^{165}Yb ε decay (9.9 min) 1978Ad06,1973Ta18

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Ashok K. Jain and Anwesha Ghosh, Balraj Singh	NDS 107, 1075 (2006)	15-Apr-2006

Parent: ^{165}Yb: E=0.0; J$^{\pi}$=5/2^{-}; T$_{1/2}$=9.9 min *3*; Q(ε)=2649 *28*; %ε+%β^{+} decay=100.0

1978Ad06 (also 1985Ad12): measured Eγ, Iγ, γγ, ce, γγ(t). Some revisions In the level scheme are proposed by 1985Ad12.

1973Ta18: measured Eγ, Iγ, γγ. A total of 118 γ rays reported with placements proposed for 73 γ rays amongst 37 excited states, most of which are confirmed by 1978Ad06.

Others:

1980AlZE: measured lifetimes by Ce(t).

1968Ta05: measured T$_{1/2}$(^{165}Yb isotope), Eβ, Eγ, Iγ, ce, Xγ, Xγ(t), γγ(t), xgce(t). The conversion electron measurements were made using Si(Li) detector. The work is by the same author As the first author In 1973Ta18.

^{165}Yb isotope T$_{1/2}$: 1972Ch23, 1969DeZZ, 1967Pa04 (also 1964Pa07), 1961St05.

^{165}Tm Levels

The following levels proposed by 1973Ta18 are not confirmed by 1978Ad06 and are omitted here: 369.8, 609.5, 1424.8; tentative levels At 950.0, 1100.5, 1129.1, 1352.6.

A 1790.4 level proposed In 1978Ad06 is excluded In the reanalysis by 1985Ad12.

E(level)	J$^{\pi}$ †	T$_{1/2}$ ‡
0.0	1/2^{+}	
11.55 *6*	3/2^{+}	0.75 ns *5*
80.36 *6*	7/2^{+}	
129.64 *5*	5/2^{+}	≤0.2 ns
158.20? *25*	1/2^{-}	
158.94 *6*	7/2^{+}	≤0.3 ns
160.46 *6*	7/2^{-}	9.0# μs *5*
181.73 *7*	5/2^{-}	
210.60 *8*	(9/2^{+})	
252.30 *7*	(9/2^{-})	
275.53 *7*	3/2^{-}	
293.52 *10*	9/2^{-}	
315.59 *6*	5/2^{+}	
362.29 *7*	9/2^{+}	
413.90 *11*	11/2^{+}	
415.88@ *10*	(3/2^{+})	
419.82 *7*	7/2^{+}	
450.33 *10*	7/2^{-}	
491.24 *7*	(5/2^{+})	
552.12 *11*	9/2^{+}	
592.26 *10*	(7/2^{+})	
725.86 *10*	(9/2^{+})	
797.32 *9*		
830.88 *16*	(9/2^{-})	
889.88 *23*		
921.41 *20*	(5/2^{-},7/2)	
1012.76 *14*		
1037.03 *9*	(7/2^{-})	
1190.48 *8*		
1251.04 *8*	5/2^{-}	
1280.94 *14*		
1307.74 *10*	(7/2^{+})	
1315.02 *9*		
1325.94 *10*		
1370.07 *10*		
1466.15 *16*		
1564.74 *8*	7/2	
1581.76 *7*	7/2^{-}	
1595.2?@ *3*		
1846.56 *9*	(7/2^{-})	
2194.8 *3*	(7/2)	

† From ‘Adopted Levels’.

‡ From ce-ce(t) and/or ce-γ(t) (1980AlZE), unless otherwise stated.

From γγ(t) (1978Ad06).

@ Level proposed by 1985Ad12.

^{165}Yb ε decay (9.9 min) 1978Ad06,1973Ta18 (continued)

