^{174}Ta ε decay 1975Ca11,1971Ch26,1971Gi04

History

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

Parent: ^{174}Ta: E=0.0; $J^{\pi}=3^{+}$; $T_{1/2}$=1.14 h *8*; Q(ε)=3844 *80*; %ε+%β^{+} decay=100.0

^{174}Hf Levels

E(level)	J^{π} [†]	$T_{1/2}$	Comments
0.0[‡]	0^+		
90.985[‡] *19*	2^+	1.66 ns *7*	$T_{1/2}$: weighted average of 1.68 ns *8* (1971Ch26) and 1.64 ns *10* (1965Ab02,1967Ab06).
297.38[‡] *4*	4^+		
608.26[‡] *5*	6^+		
828.13[#] *24*	0^+		
900.24[#] *4*	2^+		
1062.17[#] *4*	4^+		
1226.77[@] *7*	(2^+)		
1303.36[&] *8*	(3^+)		
1308.69[a] *10*	(2^-)		
1319.40[b] *5*	(2^+)	≤5 ns	$T_{1/2}$: from $\gamma\gamma$(t) (1975Ca11).
1336.48[@] *7*	$(3)^+$		
1394.60[&] *8*	$(4)^+$		
1425.24[a] *8*	(4^-)		
1442.66[a] *11*	(5^-)		
1448.85[@] *6*	(4^+)		
1496.36[c] *11*	(2^+)		
1503.29[b] *5*	$(4)^+$	≤5 ns	$T_{1/2}$: from $\gamma\gamma$(t) (1975Ca11).
1626.0[c] *3*	(4^+)		
1648.33 *18*	(4)		
1658.41[@] *7*	(5^+)		J^{π}: $J^{\pi}=(5^{+})$ assignment is not consistent with log *ft*=7.45 from ^{174}Ta ($J^{\pi}=3^{(+)}$) $\varepsilon+\beta^{+}$ decay.
1779.9 *2*	$3,4^+$		
1861.78 *15*	$3,4^+$		
1904.4[c] *3*			J^{π}: a tentative $J^{\pi}=(6^{+})$ assignment given by authors is not consistent with log *ft*=8.1 to this level.
2030.25 *15*	(4^+)		
2338.51 *13*	$3,4^+$		
2353.99 *25*	$3,4^+$		
2402.80 *7*	(2^+)		
2421.98 *10*	(3^-)		
2441.85 *23*	$3,4^+$		
2486.1 *4*	(2^+)		
2491.7 *3*	$3,4^+$		
2505.25 *15*	(2^+)		
2529.97 *17*	(2^+)		
2592.21 *20*	$3,4^+$		
2641.0 *4*	(4^+)		
2729.84 *12*	2		
2791.42 *17*	$3,4^+$		
2931.76 *25*	(2^+)		
3087.9 *3*	(4^+)		
3106.0 *5*			

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^{174}Ta ε decay 1975Ca11,1971Ch26,1971Gi04 (continued)

^{174}Hf Levels (continued)

E(level)
3191.1 *5*
3248.01 *16*

† Spin assignments are based on γ-ray multipolarities, log *ft* values, and rotational band structure.
‡ K=0$^+$ g.s.-rotational band.
# K=0$^+$ β-vibrational band.
@ K=2$^+$ γ-vibrational band.
& K=(3$^+$) band. Probable Configuration=(ν 1/2[521])+(ν 5/2[512]).
[a] K=(1$^-$) octupole-vibrational band.
[b] K=(0$^+$) band.
[c] K=(0$^+$) band.

ε,β^+ radiations

E(decay)	E(level)	Iβ^+ †	Iε†	Log *ft*	I($\varepsilon+\beta^+$)†	Comments
(6.0×10^2 *8*)	3248.01		0.8 *1*	6.40 *16*	0.8 *1*	εK= 0.802 *6*; εL= 0.151 *4*; εM+= 0.0473 *15*
(6.5×10^2 *8*)	3191.1		0.35 *5*	6.84 *15*	0.35 *5*	εK= 0.804 *5*; εL= 0.149 *4*; εM+= 0.0465 *12*
(7.4×10^2 *8*)	3106.0		0.23 *4*	7.14 *14*	0.23 *4*	εK= 0.808 *4*; εL= 0.1465 *24*; εM+= 0.0455 *9*
(7.6×10^2 *8*)	3087.9		0.47 *6*	6.85 *13*	0.47 *6*	εK= 0.809 *3*; εL= 0.1461 *23*; εM+= 0.0454 *9*
(9.1×10^2 *8*)	2931.76		0.6 *1*	6.92 *12*	0.6 *1*	εK= 0.8129 *20*; εL= 0.1429 *15*; εM+= 0.0442 *6*
(1.05×10^3 *8*)	2791.42		≈0.1	7.8	≈0.1	εK= 0.8155 *15*; εL= 0.1410 *11*; εM+= 0.0435 *4*
(1.11×10^3 *8*)	2729.84		≈0.7	7.0	≈0.7	εK= 0.8165 *13*; εL= 0.1403 *10*; εM+= 0.0432 *4*
(1.20×10^3 *8*)	2641.0		≈0.4	7.4	≈0.4	εK= 0.8177 *11*; εL= 0.1394 *8*; εM+= 0.0429 *3*
(1.31×10^3 *8*)	2529.97		0.73 *8*	7.17 *8*	0.73 *8*	εK= 0.8188; εL= 0.1385 *7*; εM+= 0.04259 *24*
(1.34×10^3 *8*)	2505.25		0.34 *4*	7.52 *9*	0.34 *4*	εK= 0.8190; εL= 0.1383 *7*; εM+= 0.04252 *23*
(1.35×10^3 *8*)	2491.7		0.6 *1*	7.28 *10*	0.6 *1*	εK= 0.8191; εL= 0.1382 *7*; εM+= 0.04248 *23*
(1.36×10^3 *8*)	2486.1		≈0.1	8.1	≈0.1	εK= 0.8191; εL= 0.1381 *7*; εM+= 0.04247 *23*
(1.40×10^3 *8*)	2441.85		0.31 *5*	7.60 *10*	0.31 *5*	εK= 0.8194; εL= 0.1378 *6*; εM+= 0.04235 *22*
(1.42×10^3 *8*)	2421.98		1.0 *1*	7.11 *8*	1.0 *1*	εK= 0.8195; εL= 0.1377 *6*; εM+= 0.04230 *22*
(1.44×10^3 *8*)	2402.80		1.3 *2*	7.00 *9*	1.3 *2*	εK= 0.8195; εL= 0.1375 *6*; εM+= 0.04225 *21*
(1.49×10^3 *8*)	2353.99	0.0003 *5*	0.31 *5*	7.66 *10*	0.31 *5*	av Eβ= 228 *36*; εK= 0.8196; εL= 0.1372 *6*; εM+= 0.04213 *21*
(1.51×10^3 *8*)	2338.51	0.0006 *8*	0.50 *10*	7.46 *11*	0.5 *1*	av Eβ= 235 *36*; εK= 0.8196; εL= 0.1371 *6*; εM+= 0.04209 *21*
(1.81×10^3 *8*)	2030.25	0.0047 *24*	0.55 *7*	7.59 *8*	0.55 *7*	av Eβ= 371 *36*; εK= 0.815 *3*; εL= 0.1346 *8*; εM+= 0.0413 *3*
(1.94×10^3 *8*)	1904.4	0.0031 *14*	0.21 *4*	8.07 *10*	0.21 *4*	av Eβ= 426 *36*; εK= 0.811 *4*; εL= 0.1334 *10*; εM+= 0.0409 *3*
(1.98×10^3 *8*)	1861.78	0.0027 *13*	0.16 *5*	8.21 *15*	0.16 *5*	av Eβ= 445 *36*; εK= 0.809 *5*; εL= 0.1329 *10*; εM+= 0.0407 *4*
(2.06×10^3 *8*)	1779.9	0.0034 *15*	0.15 *4*	8.27 *13*	0.15 *4*	av Eβ= 481 *36*; εK= 0.805 *5*; εL= 0.1319 *11*; εM+= 0.0404 *4*
(2.19×10^3 *8*)	1658.41	0.040 *13*	1.16 *20*	7.43 *9*	1.2 *2*	av Eβ= 534 *36*; εK= 0.797 *7*; εL= 0.1302 *13*; εM+= 0.0398 *4*
(2.22×10^3 *8*)	1626.0	0.011 *4*	0.30 *5*	8.03 *9*	0.31 *5*	av Eβ= 549 *36*; εK= 0.794 *7*; εL= 0.1297 *14*; εM+= 0.0397 *5*
(2.34×10^3 *8*)	1503.29	0.25 *7*	4.8 *5*	6.87 *7*	5.1 *5*	av Eβ= 603 *36*; εK= 0.784 *8*; εL= 0.1276 *16*; εM+= 0.0390 *5*
(2.40×10^3 *8*)	1448.85	0.101 *24*	1.70 *19*	7.34 *7*	1.8 *2*	av Eβ= 627 *36*; εK= 0.778 *9*; εL= 0.1266 *16*; εM+= 0.0387 *5*

