(5,6)	1658.86 *25*	37 *12*	260.268	4+				
1921.80	(7−)	119.3 *5*	33 *8*	1802.65	6−				
		215.4 *5*	100 *17*	1706.447	5−				
		255.7 *5*	42 *8*	1666.12	(7+)				
		411.4 *5*	92 *17*	1510.179	6+				
1927.016	5+	416.65[a] *8*	<21[a]	1510.179	6+	M1(+E2)	<0.7	0.061 *7*	
		551.078[@] *19*	100 *4*	1375.815	5+	M1+E2	+1.5 *5*	0.020 *4*	
		664.07 *5*	26 *2*	1263.028	4+	M1(+E2)	<1.2	0.017 *4*	
		1387.18[@] *2*	<30	539.977	6+				
		1666.38 *20*	68 *2*	260.268	4+	E2+M1	+6.9 *+19−12*		
1956.351	2+	734.77 *4*	6.7 *13*	1221.720	3−				
		839.4 *4*	6.43 *16*	1117.874	2+				
		1696.00 *10*	81 *5*	260.268	4+				
		1877.89 *16*	100 *9*	78.7427	2+	M1+E2+E0			
		1956.90[@] *18*	75 *9*	0.0	0+	[E2]			B(E2)(W.u.)=0.33 *16*
1968.20	(9−)	157.92 *8*	100 *9*	1810.32	(8−)	D+Q			
		297.1 *3*	29 *3*	1670.55	(7−)				
1975.63	(4+)	1435.23 *25*	36 *6*	539.977	6+				
		1714.95 *25*	100 *19*	260.268	4+				
		1897.42 *20*	53 *6*	78.7427	2+				
2007.98	(6+)	350.65 *20*	100 *11*	1657.790	(4)+				
		1468.42 *25*	80 *7*	539.977	6+				
		1746.58[@] *25*	38 *4*	260.268	4+				
2009.80	1+	811.6[b] *4*	9 *4*	1198.472	2−				
		854.435[@b] *16*	27 *4*	1154.935	1−				
		892.11[@] *4*	5.0 *4*	1117.874	2+				
		1931.28 *9*	94 *7*	78.7427	2+	E2			
		2009.92 *15*	100 *11*	0.0	0+	(M1)			
2039.38	(9+)	197.2 *3*		1841.84	(8+)				
		373.6 *3*	100	1666.12	(7+)	(E2)			
2046.99	(2)+	90.645 *4*	16 *3*	1956.351	2+				
		892.11 *4*	6.0 *4*	1154.935	1−				
		1787.85[@] *20*	44 *5*	260.268	4+				
		1968.19 *9*	100 *20*	78.7427	2+	E2			
2064.04	(8−)	142.3 *3*	28 *6*	1921.80	(7−)				
		261.6 *3*	100 *11*	1802.65	6−				
		397.7 *3*	17 *6*	1666.12	(7+)				
2073.114	4+	146.03 *4*	0.25 *3*	1927.016	5+	M1(+E2)	<1.4	1.05 *13*	
		210.28 *3*	0.30 *2*	1862.799	(5)+	M1(+E2)	<1.1	0.37 *6*	

$^{172}_{70}Yb_{102}$-17

Adopted Levels, Gammas (continued)

γ(^{172}Yb) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[#]	α[&]
2073.114	4^+	270.028 8	6.48 15	1803.108	4^+	M1+E2	+0.79 +21−31	0.172 15
		323.889 15	5.03 8	1749.205	4^+	M1+E2	+0.40 8	0.121 4
		366.684 24	0.97 4	1706.447	5^-	E1		0.0123
		372.507 12	8.93 17	1700.639	3^+	M1+E2	+0.71 7	0.073 2
		410.308 12	6.62 10	1662.810	3^+	M1+E2	+0.74 9	0.056 2
		415.7 4	0.17 8	1657.790	$(4)^+$	(M1,E2)		0.048 20
		432.549 13	5.49 15	1640.557	4^-	E1(+M2)	+0.04 +9−7	
		524.05 4	0.75 3	1549.150	3^+	E2+M1	+2.8 5	0.018
		607.141[@] 18	1.66 17	1465.875	2^+	E2		0.0112
		697.300 16	20.6 4	1375.815	5^+	M1(+E2)	−0.014 10	0.0181
		810.064 15	55.8 8	1263.028	4^+	M1+E2	−0.08 4	0.0124
		900.724 20	100.0 13	1172.385	3^+	M1+E2	+0.068 9	
		1533.27 12	0.09 1	539.977	6^+			
		1812.85 4	0.65 3	260.268	4^+	E2+M1	+6.0 +57−19	
		1994.36 6	0.50 3	78.7427	2^+	E2		
2075.27	(6^+)	565.6 3	72 19	1510.179	6^+			
		1535.18 12	100 10	539.977	6^+			
		1815.2 3	38 6	260.268	4^+			
2076.172	$(1)^-$	365.72 3	4.7 23	1710.480	$3^{(-)}$			
		476.329 18	29 3	1599.870	1^-			
		610.963[@b] 23	7.1 12	1465.875	2^+			
		854.435 16	46 7	1221.720	3^-	E2		
		877.65 3	12.7 7	1198.472	2^-			
		1997.39 15	100 12	78.7427	2^+			
2084.81?		708.99 20	100	1375.815	5^+			
2100.22	(4^+)	1560.09 20	48 19	539.977	6^+			
		1840.3 3	100 19	260.268	4^+			
2102.944	1^-	208.315 10	3.0 4	1894.616	0^+			
		697.86 16	1.6 3	1405.008	0^+			
		2024.38 18	100 11	78.7427	2^+	E1		
		2102.4 3	49 3	0.0	0^+			
2145.03	(10^-)	176.9 3	100 8	1968.20	(9^-)			
		334.8 3	47 5	1810.32	(8^-)	(E2)		
2154.30	(7)	483.6 3	100 21	1670.55	(7^-)			
		603.7 3	71 14	1550.43	6^-			
2156.43	(6^+)	1616.45 3	100	539.977	6^+			
2175.059	3^+	517.29 10	4.9 8	1657.790	$(4)^+$			
		566.49 5	9.4 8	1608.490	2^+	E2(+M1)	>0.8	
		625.95 4	37.9 16	1549.150	3^+	E2(+M1)	>3	
		709.133 17	100 4	1465.875	2^+	E2+M1	+4.9 +10−8	
		1002.74 2	31 15	1172.385	3^+			

$^{172}_{70}$Yb$_{102}$-18

$\gamma(^{172}Yb)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[#]	α[&]	Comments
2175.059	3^+	1634.78[b] *20*		539.977	6^+				E_γ: from (α,2nγ) only. It is suspect since a transition with ΔJ=3 is not expected.
		1914.80 *3*	72.9 *14*	260.268	4^+	M1+E2	−0.291 *24*		
		2096.33 *5*	8.5 *4*	78.7427	2^+	M1+E2	+0.68 *+16−11*		
2176.20	$(1)^-$	576.31 *7*	100 *8*	1599.870	1^-	M1+E2	0.8 *4*		
		1021.27 *5*	90 *8*	1154.935	1^-				
		1133.56[@b] *5*	67 *8*	1042.914	0^+				
2181.97	$(4,5,6)^+$	254.39 *24*	41 *12*	1927.016	5^+				
		319.174 *22*	100 *7*	1862.799	$(5)^+$	M1(+E2)	<0.5		
		524.05[b] *6*		1657.790	$(4)^+$				
2192.130	5^+	119.023 *15*	1.0 *2*	2073.114	4^+	[M1,E2]		1.9 *2*	
		329.39 *5*	4.5 *4*	1862.799	$(5)^+$	M1(+E2)	<1	0.108 *18*	
		389.44 *5*	2.3 *3*	1802.65	6^-				Mult=E1 from ce data is in conflict with ΔJ^π.
		413.2 *3*	1.2 *5*	1778.86	5^+	[M1,E2]		0.049 *20*	
		534.29 *7*	4.1 *6*	1657.790	$(4)^+$	M1(+E2)	<2	0.027 *9*	
		681.82 *4*	22.8 *8*	1510.179	6^+	M1+E2	+0.10 *7*	0.0191	
		816.327 *20*	37.8 *8*	1375.815	5^+	M1+E2	+0.20 *14*	0.0120 *5*	
		929.106 *20*	100.0 *23*	1263.028	4^+	M1+E2	−0.066 *9*		
		1019.79 *4*	3.8 *3*	1172.385	3^+	(E2)			
		1652.32 *10*	0.47 *10*	539.977	6^+				
		1931.76 *7*	1.23 *12*	260.268	4^+	(M1,E2)			
2193.02	(10^-)	364.2 *3*	100 *7*	1828.76	8^-	(E2)			
		823.0 *3*	22 *7*	1370.07	10^+				
2193.16	(4^+)	816.95 *25*	23 *8*	1375.815	5^+				
		930.13 *16*	100 *8*	1263.028	4^+				
		1653.64 *25*	75 *14*	539.977	6^+				
2194.331	(1^+)	585.71[@] *3*	4.7 *7*	1608.490	2^+				
		717.502 *18*	17.3 *19*	1476.784	2^+				
		728.20 *10*	5.9 *7*	1465.875	2^+				
		995.740[@] *21*	52 *4*	1198.472	2^-				
		2115.5[b] *3*	100 *15*	78.7427	2^+				
2195.03	$(1,2^+)$	437.67 *6*	2.5 *4*	1757.367	$(2)^-$				
		728.8 *3*	5.0 *13*	1465.875	2^+				
		1152.08 *10*	32 *3*	1042.914	0^+				
		2195.4 *3*	100 *13*	0.0	0^+				
2199.47	(11^-)	359.9 *3*	19 *6*	1839.80	9^-				
		829.2 *3*	100 *8*	1370.07	10^+				
2210	$1^{(-)}$	2131	100	78.7427	2^+				
		2210	65 *6*	0.0	0^+	[E1]			B(E1)(W.u.)=0.00175 *33*
2212.52	(10^+)	358.9 *3*	81 *13*	1853.46	8^+				

$^{172}_{70}Yb_{102}$-19

Adopted Levels, Gammas (continued)

$\gamma(^{172}Yb)$ (continued)

E_i(level)	J^{π}_i	E_γ[†]	I_γ[†]	E_f	J^{π}_f	Mult.[‡]	δ[#]	α[&]
2212.52	(10$^+$)	842.6 *3*	100 *19*	1370.07	10$^+$			
2213.307	3$^+$,4$^+$	512.54 *5*	56 *4*	1700.639	3$^+$	M1+E2	0.6 *3*	0.034 *5*
		664.07 *5*	31 *2*	1549.150	3$^+$	M1(+E2)	<1.2	0.017 *4*
		950.37 *7*	16 *3*	1263.028	4$^+$			
		1040.99 *3*	100 *3*	1172.385	3$^+$	M1(+E2)	<0.9	
2214.06	(1$^-$)	319.74 *12*	2.6 *16*	1894.616	0$^+$			
		605.7[b] *4*	28 *10*	1608.490	2$^+$			
		746.598[@b] *16*	18 *7*	1465.875	2$^+$			
		2135.14 *14*	100 *9*	78.7427	2$^+$			
2225.3	9$^-$	161.3 *3*	25 *6*	2064.04	(8$^-$)			
		303.4 *3*	100 *19*	1921.80	(7$^-$)			
2228.63	2$^+$	272.31 *3*	3.8 *21*	1956.351	2$^+$			
		565.02[@b] *3*	14.4 *9*	1662.810	3$^+$			
		1185.60 *12*	12.1 *4*	1042.914	0$^+$			
		1968.19 *9*	100 *20*	260.268	4$^+$			
2248.19		1336.06 *12*	100	912.12	8$^+$			
2256.3	(10$^+$)	414.5 *3*	100	1841.84	(8$^+$)			
2285.399	4$^+$	358.45 *3*	7.3 *4*	1927.016	5$^+$	M1+E2	1.3 *2*	0.065 *5*
		422.61 *3*	8.3 *4*	1862.799	(5)$^+$	(M1,E2)		0.046 *19*
		482.23 *4*	35 *2*	1803.108	4$^+$	M1+E2	−0.10 *7*	0.046
		536.194 *19*	39 *2*	1749.205	4$^+$	M1+E2	−0.17 *7*	0.035
		584.725 *17*	20.7 *6*	1700.639	3$^+$	M1(+E2)	+0.06 *9*	0.0282
		622.605 *22*	9.7 *7*	1662.810	3$^+$	M1(+E2)	<0.4	0.023 *1*
		644.86 *6*	7.1 *6*	1640.557	4$^-$			
		909.70 *6*	39 *3*	1375.815	5$^+$	E2(+M1)	>1.3	
		1022.370 *21*	85 *2*	1263.028	4$^+$	M1+E2	+0.75 *17*	
		1113.05 *5*	100 *5*	1172.385	3$^+$	M1+E2	−0.18 *4*	
		2024.9 *3*	3.4 *4*	260.268	4$^+$	M1(+E2)	+0.46 *44*	
		2206.72[b] *15*	0.5 *3*	78.7427	2$^+$	(E2)		
2299.29		489.2 *3*	56 *22*	1810.32	(8$^-$)			
		628.4 *3*	100 *22*	1670.55	(7$^-$)			
2307.786	3$^+$,4$^+$	607.141 *18*	100 *10*	1700.639	3$^+$	E2		
		649.6 *5*	8.7 *25*	1657.790	(4)$^+$			
		758.74 *8*	14 *3*	1549.150	3$^+$	M1		
		2047.55 *15*	2.2 *5*	260.268	4$^+$			
2312.90	(2$^+$)	1026.43 *8*	36 *3*	1286.54	4$^+$			
		1269.71 *24*	25 *15*	1042.914	0$^+$			
		2233.6[b] *3*	100 *25*	78.7427	2$^+$			
2316.97	1,2$^{(+)}$	422.351[b] *16*	5.5 *20*	1894.616	0$^+$			
		2238.52[b] *20*	100 *20*	78.7427	2$^+$			

From ENSDF

$^{172}_{70}Yb_{102}$-20

Adopted Levels, Gammas (continued)

$\gamma(^{172}Yb)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[#]	α[&]
2327.58	(2+)	850.69 9	2.9 3	1476.784	2+			
		861.7[b] 3	9 3	1465.875	2+			
		1172.68 11	14 8	1154.935	1−			
		2327.3 3	100 17	0.0	0+	(E2)		
2340.7	(11−)	195.7 3	100 8	2145.03	(10−)			
		372.3 3	60 8	1968.20	(9−)			
2341.86	(0+,1+,2+)	294.819[b] 17	2.0 6	2046.99	(2)+			
		733.360 25	7.1 8	1608.490	2+			
		2263.75[@] 20	100 25	78.7427	2+			
2343.715	4+	151.55 6	4.4 8	2192.130	5+	[M1,E2]		0.88 18
		416.65[a] 8	<9.5[a]	1927.016	5+	M1(+E2)	<0.7	0.061 7
		480.84 10	13.5 14	1862.799	(5)+	M1(+E2)	<1.3	0.038 9
		540.187[@b] 16		1789	(4+)			
		594.538 19	46 3	1749.205	4+	M1(+E2)	+0.23 +18−31	0.026
		643.04 3	25.0 13	1700.639	3+	M1(+E2)	<0.6	0.0222
		680.7[b] 4	12 5	1662.810	3+			
		703.06[b] 8	15.0 16	1640.557	4−			
		967.89 5	21.0 10	1375.815	5+	M1+E2	−0.93 13	
		1080.68 4	100 3	1263.028	4+	M1+E2	−0.22 12	
		1171.31 11	2.8 7	1172.385	3+			
		1803.97[b] 15	1.3 2	539.977	6+			
		2083.41 6	24.0 8	260.268	4+	M1+E2	+0.41 14	
		2265.02 8	1.45 21	78.7427	2+	(E2)		
2375.37	(1+,2)	272.31 3	7 4	2102.944	1−			
		365.72 3	6 3	2009.80	1+			
		712.51 4	6.3 7	1662.810	3+			
		2296.2 4	100 16	78.7427	2+			
2387.706	(1+,2+)	193.354 6	22 2	2194.331	(1+)			
		630.79[a@] 3	<18[a]	1757.367	(2)−			
		839.4 4	20 5	1549.150	3+			
		1216.01[@] 11	56 6	1172.385	3+			
		1233.51[@] 16	27 5	1154.935	1−			
		1269.71 24	91 54	1117.874	2+			
		1344.32[@b] 12	100 14	1042.914	0+			
2392.3		1852.3 4	100	539.977	6+			
2404.8	(0−,1−,2−)	855[b]	<260	1549.150	3+			
		2326	38	78.7427	2+			
2411.4	(10−)	186.2 3	13 6	2225.3	9−			

From ENSDF

$^{172}_{70}Yb_{102}$-21

Adopted Levels, Gammas (continued)

$\gamma(^{172}Yb)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	Comments
2411.4	(10^-)	347.4 *3*	100 *13*	2064.04	(8^-)		
2464.09	(2^+)	250.035 *7*	51 *4*	2214.06	(1^-)		
		1242.29 *13*	100 *9*	1221.720	3^-		
2465.22	(7,8)	310.6 *3*	92 *15*	2154.30	(7)		
		656.0 *3*	62 *15*	1810.32	(8^-)		
		793.9 *3*	100 *23*	1670.55	(7^-)		
2480.037	$(1^+,2^+)$	523.82[b] *3*	3.5 *4*	1956.351	2^+		
		585.71[@b] *3*	0.90 *13*	1887			
		630.79[a] *3*	<1.0[a]	1849.173	2^+		
		816.35[@b] *10*	2.6 *8*	1662.810	3^+		
		871.564 *21*	5.2 *4*	1608.490	2^+		
		1002.81[@b] *4*	6.4 *5*	1476.784	2^+		
		1013.85[@b] *3*	6.1 *8*	1465.875	2^+		
		1281.89 *13*	4.1 *5*	1198.472	2^-		
		2401.39 *8*	100 *8*	78.7427	2^+	(E2)	
2492.2	(11^+)	452.8 *3*	100	2039.38	(9^+)	(E2)	
2518.7	(14^+)	611.2 *3*	100	1907.48	(12^+)	(E2)	B(E2)(W.u.)=394 *+60−45*
2554.2	(12^-)	213.6 *3*	100 *14*	2340.7	(11^-)		
		409.3 *3*	100 *14*	2145.03	(10^-)		
2573	1	2494	51 *9*	78.7427	2^+		
		2573	100	0.0	0^+		
2607.2	(12^+)	394.7 *3*	100	2212.52	(10^+)		
2607.3		1408.8 *3*	81 *15*	1198.472	2^-		
		1434.5 *3*	44 *15*	1172.385	3^+		
		1489.8[@] *3*	100 *15*	1117.874	2^+		
2609.2	(11^-)	383.9 *3*	100	2225.3	9^-	(E2)	
2612	1	2533	70 *13*	78.7427	2^+		
		2612	100	0.0	0^+		
2629.8	(12^-)	436.8 *3*	100	2193.02	(10^-)		
2636.1	(13^-)	436.7 *3*	42 *17*	2199.47	(11^-)		
		728.6 *3*	100 *17*	1907.48	(12^+)		
2653.3		353.9 *3*	100 *40*	2299.29			
		685.2 *3*	100 *40*	1968.20	(9^-)		
2689.8	(9^-)	224.6 *3*	100	2465.22	(7,8)		
2746.5	(12^+)	490.2 *3*	100	2256.3	(10^+)		
2786.8	(13^-)	232.7 *3*	50 *10*	2554.2	(12^-)		
		446.0 *3*	100 *20*	2340.7	(11^-)		
2840.8	(12^-)	429.4 *3*	100	2411.4	(10^-)	(E2)	
2856.4	(10^-)	166.6 *3*	100	2689.8	(9^-)		
3002	1	2923	51 *10*	78.7427	2^+		

$\gamma(^{172}Yb)$ (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡	Comments
3002	1	3002	100	0.0	0^+		
3017	1	2938	100	78.7427	2^+		
		3017	54 *24*	0.0	0^+		
3020.0	(13^+)	527.8 *3*	100	2492.2	(11^+)		
3034.2	(14^-)	247.4 *3*	40 *20*	2786.8	(13^-)		
		480.0 *3*	100 *40*	2554.2	(12^-)		
3043.9	(14^+)	436.7 *3*	100 *40*	2607.2	(12^+)		
3044.5	(11^-)	188.1 *3*	100	2856.4	(10^-)		
3072	$1^{(-)}$	2993	100	78.7427	2^+		
		3072	76 *17*	0.0	0^+	[E1]	B(E1)(W.u.)=0.00053 *17*
3096	1	3017	185 *77*	78.7427	2^+		
		3096	100	0.0	0^+		
3118	$1^{(-)}$	3039	100	78.7427	2^+		
		3118	63 *19*	0.0	0^+	[E1]	B(E1)(W.u.)=0.00037 *17*
3134.6	(14^-)	504.8 *3*	100	2629.8	(12^-)		
3160	$1^{(-)}$	3081	100	78.7427	2^+		
		3160	54 *10*	0.0	0^+	[E1]	B(E1)(W.u.)=0.00072 *22*
3174	$1^{(-)}$	3096	227 *45*	78.7427	2^+		
		3174	100	0.0	0^+	[E1]	B(E1)(W.u.)=0.00057 *17*
3198.4	(16^+)	679.7 *5*	100	2518.7	(14^+)		
3246	$1^{(-)}$	3167	100	78.7427	2^+		
		3246	73 *21*	0.0	0^+	[E1]	B(E1)(W.u.)=0.00048 *20*
3252.9	(12^-)	208.4 *3*	100	3044.5	(11^-)		
3253	1	3174	46 *11*	78.7427	2^+		
		3253	100	0.0	0^+		
3309.5	(14^+)	563.0 *3*	100	2746.5	(12^+)		
3393	$1^{(-)}$	3314	100	78.7427	2^+		
		3393	57 *9*	0.0	0^+	[E1]	B(E1)(W.u.)=0.00075 *19*
3481.6	(13^-)	228.7 *3*	100	3252.9	(12^-)		
3545	$1^{(-)}$	3466	100	78.7427	2^+		
		3545	40 *9*	0.0	0^+	[E1]	B(E1)(W.u.)=0.00085 *28*
3604	1	3525	76 *13*	78.7427	2^+		
		3604	100	0.0	0^+		
3635	$1^{(-)}$	3556	100	78.7427	2^+		
		3635	61 *8*	0.0	0^+	[E1]	B(E1)(W.u.)=0.00135 *32*
3863	1	3784	100	78.7427	2^+		
		3863	88 *19*	0.0	0^+		

† From weighted averages when data of comparable precision are available from different γ-ray studies. In many cases, however, values are from (n,γ) E=th and/or

$^{172}_{70}Yb_{102}$-23

γ(^{172}Yb) (continued)

^{172}Lu ε decay for low-spin levels.

‡ From ce data in ^{172}Lu ε decay, (α,2nγ) and (n,γ) E=th.

From $\gamma(\theta$,t) and/or ce data in ^{172}Lu ε decay.

@ The least-squares fit gives a poor fit for this transition. The fitted value (level energy difference) deviates up to about four times the quoted uncertainty.

& 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.

[a] Multiply placed with undivided intensity.

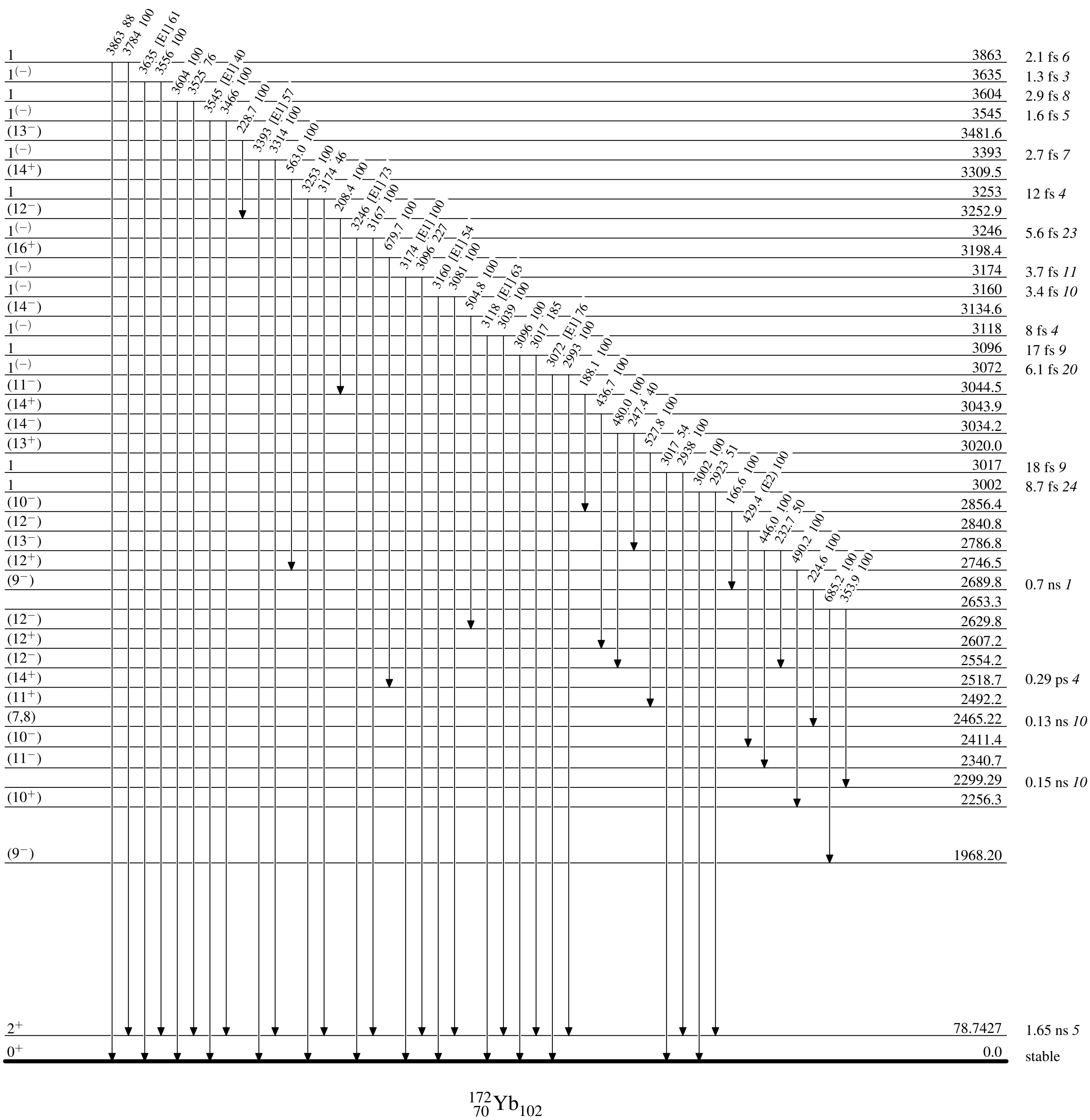
[b] Placement of transition in the level scheme is uncertain.