ε,β^+ radiations

E(decay)	E(level)	Iβ^+ †	Iε†	Log *ft*	I(ε+β^+)†	Comments
(4.5×10^2 *3*)	2194.8		0.15 *4*	5.93 *14*	0.15 *4*	εK=0.800 *3*; εL=0.1525 *21*; εM+=0.0471 *8*
(8.0×10^2 *3*)	1846.56		0.8 *2*	5.74 *12*	0.8 *2*	εK=0.8174 *8*; εL=0.1400 *6*; εM+=0.04258 *20*
(1.05×10^3 *3*)	1595.2?		0.03 *2*	7.4 *3*	0.03 *2*	εK=0.8223 *5*; εL=0.1364 *3*; εM+=0.04130 *11*
(1.07×10^3 *3*)	1581.76		3.5 *7*	5.36 *10*	3.5 *7*	εK=0.8225 *4*; εL=0.1363 *3*; εM+=0.04125 *11*
(1.08×10^3 *3*)	1564.74		1.1 *2*	5.88 *9*	1.1 *2*	εK=0.8227 *4*; εL=0.1361 *3*; εM+=0.04119 *11*
(1.18×10^3 *3*)	1466.15		0.13 *4*	6.89 *14*	0.13 *4*	εK=0.8239 *4*; εL=0.13520 *24*; εM+=0.04087 *9*
(1.28×10^3 *3*)	1370.07		0.6 *1*	6.29 *8*	0.6 *1*	εK=0.8248 *3*; εL=0.13446 *21*; εM+=0.04060 *8*
(1.32×10^3 *3*)	1325.94		1.0 *2*	6.10 *9*	1.0 *2*	εK=0.8251 *2*; εL=0.13414 *20*; εM+=0.04049 *7*
(1.33×10^3 *3*)	1315.02		1.2 *2*	6.03 *8*	1.2 *2*	εK=0.8252 *2*; εL=0.13407 *20*; εM+=0.04046 *7*
(1.34×10^3 *3*)	1307.74		0.4 *1*	6.51 *12*	0.4 *1*	εK=0.8253 *2*; εL=0.13402 *20*; εM+=0.04045 *7*
(1.37×10^3 *3*)	1280.94		0.18 *4*	6.88 *10*	0.18 *4*	εK=0.8254 *2*; εL=0.13383 *19*; εM+=0.04038 *7*
(1.40×10^3 *3*)	1251.04	0.0030 *12*	5.2 *10*	5.44 *9*	5.2 *10*	av Eβ=185 *13*; εK=0.82548 *9*; εL=0.13363 *19*; εM+=0.04031 *7*
(1.61×10^3 *3*)	1037.03	0.0051 *15*	1.4 *3*	6.14 *10*	1.4 *3*	av Eβ=280 *13*; εK=0.8244 *5*; εL=0.13216 *22*; εM+=0.03981 *7*
(1.64×10^3 *3*)	1012.76	0.00064 *21*	0.15 *4*	7.12 *12*	0.15 *4*	av Eβ=291 *13*; εK=0.8240 *5*; εL=0.13197 *22*; εM+=0.03975 *8*
(1.73×10^3 *3*)	921.41	0.0009 *3*	0.13 *3*	7.23 *11*	0.13 *3*	av Eβ=332 *13*; εK=0.8221 *8*; εL=0.13122 *25*; εM+=0.03950 *8*
(1.76×10^3 *3*)	889.88	0.0016 *6*	0.19 *7*	7.08 *17*	0.19 *7*	av Eβ=345 *13*; εK=0.8212 *9*; εL=0.1309 *3*; εM+=0.03941 *9*
2602 *20*	160.46	7.0	75	4.8	82	av Eβ=666 *13*; εK=0.759 *4*; εL=0.1190 *7*; εM+=0.03574 *21* E(decay): from 1967Pa04. Other: 2722 *50* (1968Ta05).

† Absolute intensity per 100 decays.

γ(^{165}Tm)

Iγ normalization: From I(γ+ce) balance, assuming Σ Ti(to g.s.)=100% and no ε+β^+ feeding to levels below 160 keV. Note that I(ε+β^+)(g.s.)<0.6% from log $f^{1u}t$>8.5 and I(ε+β^+)(to levels below 160)<8% from log *ft*>5.9.

The following γ rays with Eγ (Iγ relative to 100 for 80.11γ) were reported by 1973Ta18 only: 282.5 *5* (weak), 292.2 *5* (0.04), 427.0 *5* (0.06), 589.3 *7* (weak), 675.1 *1* (0.13), 736.8 *5* (0.09), 920.0 *10* (0.04), 944.0 *10* (0.06), 963 *1* (0.05), 976.8 *10* (0.04), 1100.6 *10* (0.1), 1253.2 *10* (0.01), 1306 *1* (0.04). Placements were proposed for only the 589.3 and 1100.6 γ rays, but the corresponding levels have not been confirmed by 1978Ad06.

E_γ [†]	I_γ [†b]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [a]	δ	α [c]	$I_{(\gamma+ce)}$ [b]	Comments
11.60 *10*		11.55	3/2$^+$	0.0	1/2$^+$	M1(+E2)	≤0.3	3.9×10^3 *36*		α: from α(M1)=303; α(M1+E2, δ=0.32)=7488. Mult.,δ: from M1:M2:M3=≈860:≤200:≤200 (1978Ad06). Additional information 1.
(22.78 *7*)		181.73	5/2$^-$	158.94	7/2$^+$	(E1)		3.58	<4	α(L)= 2.75; α(M)= 0.624
(29.31 *5*)		158.94	7/2$^+$	129.64	5/2$^+$				14 *5*	$I_{(\gamma+ce)}$: from γγ coin.
30.80 *10*	11.8 *20*	160.46	7/2$^-$	129.64	5/2$^+$	E1		1.56		α(L)= 1.198; α(M)= 0.269 Additional information 6. α(L1)exp<2.8, K/L=7 *+8−4*, α(K)exp=1.0 *4* (1968Ta05).
(52.10 *7*)		181.73	5/2$^-$	129.64	5/2$^+$				<4	Ti(52.10γ+22.78γ)≈4.
68.86 *5*	70 *4*	80.36	7/2$^+$	11.55	3/2$^+$	E2		13.75		α(K)= 1.895; α(L)= 9.04; α(M)= 2.205; α(N+..)= 0.601 Mult.: from K:L1:L2:L3=≈400:≤70:770:800 (1978Ad06). Others: L2/L3≈0.91 (1967Pa04), α(L)exp=7.6 *20* (1968Ta05). Additional information 2.
80.11 *2*	374 *20*	160.46	7/2$^-$	80.36	7/2$^+$	E1+M2	≈0.14	1.92		α(K)= 1.416; α(L)= 0.387; α(M)= 0.092; α(N+..)= 0.027 Mult.,δ: α(K)exp=1.42, K:L1:L2=≈1600:180:≈40 (1978Ad06). Others: K/L≈5.5, α(K)exp≈0.88 (1967Pa04). Additional information 7.
91.97 *5*	2.6 *3*	252.30	(9/2$^-$)	160.46	7/2$^-$	M1+E2		4.17 *13*		α(K)=2.3 *11*; α(L)=1.4 *9*; α(M)=0.34 *23*; α(N+..)=0.09 *7* Mult.: M1+E2 from α(K)exp=2.01. Additional information 10.
104.26 *7*	1.21 *15*	419.82	7/2$^+$	315.59	5/2$^+$	M1		2.82		α(K)= 2.361; α(L)= 0.357; α(M)= 0.079; α(N+..)=0.023 α(K)exp=2.74 Additional information 18.
118.06 *5*	18.4 *10*	129.64	5/2$^+$	11.55	3/2$^+$	M1		1.97		α(K)= 1.649; α(L)= 0.250; α(M)= 0.056; α(N+..)=0.016 Additional information 3. Mult.: E2 or M1+E2 from α(K)exp=0.81.