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^{174}Ta ε decay 1975Ca11,1971Ch26,1971Gi04 (continued)

ε,β⁺ radiations (continued)

E(decay)	E(level)	Iβ⁺ †	Iε†	Log ft	I(ε+β⁺)†	Comments
(2.42×10³‡ 8)	1425.24	0.01	0.19	8.3	≈0.2	av Eβ= 637 36; εK= 0.776 9; εL= 0.1261 17; εM+= 0.0386 5
(2.45×10³ 8)	1394.60	0.041 11	0.60 12	7.81 10	0.64 12	av Eβ= 651 36; εK= 0.773 10; εL= 0.1255 17; εM+= 0.0384 6
(2.51×10³ 8)	1336.48	0.036 10	0.46 10	7.95 10	0.5 1	av Eβ= 676 36; εK= 0.766 10; εL= 0.1243 18; εM+= 0.0380 6
(2.52×10³ 8)	1319.40	0.13 4	1.6 4	7.42 12	1.7 4	av Eβ= 684 36; εK= 0.764 10; εL= 0.1239 18; εM+= 0.0379 6
(2.54×10³ 8)	1303.36	0.023 9	0.28 10	8.18 16	0.3 1	av Eβ= 691 36; εK= 0.762 11; εL= 0.1236 19; εM+= 0.0378 6
(2.78×10³ 8)	1062.17	0.25 5	1.85 18	7.44 7	2.1 2	av Eβ= 798 36; εK= 0.729 13; εL= 0.1177 22; εM+= 0.0360 7
3547 80	297.38	17.7 20	43 4	6.28 6	61 5	av Eβ= 1141 37; εK= 0.587 17; εL= 0.094 3; εM+= 0.0287 9 E(decay): from Eβ+=2525 80 (1971Ch26).
(3.75×10³ 8)	90.985	5 3	11 6	6.95 23	16 8	av Eβ= 1234 37; εK= 0.545 17; εL= 0.087 3; εM+= 0.0266 9

† Absolute intensity per 100 decays.
‡ Existence of this branch is questionable.

γ(^{174}Hf)

Iγ normalization: From level scheme if sum of transition intensities to g.s.=100%.
Evaluator deduced α(K)exp using average values of Ice from 1975Ca11 and 1971Ch26.
Measured Eγ, Iγ, γγ coin, Ice, detectors:Ge(Li), Si(Li). Others: 1969GiZY, 1970GiZZ, 1970ChZF, 1970PeZX, 1970ChZF, 1971EmZY, 1971EmZX, 1971Bo48, 1985Sz03.
Measured Ice, subshell ratios. Detector: magnetic spectrometer (1968Ha39).
I(γ±)=1196 60 (1975Ca11).

Eγ†	Iγ†@	Ei(level)	J_i^π	E_f	J_f^π	Mult.#	α&	Comments
91.00 2	262‡ 20	90.985	2⁺	0.0	0⁺	E2	5.21	%Iγ=15.9 4 α(K)= 1.151; α(L)= 3.07; α(M)= 0.764; α(N+..)= 0.2180 Mult.: from α(L)exp=4.8 6 (1975Ca11,1971Ch26); ce(K):ce(L2):ce(L3):ce(M)=48:105:10:50 (1968Ha39).
206.50 4	1000	297.38	4⁺	90.985	2⁺	E2	0.261	α(K)= 0.1543; α(L)= 0.0813; α(M)= 0.0198; α(N+..)=0.00562 Mult.: from α(K)exp=0.155 (1975Ca11); ce(K):ce(L):ce(M) 155:77 5:24.5 24; ce(K):ce(L2):ce(L3):ce(M) 41:23:13:9 (1968Ha39).
ˣ211.81 40	1.1 6							
ˣ220.44 50	1.43 19							
222.80ᵃ 50	0.33ᵃ 9	1448.85	(4⁺)	1226.77	(2⁺)	[E2]	0.2032	α(K)= 0.1250; α(L)= 0.0596; α(M)=0.01449; α(N+..)=0.00411
222.80ᵃ 50	0.33ᵃ 9	1648.33	(4)	1425.24	(4⁻)			
259.36 82	1.06 19	3191.1		2931.76	(2⁺)			

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^{174}Ta ε decay 1975Ca11,1971Ch26,1971Gi04 (continued)

γ(^{174}Hf) (continued)