$^{172}_{70}$Yb$_{102}$-24

Adopted Levels, Gammas

Level Scheme

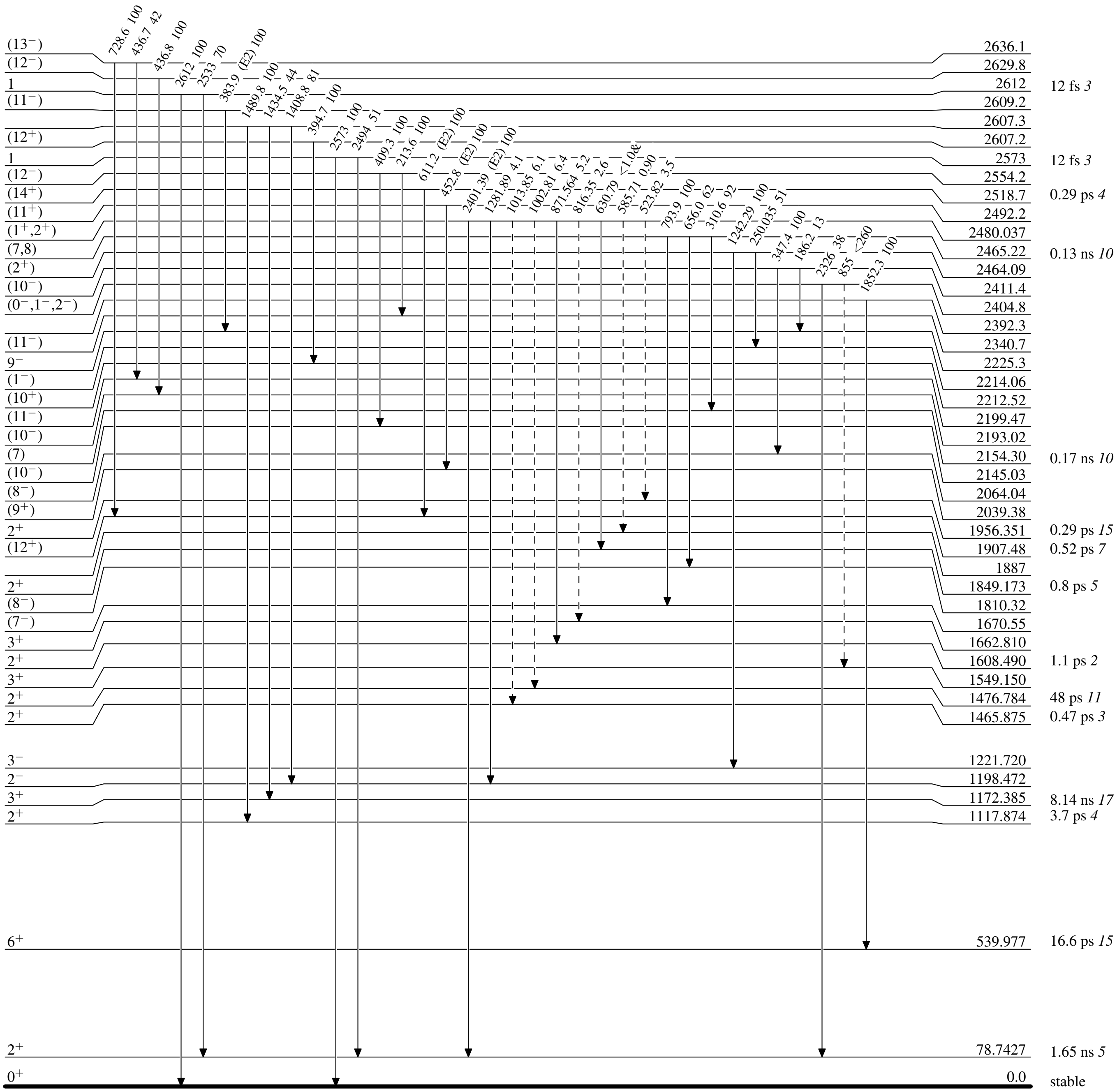
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

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



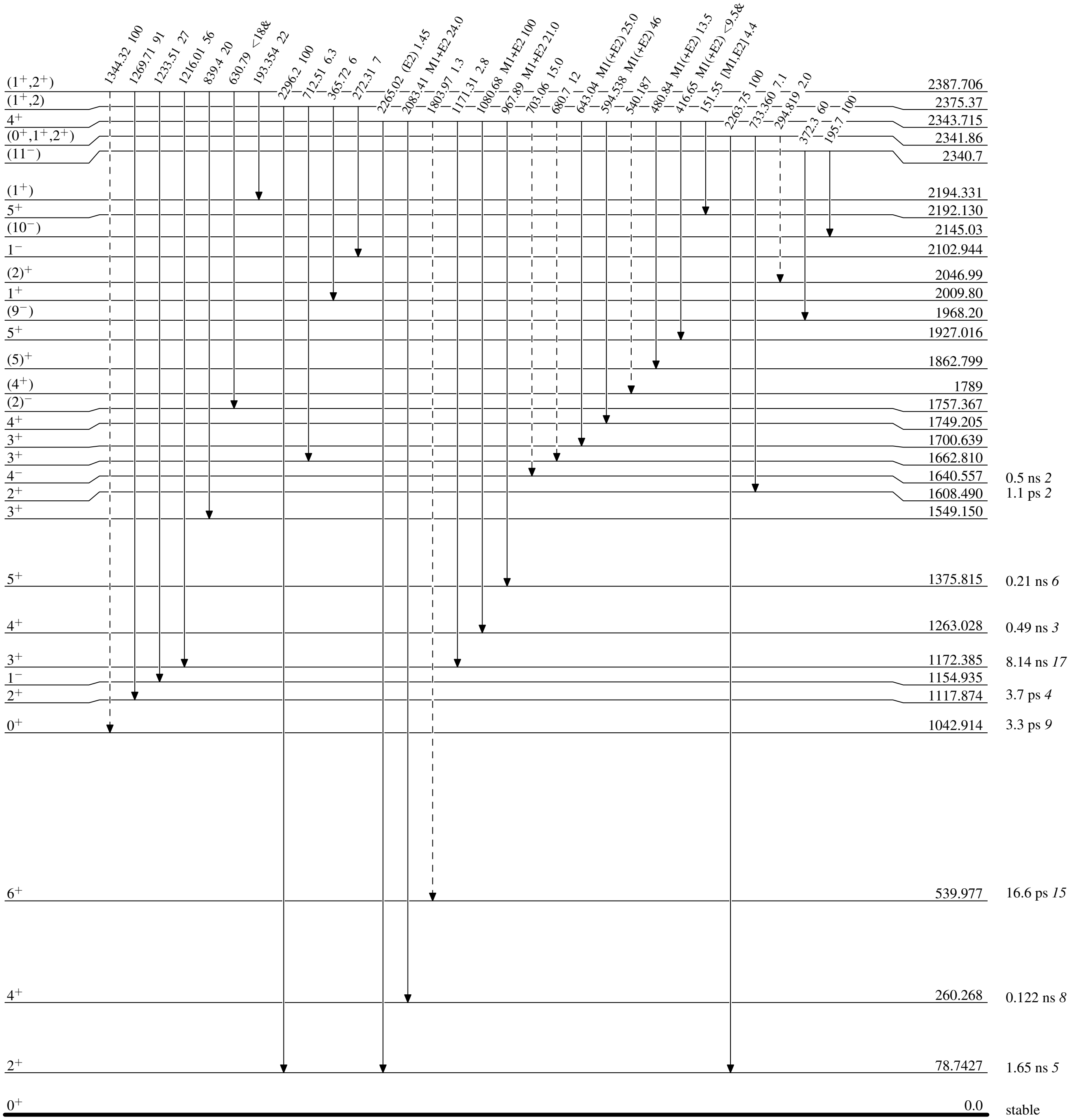
Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

γ Decay (Uncertain)

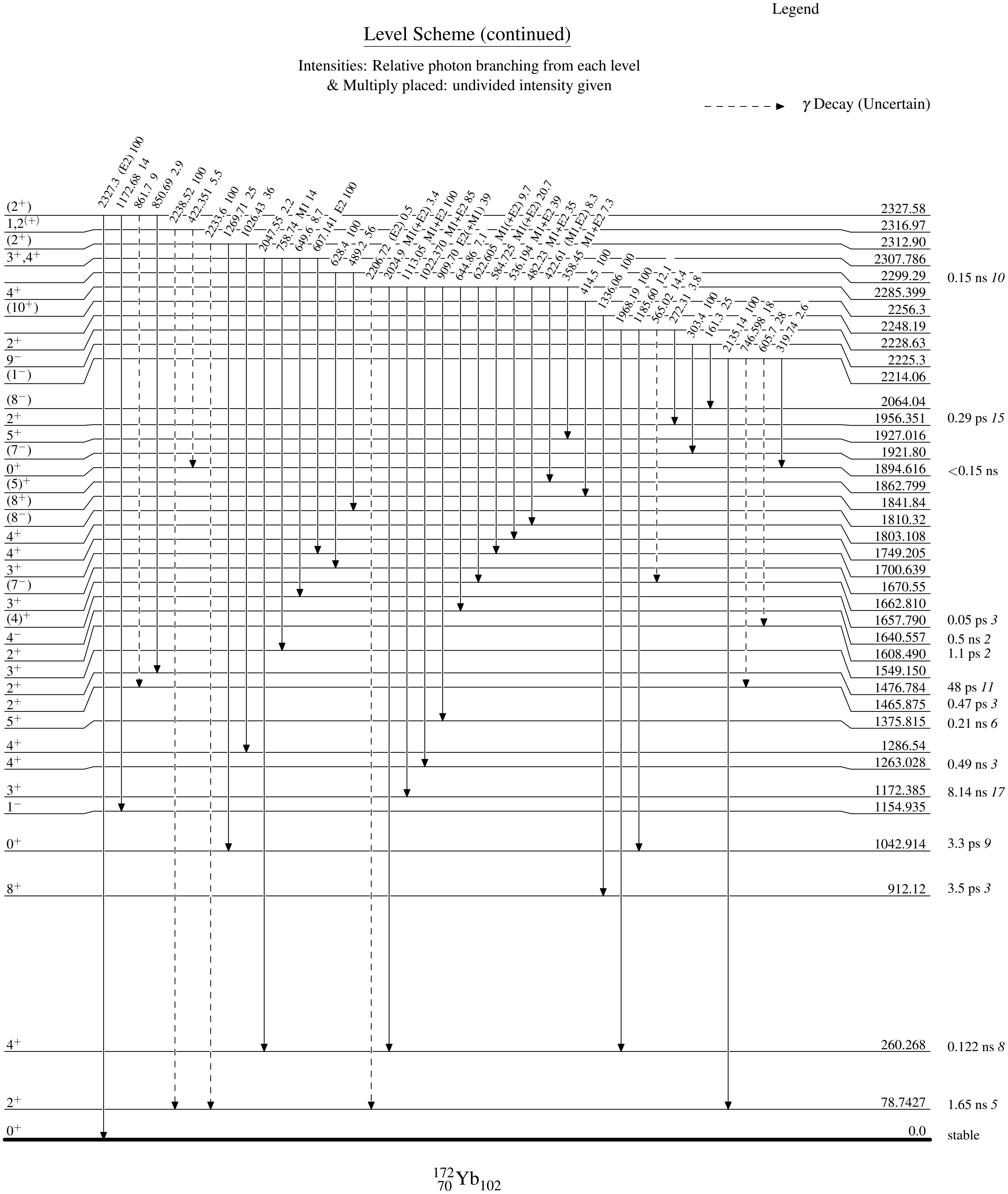


$^{172}_{70}Yb_{102}$

Adopted Levels, Gammas

Level Scheme (continued)

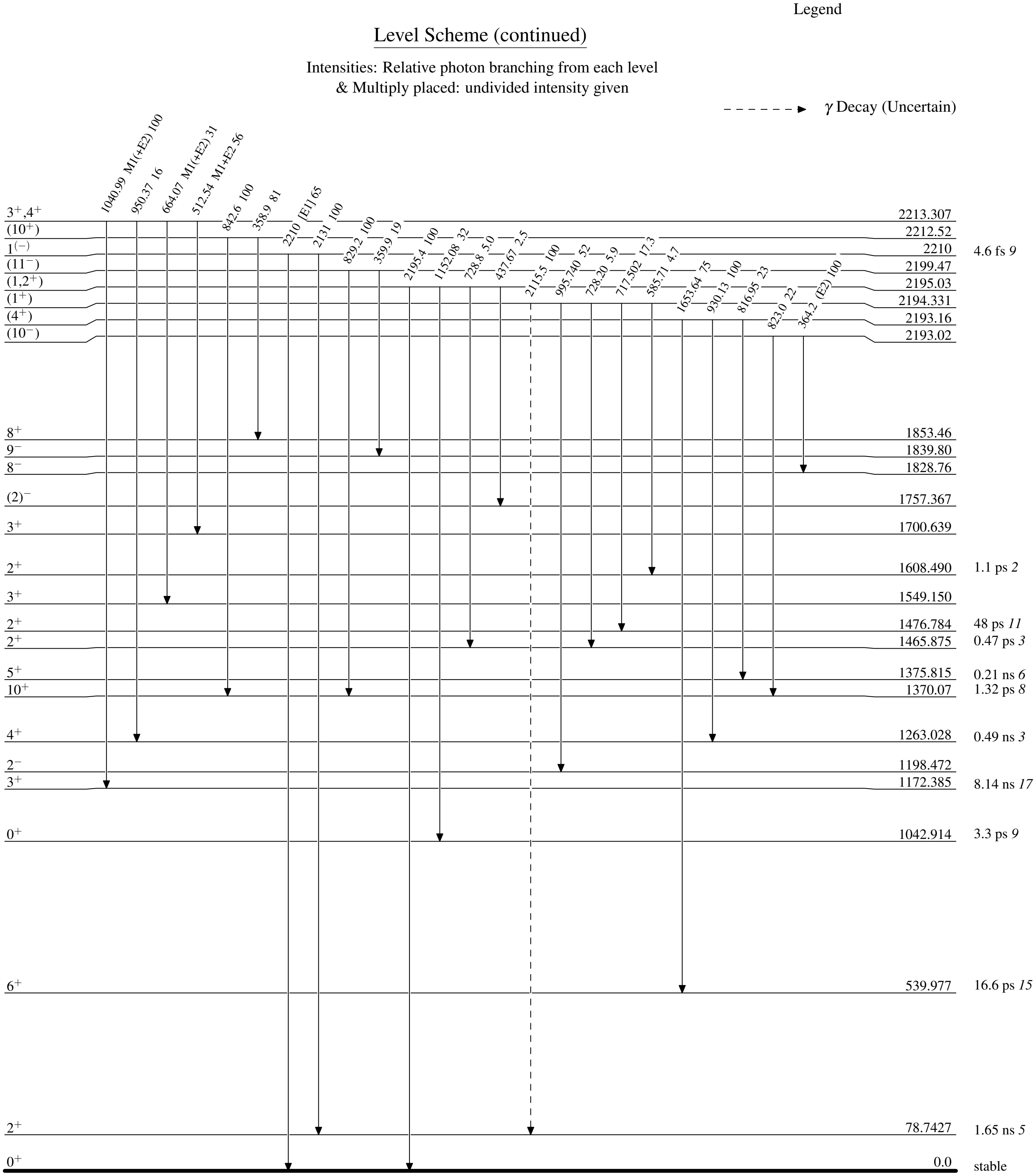
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



Adopted Levels, Gammas

Level Scheme (continued)

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

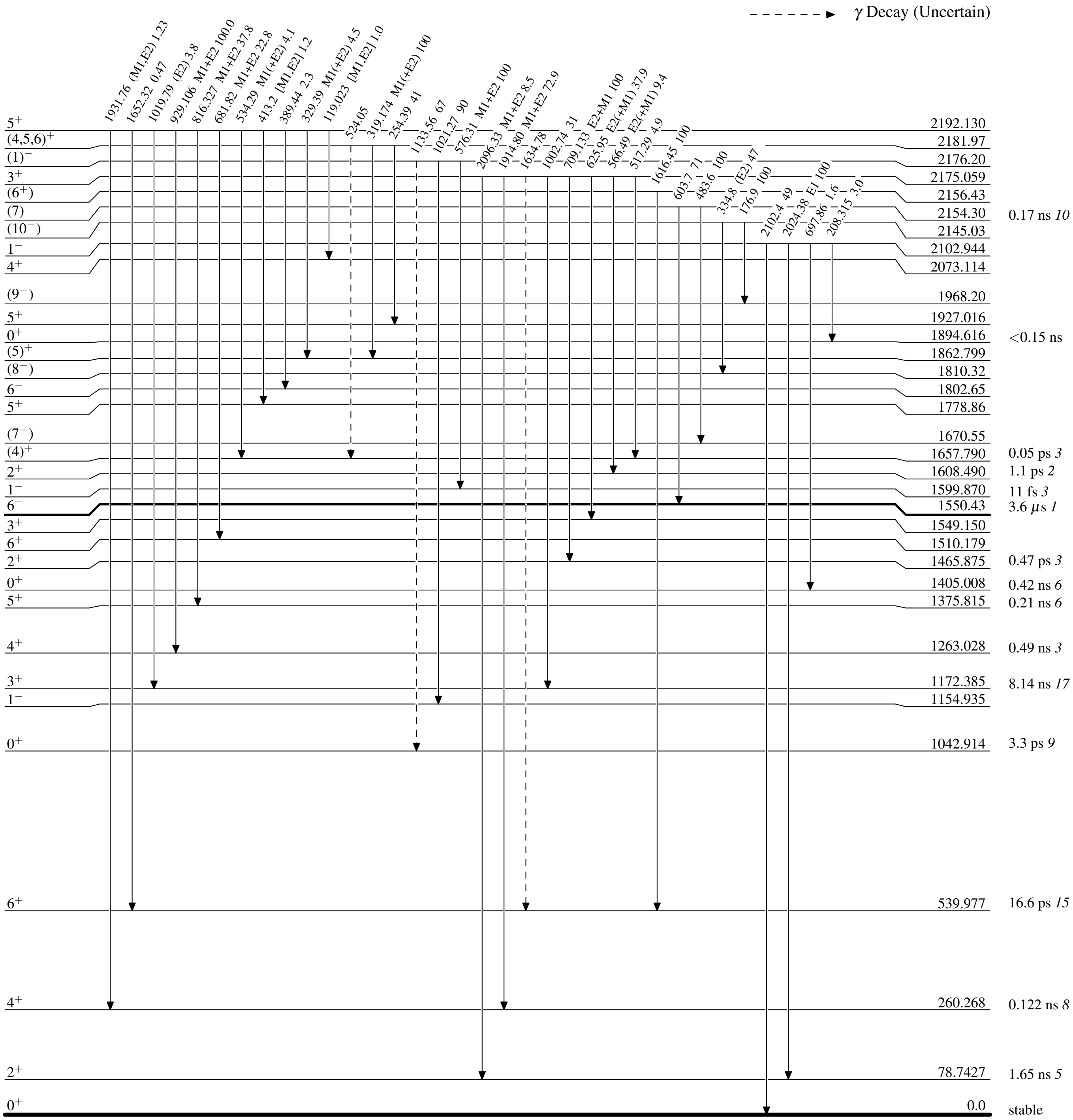


$^{172}_{70}Yb_{102}$

Adopted Levels, Gammas

Level Scheme (continued)

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



$^{172}_{70}Yb_{102}$

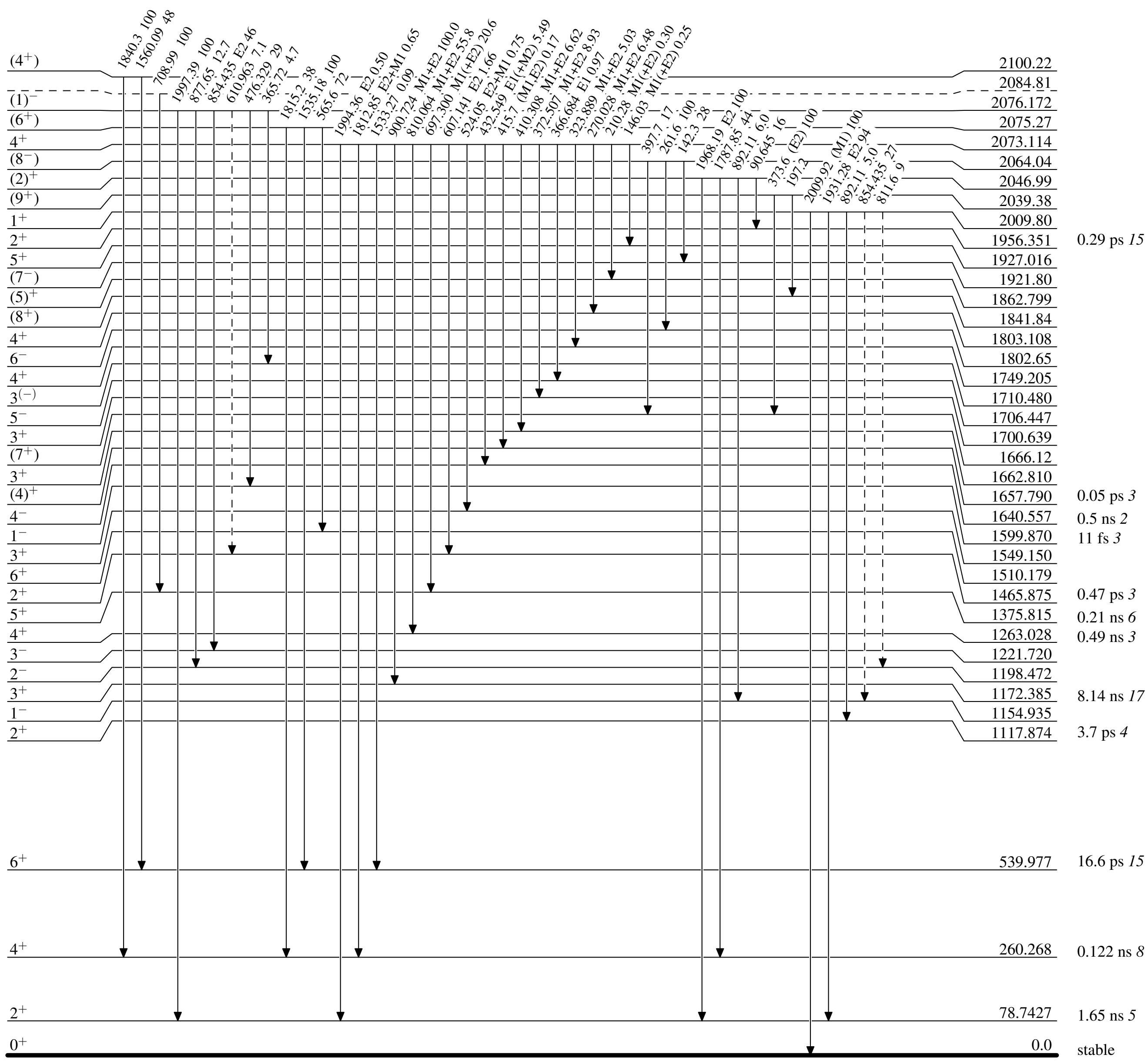
Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

γ Decay (Uncertain)



$^{172}_{70}Yb_{102}$

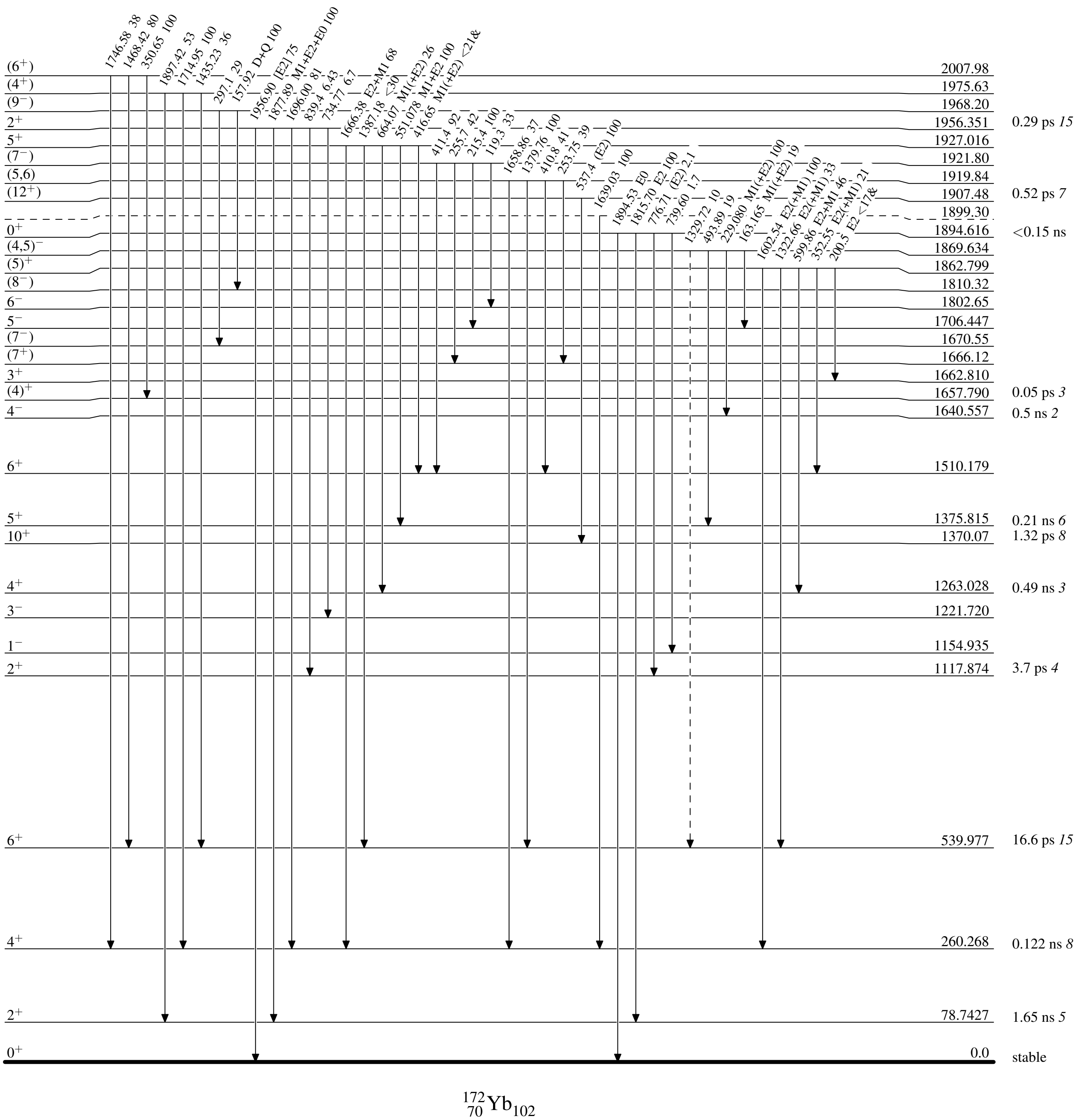
Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

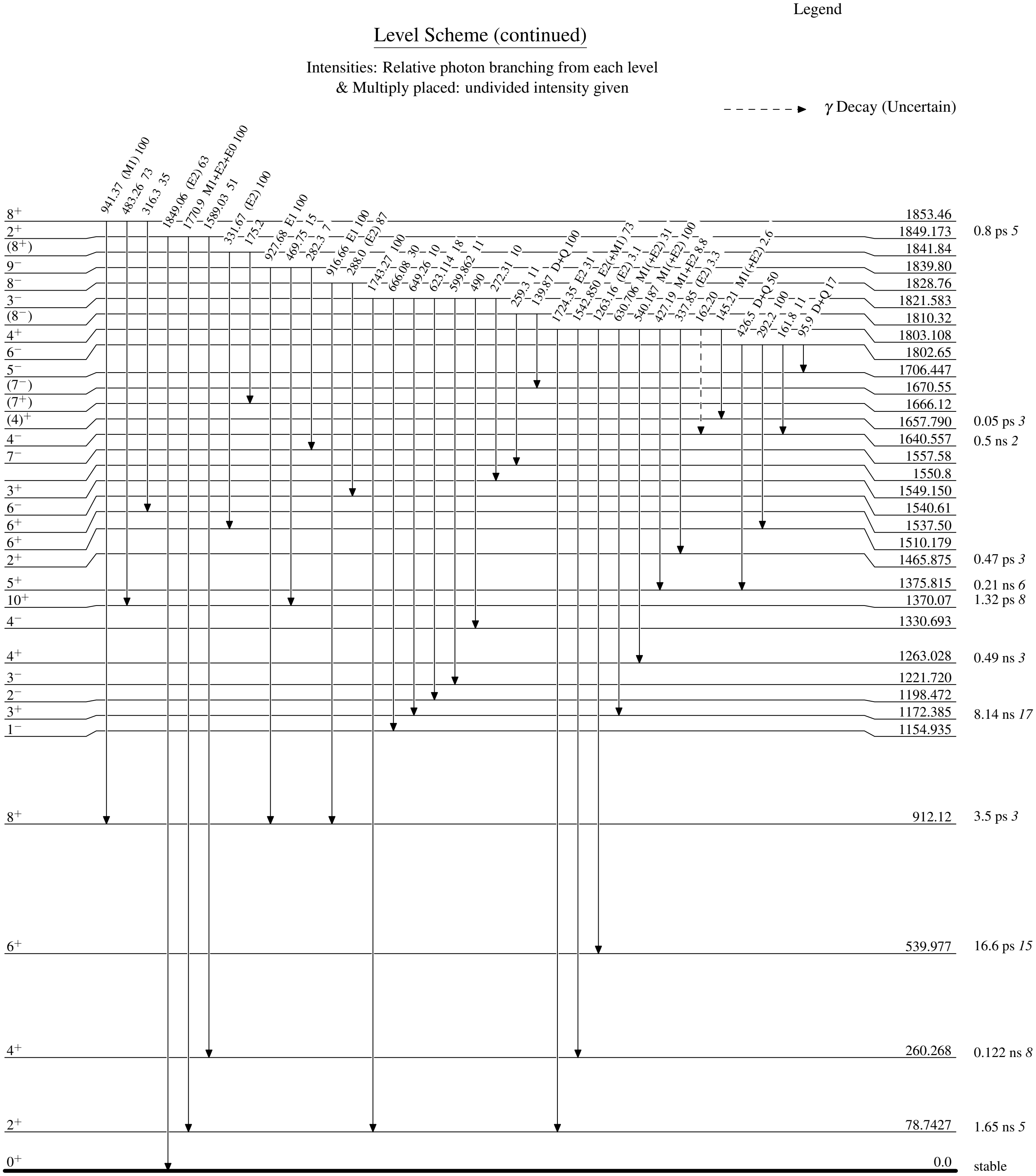
γ Decay (Uncertain)