γ(^{165}Tm) (continued)

E_γ [†]	I_γ [†b]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [a]	δ	α [c]	Comments
129.59 *6*	3.0 *5*	129.64	5/2$^+$	0.0	1/2$^+$	(E2)		1.20	Mult.: D or E2 from α(K)exp≤1.3; E2 from ΔJ$^\pi$. Additional information 4.
130.26 *7*	2.2 *5*	210.60	(9/2$^+$)	80.36	7/2$^+$	(M1+E2)	+1.00 *12*	1.33	α(K)=0.90 *5*; α(L)=0.330 *18*; α(M)=0.078 *5*; α(N+..)=0.0220 *13* Mult.: from 'Adopted Gammas'. Other: E2 or E1 from α(K)exp≤0.75. Additional information 9.
132.32 *10*	0.80 *20*	552.12	9/2$^+$	419.82	7/2$^+$				
134.60 *8*	0.75 *15*	293.52	9/2$^-$	158.94	7/2$^+$				
147.29 *5*	7.9 *4*	158.94	7/2$^+$	11.55	3/2$^+$	E2		0.75	α(K)= 0.393; α(L)= 0.274; α(M)= 0.066; α(N+..)=0.018 Mult.: E2 or M1+E2 from α(K)exp=0.46; E2 from ΔJ$^\pi$. Additional information 5.
156.51 *15*	1.05 *10*	315.59	5/2$^+$	158.94	7/2$^+$	M1		0.887	α(K)= 0.743; α(L)= 0.112; α(M)=0.025 α(K)exp=0.63 Additional information 12.
158.20 *25*	0.56 *7*	158.20?	1/2$^-$	0.0	1/2$^+$				
170.25 *5*	4.45 *22*	181.73	5/2$^-$	11.55	3/2$^+$	(E1)		0.082	α(K)= 0.069; α(L)=0.010 Mult.: E1 or (E2) from α(K)exp=0.11. Additional information 8.
185.88 *6*	4.45 *22*	315.59	5/2$^+$	129.64	5/2$^+$	E2		0.335	α(K)= 0.203; α(L)= 0.101; α(M)=0.024 α(K)exp=0.19 Additional information 13.
203.32 *7*	2.81 *15*	362.29	9/2$^+$	158.94	7/2$^+$	M1		0.428	α(K)= 0.359; α(L)= 0.054; α(M)=0.012 α(K)exp=0.35 Additional information 16.
^{x}208.5 *5*	0.17 *4*								
^{x}228.34[‡] *20*	0.22 *3*								
232.61 *8*	1.87 *10*	362.29	9/2$^+$	129.64	5/2$^+$	E2		0.160	α(K)= 0.107; α(L)= 0.041 α(K)exp=0.09 Additional information 17.
235.21 *9*	0.73 *6*	315.59	5/2$^+$	80.36	7/2$^+$	M1		0.286	α(K)= 0.240; α(L)= 0.036 α(K)exp=0.27 Additional information 14.
255.00 *10*	0.41 *5*	413.90	11/2$^+$	158.94	7/2$^+$				
260.87 *9*	0.75 *8*	419.82	7/2$^+$	158.94	7/2$^+$				
^{x}263.89 *20*	0.16 *4*								
275.53 *20*	1.2 *2*	275.53	3/2$^-$	0.0	1/2$^+$	E1		0.024	α(K)= 0.020 α(K)exp<0.04 E_γ,I_γ: total intensity of 275.53 *7* doublet=1.50 *8*. Additional information 11.
275.70 *20*	≈0.3	1466.15		1190.48					
286.03[#] *15*	0.24 *3*	415.88	(3/2$^+$)	129.64	5/2$^+$				
290.32 *16*	0.41 *4*	419.82	7/2$^+$	129.64	5/2$^+$	M1,E2			Mult.: D or E2 from α(K)exp≤0.24; M1,E2 from ΔJ$^\pi$. Additional information 19.