$E_γ$[†]	$I_γ$[†@]	E_i(level)	$J_i^π$	E_f	$J_f^π$	Mult.[#]	α[&]	Comments
301.62 *70*	0.59 *16*	2641.0	(4$^+$)	2338.51	3,4$^+$			
310.90 *4*	20.8[‡] *8*	608.26	6$^+$	297.38	4$^+$	E2	0.0718	α(K)= 0.0502; α(L)=0.01650; α(M)=0.00396; α(N+..)=0.00112 Mult.: from α(K)exp=0.044 *5* (1975Ca11,1971Ch26).
339.33 *29*	3.6 *5*	2931.76	(2$^+$)	2592.21	3,4$^+$			
362.95 *34*	0.8 *2*	1425.24	(4$^-$)	1062.17	4$^+$	[E1]	0.01363	α(K)=0.01145; α(L)=0.00169; α(M)=0.00038; α(N+..)=0.00011
366.2 *14*	0.17 *10*	1861.78	3,4$^+$	1496.36	(2$^+$)			
371.68 *65*	0.35 *14*	2030.25	(4$^+$)	1658.41	(5$^+$)	[M1]	0.1075	α(K)= 0.0899; α(L)=0.01365; α(M)=0.00307; α(N+..)=0.00090
408.37 *54*	0.79 *25*	1308.69	(2$^-$)	900.24	2$^+$	[E1]	0.01035	α(K)=0.00871; α(L)=0.00128; α(M)=0.00029
418.99 *12*	2.9 *4*	1319.40	(2$^+$)	900.24	2$^+$	E0+M1+E2	0.06 *4*	α: experimental value from 1975Ca11, 1971Ch26. Mult.: from α(K)exp=0.05 *3* (1975Ca11,1971Ch26).
440.88 *12*	3.5 *4*	1503.29	(4)$^+$	1062.17	4$^+$	[M1]	0.0686	α(K)= 0.0574; α(L)=0.00867; α(M)=0.00195; α(N+..)=0.00057
454.07 *9*	3.6[‡] *5*	1062.17	4$^+$	608.26	6$^+$	[E2]	0.02490	α(K)=0.01899; α(L)=0.00454; α(M)=0.00107; α(N+..)=0.00030
471.10 *37*	0.63 *15*	1779.9	3,4$^+$	1308.69	(2$^-$)			
491.16 *36*	0.67 *19*	1319.40	(2$^+$)	828.13	0$^+$	[E2]	0.02034	α(K)=0.01571; α(L)=0.00356; α(M)=0.00083; α(N+..)=0.00024
560.28 *18*	2.09 *30*	2421.98	(3$^-$)	1861.78	3,4$^+$			
574.14 *23*	1.31 *23*	2353.99	3,4$^+$	1779.9	3,4$^+$			
596.19[a] *12*	2.54[a] *30*	1496.36	(2$^+$)	900.24	2$^+$	[M1]	0.0315	α(K)= 0.0263; α(L)=0.00395
596.19[a] *12*	2.54[a] *30*	1658.41	(5$^+$)	1062.17	4$^+$	[M1]	0.0315	α(K)= 0.0263; α(L)=0.00395
602.91 *7*	7.2[‡] *6*	900.24	2$^+$	297.38	4$^+$	E2	0.01238	α(K)=0.00978; α(L)=0.00196 Mult.: from α(K)exp=0.017 *6* (1975Ca11,1971Ch26).
614.82 *91*	0.8 *3*	3106.0		2491.7	3,4$^+$			
^{x}621.65 *46*	0.82 *26*							
^{x}628.86 *49*	1.07 *18*							
^{x}657.05 *29*	1.38 *18*							
703.16 *73*	0.86 *24*	3106.0		2402.80	(2$^+$)			
737.25 *36*	0.86 *23*	828.13	0$^+$	90.985	2$^+$	[E2]	0.00784	α(K)=0.00631; α(L)=0.00115
764.79 *5*	21.0[‡] *10*	1062.17	4$^+$	297.38	4$^+$	E0+M1+E2	0.08 *2*	α: experimental value from 1975Ca11, 1971Ch26. Mult.: from α(K)exp=0.048 *14*, ce(K)/ce(L)=5.25 *82* (1975Ca11,1971Ch26).
^{x}771.7 *16*	0.48 *20*							
809.33 *6*	12.2[‡] *7*	900.24	2$^+$	90.985	2$^+$	E0+M1+E2	0.050 *6*	α: experimental value from 1975Ca11, 1971Ch26. Mult.: from α(K)exp=0.040 *6* (1975Ca11,1971Ch26).
828.0 *10*		828.13	0$^+$	0.0	0$^+$	E0		
834.35 *20*	3.3 *6*	1442.66	(5$^-$)	608.26	6$^+$	[E1]	0.00231	α(K)=0.00195; α(L)=0.00027
835.16 *20*	3.3 *6*	2338.51	3,4$^+$	1503.29	(4)$^+$			
840.79 *34*	1.3 *5*	1448.85	(4$^+$)	608.26	6$^+$	[E2]	0.00590	α(K)=0.00480; α(L)=0.00083
^{x}890.95 *58*	0.98 *15*							
900.15 *5*	8.9[‡] *6*	900.24	2$^+$	0.0	0$^+$	[E2]	0.00512	α(K)=0.00418; α(L)=0.00070
929.08[a] *87*	0.49[a] *19*	2353.99	3,4$^+$	1425.24	(4$^-$)			

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^{174}Ta ε decay 1975Ca11,1971Ch26,1971Gi04 (continued)

γ(^{174}Hf) (continued)