Adopted Levels, Gammas

Level Scheme (continued)

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



$^{172}_{70}Yb_{102}$

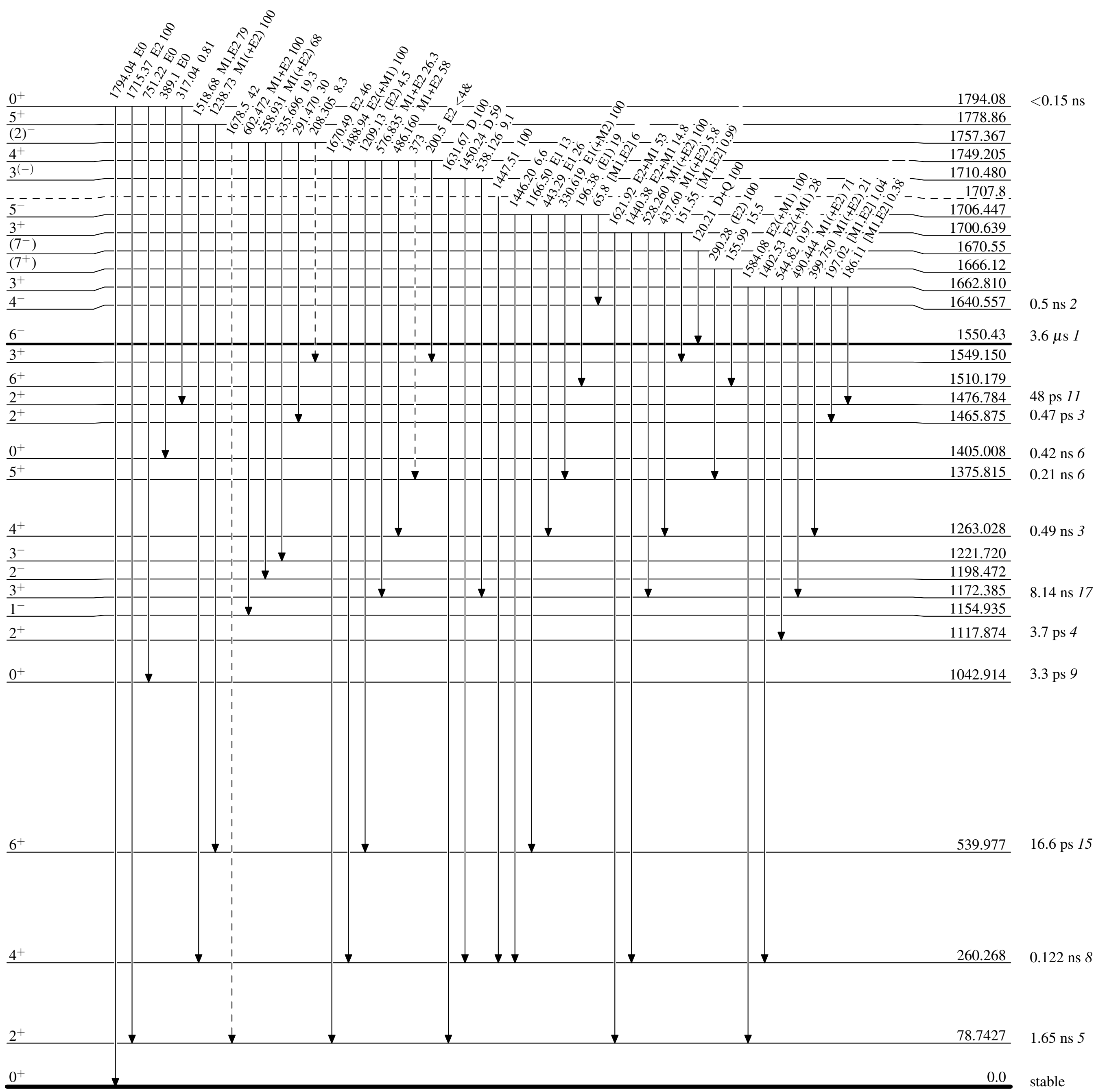
Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

γ Decay (Uncertain)



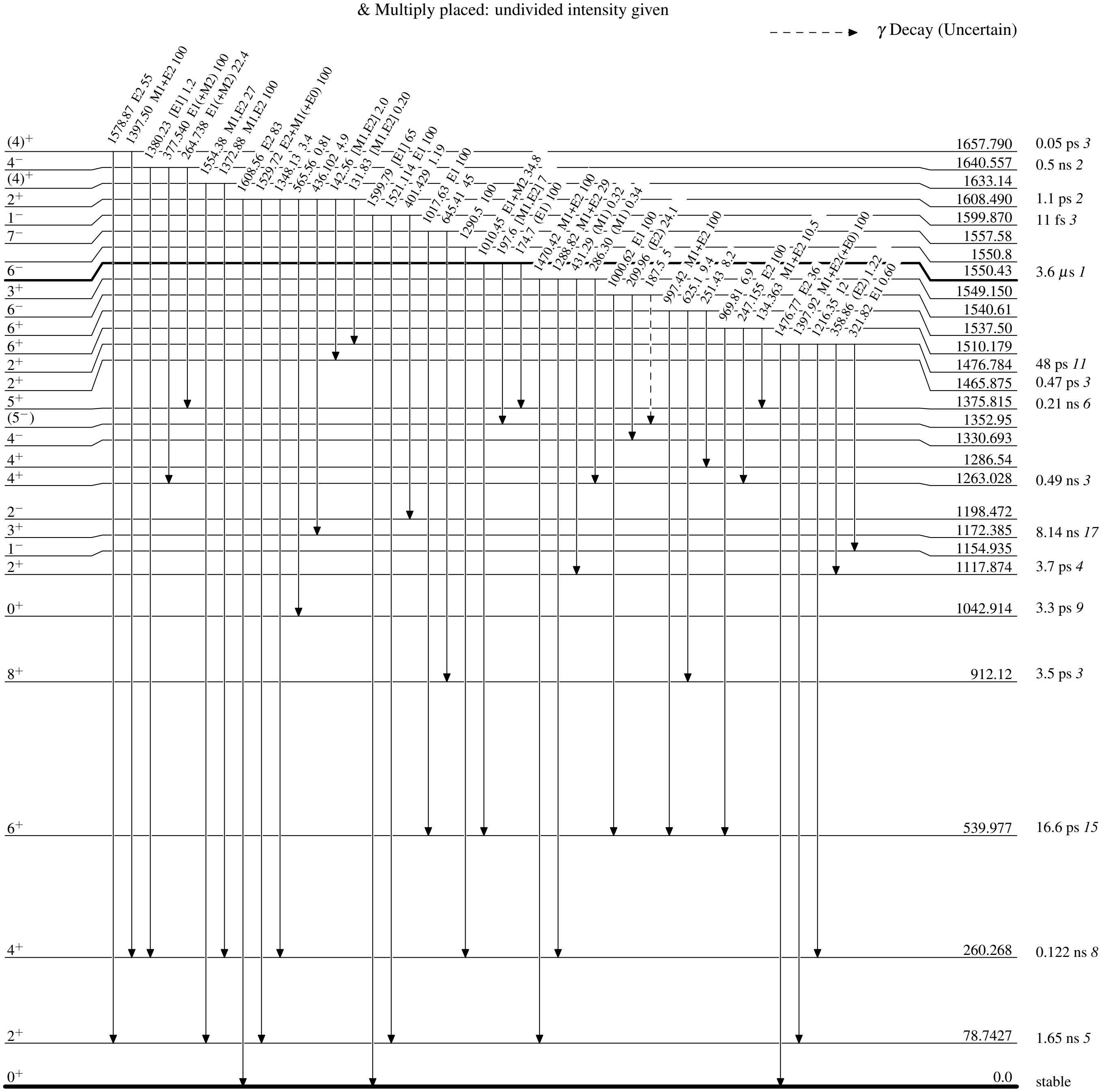
$^{172}_{70}Yb_{102}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

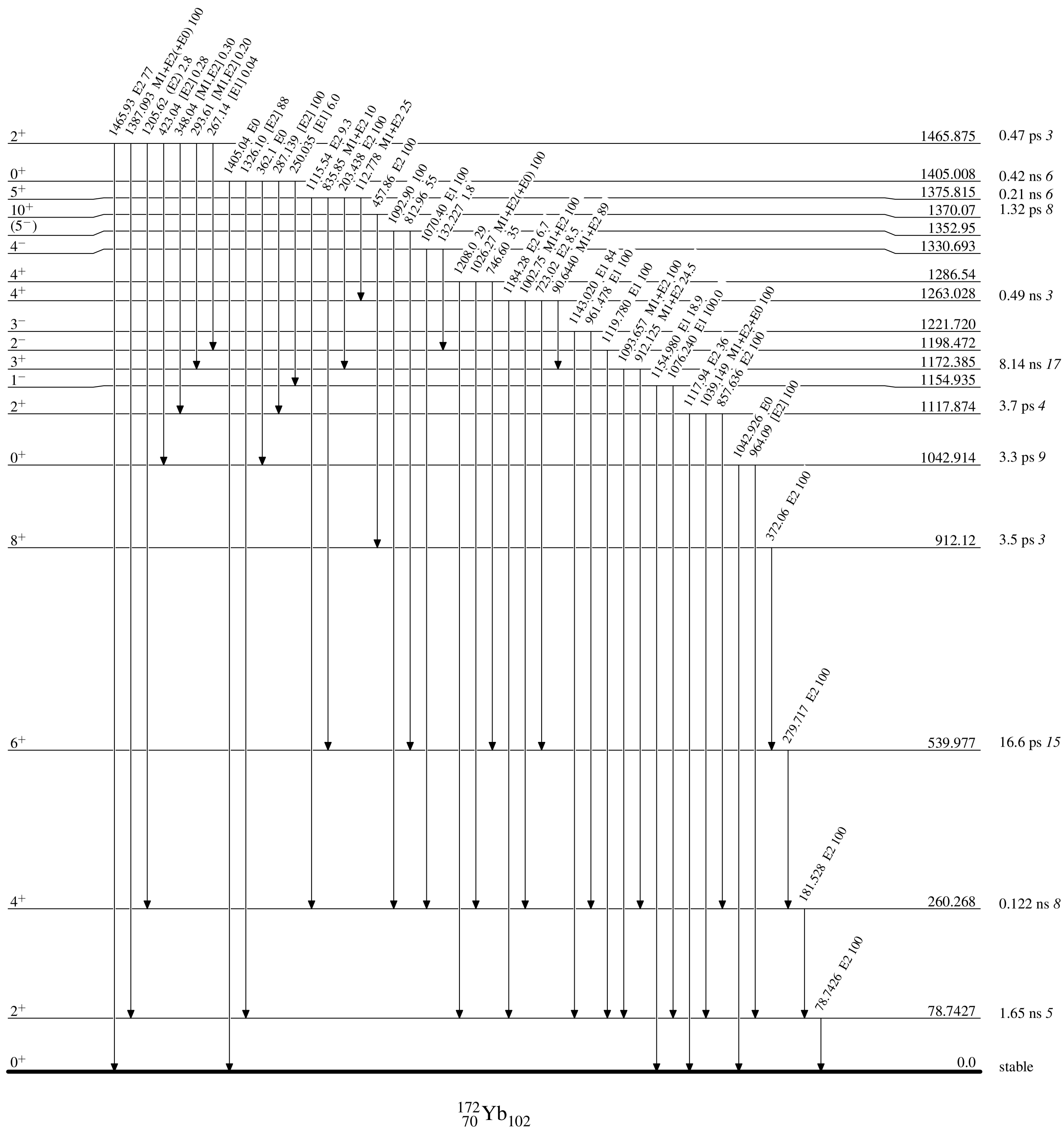


$^{172}_{70}Yb_{102}$

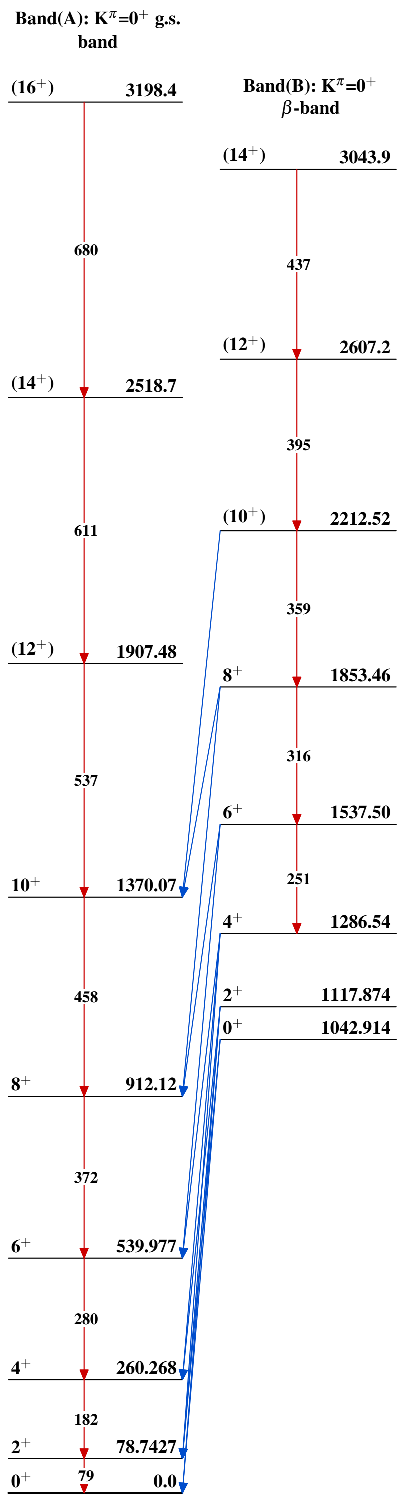
Adopted Levels, Gammas

Level Scheme (continued)

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

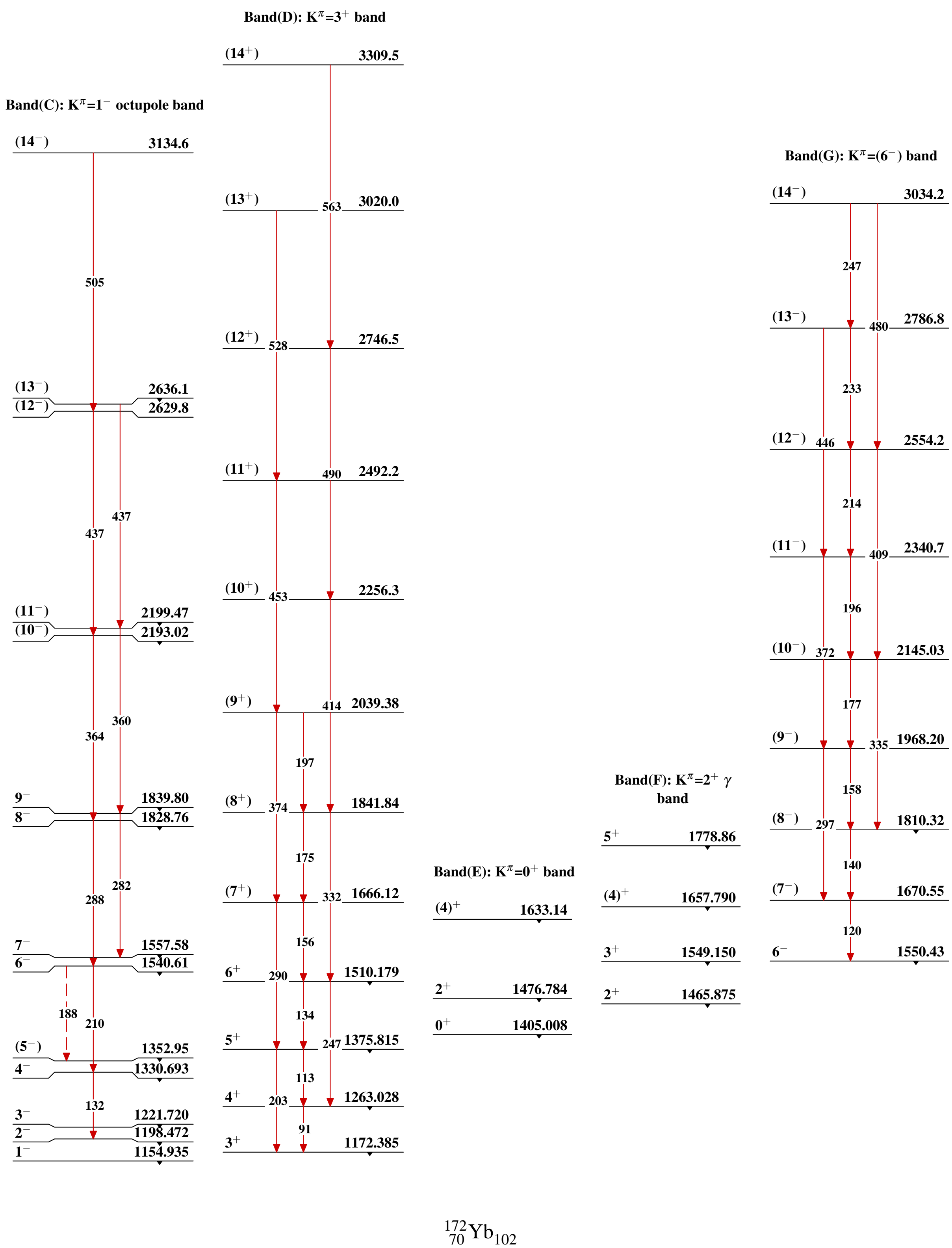


Adopted Levels, Gammas

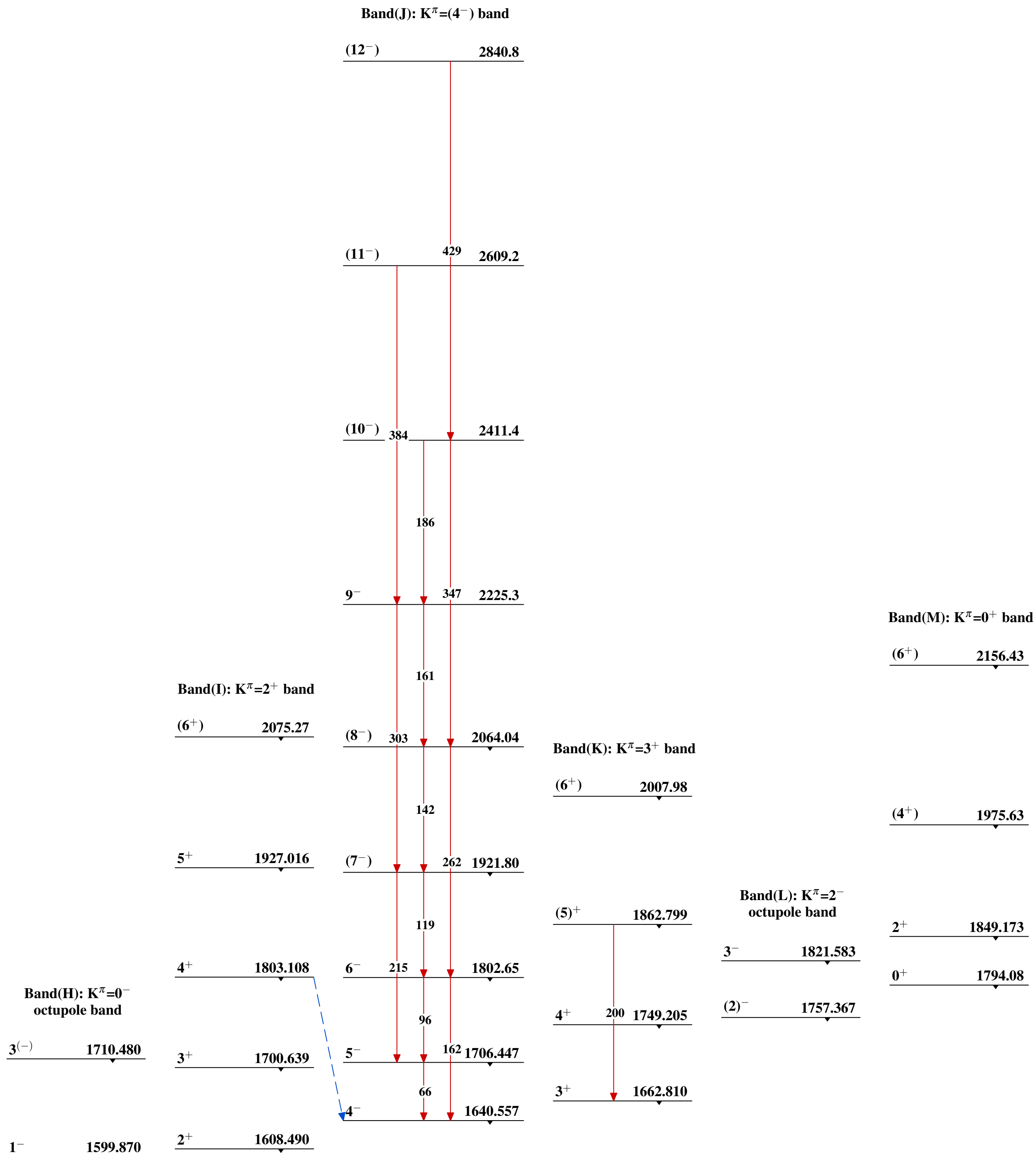


$^{172}_{70}Yb_{102}$

Adopted Levels, Gammas (continued)

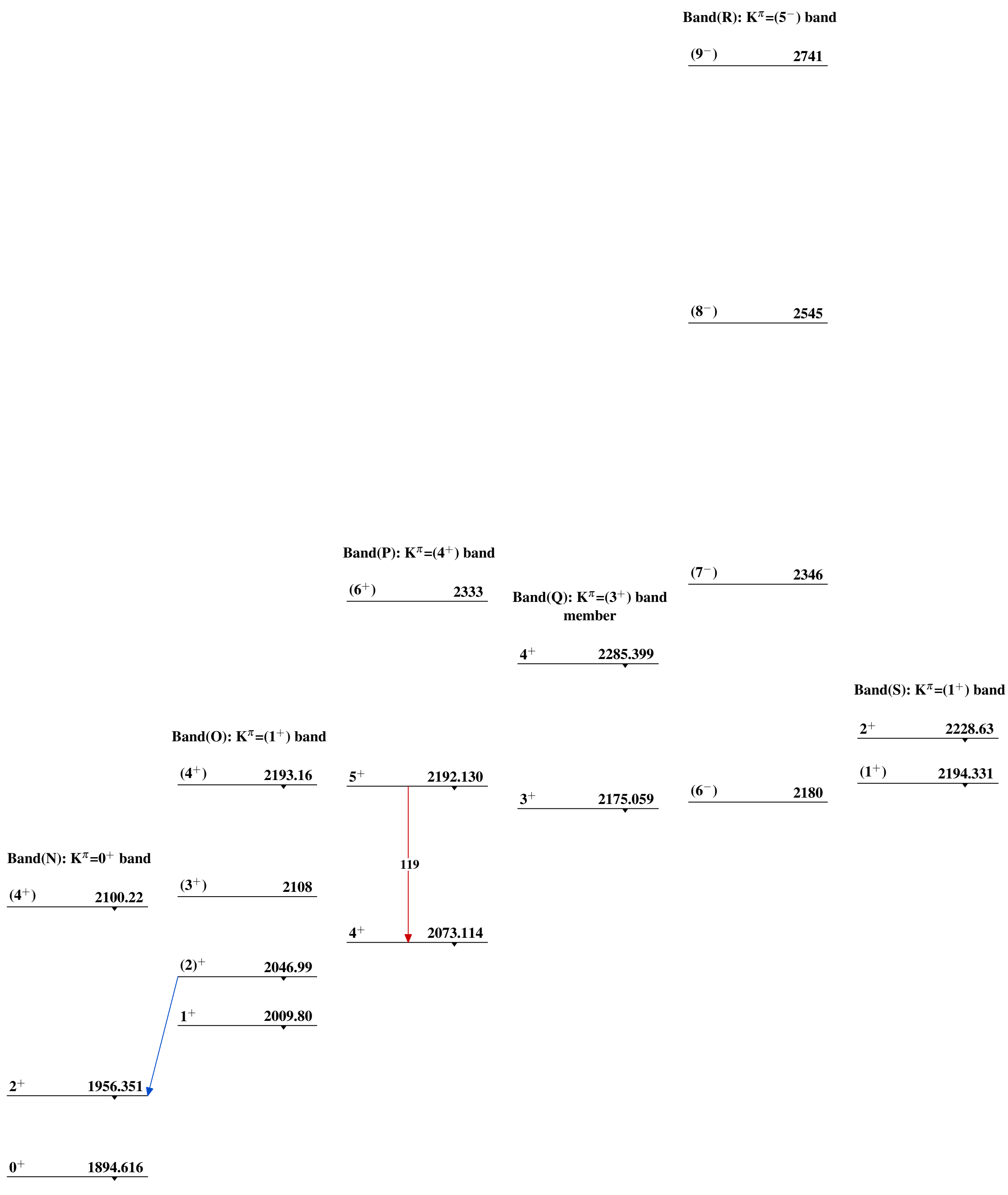


Adopted Levels, Gammas (continued)



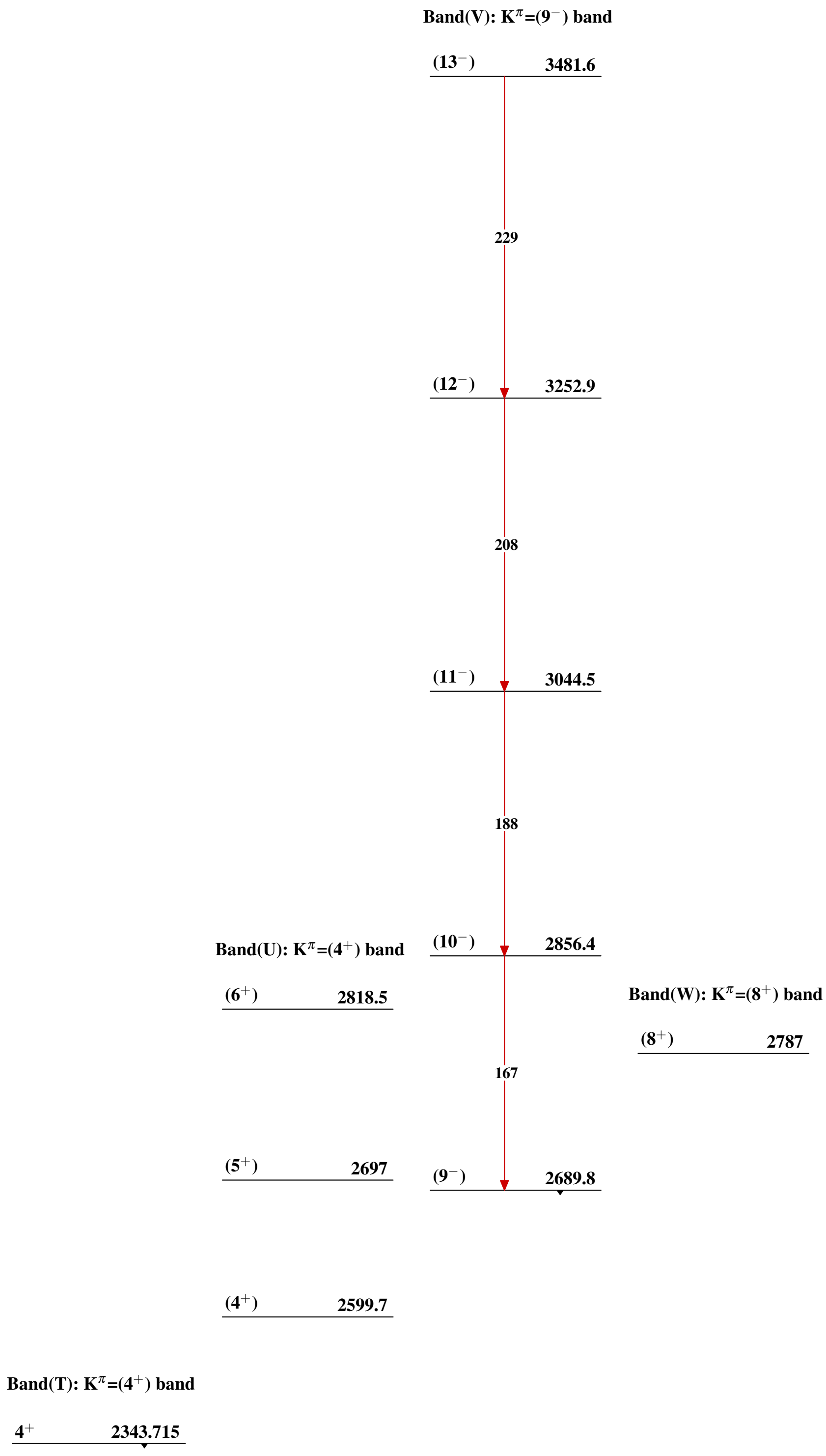
$^{172}_{70}Yb_{102}$

Adopted Levels, Gammas (continued)



$^{172}_{70}Yb_{102}$

Adopted Levels, Gammas (continued)



$^{172}_{70}Yb_{102}$

Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, Huo Junde	NDS 87,15 (1999)	1-Nov-1998

Q(β^-)=−1373.4 *16*; S(n)=7464.63 *6*; S(p)=7980 *5*; Q(α)=738.6 *16* 2012Wa38

Note: Current evaluation has used the following Q record −1374.3 167464.60 *107980* 5 *740*.1 16 1995Au04.