γ(^{165}Tm) (continued)

E_γ[†]	I_γ[†b]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[a]	α[c]	Comments
304.03 *6*	8.3 *5*	315.59	5/2$^+$	11.55	3/2$^+$	(E2)	0.069	α(K)= 0.050; α(L)=0.015 Mult.: E2 or M1+E2 from α(K)exp=0.064. Additional information 15.
312.2 *3*	0.31 *5*	725.86	(9/2$^+$)	413.90	11/2$^+$			
314.3 *3*	0.37 *5*	1564.74	7/2	1251.04	5/2$^-$			
320.68 *8*	1.70 *10*	450.33	7/2$^-$	129.64	5/2$^+$	(E1)	0.016	α(K)=0.014 α(K)exp≤0.04 Additional information 20.
332.30 *20*	1.0 *3*	491.24	(5/2$^+$)	158.94	7/2$^+$	(E2)	0.053	α(K)= 0.039 Mult.: E1 or E2 from α(K)exp≤0.07; ΔJ^π requires E2. Additional information 21.
339.67 *20*	0.54 *18*	419.82	7/2$^+$	80.36	7/2$^+$			
361.59 *10*	2.00 *14*	491.24	(5/2$^+$)	129.64	5/2$^+$			
363.6 *3*	0.71 *10*	725.86	(9/2$^+$)	362.29	9/2$^+$			
^{x}382.49[‡] *20*	0.24 *3*							
^{x}389.9[‡] *5*	0.35 *20*							
391.40 *8*	2.3 *3*	1581.76	7/2$^-$	1190.48				
404.47[#] *10*	1.08 *7*	415.88	(3/2$^+$)	11.55	3/2$^+$			
404.57[#]	≈0.4	1595.2?		1190.48				
416.03[#] *13*	1.26 *10*	415.88	(3/2$^+$)	0.0	1/2$^+$			
422.26 *25*	0.29 *3*	552.12	9/2$^+$	129.64	5/2$^+$			
^{x}430.8[‡] *5*	0.13 *3*							
433.35 *10*	1.44 *10*	592.26	(7/2$^+$)	158.94	7/2$^+$			
^{x}446.1 *3*	0.26 *3*							
462.63 *15*	0.83 *9*	592.26	(7/2$^+$)	129.64	5/2$^+$			
479.72 *7*	2.68 *20*	491.24	(5/2$^+$)	11.55	3/2$^+$			
^{x}492.9[‡] *6*	0.26 *9*							
^{x}522.76 *20*	0.26 *7*							
527.5[d] *3*	0.15[d] *3*	889.88		362.29	9/2$^+$			
527.5[d] *3*	0.15[d] *3*	1564.74	7/2	1037.03	(7/2$^-$)			
^{x}533.3 *4*	0.12 *4*							
545.24 *20*	0.44 *6*	797.32		252.30	(9/2$^-$)			
558.0[#] *4*	0.18 *6*	1595.2?		1037.03	(7/2$^-$)			
566.90 *10*	0.97 *8*	725.86	(9/2$^+$)	158.94	7/2$^+$			
578.58 *16*	0.51 *5*	830.88	(9/2$^-$)	252.30	(9/2$^-$)			
^{x}597.2 *3*	0.38 *8*							
599.6[#] *3*	0.38 *8*	2194.8	(7/2)	1595.2?				
606.24 *25*	0.38 *6*	921.41	(5/2$^-$,7/2)	315.59	5/2$^+$			
^{x}609.4[‡] *3*	0.20 *6*							
^{x}613.52 *20*	0.36 *5*							
628.1 *6*	0.12 *4*	921.41	(5/2$^-$,7/2)	293.52	9/2$^-$			

^{165}Yb ε decay (9.9 min) 1978Ad06,1973Ta18 (continued)

$\gamma(^{165}$Tm) (continued)