E_γ[†]	I_γ[†@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ	α[&]	Comments
929.08[a] *87*	0.49[a] *19*	2791.42	3,4$^+$	1861.78	3,4$^+$				
933.62 *92*	0.42 *18*	2592.21	3,4$^+$	1658.41	(5$^+$)				
971.06 *5*	18.2[‡] *11*	1062.17	4$^+$	90.985	2$^+$	(E2)		0.00438	α(K)=0.00359; α(L)=0.00059 Mult.: from α(K)exp=0.030 *8* (1975Ca11,1971Ch26).
979.25 *13*	4.1 *6*	2421.98	(3$^-$)	1442.66	(5$^-$)	[E2]		0.00430	α(K)=0.00353; α(L)=0.00058
996.61 *17*	6.5 *8*	2421.98	(3$^-$)	1425.24	(4$^-$)	M1(+E2)			Mult.: from α(K)exp=0.006 *3* (1971Gi04).
1006.21 *13*	1.2 *5*	1303.36	(3$^+$)	297.38	4$^+$	[M1]		0.00848	α(K)=0.00709; α(L)=0.00105
1018.5 *10*	2.1 *4*	1626.0	(4$^+$)	608.26	6$^+$	[E2]		0.00398	α(K)=0.00327; α(L)=0.00053
1022.07 *6*	13.8 *12*	1319.40	(2$^+$)	297.38	4$^+$	E2		0.00395	α(K)=0.00325; α(L)=0.00053 Mult.: from α(K)exp=0.0035 *23*.
1029.81 *14*	0.32 *23*	2338.51	3,4$^+$	1308.69	(2$^-$)				
1038.93 *18*	2.7 *4*	1336.48	(3)$^+$	297.38	4$^+$	[M1]		0.00784	α(K)=0.00656; α(L)=0.00097
1050.18 *28*	3.1 *6*	1658.41	(5$^+$)	608.26	6$^+$	[M1]		0.00764	α(K)=0.00639; α(L)=0.00094
1066.37 *9*	4.5 *8*	2402.80	(2$^+$)	1336.48	(3)$^+$	E2			Mult.: from α(K)exp=0.0031 *14* (1971Gi04).
1083.30 *8*	5.4[‡] *8*	2402.80	(2$^+$)	1319.40	(2$^+$)	E0+M1+E2		0.010 *5*	α: experimental value from 1971Gi04, 1975Ca11. Mult.: from α(K)exp=0.008 *4*.
1097.26 *9*	6.9[‡] *5*	1394.60	(4)$^+$	297.38	4$^+$	M1(+E2)			Mult.: from α(K)exp=0.0048 *26* (1971Gi04).
1102.06 *36*	0.84 *15*	2421.98	(3$^-$)	1319.40	(2$^+$)	[E1]		0.00138	α(K)=0.00116; α(L)=0.00016
1104.99 *36*	0.58 *14*	2441.85	3,4$^+$	1336.48	(3)$^+$				
1112.2 *14*	0.42 *19*	2338.51	3,4$^+$	1226.77	(2$^+$)				
1127.81 *8*	10.1 *9*	1425.24	(4$^-$)	297.38	4$^+$	(E1)		0.00132	α(K)=0.00112; α(L)=0.00015 Mult.: from α(K)exp=0.0015 *12*.
1135.81 *7*	11.3[‡] *9*	1226.77	(2$^+$)	90.985	2$^+$	(E2)		0.00320	α(K)=0.00264; α(L)=0.00042 Mult.: from α(K)exp=0.0032 *18*.
1139.14 *36*	0.94 *17*	2441.85	3,4$^+$	1303.36	(3$^+$)				
1145.20 *15*	4.6 *6*	1442.66	(5$^-$)	297.38	4$^+$	[E1]		0.00129	α(K)=0.00109; α(L)=0.00015
1151.41 *6*	18.3[‡] *21*	1448.85	(4$^+$)	297.38	4$^+$	(E2)		0.00311	α(K)=0.00257; α(L)=0.00040 Mult.: from α(K)exp=0.0025 *13*.
1166.55[a] *36*	0.58[a] *14*	2486.1	(2$^+$)	1319.40	(2$^+$)	[M1]		0.00591	α(K)=0.00494; α(L)=0.00072
1166.55[a] *36*	0.58[a] *14*	2592.21	3,4$^+$	1425.24	(4$^-$)				
1176.05 *10*	10.7 *10*	2402.80	(2$^+$)	1226.77	(2$^+$)	(E2)		0.0029 *9*	α(K)=0.00247; α(L)=0.000387 Mult.: from α(K)exp=0.0014 *6* (1971Gi04).
1185.84 *14*	4.2 *2*	2505.25	(2$^+$)	1319.40	(2$^+$)	[M1]		0.00567	α(K)=0.00475; α(L)=0.00070
1192.66 *50*	2.3 *6*	2641.0	(4$^+$)	1448.85	(4$^+$)	[M1]		0.00560	α(K)=0.00468; α(L)=0.00069
1198.94 *35*	3.0 *6*	1496.36	(2$^+$)	297.38	4$^+$	[E2]		0.00287	α(K)=0.00238; α(L)=0.00037
1205.92 *4*	81[‡] *4*	1503.29	(4)$^+$	297.38	4$^+$	M1(+E2)	≤1.5	0.0045 *13*	α(K)=0.0038 *11*; α(L)=0.00056 *15* Mult.: from α(K)exp=0.0025 *5* (1975Ca11,1971Ch26).
1210.91 *30*	2.4 *4*	2529.97	(2$^+$)	1319.40	(2$^+$)	E0+M1+E2		0.20 *8*	α: experimental value from 1975Ca11. Mult.: from α(K)exp=0.13 *5*.
1212.29 *9*	10.7 *13*	1303.36	(3$^+$)	90.985	2$^+$	[M1]		0.00538	α(K)=0.00450; α(L)=0.00066
1217.67 *13*	7.2 *9*	1308.69	(2$^-$)	90.985	2$^+$	[E1]		0.00115	α(K)=0.00097; α(L)=0.00013

Continued on next page (footnotes at end of table)

^{174}Ta ε decay 1975Ca11,1971Ch26,1971Gi04 (continued)

γ(^{174}Hf) (continued)