^{174}Yb Levels

Values of the rotational parameters shown for each band were obtained from least-squares fits to the adopted experimental energies. See 1981Gr01 for additional rotational parameters.

Cross Reference (XREF) Flags

A	^{173}Yb(n,γ) E=thermal	G	^{174}Lu ε decay (3.31 y)	M	^{174}Yb(pol p,p), (pol p,p′)
B	^{173}Yb(n,γ) E=2 keV	H	^{174}Lu ε decay (142 d)	N	^{173}Yb(d,p),(d,pγ)
C	^{173}Yb(n,γ) E=4.53 eV	I	Coulomb excitation	O	^{174}Yb(e,e), (e,e′)
D	^{173}Yb(n,γ) E=4.51-307.1 eV	J	^{174}Yb(d,d′)	P	^{174}Yb(γ,γ′)
E	^{174}Yb(n,n′γ)	K	^{176}Yb(p,t) E=19 MeV	Q	^{172}Yb(t,p) E=15 MeV
F	^{174}Tm β^- decay	L	^{174}Yb(p,p), (p,p′)	R	^{175}Lu(t,α)

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$	XREF	Comments
0.0[#]	0$^+$	stable	ABCDEFGHIJKLMNO QR	Isotope shifts: 1994Ma57, 1991Ma48, 1991Ki14, 1991Ji06, 1990Bi08, 1992Ku21.
76.471[#] *1*	2$^+$	1.79 ns *4*	ABCDEFGHIJKLMN R	μ=+0.676 *8* Q=2.12 *25* J$^\pi$: 76.471 E2 γ to 0$^+$. T$_{1/2}$: weighted average of: 1.74 ns *9*, γ ce(L)(t) (1966Fu03); 1.8 ns *1*, $\gamma\gamma$(t) (1966Ja16); 1.80 ns *5*, pγ(t) in Coul. ex. (1966Ti01); 1.91 ns *21*, $\alpha\gamma$(t) in Coul. ex. (1962Bi05); 1.87 ns *12* (from B(E2),1963Bj04); 1.74 ns *5* (from B(E2),1974Sh12,1975Wo08). μ: Mossbauer (1971He03,1989Ra17). Other value: 0.679 *16* (1968Mu01), relative to μ(^{170}Yb,84)=0.675 *12*. Q: Mossbauer (1971He03,1971Pl03,1989Ra17). Deduced using Q(^{170}Yb,84)=2.12 *36*.
253.117[#] *2*	4$^+$	144 ps *4*	ABCDEFGHIJKLMN QR	Q=−1.8 *12* T$_{1/2}$: from 1977Si15, recoil distance, Coul. ex. J$^\pi$: L=4 in (t,p). Q: Coulomb excitation reorientation (1970McZQ,1989Ra17).
526.034[#] *9*	6$^+$	16 ps *2*	ABC EF HIJKLMN QR	T$_{1/2}$: weighted average of: 16.3 ps *24* (1977Si15) and 14 ps *4* (1976Wa06), recoil distance in Coulomb excitation. J$^\pi$: 273γ E2 to 4$^+$.
889.93[#] *5*	8$^+$	3.8 ps *2*	A EF HI K Q	T$_{1/2}$: weighted average of: 3.7 ps *2* (1977Si15), 3.6 ps *5* (1976Wa06), recoil distance in Coul. ex., and 4.0 ps *3* (1977Ke06,1974Ke04), Doppler broadening in Coul. ex. J$^\pi$: populated in Coul. ex.
1318.361[@] *6*	2$^-$	0.491 ns *13*	ABC EFG K Q	T$_{1/2}$: weighted average of 0.51 ns *3*, $\gamma\gamma$(t), ^{174}Lu ε decay (1972MaZS,1973ScYS) and 0.486 ns *15*, $\gamma\gamma$(t), ^{173}Yb(n,γ) E=thermal (1974Lo13). J$^\pi$: 1318.3 M2 γ to 0$^+$. γ ray reduced transition probability ratios of transitions deexciting this level are consistent with

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{174}Yb Levels (continued)

E(level)[†]	Jπ[‡]	T$_{1/2}$	XREF	Comments
				Alaga's rule for JK^{π}=22$^-$ assignment. See ^{174}Lu ε decay (3.31 y).
1336[#] *1*	10$^+$	1.6 ps *1*	I	E(level): from Coul. ex. T$_{1/2}$: weighted average. See Coul. ex. J$^{\pi}$: populated in Coul. ex.
1348 *3*			J	
1382.013[@] *6*	3$^-$		ABC EF IJK Q	J$^{\pi}$: 1129γ E1 to 2$^+$, 1305γ E1 to 4$^+$.
1468.195[@] *6*	(4)$^-$		ABC EF	J$^{\pi}$: population by capture γ ray in (n,γ), E=2 keV indicates J^{π}=1$^-$, 4$^-$. 1215.0γ E1 to 4$^+$.
1487.12[&] *3*	0$^+$	1.3 ps *6*	A E I K Q	J$^{\pi}$: L=0 in (p,t) and (t,p). T$_{1/2}$: from Coul. ex.
1518.148[d] *13*	6$^+$	830 μs *40*	ABC EF H K N Q	%IT=100 T$_{1/2}$: weighted average of 850 μs *80*, $\gamma\gamma$(t) in ^{174}Tm β^- decay (1964Ka15), and 820 μs *50*, $\gamma\gamma$(t) in ^{173}Yb(d,pγ) (1967Bo08). J$^{\pi}$: 992.1 (M1+E2) γ to 6$^+$, 1265.2γ to 4$^+$, 628.3γ to 8$^+$, $\gamma\gamma(\theta)$ in ^{174}Lu ε decay (142 d).
1561.021[&] *20*	(2)$^+$		ABCDE K Q	J$^{\pi}$: population by capture γ ray in (n,γ), E=2 keV indicates J^{π}=2$^+$, 3$^+$. 1484γ M1+E2 to 2$^+$.
1572.126[@] *10*	(5$^-$)		A C EF N	XREF: N(1559). J$^{\pi}$: (d,p) strength consistent with configuration assignment ν 9/2[624]-ν 5/2[512]. The K^{π}=2$^-$ octupole vibrational band is expected to have a large component of this configuration.
1606.358[a] *6*	(3)$^+$		AB DEF K R	J$^{\pi}$: population by capture γ ray in (n,γ), E=2 keV indicates J^{π}=2$^+$, 3$^+$. 288γ E1 to 2$^-$. γ ray reduced transition probability ratio to 1318.32(2$^-$) and 1381.98(3$^-$) members of K^{π}=2$^-$ octupole vibrational band is consistent with Alaga's rule for JK^{π}=33$^+$ assignment. B(E1)(288γ)/B(E1)(224γ) exp.: 1.9 *2*, theoretical value: 2.8.
1624.40[b] *3*	(1)$^+$		AB DE	J$^{\pi}$: population by capture γ ray in (n,γ), E=2 keV indicates J^{π}=1$^+$, 4$^+$. 1624.3γ to 0$^+$.
1633.973[c] *7*	(2)$^+$	0.20 ps *3*	ABCDE IJK N	J$^{\pi}$: L=(2) in (p,t). Population by capture γ ray in (n,γ), E=2 keV indicates J^{π}=2$^+$, 3$^+$. 1634.2γ to 0$^+$, 1557.5γ E2 to 2$^+$. T$_{1/2}$: from Coul. ex.
1671.216[d] *14*	(7$^+$)		A F k n	XREF: k(1676)n(1667). E(level): from ^{174}Tm β^- decay. J$^{\pi}$: 153.1γ to (6$^+$).
1674.82[b] *3*	2$^+$		AB DE k n	XREF: k(1676)n(1667). J$^{\pi}$: 1674.8γ E2 to 0$^+$.
1701.68[a] *10*	4$^+$		AB DEF JK R	J$^{\pi}$: population by capture γ ray in (n,γ), E=2 keV indicates J^{π}=1$^+$, 4$^+$. 319.5γ E1 to 3$^-$. γ-decay reduced transition probability ratio to 1381.98(3$^-$) and 1468.15 (4$^-$) members of K^{π}=2$^-$ octupole vibrational band is consistent with Alaga's rule for JK^{π}=43$^+$ assignment, B(E1)(319γ)/B(E1)(233γ) exp: 1.6 *2* (theoretical value: 1.66).
1709.42[c] *6*	(3)$^+$		ABCDE N	XREF: N(1702). J$^{\pi}$: population by capture γ ray in (n,γ), E=2 keV indicates J^{π}=2$^+$, 3$^+$. 1456.2γ E2 to 4$^+$.
1710.859[e] *50*	(1$^-$)	7.6[s] fs *20*	A P	J$^{\pi}$: γ ray reduced transition probability ratio to 0.0(0$^+$) and 76.470(2$^+$) levels is consistent with Alaga's rule for JK^{π}=11$^-$ assignment, B(E1)(1710γ)/B(E1)(1634γ) exp: 0.64 *15*, (theoretical value: 0.50).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{174}Yb Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$	XREF	Comments
1715.449[&] *27*	4^+		ABCDE K N Q	XREF: K(1712)N(1723). J^{π}: population by capture γ ray in (n,γ), E=2 keV indicates $J^{\pi}=1^+$, 4^+. 1462.3γ E2 to 4^+.
1733.64[b] *1*	$(3)^+$		AB DE	J^{π}: population by capture γ ray in (n,γ), E=2 keV indicates $J^{\pi}=2^+$, 3^+. 1657.3γ E2 to 2^+.
1760 *6*			B J	
1785.90[e] *4*	3^-		AB JK	J^{π}: population by capture γ ray in (n,γ), E=2 keV indicates $J^{\pi}=2^-$, 3^-. 1532.8γ E1 to 4^+. γ ray reduced transition probability ratio to 76.470(2^+) and 253.123(4^+) levels is consistent with Alaga's rule for $JK^{\pi}=31^-$ assignment, B(E1)(1709γ)/B(E1)(1533γ) exp: 0.65 *9* (theoretical value: 0.75).
1805.40[c] *15*	4^+		ABCDE JK N q	XREF: q(1812). J^{π}: population by capture γ ray in (n,γ), E=2 keV indicates $J^{\pi}=1^+$, 4^+. 1552.1γ E2 to 4^+.
1819.817[a] *7*	(5^+)		A E qR	XREF: q(1812). J^{π}: γ ray reduced transition probability ratio to 1468.15 (4^-) and 1572.06 (5^-) is consistent with Alaga's rule for $JK^{\pi}=53^+$ assignment, B(E1)(351γ)/B(E1)(248γ) exp.: 2.4 *5* (theoretical value: 1.25).
1851.408[f] *10*	$(3)^-$		AB Jk N q	XREF: k(1852)N(1841)q(1855). J^{π}: population by capture γ ray in (n,γ), E=2 keV indicates $J^{\pi}=2^-$,3^-. 1598.3γ to 4^+.
1859.232[b] *25*	(4^+)		AB DE k q	XREF: k(1852)q(1855). J^{π}: population by capture γ ray in (n,γ), E=2 keV indicates $J^{\pi}=1^+$, 4^+.
1861[#] *2*	(12^+)	0.66 ps *4*	I	E(level): from Coul. ex. $T_{1/2}$: from 1977Ke06, 1974Ke04, Doppler broadening, Coul. ex. J^{π}: populated in Coul. ex.
1876 *6*			N	
1884.674[i] *14*	$(5)^-$		A EF Q	E(level): from ^{174}Tm β^- decay. J^{π}: 366.5 E1 γ to 6^+, 1631.5γ to 4^+.
1886.0[g] *2*	0^+		C E K	J^{π}: L=0 in (p,t).
1913 *2*			R	
1926[c]	(5^+)		N	J^{π}: strength in (d,p) consistent with $JK^{\pi}=52^+$ assignment.
1933.951 *25*			AB E R	
1949.696[f] *6*	(4^-)		AB N	J^{π}: 567.7γ to 3^-, 343.3γ to $(3)^+$, 248.1γ to 4^+.
1958.52[g] *3*	(2^+)		ABCDE K Q	J^{π}: population by capture γ ray in (n,γ), E=2 keV indicates $J^{\pi}=2^+$, 3^+.
1959[a] *2*	(6^+)		R	
2016.126 *20*	3^+		AB DE	J^{π}: population by capture γ ray in (n,γ), E=2 keV indicates $J^{\pi}=2^+$, 3^+. 314.5γ M1 to 4^+.
2019 *2*			R	L=2 in (t,α).
2020.622[i] *50*	(6^-)		A F	E(level): from ^{174}Tm β^- decay. J^{π}: 136.0γ to (5^-), 349.3γ to (7^+), 502.4γ to (6^+).
2037	1		P	
2038.83 *3*			A N	
2049.967 *9*	$(3)^-$		AB EF	J^{π}: population by capture γ ray in (n,γ), E=2 keV indicates $J^{\pi}=2^-$, 3^-. 347.6γ to (4^+).
2068.984 *60*	$(1)^+$		AB DE K PQ	J^{π}: population by capture γ ray in (n,γ), E=2 keV indicates $J^{\pi}=1^+$, 4^+. 1992.3γ to 2^-.
2088.46 *18*	$(4)^-$		AB F N R	J^{π}: population by capture γ ray in (n,γ), E=2 keV indicates $J^{\pi}=1^-$, 2^-, 3^-, 4^-. 268.9γ to (5^+).
2101.209 *23*			ABCDE q	XREF: q(2099).

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Adopted Levels, Gammas (continued)

^{174}Yb Levels (continued)

E(level)[†]	Jπ[‡]	XREF	Comments
			Jπ: population by capture γ ray in (n,γ), E=2 keV indicates $J^\pi=1^+$, 4^+. Population in ^{173}Yb(n,γ) E=4.51-307.1 eV suggests $J^\pi=2^+$, 3^+. $J^\pi=(4^+)$ assigned in ^{174}Yb(n,n′γ). $J^\pi=(1^-,2^-,3^-)$ from 2024.8γ (E1) to 2^+.
2111.876 *14*		AB D R	XREF: R(2114). Jπ: population by capture γ ray in (n,γ), E=2 keV indicates $J^\pi=2^-$, 3^-. Possibly not consistent with 292γ to (5^+).
2113.9[h] *4*	0^+	E K q	XREF: q(2099). Jπ: L=0 in (p,t).
2123.04[g] *10*	$(4)^+$	ABCDE K	Jπ: 1869.9γ E2 to 4^+.
2150 *6*		N	
2160.918[m] *10*	4^+	A D R	XREF: D(2161.1)R(2163). Jπ: L=2 in (t,α). $J^\pi=1^-$, 2^-, 3^-, 4^-. Population in ^{173}Yb(n,γ) E=4.51-307.1 eV suggests $J^\pi=(2^+,3^+,4)$. 341.1γ to (5^+).
2163.144 *11*	(2^+)	AB D	XREF: D(2163.3). Jπ: population by capture γ ray in (n,γ), E=2 keV indicates $J^\pi=2^+$, 3^+. 2163.6γ to 0^+.
2171.982[h] *26*	(2^+)	ABCDE JK	Jπ: population by capture γ ray in (n,γ), E=2 keV indicates $J^\pi=2^+$, 3^+.
2186.864 *26*		A	
2189		N	
2191.6 *10*		B R	
2198.6 *3*	(1^-)	B	Jπ: population by capture γ ray in (n,γ), E=2 keV indicates $J^\pi=1^-$ to 4^-. 2198.5γ to 0^+.
2213		N	
2230	(3^+)[p]	J R	
2237.715 *19*	$(1^+,2^+)$	AB D N	Jπ: population by capture γ ray in (n,γ), E=2 keV indicates $J^\pi=1^+$, 2^+, 3^+, 4^+. 750.6γ to 0^+.
2246.825 *15*	$(2^+,3^+)$	AB D K	Jπ: population by capture γ ray in (n,γ), E=2 keV indicates $J^\pi=2^+$, 3^+.
2256.416 *8*	(3^+)	AB D R	XREF: R(2260). Jπ: population in ^{173}Yb(n,γ) E=4.51-307.1 eV suggests $J^\pi=(2^+,3^+)$. 788.3γ to $(4)^-$, 622.4γ to $(2)^+$.
2284[j]	(3^+)[p]	N	
2290[m] *2*	5^+	R	Jπ: L=2 in (t,α).
2295.773 *30*	$(2)^+$	AB D K	Jπ: population by capture γ ray in (n,γ), E=2 keV indicates $J^\pi=2^+$, 3^+. 808.3γ to 0^+, 661.8γ M1+E2 to $(2)^+$.
2320.6[r] *3*		E	
2329[l] *2*	7^-	R	Jπ: L=5 in (t,α).
2336.7 *3*	$(4^-,5)$	ABCD F	E(level): from ^{174}Tm β^- decay. Jπ: 452.2γ to (5^-), 315.8γ to (6^-), populated by β^- with log *ft*=6.3 from $(4)^-$.
2336.876[h] *7*	(4^+)	A F K N	Jπ: populated by capture γ ray in (n,γ), E=2 keV.
2338	1	P	Jπ: D γ to 0^+.
2341.502 *17*	$1,2^+$	A	Jπ: 854.5γ to 0^+.
2350.3[r] *2*		E	
2361.838 *10*		AB E	
2370[j]	(4^+)	N	
2377.9[r] *2*		E K	
2378.7 *2*	$(5)^-$	A F	E(level): from ^{174}Tm β^- decay. Jπ: log *ft*=4.6 from ^{174}Tm ($J^\pi=(4)^-$) β^- decay. 494.1 M1 γ to $(5)^-$, 860.7γ to 6^+. Probable configuration=(π 1/2[411])+(π 9/2[514]).
2384.056 *25*	(4^+)	AB	Jπ: 88.2γ to 2^+, 578.6γ to 4^+, 866.0γ to 6^+.
2403.332 *13*		AB N	
2408 *3*		R	
2434[k] *3*	5^+	R	Jπ: L=2 in (t,α).
2436.4[r] *3*		b E k	XREF: b(2437.2)k(2436).

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Adopted Levels, Gammas (continued)

^{174}Yb Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$	XREF	Comments
2438.165 *10*	(4^+)		Ab k	XREF: b(2437.2)k(2436). J^{π}: 866.0γ to (5^-), 763.2γ to 2^+.
2450			N	
2457[#] *3*	(14^+)	0.4 ps *1*	I	$T_{1/2}$: from 1976Wa06, Doppler broadening, Coul. ex. J^{π}: populated in Coul. ex.
2464.965 *17*	$(2^+,3^+)$		AB K	J^{π}: population by capture γ ray in (n,γ), E=2 keV indicates $J^{\pi}=2^+, 3^+$.
2482[j]	(5^+)		N	
2496[l] *4*	8^-		R	J^{π}: L=5 in (t,α).
2500	1		P	J^{π}: D γ to 0^+.
2501.3 *5*	$(2^-,3^-)$		AB	J^{π}: population by capture γ ray in (n,γ), E=2 keV indicates $J^{\pi}=2^-, 3^-$.
2514.3 *7*			AB	
2519.7 *7*			AB K R	XREF: K(2520)R(2521).
2527.4 *7*			AB	
2540.8 *1*			AB	
2549.1 *11*			A R	XREF: R(2546).
2558 *5*			K	
2572[k] *3*	(6^+)		R	J^{π}: L=2 in (t,α).
2581.4 *4*	1[q]		A P	J^{π}: from ^{174}Yb(γ,γ′).
2583.1[o] *7*			B	
2588.2 *4*	$(2^+,3^+)$		AB K	XREF: K(2588). J^{π}: population by capture γ ray in (n,γ), E=2 keV indicates $J^{\pi}=2^+, 3^+$.
2601.2[r] *2*			AB E	
2623.3 *5*	$(2^+,3^+)$		AB K	J^{π}: population by capture γ ray in (n,γ), E=2 keV indicates $J^{\pi}=2^+, 3^+$.
2642.5 *4*			AB	
2647.0[o] *7*			B	
2657.5 *5*			AB R	XREF: R(2654).
2663.1 *5*			AB K	XREF: K(2662).
2680.3 *4*			AB	
2683[l] *3*	9^-		R	J^{π}: L=5 in (t,α).
2705.3 *5*			AB	
2712.4 *4*			AB k	XREF: k(2720).
2728.1[no] *10*	2^+		B k	XREF: k(2720). J^{π}: L=2 in (t,α).
2732.3 *4*			A	
2749.4 *5*			AB	
2753 *5*			K	
2761 *3*			R	
2767.9 *6*			A	
2784.0 *6*			AB	
2793.1[n] *4*	3^+		A R	XREF: R(2791). J^{π}: L=2 in (t,α).
2796.1[r] *2*			E	
2799.3 *6*			AB	
2808.8 *5*			A	
2813.8[o] *15*	1[q]		B P	J^{π}: from ^{174}Yb(γ,γ′).
2818.6 *4*			A R	
2821 *5*	(0^+)		K	J^{π}: L=(0) in (p,t).
2824.4 *5*			AB	
2839.5 *5*			A k	XREF: k(2840).
2845.4 *4*			AB k	XREF: k(2840).

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Adopted Levels, Gammas (continued)

^{174}Yb Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$	XREF	Comments
2870.1 7			A R	XREF: R(2868).
2882.8[n] 4	(4$^+$)		AB K R	Jπ: L=(2) in (t,α).
2895.4 5			AB	
2902.4 4			A R	
2904 5	(0$^+$)		K	Jπ: L=(0) in (p,t).
2909.1 5			AB	
2918.2 5	1[q]		A P	Jπ: from ^{174}Yb(γ,γ').
2944.5 4			AB	
2965.3 7			AB	
3001.7[o] 6			B K	
3009	(1$^-$)[q]	3.9[s] fs 13	P	
3009 4	(5$^+$)		R	
3014.8[o] 8			B	
3038.9 7			A K	
3049.0 7	(1$^-$)	15[s] fs 10	A P R	XREF: R(3051). Jπ: from ^{174}Yb(γ,γ').
3062.4 7			A	
3075.2 10			A	
3095.6 7			A	
3117[#] 4	(16$^+$)		I	Jπ: populated in Coul. ex.
3122.3 11	1[q]		A P	
3136.1 8			A	
3145	1[q]		P	
3153.9[o] 9			B	
3163.0 6			AB R	XREF: R(3162).
3174.6 6			A	
3184 4			R	
3210.6 7			AB	
3217.2 3			A	
3222	(1$^-$)[q]	3.9[s] fs 19	P	
3236.3 6			AB	
3244 3			R	
3250.8[o] 8			B	
3268.0 7			AB	
3283.8[o] 9			B	
3294.2[o] 8			B	
3300.0[o] 8			B	
3314.9 8			AB	
3327	(1$^-$)[q]	2.8[s] fs 7	P	
3349.1 9	1$^+$		A oP	XREF: o(3350). Jπ: from excitation strength and form factor in (e,e$'$).
3352.7[o] 10			B o	XREF: o(3350).
3356.0 7			A o	XREF: o(3350).
3383.4 7			A	
3387	(1$^-$)[q]	1.8[s] fs 5	P	
3395.3 6			A	
3402.9[r] 2			E	
3410.1 6			A	
3427.0[r] 2			E	
3446.1 7			A	
3462.0 6			AB	
3477.6[o] 8			B	
3480.1 6			A	
3485	1[q]		P	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{174}Yb Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$	XREF	Comments
3491.2 *6*			A	
3519.8 *3*			A R	XREF: R(3521).
3523.6[o] *12*			B	
3527	(1⁻)[q]	1.6[s] fs *5*	P	
3534.6[o] *9*			B	
3553.4 *7*	1⁺		AB OP	XREF: P(3562). Jπ: from excitation strength and form factor in (e,e′).
3597.8 *6*			AB	
3602.8 *7*			A	
3614.5 *6*			A	
3624.0[o] *12*			B	
3648.1 *12*	(1⁻)[q]	7.8[s] fs *7*	A P	XREF: P(3647). Jπ: from ^{174}Yb(γ,γ′).
3655.8 *6*			A	
3692.2 *8*	1[q]		A P	XREF: P(3695). Jπ: from ^{174}Yb(γ,γ′).
3725.6 *6*			A	
3733.3 *6*			AB	
3757.1 *6*			A	
3772.5 *8*			AB	
3836[#] *5*	(18⁺)		I	Jπ: populated in Coul. ex.
3886.2 *7*			A	
3895.5 *6*			A	
3901.5 *6*			A	
3918.8 *6*			A	
4610[#] *7*	(20⁺)		I	Jπ: populated in Coul. ex.

† Level energies are from ^{173}Yb(n,γ) E=thermal, for levels populated by this reaction.

‡ Assignments are based on rotational band structure and γ-decay patterns. Assignments from ^{173}Yb(n,γ) E=2 keV (1981Gr01) are based on systematic trends of Iγ/Eγ^3 for various γ-ray multipolarities (note the incorrect scale of fig. 3 in 1981Gr01).

\# Band(A): Kπ=0⁺ g.s.-rotational band. Rotational parameters: A=12.76, B=−5.55. Spin members of the band used in the fit: 0 to 8.

@ Band(B): Kπ=2⁻ octupole-vibrational band. rotational parameters: A=10.43, B=5.47. Spin members of the band used in the fit: 2 to 6.

& Band(C): Kπ=0⁺ band. rotational parameters: A=12.64, B=−61.8. Spin members of the band used in the fit: 0 to 4. Populated in (p,t).

a Band(D): Kπ=(3⁺) band. probable configuration=((n,7/2[514])-(ν 1/2[521])) is consistent with experimental g−factor(K)=+(0.62 *4*) or +(0.06 *4*). Theoretical g−factor(K)=+0.184. Fast E1 γ rays to K^π=2⁻ octupole-vibrational band (which contains a large configuration=((ν 9/2[624])-(ν 5/2[512])) component) requires mixing with configuration ((ν 11/2[505])-(ν 5/2[512])).

b Band(E): Kπ=(1⁺) band. Probable configuration=(ν 5/2[512])-(ν 7/2[514]) consistent with (d,p) strengths for J=1 to 4 band members (fingerprint). Anomalous rotational spacing is probably caused by mixing with K^π=0⁺ rotational band at 1487.4.

c Band(F): Kπ=(2⁺) γ-vibrational band. Probable configuration=(ν 5/2[512])-(ν 1/2[510]) consistent with relative (d,p) strengths to J=2 to 5 band members. Absolute (d,p) strengths suggest mixing with configuration=(ν 5/2[512])-(ν 1/2[521]).

d Band(G): Kπ=(6⁺) band. Probable configuration=(ν 7/2[514])+(ν 5/2[512]) consistent with (d,p) strength to J=6 and J=(7) band members.

e Band(H): Kπ=(0⁻) octupole-vibrational band. Rotational parameter A=7.5 suggests mixing with a higher K^π=1⁻ octupole-vibrational band.

f Band(I): Kπ=(3⁻) octupole-vibrational band.

g Band(J): Kπ=(0⁺) band. Rotational parameters: A=12.25, B=−20.0. Spin members of the band used in the fit: 0 to 4. Populated in (p,t).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{174}Yb Levels (continued)

[h] Band(K): $K^{\pi}=(0^{+})$ band. Rotational parameters: A=9.1, B=105.0. Spin members of the band used in the fit: 0 to 4. Populated in (p,t).
[i] Band(L): $K^{\pi}=(5^{-})$ band. Probable configuration=(ν 1/2[521])+(ν 9/2[624]). log *ft*=4.7 from ^{174}Tm β^{-} decay and intense M1 494.4γ from 2378.7 level to the bandhead requires mixing between these states.
[j] Band(M): $K^{\pi}=(3^{+})$ band. Rotational parameters: A=9.9, B=25.0. Spin members of the band used in the fit: 3 to 5. (d,p) strengths to $J^{\pi}=3^{+}$, 4^{+}, and 5^{+} levels are consistent with ≈60% component of configuration=((ν 5/2[512])+(ν 1/2[510])).
[k] Band(N): $K^{\pi}=(5^{+})$ band.
[l] Band(O): $K^{\pi}=7^{-}$ band.
[m] Band(P): $K^{\pi}=4^{+}$ band.
[n] Band(Q): $K^{\pi}=(2^{+})$ band.
[o] From (n,γ) E=2 keV.
[p] Based on comparison between experimental and theoretical (d,p) and (d,d′) cross sections.
[q] J=1 or 2 from excitation in (γ,γ'). J=1 from Alaga branching ratio.
[r] From ^{174}Yb(n,n′γ).
[s] From ^{174}Yb(γ,γ').

Adopted Levels, Gammas (continued)

$\gamma(^{174}Yb)$

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.	δ	α[d]	Comments
76.471	2^+	76.471 *1*	100	0.0	0^+	E2		9.43	B(E2)(W.u.)=201 *7* Mult.: from ce data, ^{174}Lu ε decay.
253.117	4^+	176.645 *2*	100	76.471	2^+	E2[‡]		0.413	B(E2)(W.u.)=280 *9*
526.034	6^+	272.918 *6*	100	253.117	4^+	E2[‡]		0.0996	B(E2)(W.u.)=370 *50*
889.93	8^+	363.64 *5*	100	526.034	6^+	[E2]		0.0423	B(E2)(W.u.)=388 *21* E_γ: from ^{174}Lu(142 d) ε decay.
1318.361	2^-	1065.04[@] *8*	0.32[@] *4*	253.117	4^+	E3(+M2)	>1.64	0.0082 *11*	B(M2)(W.u.)<0.001; B(E3)(W.u.)>2.4 *4* Mult.,δ: from α(K)exp, ^{174}Lu ε decay (3.31 y).
		1241.847[@] *6*	100[@] *2*	76.471	2^+	E1+E3(+M2)	0.19 *8*		Mult.: from $\gamma\gamma(\theta)$, ^{174}Lu ε decay (3.31 y). δ: from $\gamma\gamma(\theta)$. δ(M2/E1)=0.05 *9*, δ(E3/E1)=0.19 *8* in ^{174}Lu (3.31 y) ε decay.
		1318.296[@] *10*	0.69[@] *5*	0.0	0^+	M2		0.00891	B(M2)(W.u.)=0.0033 *4* Mult.: from α(K)exp, ^{174}Lu ε decay (3.31 y).
1336	10^+	447.2[&] *10*	100	889.93	8^+	[E2]		0.0239	B(E2)(W.u.)=335 *22*
1382.013	3^-	1128.895 *14*	23.2 *22*	253.117	4^+	E1[‡]		0.00120	
		1305.553 *13*	100 *5*	76.471	2^+	E1[‡]			
1468.195	$(4)^-$	86.181[e] *2*	12[e] *4*	1382.013	3^-				
		149.832[e] *7*	16[e] *5*	1318.361	2^-				
		1215.05 *4*	100 *5*	253.117	4^+	E1[‡]		0.00106	
1487.12	0^+	1410.73 *10*	100	76.471	2^+	[E2]			B(E2)(W.u.)=1.4 +*11*−*5*
1518.148	6^+	628.37[#] *4*	3.10[#] *15*	889.93	8^+				
		992.128 *13*	100 *7*	526.034	6^+	(M1+E2)	−1.63 *20*	0.00482 *16*	B(M1)(W.u.)=7.0×10^{-12} *15* B(E2)(W.u.)=8.5×10^{-9} *11* δ: δ=−1.6 +*4*−*3* from ^{174}Yb(n,n′γ) (1986Yo08). Mult.: from α(K)exp, ^{174}Lu ε decay (142 d). δ: from $\gamma\gamma(\theta)$, ^{174}Lu ε decay (142 d).
		1265.18[#] *10*	2.52[#] *12*	253.117	4^+	[E2]			B(E2)(W.u.)=8.7×10^{-11} *9*
1561.021	$(2)^+$	1307.88 *10*	100 *6*	253.117	4^+	E2[‡]		0.00219	
		1484.54 *7*	64 *3*	76.471	2^+	M1+E2[‡]	+1.3 +*9*−*5*	0.00214 *15*	δ: from ^{174}Yb(n,γ) E=thermal. δ=+1.7 *4* from ^{174}Yb(n,n′γ) (1986Yo08).
		1561.5[g] *15*	<8.5	0.0	0^+				
1572.126	(5^-)	103.929 *7*	11.3 *25*	1468.195	$(4)^-$				
		1319.02 *15*	100 *6*	253.117	4^+	D+Q[c]	−0.03[c] *4*		E_γ: Eγ=1316.5 *10* from ^{174}Tm ε decay.
1606.358	$(3)^+$	138.170 *14*	1.1 *4*	1468.195	$(4)^-$				
		224.346 *4*	24.3 *20*	1382.013	3^-	E1[‡]		0.0414	
		287.997 *2*	100 *5*	1318.361	2^-	E1[‡]		0.0221	

$^{174}_{70}Yb_{104}$-9

Adopted Levels, Gammas (continued)

γ(^{174}Yb) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.	δ	α[d]	Comments
1606.358	$(3)^+$	1353.18 *15*	9.1 *7*	253.117	4^+				
		1529.68 *16*	18.7 *15*	76.471	2^+	D+Q[c]	[c]		
1624.40	$(1)^+$	1547.97 *10*	100 *7*	76.471	2^+	E2[‡]		0.00133	
		1624.28 *23*	50 *5*	0.0	0^+				
1633.973	$(2)^+$	1380.98 *15*	14 *5*	253.117	4^+				
		1557.49 *10*	100 *4*	76.471	2^+	E2[‡]			B(E2)(W.u.)=2.5 *5*
		1634.2[f] *3*	53[f]	0.0	0^+				I_γ: from 1981Gr01.
1671.216	(7^+)	153.074 *20*	100	1518.148	6^+				
1674.82	2^+	1598.36 *10*	100 *8*	76.471	2^+	E2[‡]			Mult.: D+Q from $\gamma(\theta)$ in ^{174}Yb(n,n′γ).
		1674.76 *10*	139 *8*	0.0	0^+	E2			
1701.68	4^+	95.212 *2*	31 *6*	1606.358	$(3)^+$	M1+E2[‡]	0.56 *18*	3.97	δ: from ^{174}Yb(n,γ) E=thermal.
		233.376[#] *5*	≈33[#]	1468.195	$(4)^-$				
		319.546 *5*	100 *8*	1382.013	3^-	E1[‡]		0.0171	
		1175.38 *10*	20.1 *19*	526.034	6^+				M1 multipolarity in ^{173}Yb(n,γ) E=thermal is not consistent with decay scheme.
		1448.46 *8*	61 *5*	253.117	4^+	M1+E2[‡]	0.5 *+5−5*	0.0028 *4*	δ: from ^{174}Yb(n,γ) E=thermal.
1709.42	$(3)^+$	1456.15 *7*	38 *4*	253.117	4^+	E2[‡]		0.00178	
		1632.92 *20*	100 *16*	76.471	2^+	D+Q[c]	−3.8[c] *+14−8*		
1710.859	(1^-)	149.832[e] *7*	≈3[e]	1561.021	$(2)^+$				
		1634.2[f] *3*	107[f]	76.471	2^+	[E1]			I_γ: from 1981Gr01.
		1710.87 *20*	100 *14*	0.0	0^+				E_γ: from ^{174}Yb(n,γ) E=thermal (1981Gr01).
1715.449	4^+	1189.44 *9*	20.9 *2*	526.034	6^+				
		1462.32 *6*	100 *6*	253.117	4^+	E2[‡]		0.00177	
		1639.4 *4*	15 *3*	76.471	2^+				
1733.64	$(3)^+$	172.64[e] *8*	1.7[e] *6*	1561.021	$(2)^+$				
		351.615[e] *6*	22[e] *4*	1382.013	3^-				
		1480.78 *7*	26 *3*	253.117	4^+	E2[‡]		0.00173	
		1657.33 *10*	100 *5*	76.471	2^+	E2[‡]			
1785.90	3^-	1532.79 *10*	100 *5*	253.117	4^+	E1[‡]			
		1709.05 *20*	91 *10*	76.471	2^+				
1805.40	4^+	1552.13 *10*	100 *7*	253.117	4^+	E2[‡]			
		1729.4 *5*	36 *4*	76.471	2^+				
1819.817	(5^+)	86.181[e] *2*	100[e] *34*	1733.64	$(3)^+$				
		118.272 *9*	53 *4*	1701.68	4^+				
		213.458[e] *4*	68[e] *9*	1606.358	$(3)^+$				
		247.675[e] *25*	19[e] *3*	1572.126	(5^-)				
		351.615[e] *6*	130[e] *17*	1468.195	$(4)^-$				

$^{174}_{70}Yb_{104}$-10

$\gamma(^{174}Yb)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.	δ	α[d]	Comments
1819.817	(5^+)	1293.64 *15*	100 *13*	526.034	6^+	D+Q[c]	−0.43[c] *4*		
1851.408	$(3)^-$	217.434 *4*	25.5 *24*	1633.973	$(2)^+$				
		245.044 *4*	100 *8*	1606.358	$(3)^+$	E1[‡]		0.0331	
		383.02[e] *8*	12[e] *5*	1468.195	$(4)^-$				
		469.398[e] *22*	9.7[e] *11*	1382.013	3^-				
		533.039 *8*	67 *5*	1318.361	2^-				
1859.232	(4^+)	341.090[e] *23*	5.6[e] *12*	1518.148	6^+				
		1333.10 *11*	17.9 *24*	526.034	6^+				
		1782.3 *3*	100 *11*	76.471	2^+				
1861	(12^+)	524.4[&] *13*	100	1336	10^+	[E2]		0.016	B(E2)(W.u.)=369 *23*
1884.674	$(5)^-$	366.526 *5*	100 *4*	1518.148	6^+	E1		0.0123	Mult.: from α(K)exp, ^{174}Tm β^- decay.
		1358.7[#] *3*	0.07[#] *3*	526.034	6^+				
		1631.5[#] *3*	0.20[#] *4*	253.117	4^+				
1886.0	0^+	1809.6 *2*	100	76.471	2^+				E_γ: from ^{174}Yb(n,n′γ) (1986Yo08).
1933.951		1681.13 *17*	100 *13*	253.117	4^+				
		1858.00 *19*	87 *7*	76.471	2^+				
1949.696	(4^-)	248.138[e] *4*	59[e] *7*	1701.68	4^+				
		343.321 *5*	100 *7*	1606.358	$(3)^+$				
		567.688 *8*	68 *6*	1382.013	3^-				
1958.52	(2^+)	172.64[e] *8*	2.8[e] *9*	1785.90	3^-				
		247.675[e] *25*	5.0[e] *8*	1710.859	(1^-)				
		1882.07 *20*	100 *8*	76.471	2^+	(E2)[‡]			
2016.126	3^+	314.546 *13*	10.1 *13*	1701.68	4^+	M1[‡]		0.142	
		409.768 *8*	100 *6*	1606.358	$(3)^+$	M1[‡]		0.0705	
		1763.5 *2*	26 *6*	253.117	4^+				From ^{174}Yb(n,n′γ) (1986Yo08).
2020.622	(6^-)	136.0[#] *5*	23[#] *10*	1884.674	$(5)^-$				
		349.421[#] *5*	65[#] *36*	1671.216	(7^+)				
		502.46 *4*	44 *11*	1518.148	6^+				
2037	1	1960[b]	64[b] *40*	76.471	2^+				
		2037[b]	100[b]	0.0	0^+	D[b]			
2038.83		233.376 *5*	1.25×10^3 *10*	1805.40	4^+				
		570.60 *9*	100 *30*	1468.195	$(4)^-$				
2049.967	$(3)^-$	198.560 *7*	100 *20*	1851.408	$(3)^-$				
		348.395[#] *8*	24[#] *12*	1701.68	4^+				
		443.60[#] *4*	100[#] *10*	1606.358	$(3)^+$				E_γ: from ^{174}Tm β^- decay.
2068.984	$(1)^+$	750.632[e] *28*	21[e] *8*	1318.361	2^-				
		1992.3 *5*	100 *10*	76.471	2^+				

$^{174}_{70}Yb_{104}$-11

γ(^{174}Yb) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.	Comments
2068.984	(1)$^+$	2068[b]	[b]	0.0	0$^+$	D[b]	
2088.46	(4)$^-$	268.944 *9*	5.1 *6*	1819.817	(5$^+$)		
		387.19[#] *4*	100[#] *18*	1701.68	4$^+$		
		482.385 *17*	42 *16*	1606.358	(3)$^+$		I_γ: from ^{174}Tm β^- decay.
2101.209		399.638 *16*	5.3 *6*	1701.68	4$^+$		
		2024.79 *14*	100 *6*	76.471	2$^+$	(E1)[‡]	
2111.876		291.977 *23*	100 *20*	1819.817	(5$^+$)		
		643.57 *5*	16 *3*	1468.195	(4)$^-$		
		793.36 *3*	59 *10*	1318.361	2$^-$		
2123.04	(4)$^+$	1869.87 *20*	100	253.117	4$^+$	E2[‡]	
2160.918	4$^+$	341.090[e] *23*	29[e] *6*	1819.817	(5$^+$)		E_γ: not seen in ^{174}Tm β^- decay. E_γ: placed by evaluator in the decay scheme.
		458.400 *15*	69 *6*	1701.68	4$^+$		
		554.56 *1*	100 *12*	1606.358	(3)$^+$		
		779.01[e] *8*	50[e] *13*	1382.013	3$^-$		
2163.144	(2$^+$)	213.458[e] *4*	13.3[e] *17*	1949.696	(4$^-$)		
		2085.9 *5*	100 *5*	76.471	2$^+$		
		2163.1 *4*	56 *8*	0.0	0$^+$		
2171.982	(2$^+$)	213.458[e] *4*	12.9[e] *16*	1958.52	(2$^+$)		
		456.4 *4*	4.8 *8*	1715.449	4$^+$		
		497.120 *21*	4.8 *8*	1674.82	2$^+$		
		1918.96 *18*	72 *6*	253.117	4$^+$		
		2095.64 *25*	100 *7*	76.471	2$^+$		
		2171.0 *2*	60 *7*	0.0	0$^+$		E_γ,I_γ: from ^{174}Yb(n,n$'\gamma$).
2186.864		718.67 *3*	39 *6*	1468.195	(4)$^-$		
		1933.66 *25*	100 *10*	253.117	4$^+$		
2198.6	(1$^-$)	2198.55 *30*	100	0.0	0$^+$		
2237.715	(1$^+$,2$^+$)	526.830 *17*	72 *8*	1710.859	(1$^-$)		
		603.290[e] *19*	45[e] *7*	1633.973	(2)$^+$		
		631.394 *18*	88 *11*	1606.358	(3)$^+$		
		676.68 *8*	100 *33*	1561.021	(2)$^+$		
		750.632[e] *28*	133[e] *67*	1487.12	0$^+$		
2246.825	(2$^+$,3$^+$)	612.841 *16*	100 *15*	1633.973	(2)$^+$		
		622.432[e] *8*	274[e] *36*	1624.40	(1)$^+$		
		685.808 *21*	85 *15*	1561.021	(2)$^+$		
2256.416	(3$^+$)	240.291[e] *7*	60[e] *7*	2016.126	3$^+$		
		547.15 *25*	79 *13*	1709.42	(3)$^+$		
		622.432[e] *8*	100[e] *13*	1633.973	(2)$^+$		
		695.46 *3*	23 *3*	1561.021	(2)$^+$		
		788.29 *4*	47 *13*	1468.195	(4)$^-$		

$\gamma(^{174}Yb)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.	δ	α[d]	Comments
2256.416	(3$^+$)	938.07 *5*	40 *7*	1318.361	2$^-$				
2295.773	(2)$^+$	172.64[e] *8*	6.8[e] *22*	2123.04	(4)$^+$				
		586.282 *13*	21.9 *24*	1709.42	(3)$^+$				
		661.758 *9*	100 *11*	1633.973	(2)$^+$	M1+E2[‡]	0.9 *+7−4*	0.0155 *21*	
		808.26 *12*	62 *19*	1487.12	0$^+$				
2320.6		2067.5[a] *3*	100[a] *10*	253.117	4$^+$				
		2244.2[a] *3*	100[a] *10*	76.471	2$^+$				
2336.7	(4$^-$,5)	315.8[#] *8*	≈30[#]	2020.622	(6$^-$)				
		452.2[#] *2*	100[#] *24*	1884.674	(5)$^-$				
2336.876	(4$^+$)	248.138[e] *4*	29[e] *4*	2088.46	(4)$^-$				
		517.048 *8*	18 *4*	1819.817	(5$^+$)				
		603.29[e] *19*	4.9[e] *7*	1733.64	(3)$^+$				
		2083.6 *2*	100 *16*	253.117	4$^+$				
2338	1	2261[b]	74[b] *20*	76.471	2$^+$				
		2338[b]	100[b]	0.0	0$^+$	D[b]			
2341.502	1,2$^+$	240.291[e] *7*	100[e] *11*	2101.209					
		383.02[e] *8*	89[e] *33*	1958.52	(2$^+$)				
		854.48 *6*	78 *22*	1487.12	0$^+$				
2350.3		2273.8[a] *3*	74[a] *11*	76.471	2$^+$				
		2350.5[a] *3*	100[a] *16*	0.0	0$^+$				
2361.838		105.421 *5*	3.3 *8*	2256.416	(3$^+$)				
		652.64 *7*	4.2 *17*	1709.42	(3)$^+$				
		2285.1 *3*	100 *17*	76.471	2$^+$				
2377.9		661.9[a] *2*	80[a] *10*	1715.449	4$^+$				
		2124.7[a] *2*	100[a] *10*	253.117	4$^+$				
2378.7	(5)$^-$	358.1[#] *2*	4.6[#] *5*	2020.622	(6$^-$)				
		494.164 *16*	100 *5*	1884.674	(5)$^-$	M1		0.0433	I_γ: from ^{174}Tm β^- decay. Mult.: from α(K)exp, ^{174}Tm β^- decay.
		860.75[#] *10*	14.2[#] *8*	1518.148	6$^+$				
2384.056	(4$^+$)	88.23 *4*	100 *20*	2295.773	(2)$^+$				
		578.605 *17*	15.6 *22*	1805.40	4$^+$				
		866.04[e] *5*	13[e] *4*	1518.148	6$^+$				
2403.332		291.662 *8*	94 *31*	2111.876					
		469.398[e] *22*	100[e] *11*	1933.951					
		779.01[e] *8*	125[e] *31*	1624.40	(1)$^+$				
2436.4		2360.0[a] *3*	79[a] *14*	76.471	2$^+$				
		2436.4[a] *4*	100[a] *21*	0.0	0$^+$				
2438.165	(4$^+$)	349.421[e#] *5*	≈30[e#]	2088.46	(4)$^-$				

γ(^{174}Yb) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.	δ	α[d]	Comments
2438.165	(4$^+$)	763.22 *6*	75 *25*	1674.82	2$^+$				
		866.04[e] *5*	75[e] *25*	1572.126	(5$^-$)				
		1056.13 *3*	100 *50*	1382.013	3$^-$				
2457	(14$^+$)	595.9[&] *17*	100	1861	(12$^+$)	[E2]		0.0117	B(E2)(W.u.)=3.2×10^2 *8*
2464.965	(2$^+$,3$^+$)	763.22 *6*	11 *4*	1701.68	4$^+$				
		2388.96 *25*	100 *21*	76.471	2$^+$				
2500	1	2423[b]	60[b] *16*	76.471	2$^+$				
		2500[b]	100[b]	0.0	0$^+$	D[b]			
2581.4	1	2504[b]	46[b] *14*	76.471	2$^+$				
		2581[b]	100[b]	0.0	0$^+$	D[b]			
2601.2		532.8[a] *2*	100[a] *4*	2068.984	(1)$^+$	D+Q[c]	+1.1[c] *3*		
		885.3[a] *2*	24[a] *6*	1715.449	4$^+$				
		2524.8[a] *3*	82[a] *12*	76.471	2$^+$				
2796.1		1094.4[a] *2*	100[a] *6*	1701.68	4$^+$				
		2719.7[a] *4*	89[a] *17*	76.471	2$^+$				
2813.8	1	2738[b]	90[b] *38*	76.471	2$^+$				
		2815[b]	100[b]	0.0	0$^+$	D[b]			
2918.2	1	2843[b]	41[b] *7*	76.471	2$^+$				
		2920[b]	100[b]	0.0	0$^+$	D[b]			
3009	(1$^-$)	2932[b]	100[b]	76.471	2$^+$	[E1]			
		3009[b]	39[b] *7*	0.0	0$^+$	D[b]			
3049.0	(1$^-$)	2973[b]	100[b]	76.471	2$^+$	[E1]			
		3050[b]	94[b] *37*	0.0	0$^+$	D[b]			
3117	(16$^+$)	660[&] *2*	100	2457	(14$^+$)				
3122.3	1	3045[b]	50[b] *27*	76.471	2$^+$				
		3122[b]	100[b]	0.0	0$^+$	D[b]			
3145	1	3068[b]	76[b] *29*	76.471	2$^+$				
		3145[b]	100[b]	0.0	0$^+$	D[b]			
3222	(1$^-$)	3145[b]	100[b]	76.471	2$^+$	[E1]			
		3222[b]	54[b] *15*	0.0	0$^+$	D[b]			
3327	(1$^-$)	3250[b]	100[b]	76.471	2$^+$	[E1]			
		3327[b]	88[b] *11*	0.0	0$^+$	D[b]			
3349.1	1$^+$	3272[b]	58[b] *18*	76.471	2$^+$				
		3349[b]	100[b]	0.0	0$^+$	D[b]			

$^{174}_{70}$Yb$_{104}$-14

Adopted Levels, Gammas (continued)

γ(^{174}Yb) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.	E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.
3387	(1⁻)	3310[b]	100[b]	76.471	2⁺	[E1]	3527	(1⁻)	3527[b]	57[b] *8*	0.0	0⁺	D[b]
		3387[b]	47[b] *7*	0.0	0⁺	D[b]	3553.4	1⁺	3485[b]	47[b] *8*	76.471	2⁺	
3402.9		1934.5[a] *3*	33[a] *6*	1468.195	(4)⁻				3562[b]	100[b]	0.0	0⁺	D[b]
		2084.6[a] *2*	100[a] *8*	1318.361	2⁻		3648.1	(1⁻)	3571[b]	100[b]	76.471	2⁺	[E1]
3427.0		1711.0[a] *1*	100[a] *2*	1715.449	4⁺				3647[b]	83[b] *48*	0.0	0⁺	D[b]
		2044.7[a] *4*	13[a] *3*	1382.013	3⁻		3692.2	1	3619[b]	48[b] *16*	76.471	2⁺	
3485	1	3409[b]	68[b] *18*	76.471	2⁺				3695[b]	100[b]	0.0	0⁺	D[b]
		3485[b]	100[b]	0.0	0⁺	D[b]	3836	(18⁺)	719[&] *3*	100	3117	(16⁺)	
3527	(1⁻)	3451[b]	100[b]	76.471	2⁺	[E1]	4610	(20⁺)	774[&] *5*	100	3836	(18⁺)	

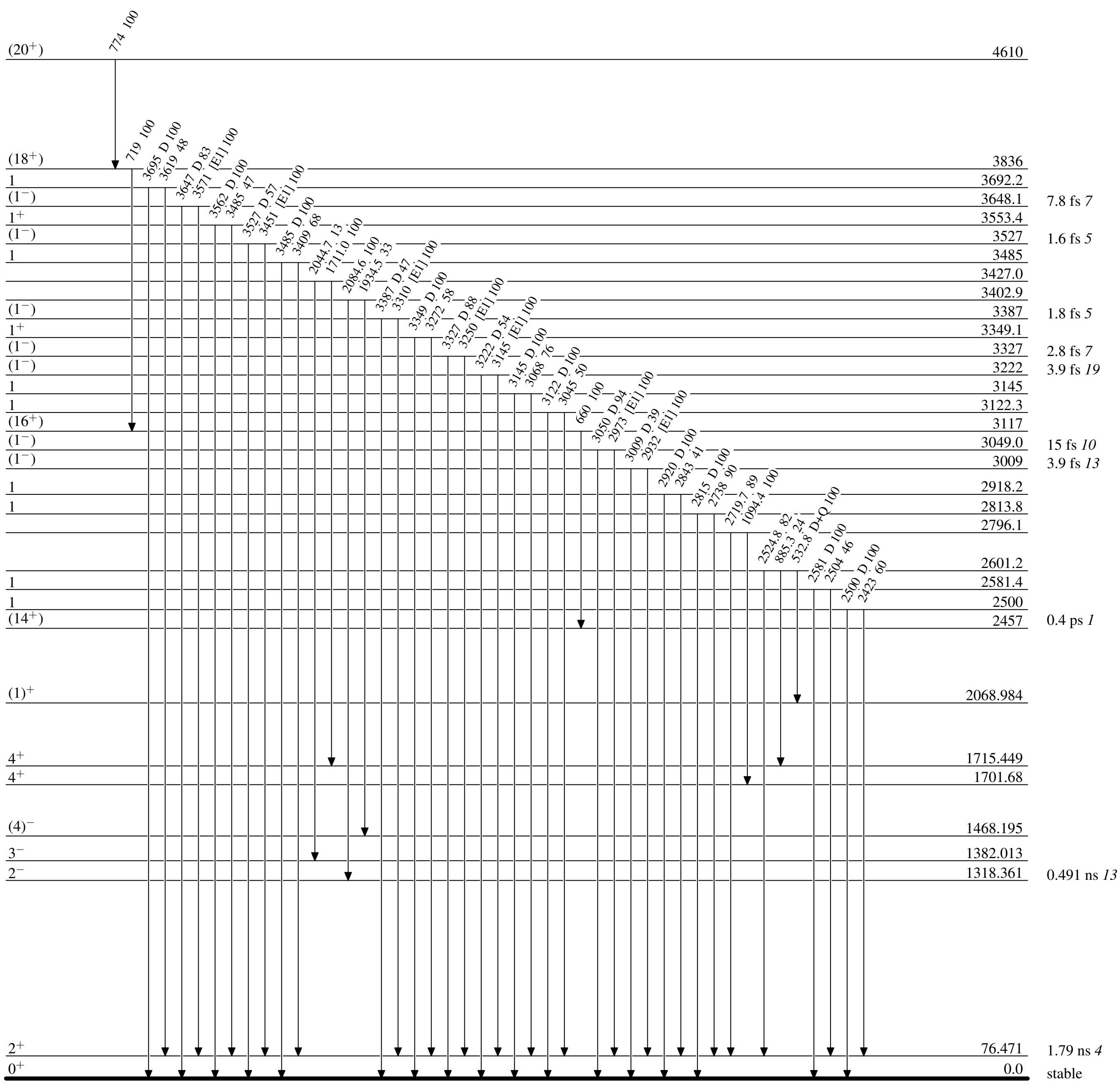
[†] From (n,γ), E=thermal, unless otherwise specified.
[‡] From ^{173}Yb(n,γ) E=thermal.
[#] From ^{174}Tm β^- decay.
[@] From ^{174}Lu ε decay (3.31 y).
[&] From Coulomb excitation.
[a] From ^{174}Yb(n,n′γ).
[b] From ^{174}Yb(γ,γ').
[c] From $\gamma(\theta)$ in ^{174}Yb(n,n′γ).
[d] Total theoretical 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.
[e] Multiply placed with undivided intensity.
[f] Multiply placed with intensity suitably divided.
[g] Placement of transition in the level scheme is uncertain.

From ENSDF

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

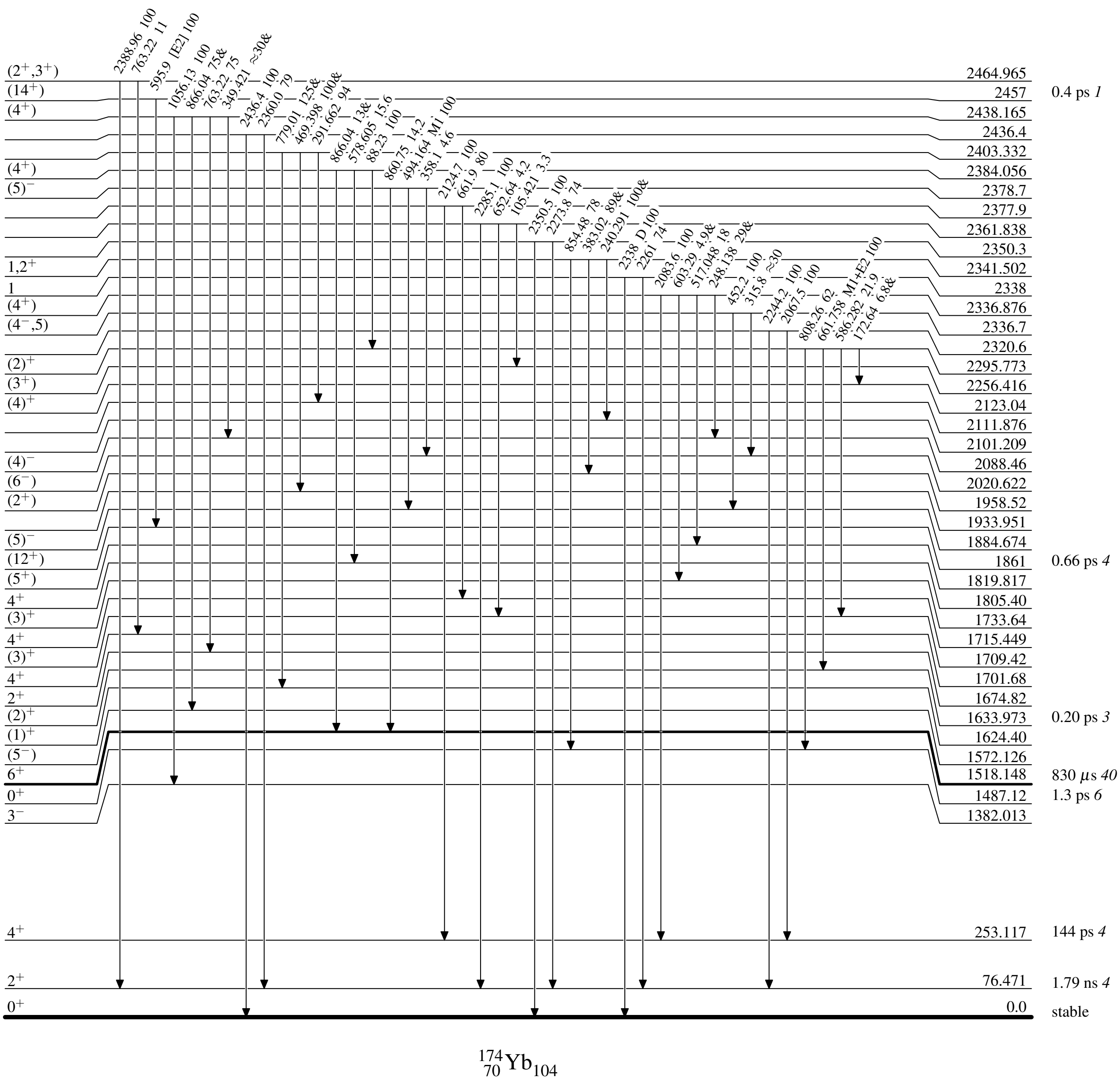


$^{174}_{70}Yb_{104}$

Adopted Levels, Gammas

Level Scheme (continued)

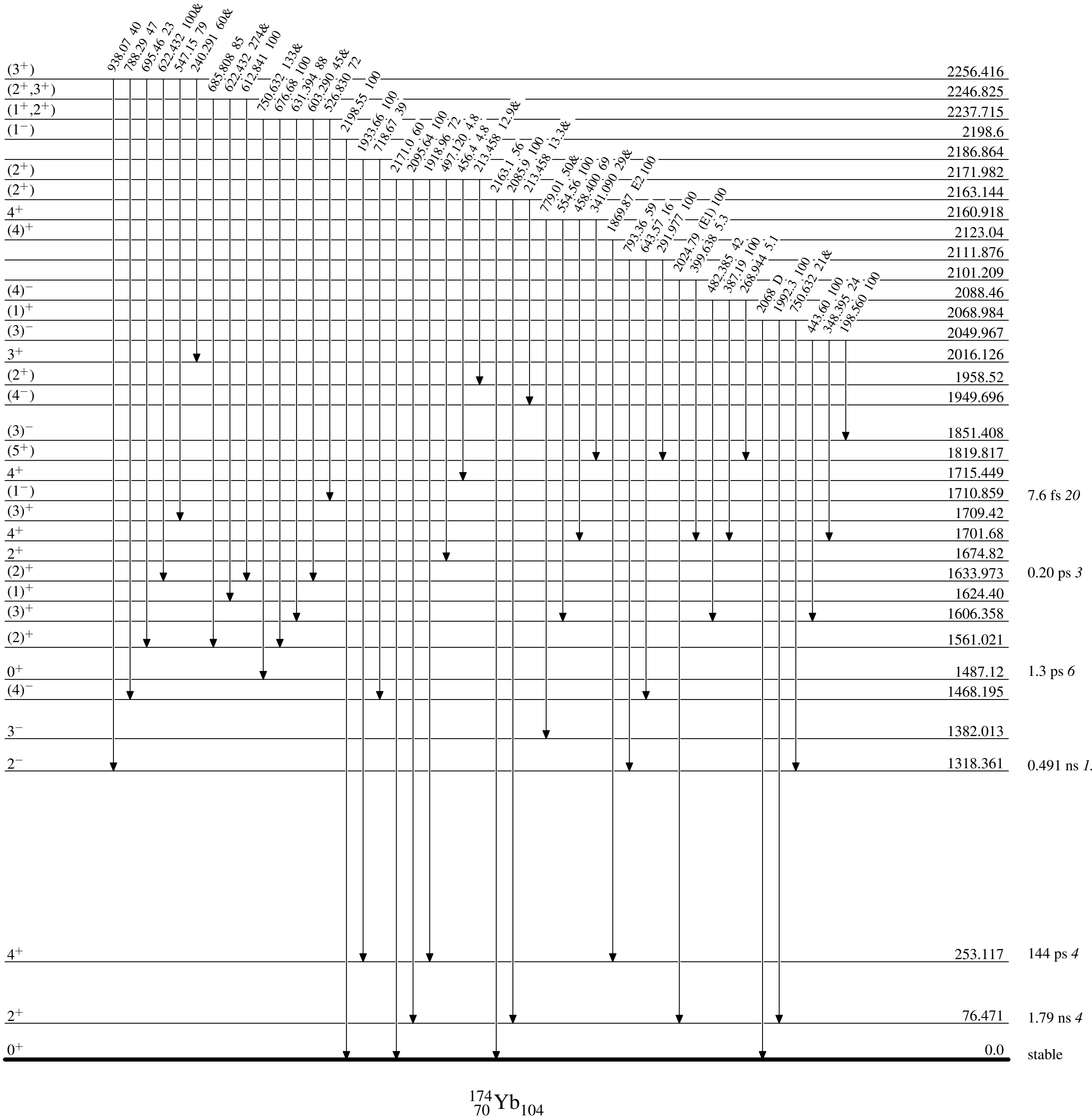
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



Adopted Levels, Gammas

Level Scheme (continued)

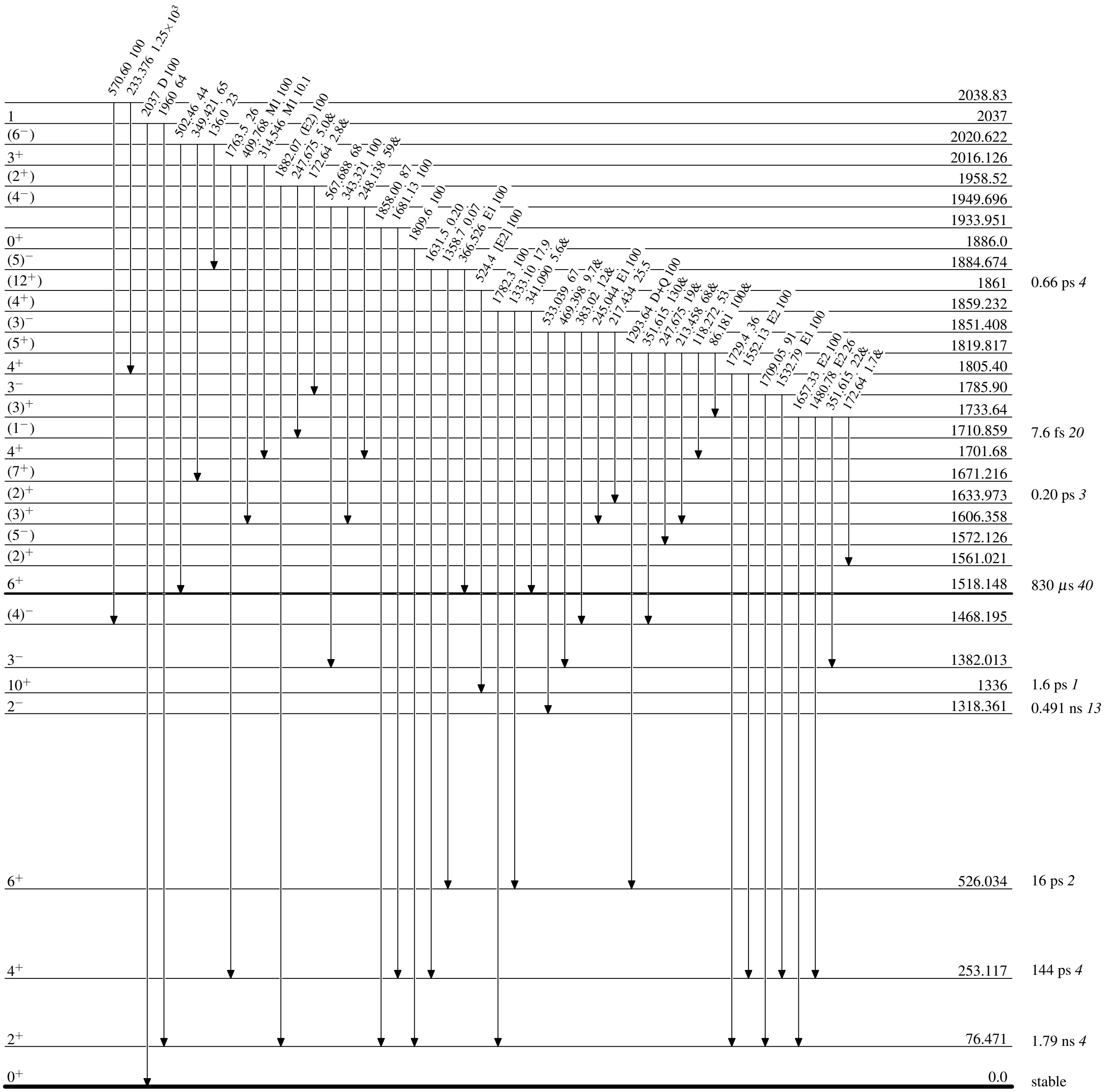
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



Adopted Levels, Gammas

Level Scheme (continued)

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



$^{174}_{70}Yb_{104}$

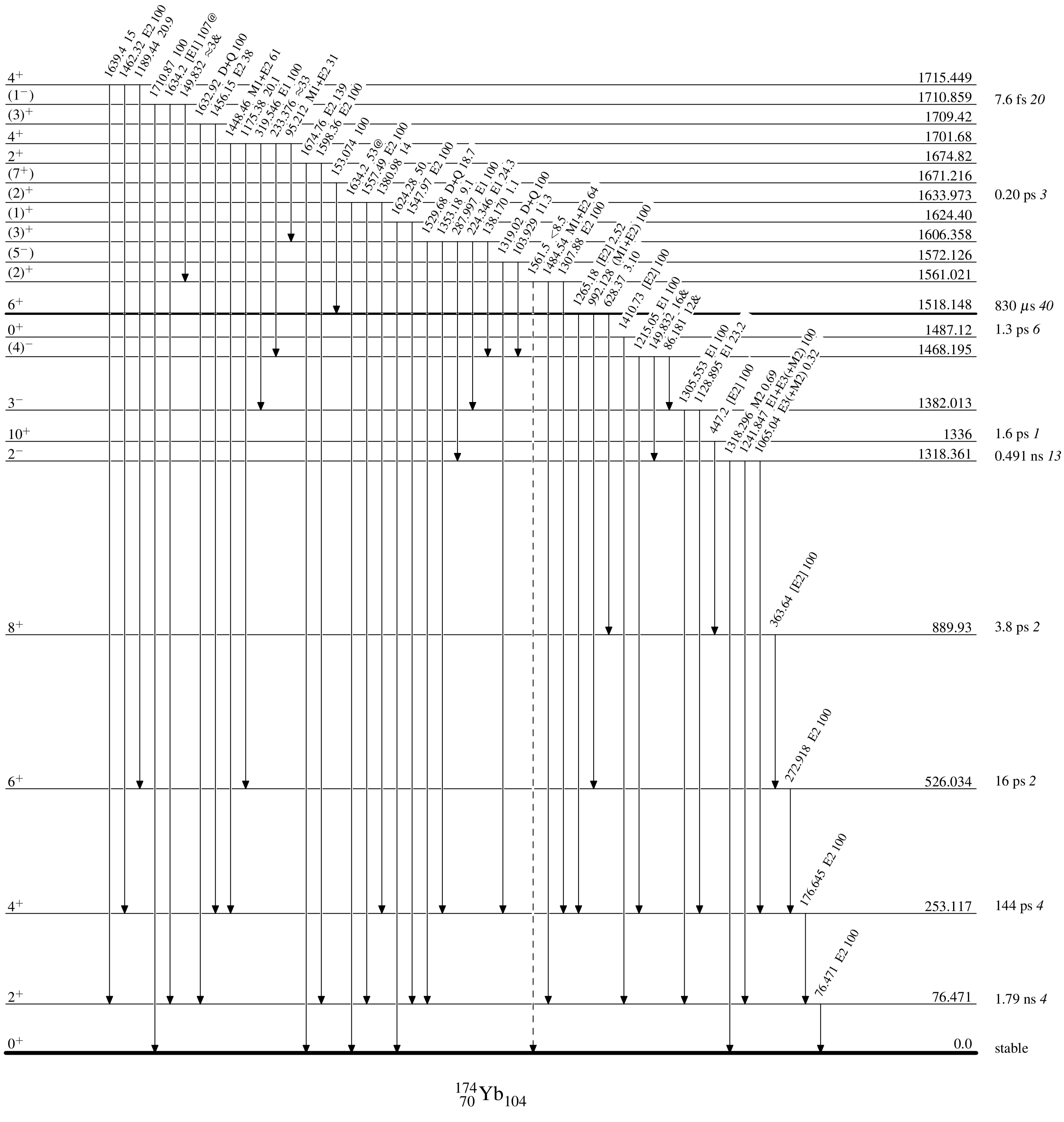
Adopted Levels, Gammas

Level Scheme (continued)

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

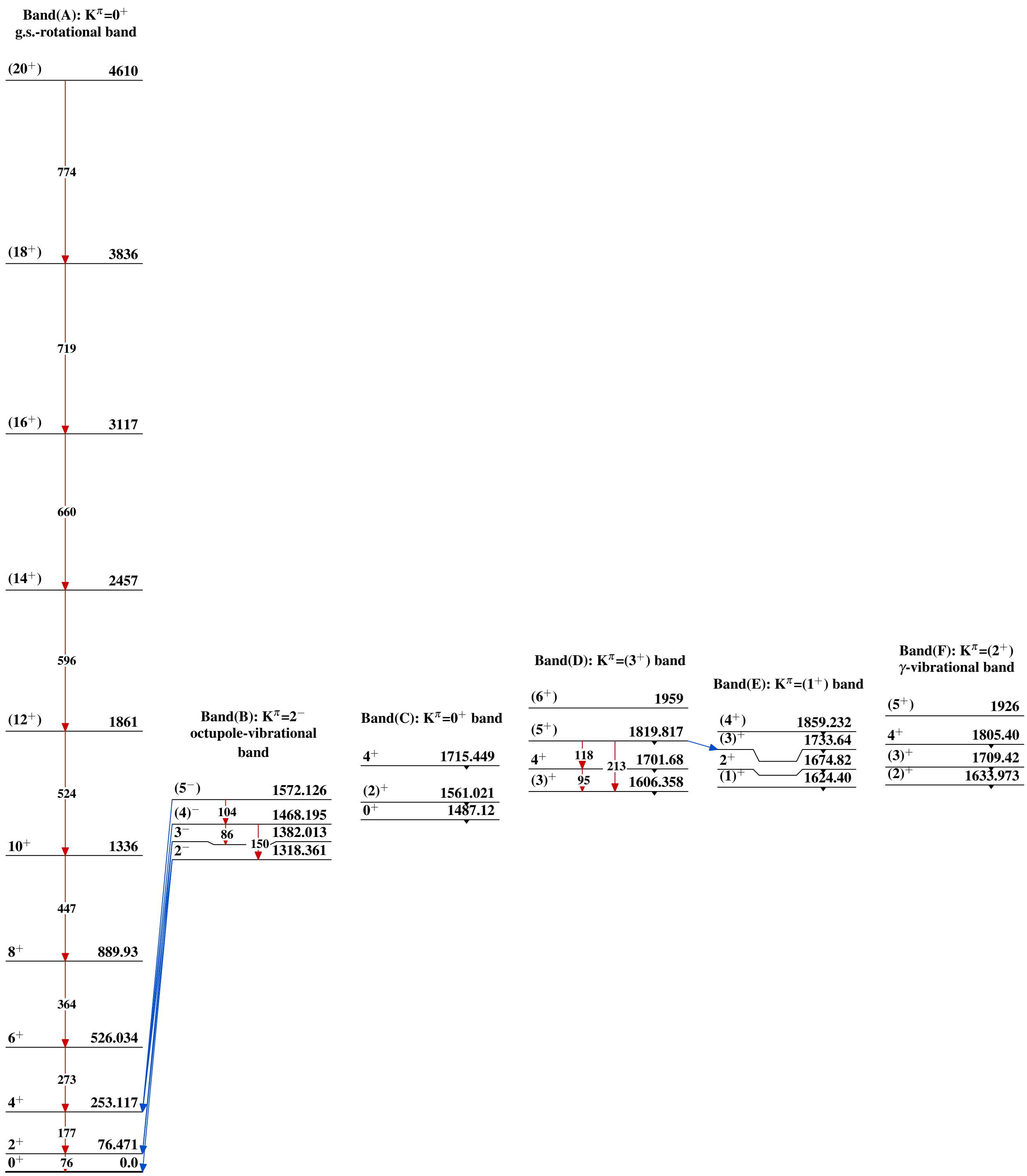
Legend

- - - - - - ► γ Decay (Uncertain)



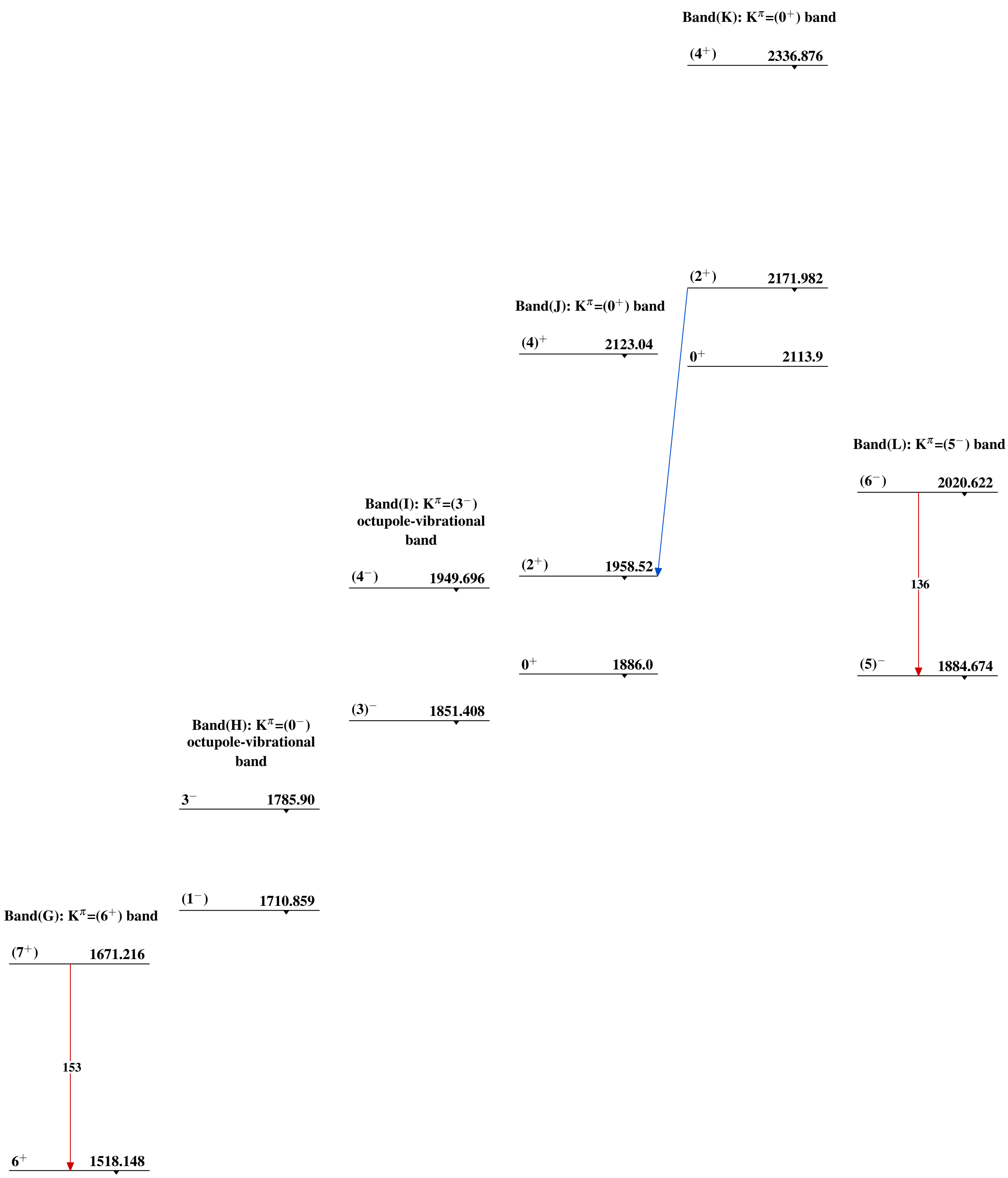
$^{174}_{70}Yb_{104}$

Adopted Levels, Gammas



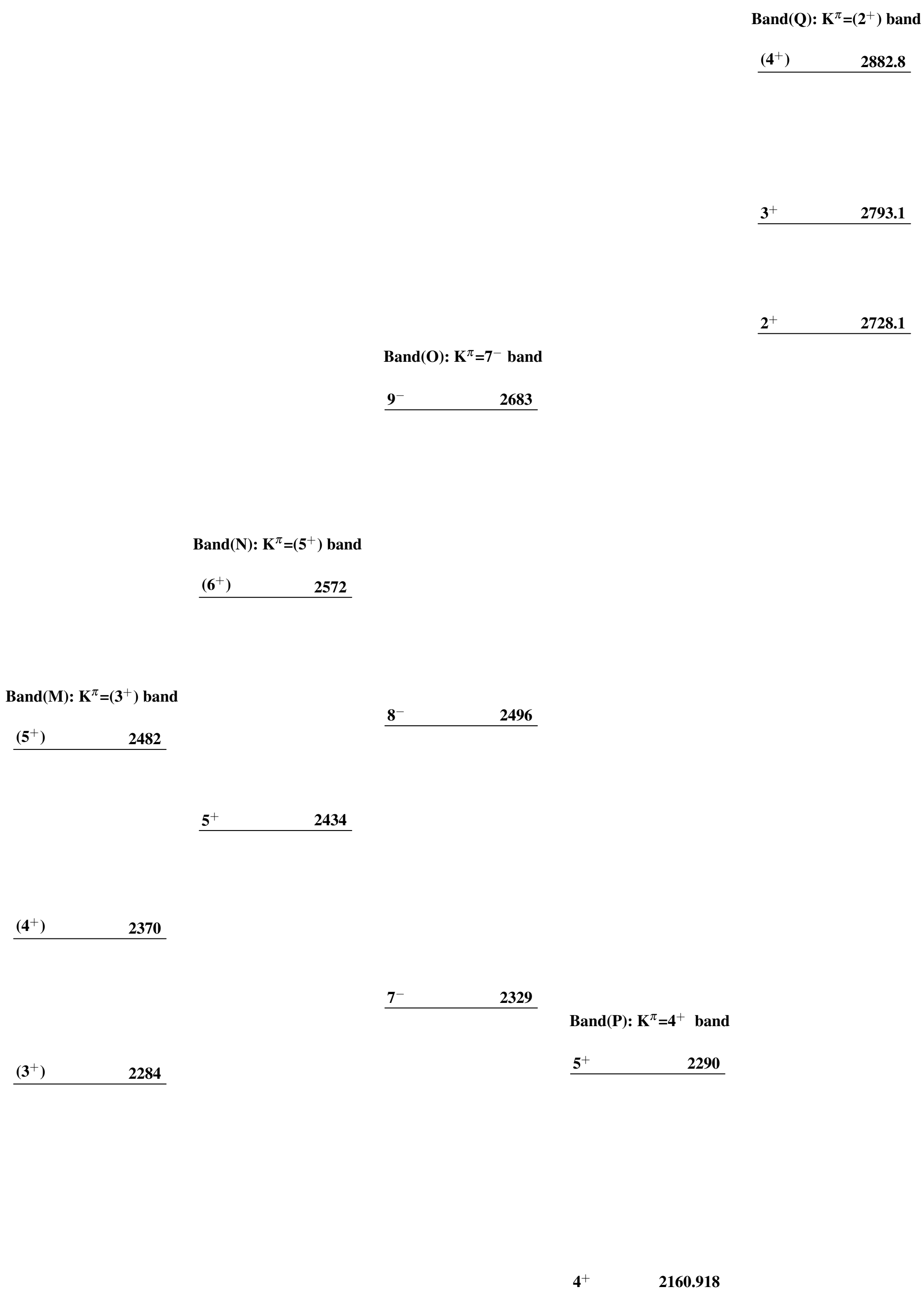
$^{174}_{70}Yb_{104}$

Adopted Levels, Gammas (continued)



$^{174}_{70}Yb_{104}$

Adopted Levels, Gammas (continued)



${}^{174}_{70}\mathrm{Yb}_{104}$

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia	NDS 107,791 (2006)	15-Sep-2005

Q(β^-)=−105.5 *17*; S(n)=6864.4 *11*; S(p)=8.47×10^3 *5*; Q(α)=569 *5* 2012Wa38
Note: Current evaluation has used the following Q record −106.8 166864.8 *108470* 50570 4 2003Au03.

^{176}Yb Levels

Cross Reference (XREF) Flags

A	^{176}Tm β^- decay	E	^{176}Yb(d,d′), (α,α')	I	^{176}Yb(γ,γ')
B	^{176}Yb IT decay (11.4 s)	F	^{176}Yb(p,p′)	J	^{176}Yb(n,n′γ)
C	Coulomb excitation	G	^{176}Yb(pol p,p′)	K	^{176}Yb(^{48}Ca,Xγ),^{176}Yb(^{154}Sm,Xγ)
D	^{174}Yb(t,p)	H	^{176}Lu ε decay (3.635 h)		

E(level)[†]	J$^\pi$	T$_{1/2}$[a]	XREF	Comments
0.0[c]	0+[@]	stable	ABCDEFGHIJK	T$_{1/2}$($\beta\beta$) >= 1.6 x 10^{17} y (68% confidence level) to 2$^+$ 82 level in ^{176}Hf (1996De60). Measured isotope shift: Δ<r^2>(^{174}Yb, ^{176}Yb)=0.0833 fm^2 *43* (1991Ji06), Δ<r^2>(^{174}Yb, ^{176}Yb)=0.090 fm^2 *2* (1994Ma57). Others: 2003Ba90, 2002Zi04, 2001Lo30, 1991Ho27, 1991Ma48, 1991Ki14, 1990Sp05, 1990Bi08, 1973Le16, 1973Ru04.
82.135[c] *15*	2+[‡@]	1.76 ns *5*	ABCDEFGHIJK	μ=+0.67 *3* Q=2.2 *4* μ: Mossbauer (1967Ec02,1989Ra17). Coul. ex. DPAD (1966Ti01,1989Ra17). J$^\pi$: 82.13γ E2 to 0$^+$ in Coulomb excitation. Q: From Q(^{176}Yb-82)/Q(^{170}Yb-84)=1.045 *2* Mossbauer (1967Ec01), and Q(^{170}Yb-84)=2.1 *4* (1989Ra17). No polarization correction (1989Ra17). T$_{1/2}$: Weighted average of 1.72 ns *5* (Coul. Excitation), 1.76 ns *5* delay coin (1966Ti01), and 2.01 ns *14* delay coin (1962Bi05).
271.85[c] *3*	4+[‡@]	0.11 ns *1*	ABCDEFG JK	J$^\pi$: 189.7γ E2 to 2$^+$ in Coulomb excitation.
564.5[c] *4*	6+[‡]	14 ps *1*	ABC EFG JK	J$^\pi$: 292.6γ E2 to 4$^+$ in Coulomb excitation. From good fit of both cross sections and analyzing powers in (pol p,p′); and agreement between experimental and theoretical cross sections in (α,α').
953.9[c] *6*	8+[‡]	3.5 ps *5*	BC EFG JK	J$^\pi$: 389.4γ E2 to 6$^+$ state. Agreement between experimental and theoretical cross sections in (α,α').
1049.8[k] *6*	8−	11.4 s *3*	B G J	%IT=100 T$_{1/2}$: from ^{176}Yb IT decay (11.4 s). J$^\pi$: 96.0γ E1 to 8$^+$ state.
1088.228[i] *17*	(1−)		A J	J$^\pi$: 1088γ E1 to 0$^+$ g.s.
1132.104[i] *23*	(2−)[&]		A D J	
1138.95[e] *4*	(0+)[&]		J	
1193.309[i] *23*	(3−)[&]		A J	
1199.578[e] *24*	(2+)		J	J$^\pi$: 1199.5γ E2 to 0$^+$ g.s. Band assignment.
1260.893[d] *17*	2+	0.76 ps *7*	A CDEFG J	J$^\pi$: 1260.8γ E2 to 0$^+$ g.s. Experimental B(E2, 1261γ)/B(E2, 179γ) =0.53 *7* agrees with theoretical value of 0.70 for J,K=2,2 (Alaga rule). T$_{1/2}$: Other value: 0.55 ps *4* (d,d′),(α,α').
1283.27[i] *13*	(4−)[&]		A J	
1336.378[d] *25*	(3+)[&]		d J	XREF: d(1338).
1341.08[f] *3*	(4+)		A dE J	XREF: d(1338).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{176}Yb Levels (continued)

E(level)[†]	J^π	$T_{1/2}$[a]	XREF	Comments
				J^π: 1258.9γ E2 to 2^+ state.
1409.61[i] *11*	(5^-)[&]		J	
1431.0[c] *13*	$(10)^+$[‡]	1.2 ps *1*	C K	
1431.70[j] *3*	(2^-)[&]		A J	
1435.50[d] *5*	$(4)^+$		A CDEFG J	J^π: 1353γ E2 to 2^+, 1163.7γ to 4^+. Experimental B(E2, 1353γ)/B(E2, 1164γ)=0.3 *1* compares with theoretical value of 0.34 for J,K=2,2 (Alaga rule) in Coulomb excitation.
1491.52[f] *13*	(5^+)[&]		EF J	
1498.73[j] *4*	(3^-)		A F J	J^π: 410.5γ E2 to the (1^-) state.
1518.93[g] *7*	(0^+)[&]		D J	
1541.1 *5*	(6^+)[&]		J	
1558.34[d] *7*	(5^+)[&]		J	
1575.32 *5*	(3)[&]		A J	
1588.57[j] *8*	(4^-)[&]		J	
1609.97[g] *5*	(2^+)		J	J^π: 1338γ E2 to the 4^+ state.
1630.03 *6*			A J	
1671.45 *4*	(3)[&]		A J	J^π: 239.8γ to (2^-), δ=0.00 *10*, and 330.4γ to (4^+), δ −0.14 *7* and −3.8 *+9−13* in (n,n′γ).
1692 *6*			E	
1738 *6*			D	
1767 *6*			E	
1778.46 *11*	0^+		D J	J^π: L=0 in (t,p).
1790 *6*			EF	
1798.10 *6*			A F J	
1819.24[h] *12*	(1^+)[&]		J	
1821.09 *6*			J	
1867.93[h] *10*	(2^+)[&]		J	
1984.6[c] *20*	$(12)^+$[‡]	0.59 ps *6*	C K	J^π: 553.6γ E2 to the $(10)^+$ state.
2027?			J	
2053.34 *12*	$(3^+,4^+)$		A D J	J^π: 1971γ to 2^+, log *ft*=5.65 from ^{176}Tm ($J^\pi=(4^+)$).
2095?			J	
2139?			J	
2153.50 *24*			A J	
2163.1 *7*	(1)[#]	11.5[b] fs *3*	I	
2170?			J	
2245?			J	
2295.2 *4*			A D	
2394?			J	
2453.1 *7*	(1)[#]	7.7[b] fs *17*	I	
2480.7 *4*			A	
2530?			J	
2537.8 *6*			A	
2570?			J	
2602[c] *3*	$(14)^+$[‡]	0.38 ps *7*	C K	
2704.1 *7*	(1)[#]	7.4[b] fs *15*	IJ	
2938.1 *7*	(1)[#]	10[b] fs *4*	I	
2949.8 *6*	$(3^+,4^+)$		A	J^π: 2868γ to (2^+), log *ft*=5.66 from ^{176}Tm ($J^\pi=(4^+)$).
2953.8 *3*	$(3^+,4^+)$		A	J^π: 2872γ to (2^+), log *ft*=5.21 from ^{176}Tm ($J^\pi=(4^+)$).
3052.2 *3*	$(3^+,4^+,5^+)$		A	J^π: log *ft*=5.50 from ^{176}Tm ($J^\pi=(4^+)$).
3126.1 *7*	1^-	3.8[b] fs *16*	I	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{176}Yb Levels (continued)

E(level)[†]	J^{π}	$T_{1/2}$[a]	XREF	Comments
3143.1 *7*	(1)[#]	2.2[b] fs *16*	I	
3186.3 *4*	(4^+,5^+)		A	J^{π}: 2622γ to 6^+, log *ft*=4.92 from ^{176}Tm (J^{π}=(4^+)).
3270[c] *5*	$(16)^+$[‡]		C K	
3456.1 *7*	(1)[#]	6[b] fs *3*	I	
3480.1 *7*	1^-	8[b] fs *4*	I	
3516.1 *7*	(1)[#]	5[b] fs *3*	I	
3540.1 *7*	(1^-)[#]	3.2[b] fs *15*	I	
3557.1 *7*	(1)[#]	3.1[b] fs *9*	I	
3780.1 *7*	(1^-)[#]	1.6[b] fs *5*	I	
3845.2 *10*		1.7[b] fs *9*	I	
3979[c] *6*	$(18)^+$[‡]		C K	
4729[c] *6*	$(20)^+$		K	J^{π}: Based on rotational structure and stretched E2 transition.

† Deduced by evaluator from a least-squares fit to adopted γ-ray energies.

‡ Assignment based on rotational band structure, E2 cascade γ's, and on the comparison of experimental level half-lives with values predicted by the rotational model (1976Wa06).

\# From $\gamma(\theta)$ in ^{176}Yb(γ,γ').

@ From excellent fit of both cross sections and analyzing powers in (pol p,p′); and agreement between experimental and theoretical cross sections in (α,α').

& From $\gamma(\theta)$ and relative level population in (n,n′γ).

a From Coulomb excitation, unless otherwise specified.

b From $\Gamma_{\gamma 0}$ and branching in ^{176}Yb(γ,γ').

c Band(A): K=0^+ g.s. rotational band Rotational parameters: A=13.7, B=−6.5. Spin members of the band used in the fit: 0 to 8. Deformation parameters: β_2=0.276, β_4=−0.054 (1968He24); β_2=0.230 *10*, β_4=−0.350 *10* (1970Ap03).

d Band(B): $K^{\pi}=2^+_1$ γ-vibrational band.

e Band(C): $K^{\pi}=0^+_2$ band.

f Band(D): $K^{\pi}=4^+_1$, configuration: π1/2[411]+π7/2[404].

g Band(E): $K^{\pi}=0^+_3$ band.

h Band(F): $K^{\pi}=1^+_1$, configuration: ν7/2[633]-ν9/2[624].

i Band(G): $K^{\pi}=1^-_1$, configuration: ν7/2[514]-ν9/2[624].

j Band(H): $K^{\pi}=2^-_1$, configuration: ν5/2[512]-ν9/2[624].

k Band(I): $K^{\pi}=8^-_1$, configuration: ν7/2[514]+ν9/2[624].

γ(^{176}Yb)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[b]	δ[d]	α[e]	Comments
82.135	2+	82.13[‡] *2*	100	0.0	0+	E2		7.06	B(E2)(W.u.)=183 *7*
271.85	4+	189.69[‡] *4*	100	82.135	2+	E2		0.324	B(E2)(W.u.)=270 *25*
564.5	6+	292.6[&] *4*	100	271.85	4+	E2		0.0803	B(E2)(W.u.)=298 *22*
953.9	8+	389.4[‡] *5*	100	564.5	6+	E2		0.0349	B(E2)(W.u.)=3.0×10^2 *5*
1049.8	8−	95.92 *9*	100	953.9	8+	E1		0.384	B(E1)(W.u.)=1.47×10^{-14} *9* Mult.: from ^{176}Yb IT decay (11.4 s).
1088.228	(1−)	1006.11 *4*	100 *5*	82.135	2+	(E1+M2)	0.0 *+2−8*		
		1088.245 *20*	21.9 *11*	0.0	0+	E1[d]			I_γ: 17.9 *19* in ^{176}Tm β^- decay.
1132.104	(2−)	1049.966 *20*	100	82.135	2+	(E1+M2)	−0.02 *5*		
1138.95	(0+)	1056.81 *3*	100	82.135	2+				
1193.309	(3−)	921.48 *5*	10.1 *6*	271.85	4+	E1+(M2)	0.00 *5*		
		1111.150 *20*	100 *8*	82.135	2+	E1+(M2)	0.00 *5*		
1199.578	(2+)	111.38 *9*	19.37 *15*	1088.228	(1−)				
		927.7	<0.4	271.85	4+				
		1117.440 *20*	100 *5*	82.135	2+	M1+E2[d]	+11 *+5−3*		
		1199.50 *8*	12.1 *7*	0.0	0+	E2[d]			
1260.893	2+	122.01	7.4	1138.95	(0+)				
		172.8[f] *3*	5.6[f] *10*	1088.228	(1−)				
		988.8 *3*	2.7 *5*	271.85	4+				
		1178.759 *20*	100 *6*	82.135	2+	M1+E2[d]	+160 *+0−130*		B(E2)(W.u.)=0.000111 *15*
		1260.875 *23*	88.7 *4*	0.0	0+	E2			B(E2)(W.u.)=1.80 *21* I_γ: 74 *7* in ^{176}Tm β^- decay.
1283.27	(4−)	1011.35 *4*	100	271.85	4+	(E1+M2)	−0.05 *5*		
1336.378	(3+)	1064.55 *7*	22.2 *14*	271.85	4+	M1+E2[d]	−6 *+9−5*		
		1254.235 *20*	100 *5*	82.135	2+	M1+E2			+100<δ<−100.
1341.08	(4+)	1069.223 *20*	100 *5*	271.85	4+	M1+E2	−0.26 *2*		E_γ: Multiplete in (n,n′γ).
		1258.95 *4*	11.9 *6*	82.135	2+	E2[d]			
1409.61	(5−)	1137.77 *11*	100	271.85	4+				
1431.0	(10)+	477.1[a] *11*	100	953.9	8+	E2		0.0202	B(E2)(W.u.)=320 *30*
1431.70	(2−)	238.31 *5*	28.7 *18*	1193.309	(3−)	M1+E2	−0.40 *+10−20*	0.281 *10*	I_γ: 39 *5* in ^{176}Tm β^- decay.
		299.60 *5*	43.2 *24*	1132.104	(2−)	M1+E2	+0.09 *+3−6*	0.161 *1*	
		343.60 *5*	100 *5*	1088.228	(1−)	M1+E2	−0.11 *2*	0.111	
		1349.45 *15*	12.2 *10*	82.135	2+	E1+M2+(E3)			I_γ: 23 *3* in ^{176}Tm β^- decay.
1435.50	(4)+	1163.65 *4*	100 *5*	271.85	4+	M1+E2	−1.2 *3*		
		1353.36 *8*	65 *4*	82.135	2+	E2[d]			
1491.52	(5+)	150.44 *12*	100 *6*	1341.08	(4+)	M1+E2	+0.23 *8*	1.06 *1*	
		208.1 *10*	14 *4*	1283.27	(4−)				
		1219.7 *10*	6 *2*	271.85	4+				

Adopted Levels, Gammas (continued)

$\gamma(^{176}Yb)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[b]	δ[d]	α[e]	Comments
1498.73	(3⁻)	215.5 3	30 3	1283.27	(4⁻)				
		305.34[f] 12	26.7[f] 25	1193.309	(3⁻)				I_γ: 50 17 with respect to Iγ of 215.5γ in ^{175}Tm β^- decay.
		366.60 5	100 6	1132.104	(2⁻)	M1+E2	0.00 5	0.07 3	
		410.54[f] 6	90[f] 5	1088.228	(1⁻)	E2[d]		0.0301	
		1226.91 14	32.6 21	271.85	4⁺	E1+M2	−0.04 +8−4		
		1416.7	2.1	82.135	2⁺				
1518.93	(0⁺)	1436.79 6	100	82.135	2⁺	E2			
1541.1	(6⁺)	976.6 3	100 11	564.5	6⁺				
		1269.0 10	24 11	271.85	4⁺				
1558.34	(5⁺)	1286.49 6	100	271.85	4⁺	M1+E2			
1575.32	(3)	234.21 4	100 5	1341.08	(4⁺)				Mult.: M1 or E1 in (n,n′γ).
		1303.3 3	9.8 15	271.85	4⁺				
		1493.12 11	17.7 15	82.135	2⁺				
1588.57	(4⁻)	152.8 5	6 4	1435.50	(4)⁺				
		179.2 5	4.9 21	1409.61	(5⁻)				
		247.32 19	25 5	1341.08	(4⁺)				
		305.34[f] 12	44[f] 4	1283.27	(4⁻)				
		395.27 8	100 6	1193.309	(3⁻)	M1+E2	+0.27 10	0.074 2	
1609.97	(2⁺)	1338.11 6	92 5	271.85	4⁺	E2[d]			
		1527.83 6	100 5	82.135	2⁺	M1+E2	−1.5 +9−35		
		1610.04 22	29 3	0.0	0⁺				
1630.03		288.93 6	100 7	1341.08	(4⁺)				
		436.75 19	39 4	1193.309	(3⁻)				
		498.3 2	25 4	1132.104	(2⁻)				I_γ: 65 8 in ^{176}Tm β^- decay.
		1358.1 4	12 3	271.85	4⁺				
1671.45	(3)	95.9[@] 1	9.8[@] 12	1575.32	(3)				I_γ: With respect to Iγ of 330.4γ in ^{176}Tm β^- decay.
		172.8[f] 3	19[f] 3	1498.73	(3⁻)				I_γ: 11.0 12 with respect to Iγ of 330.4γ in ^{176}Tm β^- decay.
		239.80 5	83 5	1431.70	(2⁻)				δ: 0.00 10 in (n,n′γ).
		330.42 5	84 5	1341.08	(4⁺)				δ: −0.14 7 and −3.8 +9−13 in (n,n′γ).
		410.54[f] 6	100[f] 5	1260.893	2⁺				I_γ: 51 4 with respect to Iγ of 330.4γ in ^{176}Tm β^- decay.
		477.8 2	16.0 18	1193.309	(3⁻)				
		539.0	2.8	1132.104	(2⁻)				I_γ: 7.7 12 with respect to Iγ of 330.4γ in ^{176}Tm β^- decay.
		1589.39 17	25.9 24	82.135	2⁺				
1778.46	0⁺	1696.32 11	100	82.135	2⁺				
1798.10		457.02 5	100	1341.08	(4⁺)				
1819.24	(1⁺)	1737.1 3	49 6	82.135	2⁺				
		1819.23 13	100 8	0.0	0⁺	M1,E1		0.0015 5	
1821.09		322.30 16	48 4	1498.73	(3⁻)				
		389.40 5	100 6	1431.70	(2⁻)				

$^{176}_{70}Yb_{106}$-5

Adopted Levels, Gammas (continued)

γ(^{176}Yb) (continued)

E$_i$(level)	J$^\pi_i$	E$_\gamma$[†]	I$_\gamma$[†]	E$_f$	J$^\pi_f$	Mult.[b]	δ[d]	α[e]	Comments
1867.93	(2$^+$)	1785.80 *10*	100 *6*	82.135	2$^+$	(M1+E2)	+0.02 *+16−1*	0.00201 *4*	
		1867.2 *7*	15 *4*	0.0	0$^+$				
1984.6	(12)$^+$	553.6[a] *15*	100	1431.0	(10)$^+$	E2		0.0140	B(E2)(W.u.)=3.1×10^2 *4*
2027?		1945.3[g] *3*	100 *8*	82.135	2$^+$				E$_\gamma$: Multiplete in (n,n′γ).
		2027.0[g] *3*	66 *8*	0.0	0$^+$				
2053.34	(3$^+$,4$^+$)	255.2[@] *2*	4.7[@] *6*	1798.10					
		381.8[@] *2*	100[@] *5*	1671.45	(3)				
		423.6[@] *3*	3.9[@] *8*	1630.03					
		554.6[@] *5*	2.2[@] *3*	1498.73	(3$^-$)				
		621.7[@] *3*	14.4[@] *13*	1431.70	(2$^-$)				
		712.1[@] *6*	3.0[@] *6*	1341.08	(4$^+$)				
		1970.9[@] *6*	10.6[@] *9*	82.135	2$^+$				
2095?		2012.9[g] *3*	100 *15*	82.135	2$^+$				E$_\gamma$: Multiplete in (n,n′γ).
		2094.5[g] *5*	35 *9*	0.0	0$^+$				
2139?		2056.7[g] *3*	100	82.135	2$^+$				E$_\gamma$: Multiplete in (n,n′γ).
2153.50		482.2[@] *3*	100[@] *10*	1671.45	(3)				
		654.8[@] *6*	27[@] *7*	1498.73	(3$^-$)				
		1881.2[@] *7*	23[@] *5*	271.85	4$^+$				
		2070.8[@] *8*	23[@] *5*	82.135	2$^+$				
2163.1	(1)	2081[#]	65[#] *14*	82.135	2$^+$				
		2163[#]	100[#]	0.0	0$^+$	D[c]			
2170?		1898.3[g] *3*	100 *13*	271.85	4$^+$				E$_\gamma$: Multiplete in (n,n′γ).
		2088.2[g] *12*	25 *13*	82.135	2$^+$				
2245?		1973.3[g] *2*	65 *16*	271.85	4$^+$				E$_\gamma$: Multiplete in (n,n′γ).
		2163.1[g] *2*	100 *13*	82.135	2$^+$				
2295.2		241.9[@] *3*	100[@]	2053.34	(3$^+$,4$^+$)				
2394?		2122.4[g] *5*	100 *5*	271.85	4$^+$				E$_\gamma$: Multiplete in (n,n′γ).
		2311.3[g] *7*	42 *8*	82.135	2$^+$				E$_\gamma$: Multiplete in (n,n′γ).
2453.1	(1)	2371[#]	41[#] *6*	82.135	2$^+$				
		2453[#]	100[#]	0.0	0$^+$	D[c]			
2480.7		809.2[@] *5*	100[@]	1671.45	(3)				
2530?		2258.5[g] *8*	93 *17*	271.85	4$^+$				
		2448.3[g] *6*	100 *17*	82.135	2$^+$				E$_\gamma$: Multiplete in (n,n′γ).
2537.8		2265.5[@] *8*	54[@] *12*	271.85	4$^+$				
		2456.0[@] *8*	100[@] *12*	82.135	2$^+$				

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Adopted Levels, Gammas (continued)

$\gamma(^{176}Yb)$ (continued)

E_i(level)	J^{π}_i	E_γ[†]	I_γ[†]	E_f	J^{π}_f	Mult.[b]	α[e]	Comments
2570?		2298.3[g] 3	100 12	271.85	4^+			
		2487.9[g] 8	37 12	82.135	2^+			E_γ: Multiplete in (n,n′γ).
2602	$(14)^+$	617[a] 2	100	1984.6	$(12)^+$	E2	0.0108	B(E2)(W.u.)=2.8×10^2 6
2704.1	(1)	2622[#]	37[#] 5	82.135	2^+			
		2704[#]	100[#]	0.0	0^+	D[c]		
2938.1	(1)	2856[#]	30[#] 10	82.135	2^+	D[c]		
		2938[#]	100[#]	0.0	0^+	D[c]		
2949.8	$(3^+,4^+)$	1756.1[@] 8	27[@] 6	1193.309	(3^-)			
		2678[@] 1	51[@] 6	271.85	4^+			
		2868[@] 1	100[@] 12	82.135	2^+			
2953.8	$(3^+,4^+)$	900.4[@] 5	100[@] 10	2053.34	$(3^+,4^+)$			
		1282.4[@] 6	69[@] 8	1671.45	(3)			
		1612.7[@] 7	39[@] 4	1341.08	(4^+)			
		2682.0[@] 8	51[@] 5	271.85	4^+			
		2871.9[@] 9	80[@] 8	82.135	2^+			
3052.2	$(3^+,4^+,5^+)$	571.5[@] 3	33[@] 5	2480.7				
		1254.1[@] 4	100[@] 11	1798.10				
		2780.7[@] 8	29[@] 3	271.85	4^+			
3126.1	1^-	3044[#]	100[#]	82.135	2^+			
		3126[#]	43[#] 13	0.0	0^+			
3143.1	(1)	3061[#]	100[#]	82.135	2^+			
		3143[#]	46[#] 7	0.0	0^+	D[c]		
3186.3	$(4^+,5^+)$	1845.1[@] 6	17.4[@] 16	1341.08	(4^+)			
		2621.6[@] 6	69[@] 6	564.5	6^+			
		2914.7[@] 6	100[@] 8	271.85	4^+			
3270	$(16)^+$	668[a] 3	100	2602	$(14)^+$	E2		
3456.1	(1)	3374[#]	80[#] 36	82.135	2^+			
		3456[#]	100[#]	0.0	0^+	D[c]		
3480.1	1^-	3398[#]	100[#]	82.135	2^+			
		3480[#]	76[#] 34	0.0	0^+			
3516.1	(1)	3434[#]	98[#] 38	82.135	2^+			
		3516[#]	100[#]	0.0	0^+	D[c]		
3540.1	(1^-)	3458[#]	100[#]	82.135	2^+			

Adopted Levels, Gammas (continued)

$\gamma(^{176}Yb)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[b]	Comments
3540.1	(1^-)	3540[#]	56[#] *18*	0.0	0^+	D[c]	
3557.1	(1)	3475[#]	97[#] *19*	82.135	2^+		
		3557[#]	100[#]	0.0	0^+	D[c]	
3780.1	(1^-)	3698[#]	100[#]	82.135	2^+		
		3780[#]	53[#] *11*	0.0	0^+	D[c]	
3845.2		3763[#]	100[#]	82.135	2^+		
3979	$(18)^+$	709[a] *4*	100	3270	$(16)^+$	E2	
4729	$(20)^+$	750.5	100	3979	$(18)^+$		E_γ: From (^{48}Ca,Xγ).

[†] From ^{176}Yb(n,n′γ), unless otherwise specified.

[‡] Weighted average from ^{176}Tm β^- decay, Coulomb excitation, ^{176}Yb IT decay (11.4 s), and ^{176}Yb(n,n′γ), unless otherwise specified.

[#] From ^{176}Yb(γ,γ').

[@] From ^{176}Tm β^- decay.

[&] Using the limitation of relative statistical weight method (1985ZiZY) from ^{176}Tm β^- decay, Coulomb excitation, ^{176}Yb IT decay (11.4 s), and ^{176}Yb(n,n′γ).

[a] From Coulomb excitation.

[b] From Coulomb excitation, unless otherwise specified.

[c] From $\gamma(\theta)$ in ^{176}Yb(γ,γ').

[d] From ^{176}Yb(n,n′γ).

[e] 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.

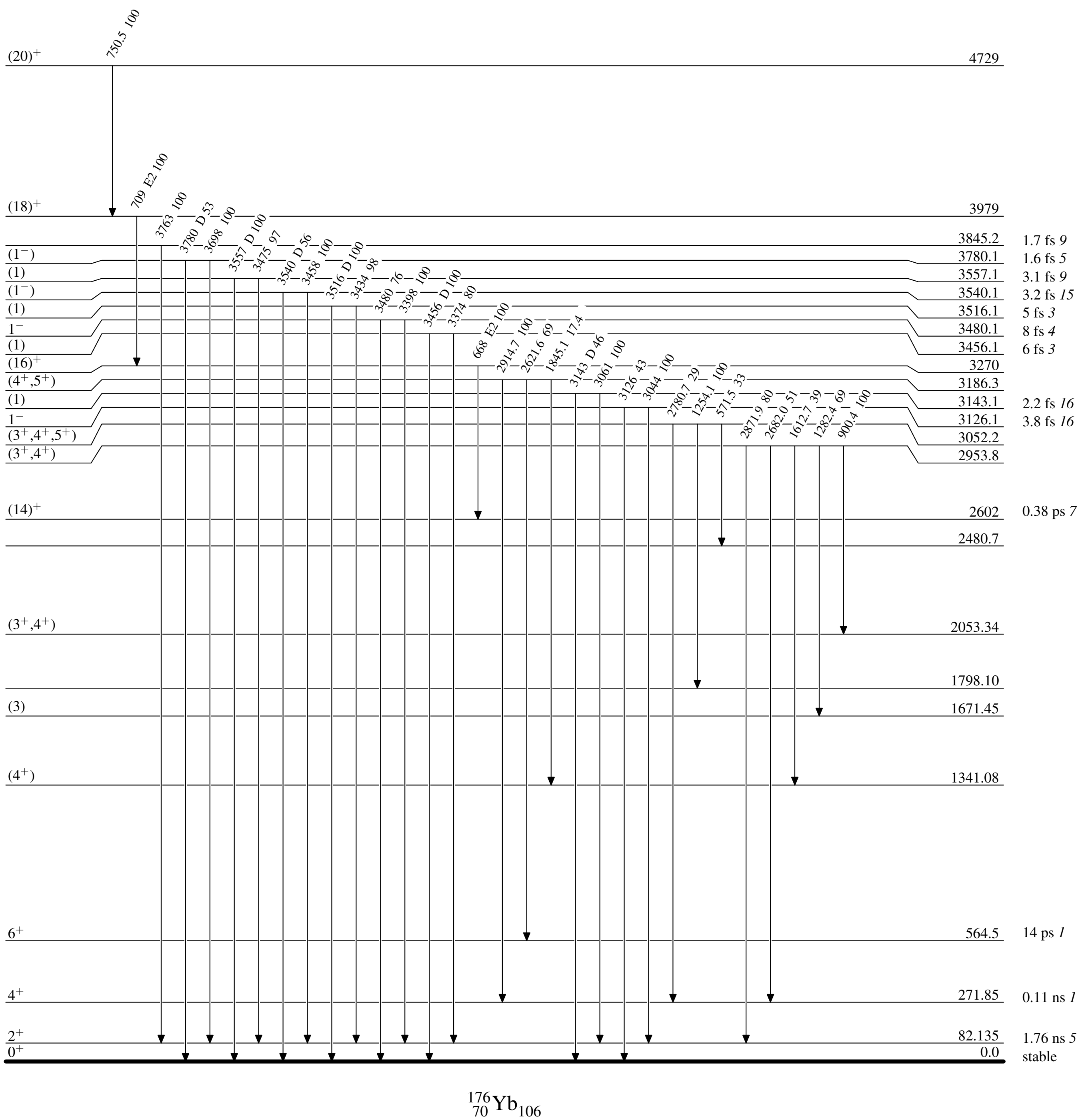
[f] Multiply placed with undivided intensity.

[g] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme

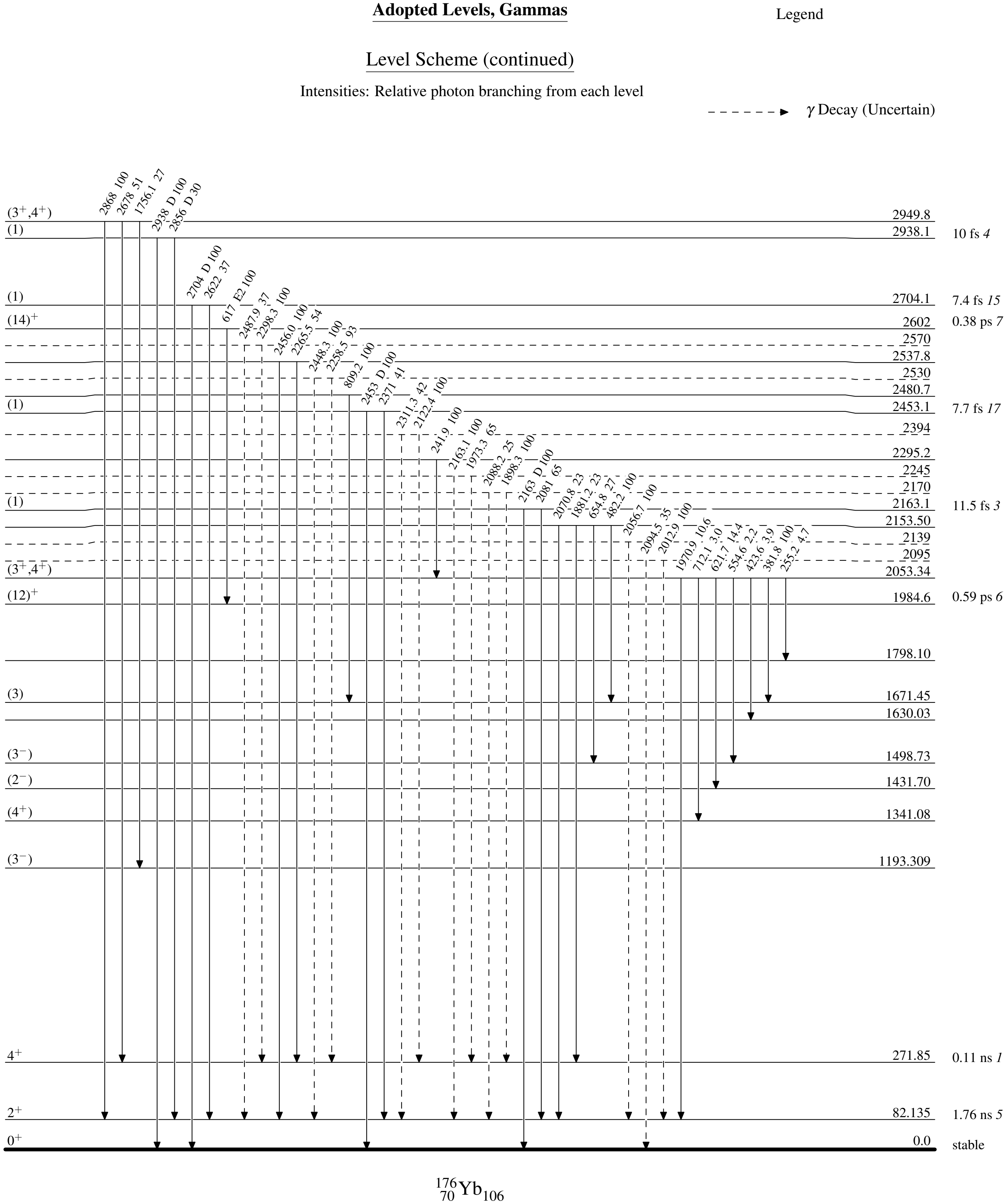
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



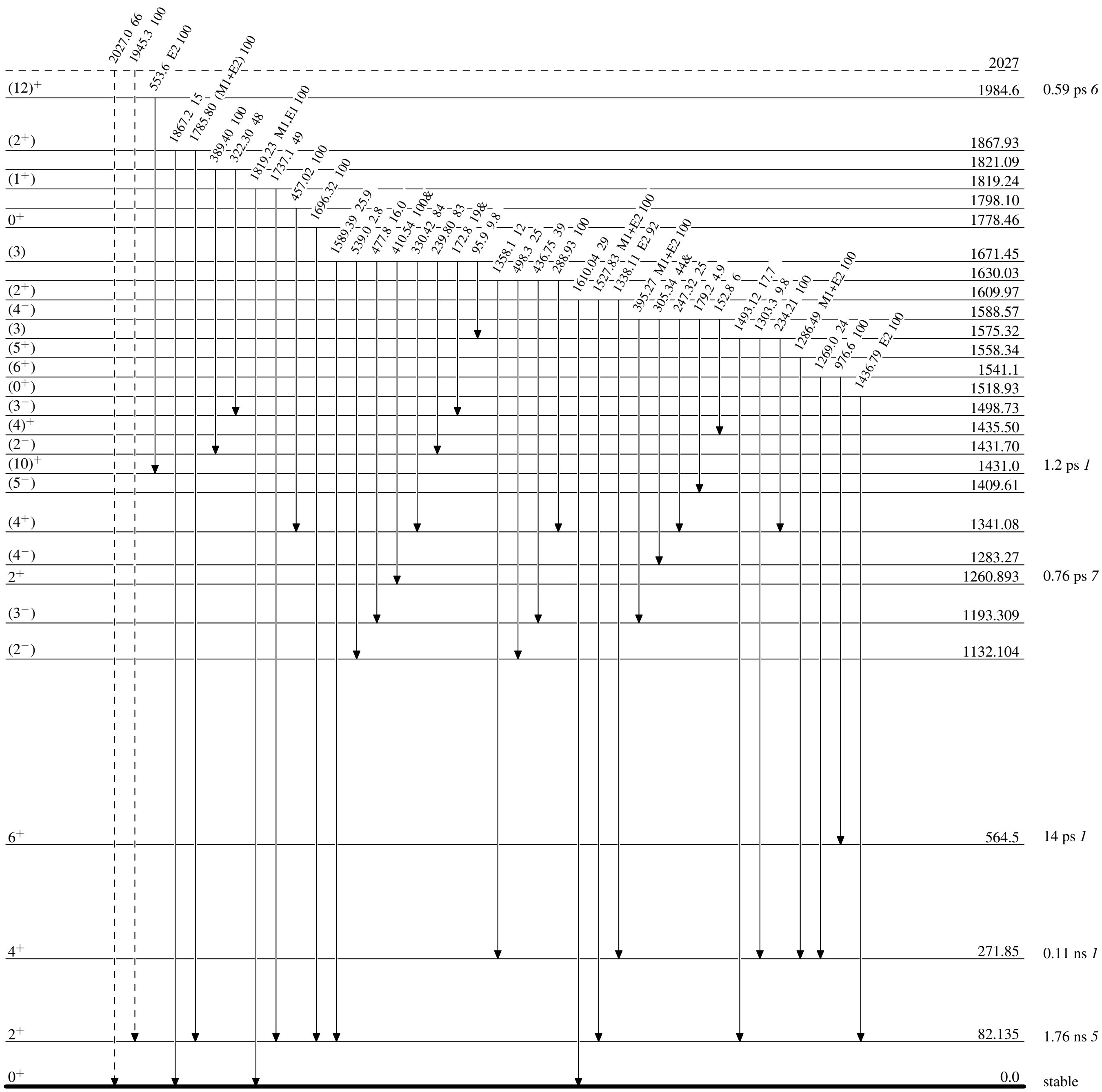
Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

γ Decay (Uncertain)

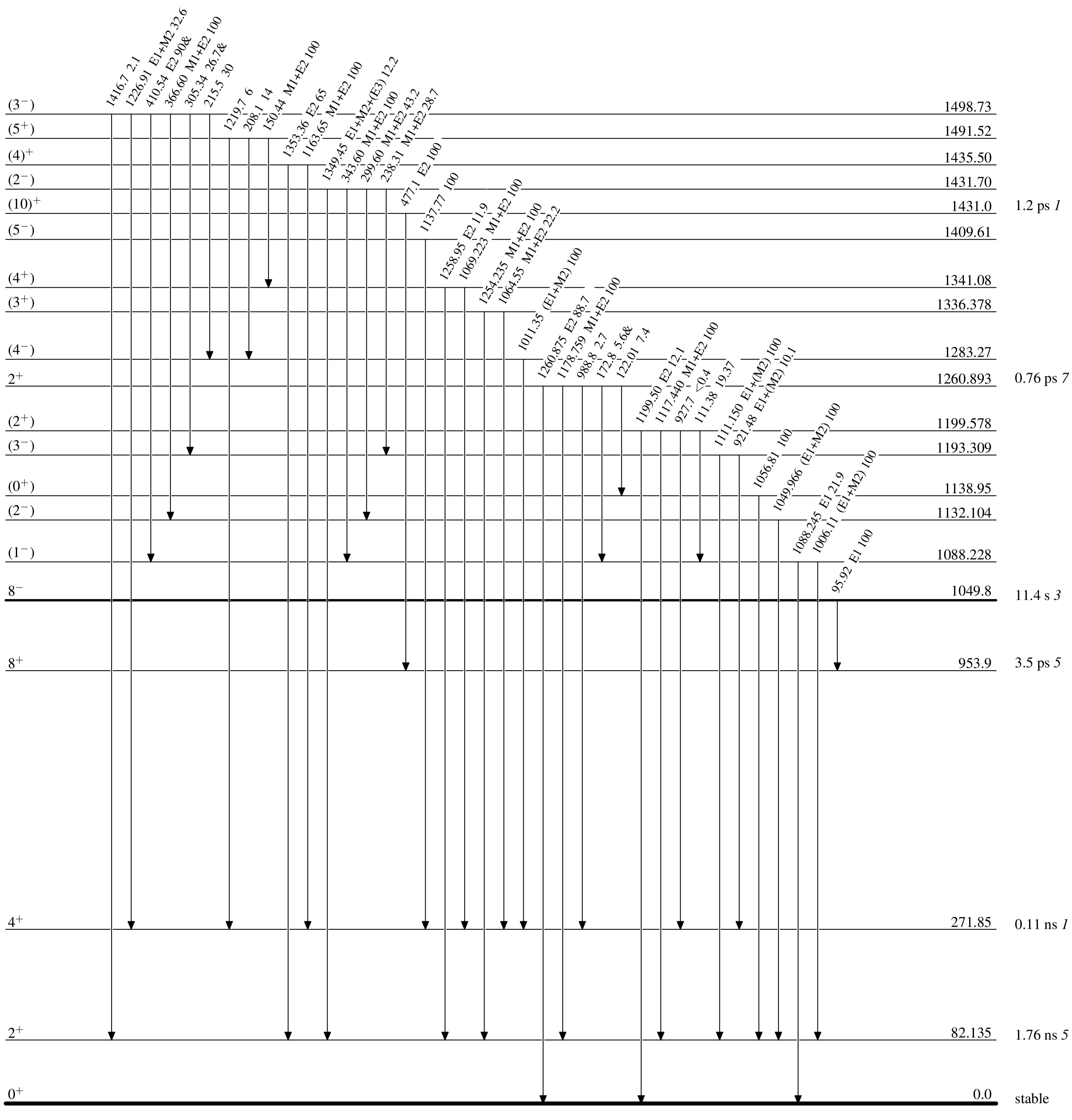


$^{176}_{70}Yb_{106}$

Adopted Levels, Gammas

Level Scheme (continued)

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

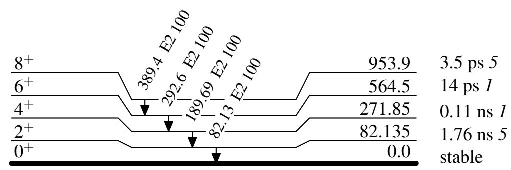


$^{176}_{70}Yb_{106}$

Adopted Levels, Gammas

Level Scheme (continued)

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



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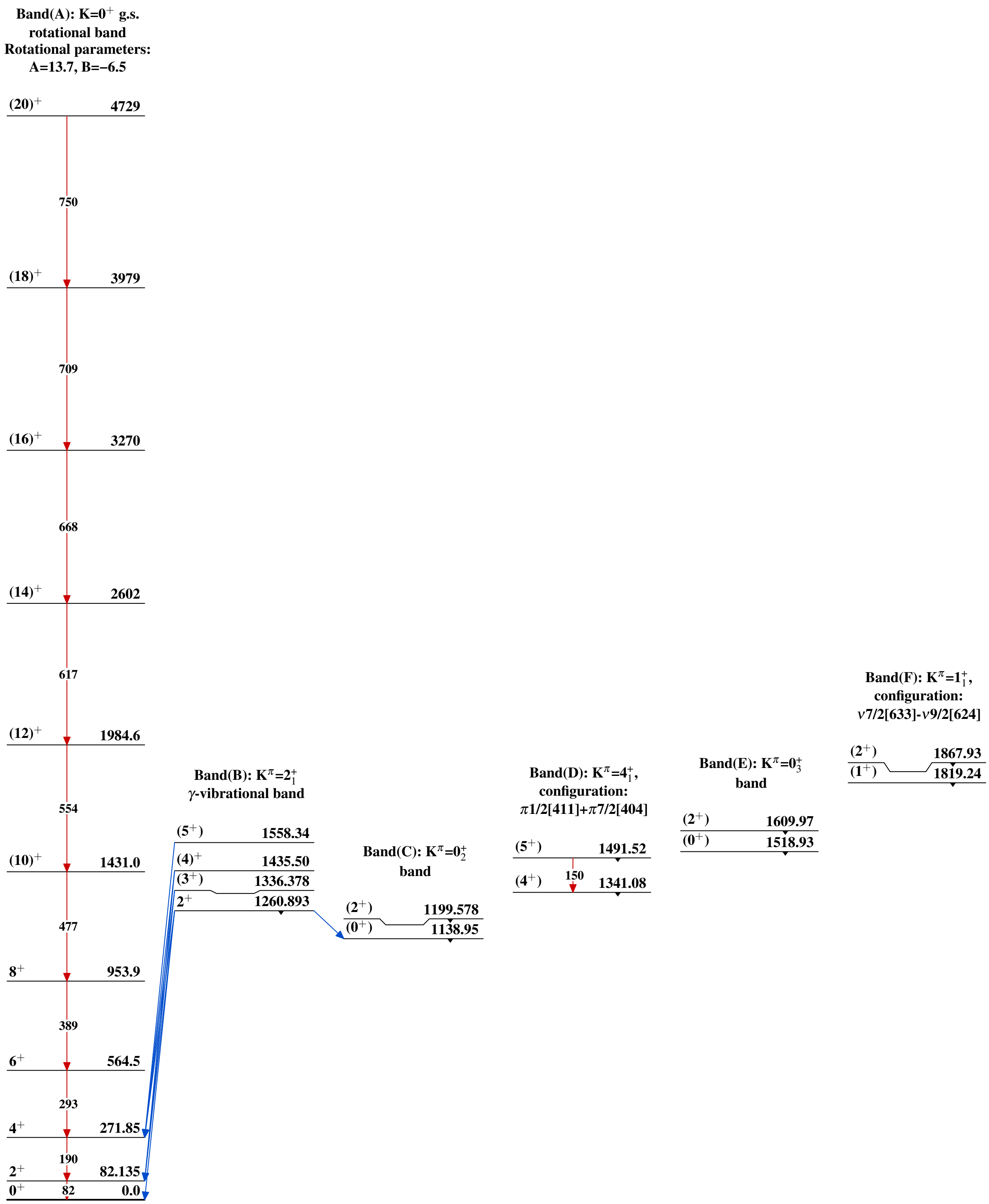
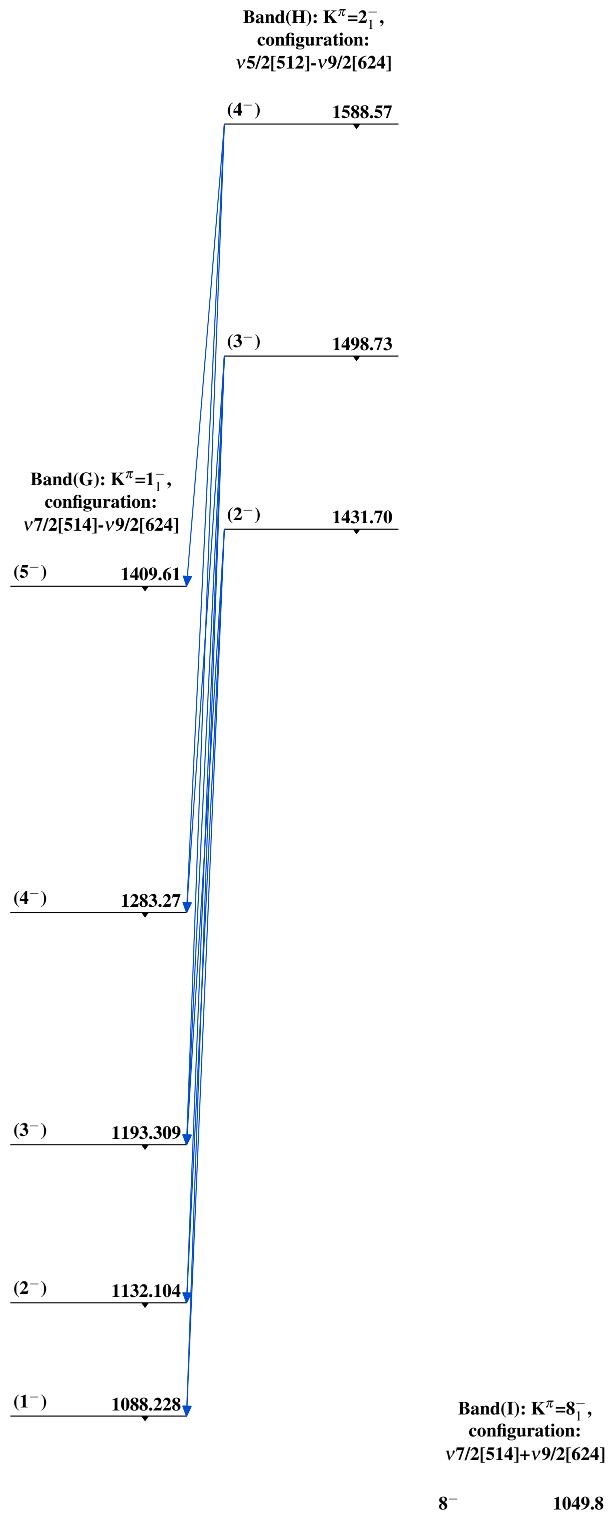
Adopted Levels, Gammas



$^{176}_{70}Yb_{106}$

Adopted Levels, Gammas (continued)



$^{176}_{70}Yb_{106}$

Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Achterberg, O. A. Capurro, G. V. Marti	NDS 110,1473 (2009)	31-May-2008

Q(β^-)=646 *11*; S(n)=6780 *10*; S(p)=9.5×10^3 *syst*; Q(α)=−2.×10^2 *syst* 2012Wa38
Note: Current evaluation has used the following Q record 645 10 *6780* 10 *9520* syst −170 syst 2003Au03.
ΔS(p)=300, ΔQ(α)=300 (2003Au03).

^{178}Yb Levels

Level energies derived from proton spectra in ^{176}Yb(t,p) reactions (1983Bu03,1982Zu02), and γ-ray data from ^{176}Yb(^{48}Ca,Xγ) and ^{176}Yb(^{154}Sm,Xγ) deep inelastic reactions (1997Le11,1999As05).

Cross Reference (XREF) Flags

A ^{176}Yb(t,p)
B ^{176}Yb(^{48}Ca,Xγ),^{176}Yb(^{154}Sm,Xγ)

E(level)	J$^\pi$ [†]	T$_{1/2}$	XREF	Comments
0.0 [@]	0$^+$	74 min *3*	AB	%β^-=100 T$_{1/2}$: from 1973Or03. J$^\pi$: L=0 in (t,p).
84.0 [@] *3*	2$^+$		AB	J$^\pi$: L=2 in (t,p).
278.0 [@] *7*	4$^+$		AB	J$^\pi$: L=4 in (t,p).
578.1 [@] *12*	(6$^+$)		AB	
981.3 [@] *18*	(8$^+$)		B	
1221 [&] *3*	(2$^+$)		A	J$^\pi$: L=2 in (t,p).
1315 [a] *3*	0$^+$		A	J$^\pi$: L=0 in (t,p).
1335 *3*			A	
1387 [‡] *3*	(2$^+$)		A	
1404 [‡a] *3*	2$^+$		A	J$^\pi$: L=2 in (t,p).
1436 *3*			A	
1483.5 [@] *25*	(10$^+$)		B	
1559 [a] *4*	(4$^+$)		A	J$^\pi$: L=4 in (t,p).
1705 *5*			A	
1813 *5*			A	
1869 *5*			A	
1969 *4*			A	
2080 [@] *4*	(12$^+$)		B	
≈2111			A	
2131 *4*	(4$^+$,5$^-$) [#]		A	
2351 *5*			A	
2371 *5*			A	
2390 *5*	(4$^+$)		A	
2405 *5*			A	
2690 *7*	(4$^+$)		A	
2770 [@] *4*	(14$^+$)		B	
2899 *7*	3$^-$		A	J$^\pi$: L=3 in (t,p).
2996 *13*	(4$^+$)		A	
3037 *10*	1$^-$		A	J$^\pi$: L=1 in (t,p).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{178}Yb Levels (continued)

† J^π assignments are based on experimental L-values from ^{175}Yb(t,p) and on band structure systematics of lighter even-Yb isotopes. L-values are given with individual levels.
‡ There is some ambiguity about the identity of the 2^+ member of the excited $K^\pi=0^+$ band. Both the 1387 and the 1404 keV levels have been proposed; see comment in the (t,p) reaction dataset.
# The J^π assignment should be considered tentative; see comments in the (t,p) reaction dataset.
@ Band(A): $K^\pi=0^+$ g.s. rotational band.
& Band(B): $K^\pi=2^+$ γ-vibrational band.
a Band(C): $K^\pi=0^+$ band.

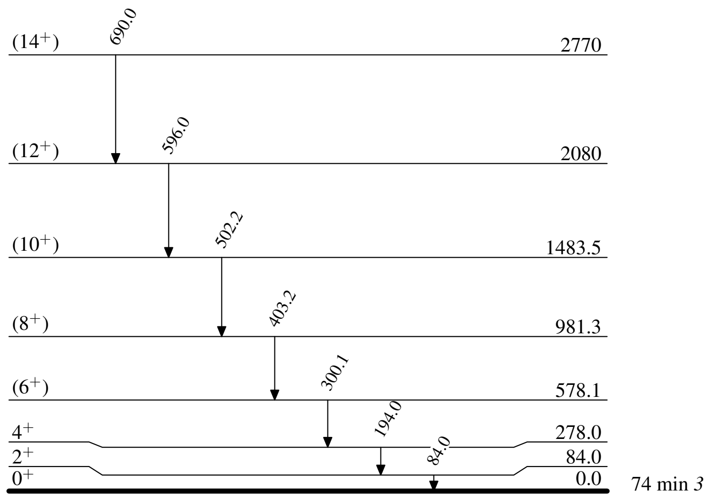
γ(^{178}Yb)

E_i(level)	J_i^π	E_γ†	E_f	J_f^π
84.0	2^+	84.0 *3*	0.0	0^+
278.0	4^+	194.0 *6*	84.0	2^+
578.1	(6^+)	300.1 *10*	278.0	4^+
981.3	(8^+)	403.2 *13*	578.1	(6^+)
1483.5	(10^+)	502.2 *17*	981.3	(8^+)
2080	(12^+)	596.0 *20*	1483.5	(10^+)
2770	(14^+)	690.0 *23*	2080	(12^+)

† γ-ray data from (HI,Xγ) deep inelastic reaction dataset.

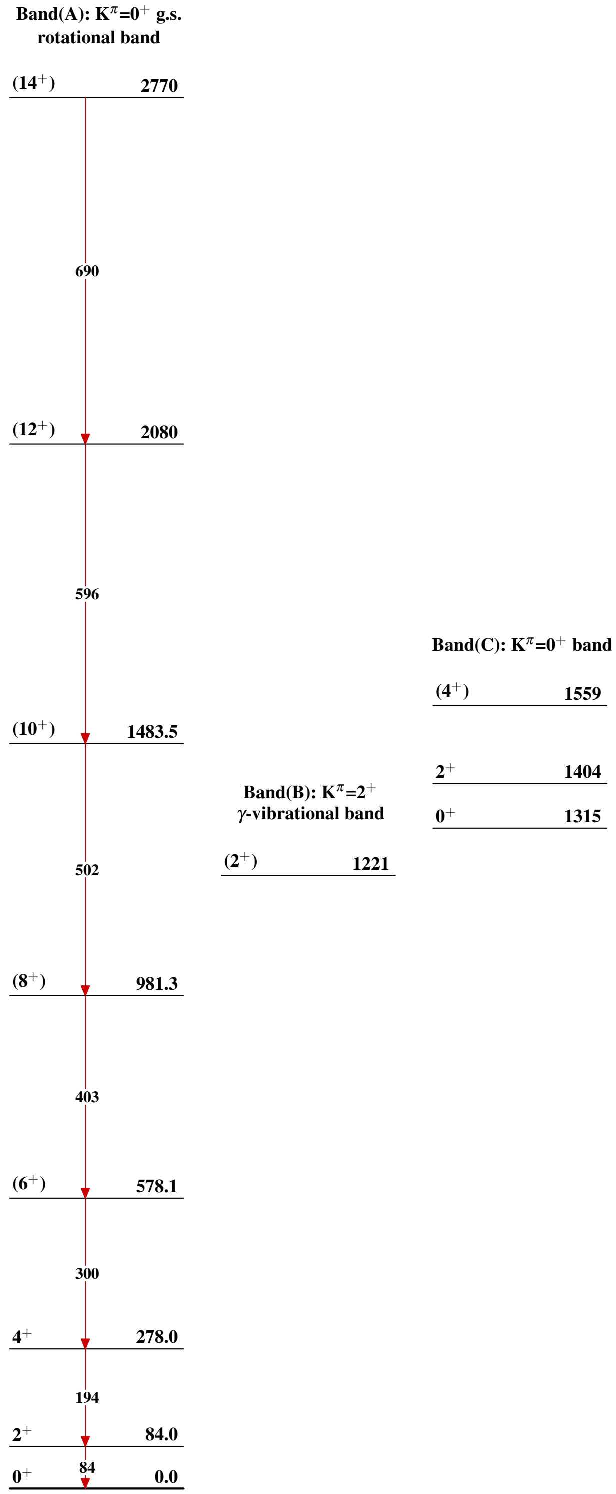
Adopted Levels, Gammas

Level Scheme



$^{178}_{70}Yb_{108}$

Adopted Levels, Gammas



$^{178}_{70}Yb_{108}$