E_γ[†]	I_γ[†b]	E_i(level)	J_i^π	E_f	J_f^π
636.79 *10*	1.48 *10*	797.32		160.46	$7/2^-$
644.2[f] *3*	0.20 *4*	1370.07		725.86	$(9/2^+)$
650.0 *3*	0.18 *4*	1012.76		362.29	$9/2^+$
656.00 *7*	2.89 *16*	1846.56	$(7/2^-)$	1190.48	
^{x}675.75 *20*	0.49 *6*				
708.1 *4*	0.25 *8*	889.88		181.73	$5/2^-$
722.3 *5*	0.17 *8*	1315.02		592.26	$(7/2^+)$
728.8 *3*	0.29 *8*	2194.8	(7/2)	1466.15	
739.0 *3*	0.43 *5*	921.41	$(5/2^-,7/2)$	181.73	$5/2^-$
744.6 *8*	0.12 *6*	1037.03	$(7/2^-)$	293.52	$9/2^-$
^{x}772.61 *20*	0.51 *7*				
784.43 *10*	1.60 *12*	1581.76	$7/2^-$	797.32	
^{x}796.2 *4*	0.26 *5*				
^{x}820.9 *4*	0.29 *14*				
826.33 *10*	1.44 *12*	1037.03	$(7/2^-)$	210.60	$(9/2^+)$
831.12 *13*	0.94 *9*	1012.76		181.73	$5/2^-$
838.83 *20*	0.48 *8*	1564.74	7/2	725.86	$(9/2^+)$
^{x}853.05 *20*	0.68 *7*				
856.00 *20*	0.77 *7*	1581.76	$7/2^-$	725.86	$(9/2^+)$
877.0 *6*	0.8 *4*	1037.03	$(7/2^-)$	160.46	$7/2^-$
878.6 *5*	1.0 *4*	889.88		11.55	$3/2^+$
878.6 *5*	1.0 *4*	1370.07		491.24	$(5/2^+)$
892.9[f] *6*	0.44 *20*	1307.74	$(7/2^+)$	413.90	$11/2^+$
895.21 *20*	1.06 *25*	1315.02		419.82	$7/2^+$
906.10 *17*	0.50 *20*	1325.94		419.82	$7/2^+$
935.17 *8*	3.21 *20*	1251.04	$5/2^-$	315.59	$5/2^+$
937.96 *25*	0.71 *8*	1190.48		252.30	$(9/2^-)$
^{x}946.8 *7*	0.21 *10*				
956.68 *7*	8.3 *5*	1037.03	$(7/2^-)$	80.36	$7/2^+$
^{x}967.94 *15*	0.70 *10*				
^{x}973.10[‡] *22*	0.43 *10*				
990.0 *3*	0.61 *14*	1581.76	$7/2^-$	592.26	$(7/2^+)$
998.38 *8*	≈1.0	1251.04	$5/2^-$	252.30	$(9/2^-)$
999.46 *10*	≈3.9	1315.02		315.59	$5/2^+$
1009.3[d] *8*	0.18[d] *9*	1190.48		181.73	$5/2^-$
1009.3[d] *8*	0.18[d] *9*	1325.94		315.59	$5/2^+$
1012.4 *4*	0.47 *15*	1564.74	7/2	552.12	$9/2^+$
1015.7 *3*	0.77 *15*	1466.15		450.33	$7/2^-$
1015.7 *3*	0.77 *15*	1846.56	$(7/2^-)$	830.88	$(9/2^-)$
1030.05 *7*	5.2 *3*	1190.48		160.46	$7/2^-$
1032.3[f] *8*	0.29 *15*	1325.94		293.52	$9/2^-$
1073.54[e] *10*	≈2.4[e]	1564.74	7/2	491.24	$(5/2^+)$
1073.56[e] *13*	≈4.8[e]	1325.94		252.30	$(9/2^-)$
1090.28[&] *8*	33.9 *20*	1251.04	$5/2^-$	160.46	$7/2^-$
1090.54 *9*	≈0.7	1581.76	$7/2^-$	491.24	$(5/2^+)$
1117.74 *10*	1.55 *15*	1370.07		252.30	$(9/2^-)$
1122.00 *12*	1.28 *15*	1280.94		158.94	$7/2^+$
1126.34 *12*	1.25 *15*	1307.74	$(7/2^+)$	181.73	$5/2^-$
1145.3 *3*	0.84 *12*	1564.74	7/2	419.82	$7/2^+$
1148.56 *10*	1.49 *15*	1307.74	$(7/2^+)$	158.94	$7/2^+$
1154.54 *8*	3.52 *25*	1315.02		160.46	$7/2^-$
1161.78 *18*	0.74 *9*	1581.76	$7/2^-$	419.82	$7/2^+$
1165.53 *10*	1.90 *15*	1325.94		160.46	$7/2^-$
1172.7[f] *5*	0.28 *9*	1466.15		293.52	$9/2^-$
1188.40 *13*	1.05 *10*	1370.07		181.73	$5/2^-$
^{x}1193.47 *15*	0.60 *15*				
1202.54 *14*	0.97 *10*	1564.74	7/2	362.29	$9/2^+$
1209.4 *5*	0.52 *20*	1370.07		160.46	$7/2^-$
^{x}1212.3 *5*	0.63 *20*				
1219.41 *8*	3.9 *3*	1581.76	$7/2^-$	362.29	$9/2^+$
^{x}1229.3[‡] *8*	0.18 *10*				
1239.56[f] *9*	2.28 *15*	1251.04	$5/2^-$	11.55	$3/2^+$
1249.5 *10*	0.29 *15*	1564.74	7/2	315.59	$5/2^+$
1266.13 *10*	1.66 *12*	1581.76	$7/2^-$	315.59	$5/2^+$
1269.87[f] *12*	1.14 *11*	1280.94		11.55	$3/2^+$
^{x}1282.65 *12*	1.22 *10*				
1289.65 *12*	1.22 *10*	1370.07		80.36	$7/2^+$
1294.5[f] *5*	0.59 *20*	1846.56	$(7/2^-)$	552.12	$9/2^+$
^{x}1296.81 *20*	1.68 *20*				
1296.81[f]		1307.74	$(7/2^+)$	11.55	$3/2^+$
^{x}1308.7 *5*	0.36 *7*				
1312.12 *11*	1.08 *8*	1564.74	7/2	252.30	$(9/2^-)$
1329.36 *8*	2.82 *20*	1581.76	$7/2^-$	252.30	$(9/2^-)$
^{x}1339.9[@] *5*	0.14 *7*				
^{x}1351.9 *3*	0.23 *4*				
^{x}1356.05 *25*	0.32 *4*				
^{x}1367.57 *12*	1.13 *10*				
1371.33 *12*	1.12 *10*	1581.76	$7/2^-$	210.60	$(9/2^+)$
1386.0 *4*	0.20 *5*	1466.15		80.36	$7/2^+$
^{x}1390.47 *14*	0.71 *8*				
^{x}1401.41 *16*	0.68 *8*				
1404.7 *3*	0.30 *5*	1564.74	7/2	160.46	$7/2^-$
1421.35 *10*	2.46 *15*	1581.76	$7/2^-$	160.46	$7/2^-$
1426.91 *12*	0.95 *12*	1846.56	$(7/2^-)$	419.82	$7/2^+$