E_γ[†]	I_γ[†@]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	α[&]	Comments
1221.18 *36*	0.52 *11*	2529.97	(2$^+$)	1308.69	(2$^-$)			
1227.0 *10*	11 *5*	1226.77	(2$^+$)	0.0	0$^+$	[E2]	0.00275	α(K)=0.00228; α(L)=0.00035
1228.33 *7*	24 *6*	1319.40	(2$^+$)	90.985	2$^+$	E0+M1+E2	0.013 *3*	α: experimental value from 1975Ca11, 1971Ch21. Mult.: from α(K)exp=0.010 *3* (1975Ca11,1971Ch26).
1233.59 *21*	3.6 *3*	2729.84	2	1496.36	(2$^+$)			
1245.54 *8*	11 *1*	1336.48	(3)$^+$	90.985	2$^+$	M1+E2	0.0039 *12*	α(K)=0.0032 *10*; α(L)= 0.00048 *14* Mult.: from α(K)exp=0.0020 *6* (1971Ch26).
[x]1264.78 *18*	2.6 *4*							
1289.03 *36*	0.39 *12*	2592.21	3,4$^+$	1303.36	(3$^+$)			
1291.54 *49*	1.7 *4*	2353.99	3,4$^+$	1062.17	4$^+$			
1295.27 *75*	0.97 *14*	1904.4		608.26	6$^+$			
1303.53 *12*	4.9[‡] *16*	1394.60	(4)$^+$	90.985	2$^+$	[E2]	0.00244	α(K)=0.00203; α(L)=0.00031
[x]1316.70 *51*	0.18 *20*							
1319.33 *32*	1.8 *3*	1319.40	(2$^+$)	0.0	0$^+$	[E2]	0.00239	α(K)=0.00198; α(L)=0.00030
1328.95 *50*	1.00 *27*	1626.0	(4$^+$)	297.38	4$^+$	[M1]	0.00430	α(K)=0.00360; α(L)=0.00053
[x]1331.28 *38*	1.8 *4*							
1351.17 *28*	3.0 *5*	1648.33	(4)	297.38	4$^+$			
[x]1357.08 *20*	6.9 *25*							
1357.94 *8*	14.3 *20*	1448.85	(4$^+$)	90.985	2$^+$	[E2]	0.00226	α(K)=0.00188; α(L)=0.00029 Mult.: α(K)exp (1357.94γ + 1357.08γ)=0.0012 *6* (1971Ch26).
1361.04 *8*	16.0 *15*	1658.41	(5$^+$)	297.38	4$^+$	M1	0.00406	α(K)=0.00340; α(L)=0.00050 Mult.: from α(K)exp=0.0026 *12* (1971Ch26). Other value: 0.0039 *17* (1971Gi04).
1405.23 *51*	0.93 *30*	1496.36	(2$^+$)	90.985	2$^+$	[M1]	0.00376	α(K)=0.00315; α(L)=0.00046
1412.55 *24*	3.6 *6*	1503.29	(4)$^+$	90.985	2$^+$	[E2]	0.00209	
1421.9[a] *12*	0.38[a] *30*	2030.25	(4$^+$)	608.26	6$^+$	[E2]	0.00207	α(K)=0.00172; α(L)=0.00026
1421.9[a] *12*	0.38[a] *30*	2729.84	2	1308.69	(2$^-$)			
1429.62[a] *73*	0.78[a] *14*	2491.7	3,4$^+$	1062.17	4$^+$			
1429.62[a] *73*	0.78[a] *14*	3087.9	(4$^+$)	1658.41	(5$^+$)	[M1]	0.00361	α(K)=0.00302; α(L)=0.00044
1435.86 *51*	1.6 *4*	2931.76	(2$^+$)	1496.36	(2$^+$)	[M1]	0.00357	α(K)=0.00299; α(L)=0.00043
1439.37 *49*	2.1[‡] *5*	3087.9	(4$^+$)	1648.33	(4)			
[x]1477.6 *10*	0.9 *4*							
1482.51 *29*	2.0 *4*	1779.9	3,4$^+$	297.38	4$^+$			
1496.50 *89*	1.4 *5*	1496.36	(2$^+$)	0.0	0$^+$	[E2]	0.00188	α(K)=0.00157; α(L)=0.00023
1502.96[a] *30*	2.0[a] *4*	2402.80	(2$^+$)	900.24	2$^+$			
1502.96[a] *30*	2.0[a] *4*	2729.84	2	1226.77	(2$^+$)			
1534.71 *39*	2.1 *4*	1626.0	(4$^+$)	90.985	2$^+$	[E2]		α(K)=0.00150
1564.40 *32*	2.3 *4*	1861.78	3,4$^+$	297.38	4$^+$			
1591.59[a] *54*	0.94[a] *28*	2491.7	3,4$^+$	900.24	2$^+$			
1591.59[a] *54*	0.94[a] *28*	3087.9	(4$^+$)	1496.36	(2$^+$)			
[x]1597.23 *55*	0.4 *4*							
1599.79 *21*	2.5 *4*	3248.01		1648.33	(4)			
1607.15 *28*	2.5 *5*	1904.4		297.38	4$^+$			
[x]1624.4 *17*	0.6 *4*							
1629.53 *28*	2.8 *5*	2529.97	(2$^+$)	900.24	2$^+$			
[x]1640.34 *21*	4.2 *6*							
[x]1652.0 *11*	1.15 *17*							
[x]1654.96 *33*	2.0 *4*							
1689.66 *65*	1.1 *4*	1779.9	3,4$^+$	90.985	2$^+$			
1732.87 *19*	4.6 *6*	2030.25	(4$^+$)	297.38	4$^+$			

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^{174}Ta ε decay 1975Ca11,1971Ch26,1971Gi04 (continued)

γ(^{174}Hf) (continued)

E_γ[†]	I_γ[†@]	E_i(level)	J_i^π	E_f	J_f^π
1742.49 73	2.2 5	3191.1		1448.85	(4^+)
[x]1760.0 12	1.8 5				
[x]1762.4 12	1.6 5				
1770.95 30	2.8 5	1861.78	$3,4^+$	90.985	2^+
[x]1774.16 73	1.2 5				
1785.6[a] 14	0.6[a] 3	3087.9	(4^+)	1303.36	(3^+)
1785.6[a] 14	0.6[a] 3	3106.0		1319.40	(2^+)
[x]1816.4 10	1.2 4				
1829.54 14	5.9 6	2729.84	2	900.24	2^+
1853.27 56	1.09 27	3248.01		1394.60	$(4)^+$
1886.8 11	1.3 5	3191.1		1303.36	(3^+)
[x]1898.25 49	1.8 5				
1927.9 20	1.2 4	3248.01		1319.40	(2^+)
1939.25[a] 25	3.8[a] 6	2030.25	(4^+)	90.985	2^+
1939.25[a] 25	3.8[a] 6	3248.01		1308.69	(2^-)
1944.53 24	3.7 5	3248.01		1303.36	(3^+)
[x]1953.9 11	1.4 5				
[x]1957.3 11	0.72 12				
[x]1968.74 73	0.26 8				
[x]1974.26 29	1.74 30				
[x]1993.82 73	0.20 10				
[x]2001.52 65	0.25 27				
[x]2008.01 40	1.8 3				
2022.6 15	0.37 11	3248.01		1226.77	(2^+)
2031.9[a] 14	1.9[a] 11	2641.0	(4^+)	608.26	6^+
2031.9[a] 14	1.9[a] 11	2931.76	(2^+)	900.24	2^+
2040.53 77	3.3 11	2338.51	$3,4^+$	297.38	4^+
2056.6 13	1.0 4	2353.99	$3,4^+$	297.38	4^+
[x]2086.32 76	0.79 23				
2104.28 63	0.81 23	2931.76	(2^+)	828.13	0^+
2124.95 20	3.1 4	2421.98	(3^-)	297.38	4^+
2143.43 51	2.2 5	2441.85	$3,4^+$	297.38	4^+
[x]2148.84 73	0.85 15				
[x]2158.1 11	0.46 13				
2189.19 72	0.9 4	2486.1	(2^+)	297.38	4^+
2194.21 57	5.0 7	2491.7	$3,4^+$	297.38	4^+
2208.1 15	0.62 13	2505.25	(2^+)	297.38	4^+
2232.37 66	2.0 3	2529.97	(2^+)	297.38	4^+
[x]2246.06 95	1.2 4				
2248.21 95	1.6 5	2338.51	$3,4^+$	90.985	2^+
2262.76 91	0.69 21	2353.99	$3,4^+$	90.985	2^+
2294.81 88	1.5 4	2592.21	$3,4^+$	297.38	4^+
[x]2296.92 88	1.5 4				
2331.51 76	0.30 9	2421.98	(3^-)	90.985	2^+
2344.5 10	0.93 30	2641.0	(4^+)	297.38	4^+
2352.09 82	1.46 30	2441.85	$3,4^+$	90.985	2^+
[x]2376.6 12	0.51 19				
[x]2390.9 14	0.47 23				
2400.86 69	3.6 6	2491.7	$3,4^+$	90.985	2^+
2414.2 12	0.30 9	2505.25	(2^+)	90.985	2^+
2438.78 59	3.6 5	2529.97	(2^+)	90.985	2^+
[x]2443.20 90	0.4 1				
2479.22 75	2.6 6	3087.9	(4^+)	608.26	6^+
2486.8 17	0.8 4	2486.1	(2^+)	0.0	0^+
2494.2 16	0.63 11	2791.42	$3,4^+$	297.38	4^+
2500.98 60	2.2 4	2592.21	$3,4^+$	90.985	2^+
2505.4 21	0.49 22	2505.25	(2^+)	0.0	0^+
2530.2 15	0.35 10	2529.97	(2^+)	0.0	0^+
[x]2544.0 16	0.39 25				
2549.5 11	0.58 12	2641.0	(4^+)	90.985	2^+
[x]2557.52 50	0.90 15				
[x]2584.31 98	0.29 16				
[x]2607.6 11	0.55 11				
2632.6 14	0.56 12	2931.76	(2^+)	297.38	4^+
[x]2655.67 64	1.10 25				
2699.2 12	0.84 22	2791.42	$3,4^+$	90.985	2^+
[x]2706.6 25	0.36 15				
[x]2711.1 17	0.38 9				
[x]2721.2 17	0.51 10				
[x]2727.0 12	1.01 30				
[x]2737.2 15	0.84 13				
[x]2772.6 14	0.62 22				
[x]2779.8 18	0.48 9				
2790.2 19	0.79 11	3087.9	(4^+)	297.38	4^+
[x]2796.8 12	2.5 6				
2808.6 17	1.34 39	3106.0		297.38	4^+
[x]2817.9 15	1.21 33				
2840.7 14	0.79 23	2931.76	(2^+)	90.985	2^+
[x]2874.4 13	0.80 18				
[x]2889.6 21	0.30 8				
2893.8 12	1.00 27	3191.1		297.38	4^+
[x]2900.0 17	0.40 9				
[x]2917.1 11	1.0 6				
[x]2927.7 17	0.48 10				
2931.8 12	1.28 27	2931.76	(2^+)	0.0	0^+
[x]2938.9 21	0.19 6				
[x]2953.1 17	0.38 13				
[x]2965.2 14	0.40 13				
2999.7 18	0.25 10	3087.9	(4^+)	90.985	2^+
3014.0 22	0.31 11	3106.0		90.985	2^+
[x]3080.6 15	0.46 14				
3100.0 18	0.32 11	3191.1		90.985	2^+
[x]3170.1 15	0.75 21				
[x]3206.4 22	0.46 14				
[x]3294.3 18	0.20 10				
[x]3332.5 22	0.27 10				
[x]3341.0 18	0.14 7				
[x]3644.2 27	0.22 10				

† From 1975Ca11, unless otherwise specified.

‡ Weighted average of values from 1975Ca11 and 1971Bo28.

\# From α(K)exp and α(L)exp using Iγ from 1975Ca11 and Ice from 1975Ca11, 1971Ch26, and 1971Gi04. Above 971 keV photon

Continued on next page (footnotes at end of table)

^{174}Ta ε decay 1975Ca11,1971Ch26,1971Gi04 (continued)

γ(^{174}Hf) (continued)

and electron intensities have been normalized using theoretical α(K)(971γ, E2)=0.0036.

[@] For absolute intensity per 100 decays, multiply by 0.060 *5*.

[&] 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.

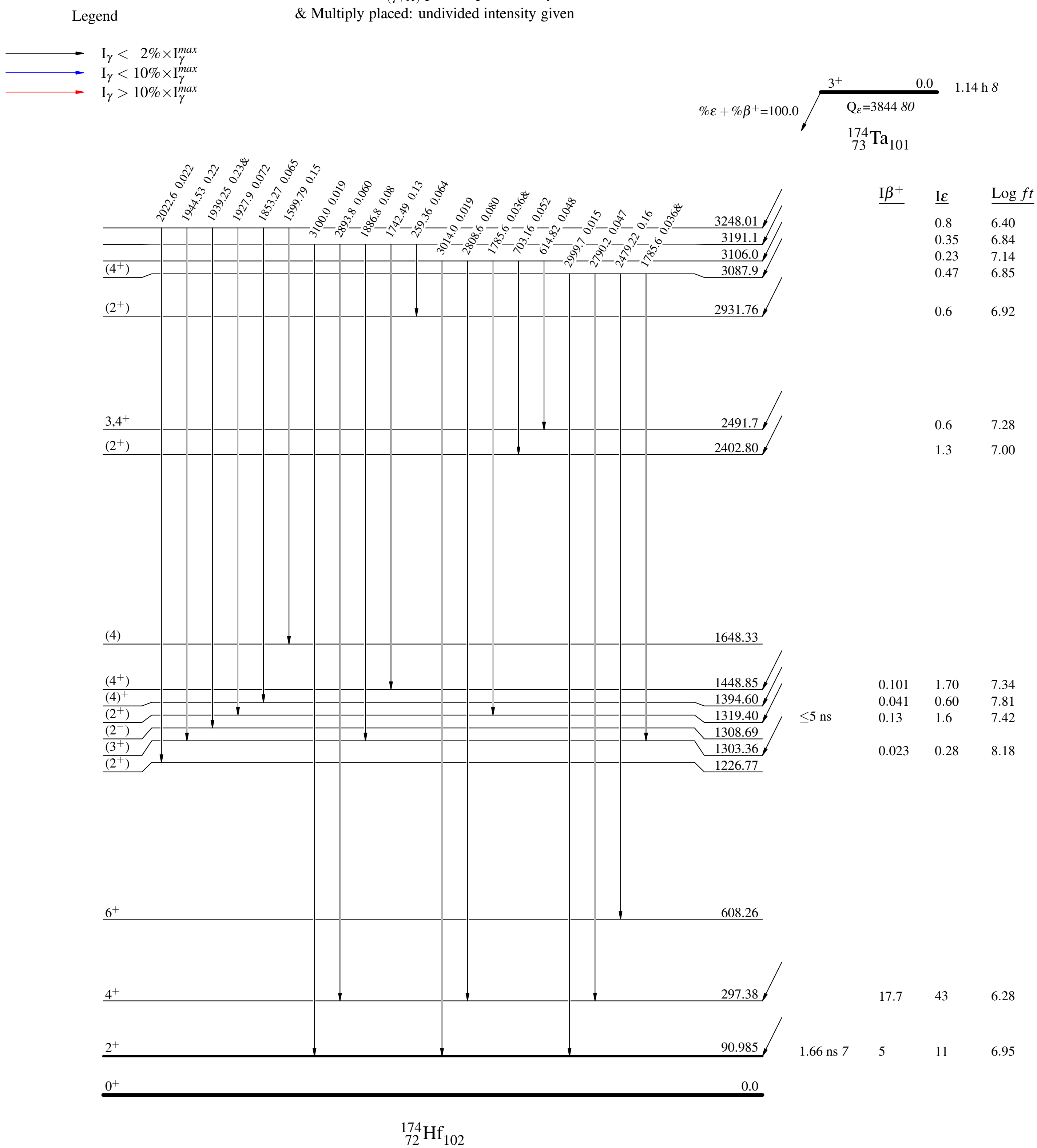
[a] Multiply placed with undivided intensity.

[x] γ ray not placed in level scheme.

^{174}Ta ε decay 1975Ca11,1971Ch26,1971Gi04

Decay Scheme

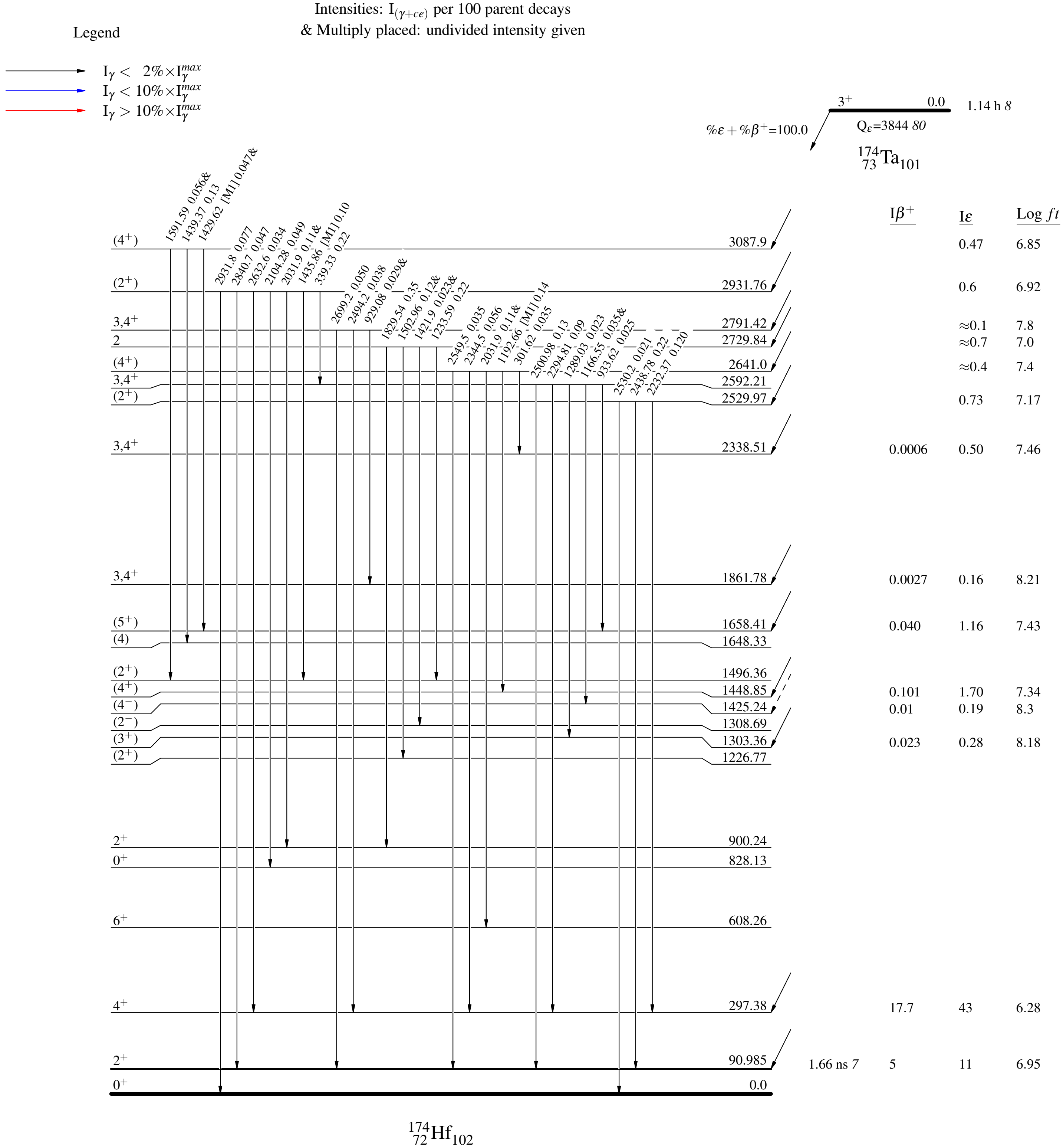
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given



^{174}Ta ε decay 1975Ca11,1971Ch26,1971Gi04

Decay Scheme (continued)

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



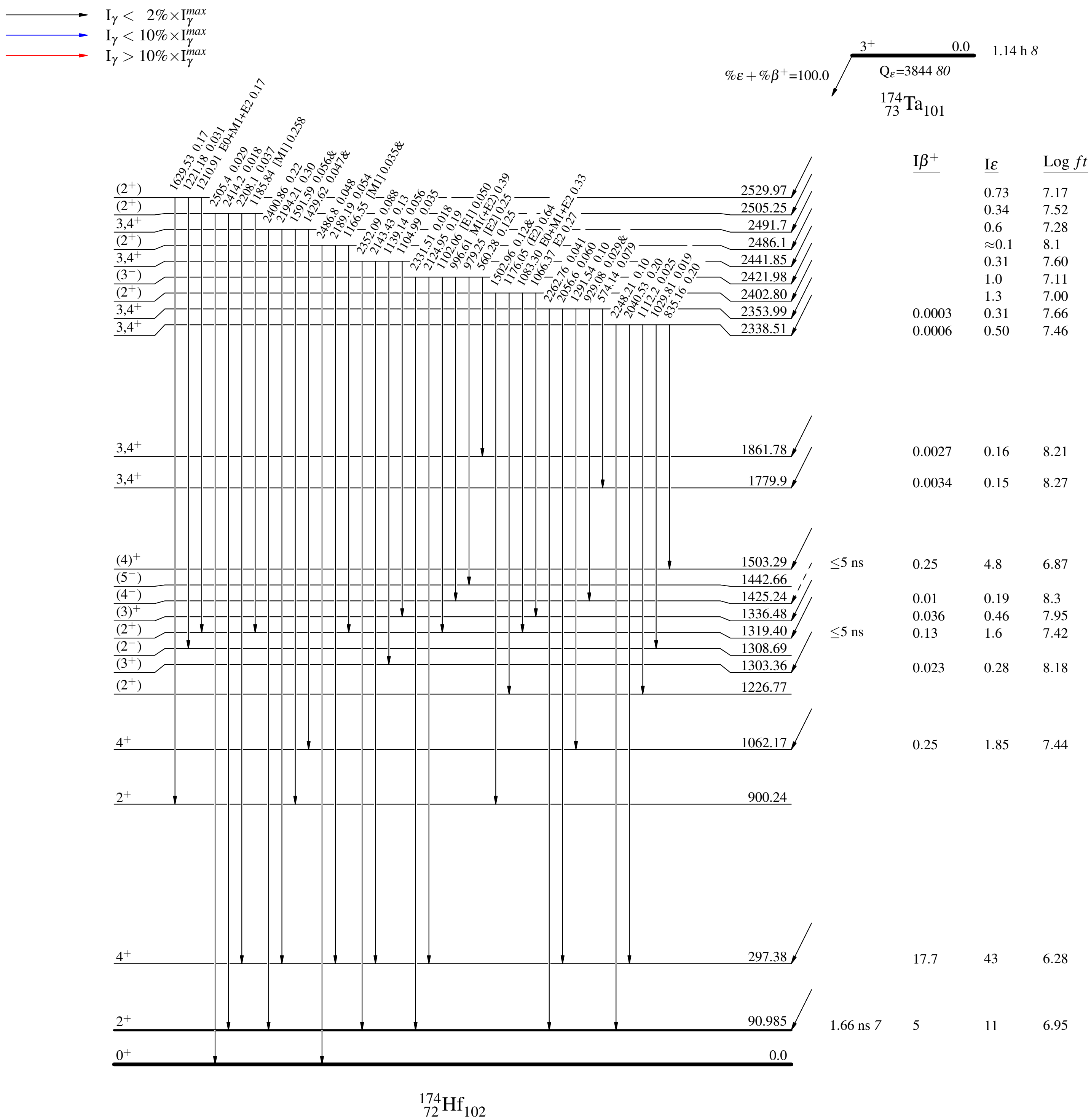
^{174}Ta ε decay 1975Ca11,1971Ch26,1971Gi04

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

& Multiply placed: undivided intensity given

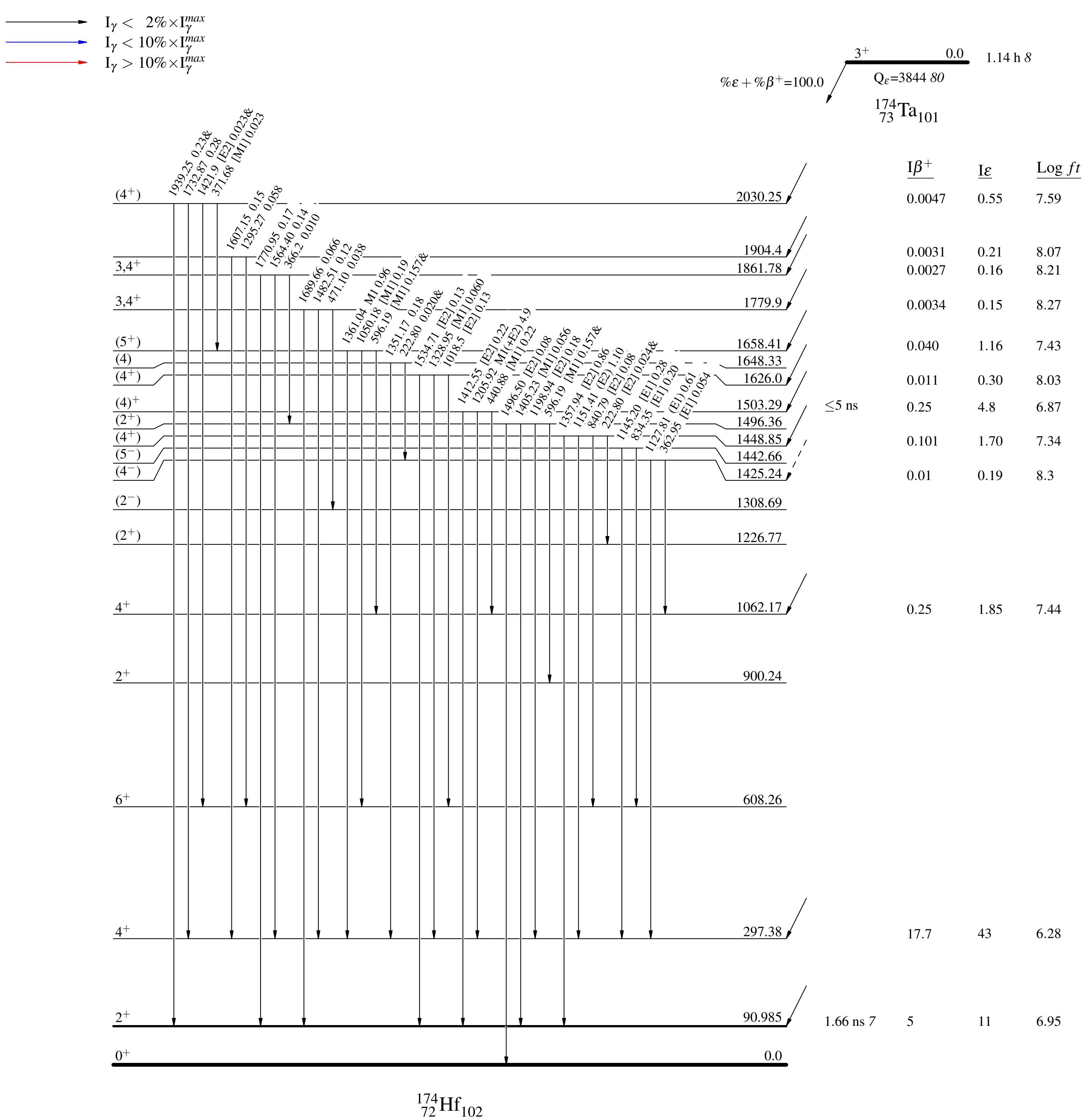
Legend



^{174}Ta ε decay 1975Ca11,1971Ch26,1971Gi04

Decay Scheme (continued)

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



^{174}Ta ε decay 1975Ca11,1971Ch26,1971Gi04

Decay Scheme (continued)

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

Legend