γ(^{165}Tm) (continued)

E_γ †	I_γ †b	E_i(level)	J_i^π	E_f	J_f^π	E_γ †	I_γ †b	E_i(level)	J_i^π	E_f	J_f^π
1435.28 *16*	0.81 *12*	1564.74	7/2	129.64	5/2+	x1802.8 *8*	0.20 *5*				
1452.06 *11*	2.20 *15*	1581.76	7/2−	129.64	5/2+	x1827.0 *15*	0.15 *7*				
1501.31 *8*	4.5 *3*	1581.76	7/2−	80.36	7/2+	x1881.0 *10*	0.15 *6*				
1531.10 *17*	0.65 *7*	1846.56	(7/2−)	315.59	5/2+	x1916.5 *10*	0.25 *10*				
1686.0 *4*	0.47 *8*	1846.56	(7/2−)	160.46	7/2−	1942.6 *10*	0.40 *6*	2194.8	(7/2)	252.30	(9/2−)
x1709.0@ *4*	0.28 *6*					x1957.4 *10*	0.44 *6*				
x1726.1 *4*	0.32 *6*					x1978.0 *15*	0.20 *8*				
x1784.8 *5*	0.29 *7*					x2204.5 *15*	0.20 *8*				
x1788.9 *5*	0.37 *7*										

† From 1978Ad06.
‡ Assignment to ^{165}Yb decay is uncertain.
\# Placement from 1985Ad12.
@ Placement proposed by 1978Ad06 is excluded by 1985Ad12.
& 1090.28+1090.54 are unresolved.
a From ce data. The α(K)exp′s were normalized to α(K)(68.86γ)=1.89 for E2. Electron intensities given by 1978Ad06 for 21 transitions are normalized to γ-ray intensities and assuming that 68.86γ is pure E2 from L-subshell ratios measured by 1978Ad06.
b For absolute intensity per 100 decays, multiply by 0.090 *25*.
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 with undivided intensity.
e Multiply placed with intensity suitably divided.
f Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

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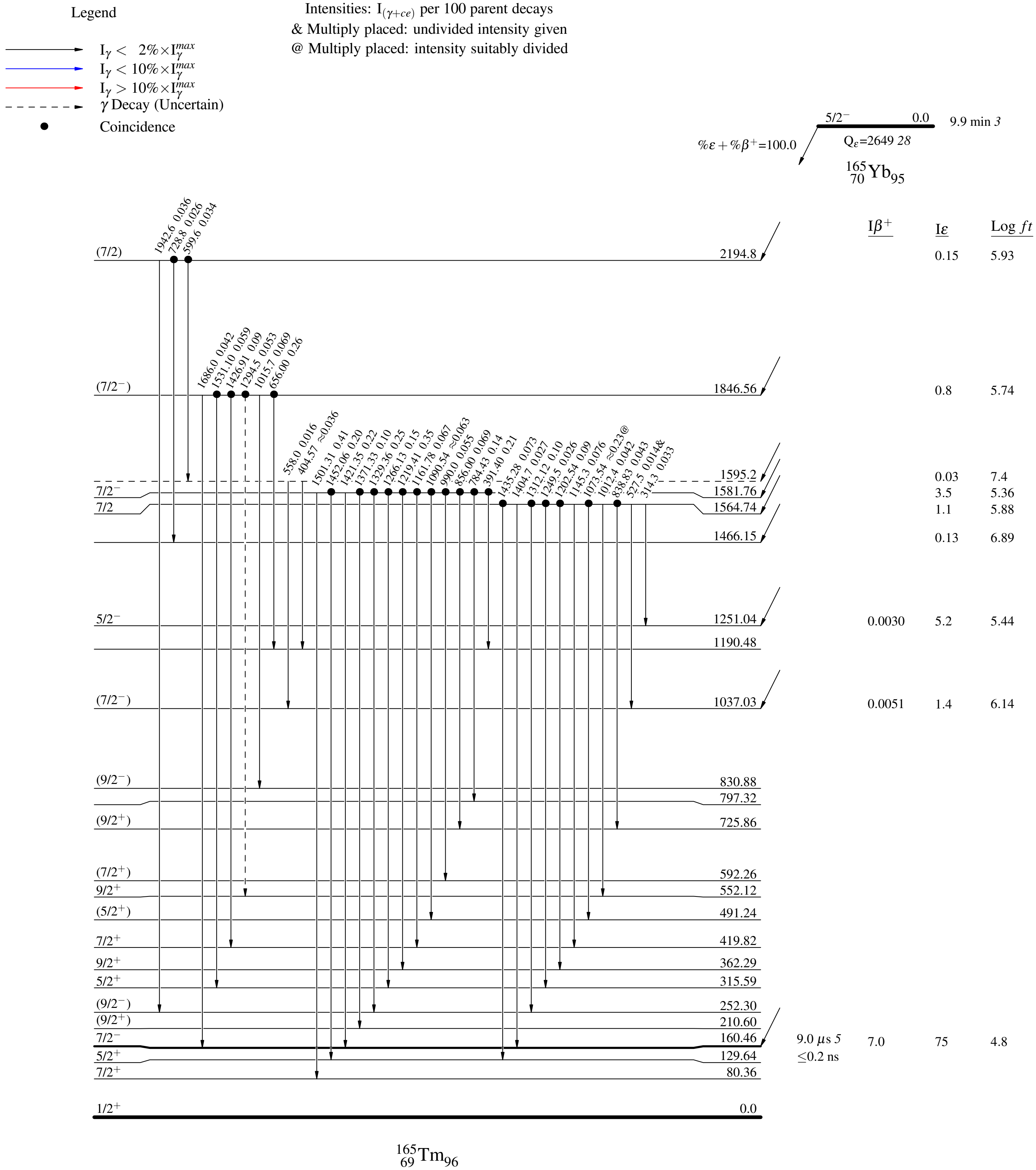
^{165}Yb ε decay (9.9 min) 1978Ad06,1973Ta18

Decay Scheme

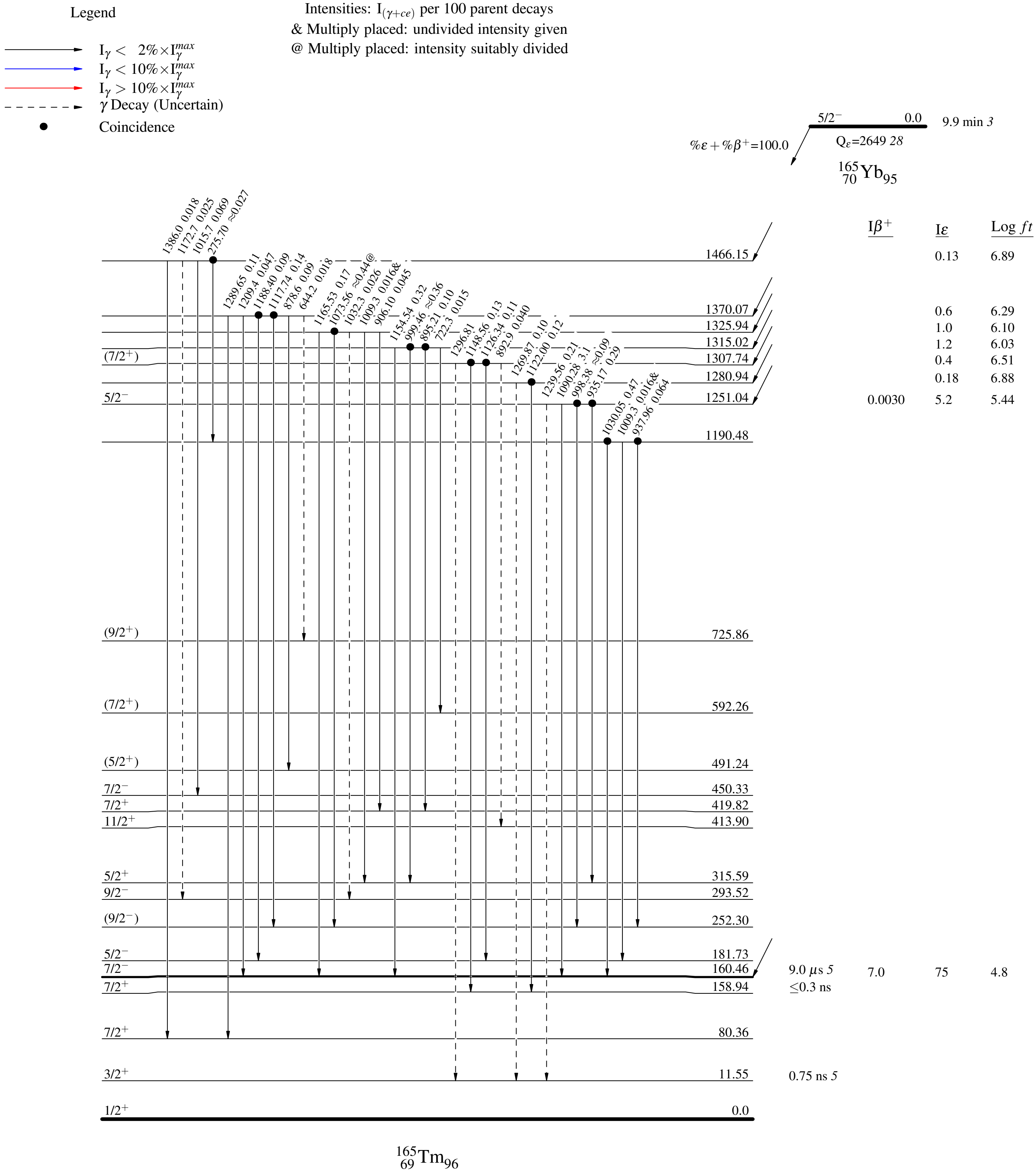
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided



^{165}Yb ε decay (9.9 min) 1978Ad06,1973Ta18

Decay Scheme (continued)

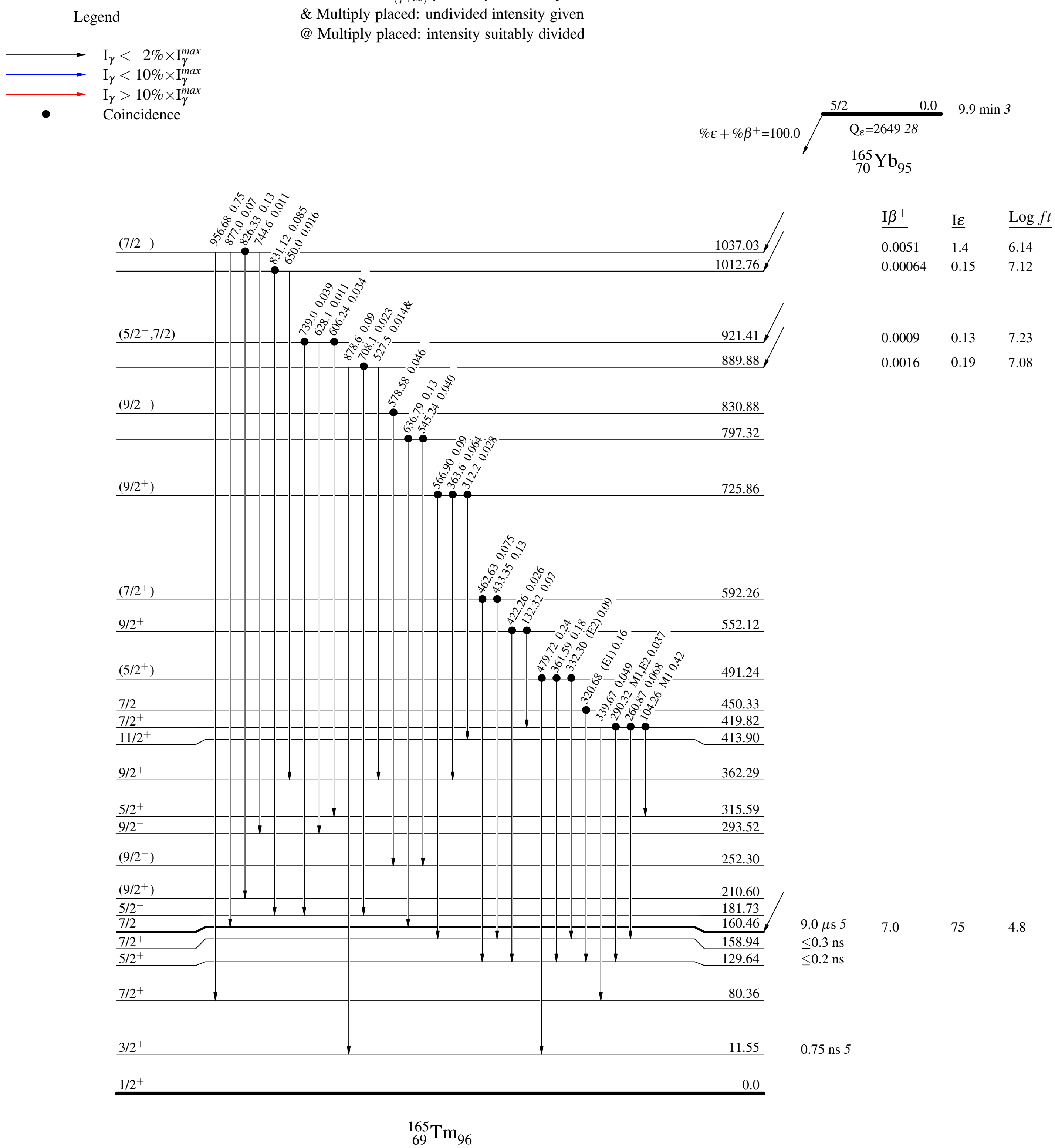
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided



^{165}Yb ε decay (9.9 min) 1978Ad06,1973Ta18

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided



^{165}Yb ε decay (9.9 min) 1978Ad06,1973Ta18

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided