^{168}Lu ε decay (5.5 min) 1972Ch44,1970Ch28

History

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

Parent: ^{168}Lu: E=0.0; $J^\pi=6^{(-)}$; $T_{1/2}$=5.5 min *1*; Q(ε)=4510 *50*; %ε+%$β^+$ decay=100.0

Others: 1960Wi09, 1961Me05, 1966Gr04, 1966Ha23, 1969Wi08, 1970Ar16, 1973Ch28.

1970Ch28, 1972Ch44: sources from ^{169}Tm(α,5n), E(α)=54 MeV, which produces both isomers; measured Eγ, Iγ (Ge(Li)), Eβ, Iβ, E(ce), Ice (Si(Li), FWHM=4), γγ coin, βγ coin.

1970Ar16: sources from the decay of spallation-produced ^{168}Hf ($J^\pi=0^+$) should contain mainly ^{168}Lu(6.7 min) ($J^\pi=3^+$); measured Eβ, Iβ (mag spect), Eγ, Iγ (Ge(Li)).

The adopted decay scheme is based on that In 1972Ch44 (which supersedes the scheme In 1970Ch28). IT was deduced from data taken with a source containing a mixture of ^{168}Lu(5.5 min) and ^{168}Lu(6.7 min), and the schemes have not been fully disentangled.

^{168}Yb Levels

E(level)†	Jπ‡	$T_{1/2}$#	E(level)†	Jπ‡	$T_{1/2}$#
0.0	0^+	stable	1551.20 *19*	$(4)^+$	
87.77 *11*	2^+	1.49@ ns *4*	1597.83 *20*	$(^-)$	
286.59 *15*	4^+		1650.48 *19*	$(2,3,4)^-$	
585.21 *17*	6^+		1674.06 *18*	(5^+)	
970.0? *3*	8^+		1770.18 *20*	5^-	
983.78 *15*	2^+		1819.04 *20*	(6^+)	
1066.98 *17*	$(3)^+$		1842.12 *22*	(6^-)	
1171.23 *18*	$(4)^+$		1972.70 *25*	$(5,6^+)$	
1302.27 *19*	$(5)^+$		1998.74 *18*	$(5)^-$	82 ns *5*
1445.13 *22*	$(6)^+$		2110.6 *5*	$(5^-,6^-,7^-)$	0.34 ns *6*
1451.66 *17*	$(3)^+$		2222.3 *3*	$(^-)$	62 ns *8*

† From least-squares fit to Eγ.
‡ From Adopted Levels.
# From γγ(t) (1973Ch28), except where noted.
@ From Adopted Levels. $T_{1/2}$ from ε decay: 1.4 ns *5* (γγ(t), 1970Ch28).

ε,$β^+$ radiations

E(decay)	E(level)	Comments
2252 *80*	2222.3	E(decay): from Eβ+=1230 *80* (β-(111.4γ+112.4γ) coin, 1970Ch28).

γ(^{168}Yb)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[d]	Comments
87.76 *12*		87.77	2^+	0.0	0^+	E2	5.34	α(K)=1.316 *19*; α(L)=3.07 *5*; α(M)=0.759 *12*; α(N+..)=0.193 *3* α(N)=0.173 *3*; α(O)=0.0198 *3*; α(P)=5.81×10^{-5} *9* Mult.: from K:L2:L3:M:N= 140:210:230:110:30 (1966Ha23).
99.5 *3*		1551.20	$(4)^+$	1451.66	$(3)^+$			
111.4[a]	≈49[a]	2222.3	$(^-)$	2110.6	$(5^-,6^-,7^-)$	[M1][c]	2.48	α(K)=2.07 *3*; α(L)=0.317 *5*; α(M)=0.0709 *10*; α(N+..)=0.0192 *3* α(N)=0.01664 *24*; α(O)=0.00238 *4*; α(P)=0.0001266 *18* Mult.: α(K)exp=2.2 *10* (1970Ch28) for 112.4γ+111.4γ doublet.
112.4[a]	≈49[a]	2110.6	$(5^-,6^-,7^-)$	1998.74	$(5)^-$	(E2)[c]	2.06	α(K)=0.780 *11*; α(L)=0.978 *14*; α(M)=0.241 *4*; α(N+..)=0.0613 *9* α(N)=0.0549 *8*; α(O)=0.00635 *9*; α(P)=3.29×10^{-5} *5* Mult.: α(K)exp=2.2 *10* (1970Ch28) for 112.4γ+111.4γ doublet.
[x]114[&] *2*	&							I_γ: 5 *2* In 1970Ar16.
122.8 *2*		1674.06	(5^+)	1551.20	$(4)^+$			
[x]126[&] *2*	&							I_γ: 4 *2* In 1970Ar16.
[x]135.7[b]								
145.1 *3*	4.7 *8*	1819.04	(6^+)	1674.06	(5^+)			Mult.: 5<α(K)exp<16 for 145γ+148γ.
156.6 *2*	31 *4*	1998.74	$(5)^-$	1842.12	(6^-)	M1	0.943	α(K)=0.788 *12*; α(L)=0.1199 *18*; α(M)=0.0268 *4*; α(N+..)=0.00725 *11* α(N)=0.00630 *10*; α(O)=0.000901 *13*; α(P)=4.80×10^{-5} *7* Mult.: α(K)exp=0.8 *3* (1970Ch28).
179.6 *2*	25 *3*	1998.74	$(5)^-$	1819.04	(6^+)	(E1)	0.0733	α(K)=0.0612 *9*; α(L)=0.00938 *14*; α(M)=0.00209 *3*; α(N+..)=0.000554 *8* α(N)=0.000485 *7*; α(O)=6.59×10^{-5} *10*; α(P)=2.93×10^{-6} *5* Mult.: α(K)exp=0.17 *8* (1970Ch28).
198.79 *15*		286.59	4^+	87.77	2^+	E2	0.274	α(K)=0.1678 *24*; α(L)=0.0815 *12*; α(M)=0.0197 *3*; α(N+..)=0.00507 *8* α(N)=0.00452 *7*; α(O)=0.000545 *8*; α(P)=7.84×10^{-6} *11* Mult.: from K:L2:L3:M=62:21:12:11 (1966Ha23).
223[&][f] *1*	&	1674.06	(5^+)	1451.66	$(3)^+$			tentatively placed in accord with Adopted Levels. From I(123γ) and adopted branching from 1674 level, I(223γ)≈3.5 is expected here.
223.6 *2*	36 *4*	2222.3	$(^-)$	1998.74	$(5)^-$	[E2][c]	0.186	α(K)=0.1202 *18*; α(L)=0.0505 *8*; α(M)=0.01216 *18*; α(N+..)=0.00314 *5* α(N)=0.00279 *4*; α(O)=0.000340 *5*; α(P)=5.77×10^{-6} *9* I_γ: probably includes small component (≈3.4) from 223γ from 1674 level (see comment on that transition). Mult.: α(K)exp=0.25 *5* (1970Ch28) for 229γ+223γ doublet.
[x]227[&] *1*	&							I_γ: 3 In 1970Ar16.
228.6 *2*	70 *7*	1998.74	$(5)^-$	1770.18	5^-	(M1)	0.329	α(K)=0.276 *4*; α(L)=0.0416 *6*; α(M)=0.00931 *14*; α(N+..)=0.00252 *4* α(N)=0.00219 *4*; α(O)=0.000313 *5*; α(P)=1.674×10^{-5} *24* Mult.: α(K)exp=0.25 *5* (1970Ch28) for 229γ+223γ doublet In which the 229γ is the stronger component.
[x]268.0[b] *4*	8.6 *15*							I_γ: 7 *2* In 1970Ar16.
[x]286.6[b]								
298.62 *8*		585.21	6^+	286.59	4^+	E2	0.0750	α(K)=0.0534 *8*; α(L)=0.01658 *24*; α(M)=0.00394 *6*; α(N+..)=0.001025 *15* α(N)=0.000908 *13*; α(O)=0.0001140 *16*; α(P)=2.73×10^{-6} *4* Mult.: from Adopted Gammas.

$^{168}_{70}Yb_{98}$-2

^{168}Lu ε decay (5.5 min) 1972Ch44,1970Ch28 (continued)

γ(^{168}Yb) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[d]	Comments
[x]310.5[b]								I_γ: 4 *2* In 1970Ar16.
324.7 *2*	30 *3*	1998.74	$(5)^-$	1674.06	(5^+)	(E1+M2)	0.26 *24*	α(K)=0.21 *20*; α(L)=0.04 *4*; α(M)=0.009 *9*; α(N+..)=0.0025 *24* α(N)=0.0021 *21*; α(O)=0.0003 *3*; α(P)=1.5×10^{-5} *15* Mult.: α(K)exp=0.022 *8* (1970Ch28).
348.3 *2*		1650.48	$(2,3,4)^-$	1302.27	$(5)^+$			I_γ,Mult.,E_γ: see comments on 348.3γ from 1999 level.
348.3 *2*	≈66	1998.74	$(5)^-$	1650.48	$(2,3,4)^-$	E2	0.0476	α(K)=0.0352 *5*; α(L)=0.00955 *14*; α(M)=0.00225 *4*; α(N+..)=0.000588 *9* α(N)=0.000520 *8*; α(O)=6.64×10^{-5} *10*; α(P)=1.85×10^{-6} *3* I_γ: Iγ=71 *8* for γ that was also placed from the 1651 level In 1972Ch44. the 1651 level was observed In ε decay (6.7 min) also, but the 348.3γ was not (see 1999Ba65). If I(348γ)<I(479γ) (=10.0 *15*) from 1651 level, 61<I(348γ from 1999 level)<71 *8*, so the evaluator assigns Iγ≈66 here. Mult.: α(K)exp=0.036 *9* (1970Ch28) for doublet dominated by this transition.
371.8[f] *4*		1674.06	(5^+)	1302.27	$(5)^+$			May Be same γ ray As the Eγ=372.17 line placed instead from a 2428 level In ε decay (6.7 min); consequently, placement is shown As tentative here.
374.2 *5*	4.8 *9*	1819.04	(6^+)	1445.13	$(6)^+$			
379.9 *3*		1551.20	$(4)^+$	1171.23	$(4)^+$			
384.8[e f] *2*		970.0?	8^+	585.21	6^+	E2	0.0359	α(K)=0.0271 *4*; α(L)=0.00679 *10*; α(M)=0.001591 *23*; α(N+..)=0.000417 *6* α(N)=0.000368 *6*; α(O)=4.75×10^{-5} *7*; α(P)=1.441×10^{-6} *21* Mult.: from Adopted Gammas; α(K)exp=0.029 *9* (1970Ch28) for doubly-placed G.
384.8[e] *2*		1451.66	$(3)^+$	1066.98	$(3)^+$	E2	0.0359	α(K)=0.0271 *4*; α(L)=0.00679 *10*; α(M)=0.001591 *23*; α(N+..)=0.000417 *6* α(N)=0.000368 *6*; α(O)=4.75×10^{-5} *7*; α(P)=1.441×10^{-6} *21* Mult.: α(K)exp=0.029 *9* (1970Ch28) for doubly-placed G.
397.2 *6*	7.5 *15*	1842.12	(6^-)	1445.13	$(6)^+$			
401.1 *3*	26 *3*	1998.74	$(5)^-$	1597.83	$(^-)$	M1	0.0727	α(K)=0.0611 *9*; α(L)=0.00907 *13*; α(M)=0.00203 *3*; α(N+..)=0.000548 *8* α(N)=0.000476 *7*; α(O)=6.82×10^{-5} *10*; α(P)=3.67×10^{-6} *6* Mult.: α(K)exp=0.061 *22* (1970Ch28).
467.9 *4*		1451.66	$(3)^+$	983.78	2^+	M1,E2	0.035 *14*	α(K)=0.029 *13*; α(L)=0.0048 *13*; α(M)=0.0011 *3*; α(N+..)=0.00029 *8* α(N)=0.00026 *7*; α(O)=3.6×10^{-5} *10*; α(P)=1.7×10^{-6} *8* Mult.: α(K)exp=0.028 *11* (1970Ch28).
479.4 *4*		1650.48	$(2,3,4)^-$	1171.23	$(4)^+$			
483[&f] *2*	&	1551.20	$(4)^+$	1066.98	$(3)^+$			
539.8 *2*	47 *5*	1842.12	(6^-)	1302.27	$(5)^+$	E1	0.00513	α(K)=0.00434 *6*; α(L)=0.000616 *9*; α(M)=0.0001367 *20*; α(N+..)=3.66×10^{-5} *6* α(N)=3.19×10^{-5} *5*; α(O)=4.49×10^{-6} *7*; α(P)=2.29×10^{-7} *4* Mult.: α(K)exp<0.005 (1970Ch28).
583.4 *2*		1650.48	$(2,3,4)^-$	1066.98	$(3)^+$	E1	0.00435	α(K)=0.00368 *6*; α(L)=0.000520 *8*; α(M)=0.0001153 *17*;

$^{168}_{70}Yb_{98}$-3

^{168}Lu ε decay (5.5 min) 1972Ch44,1970Ch28 (continued)

γ(^{168}Yb) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[d]	Comments
								α(N+..)=3.09×10^{-5} *5* α(N)=2.69×10^{-5} *4*; α(O)=3.80×10^{-6} *6*; α(P)=1.95×10^{-7} *3* Mult.: α(K)exp<0.005 (1970Ch28). I(583γ):I(479γ)=29 *4*:10.0 *15* (1970Ch28).
x624[&] *2*	&							I_γ: 9 *2* In 1970Ar16.
697[&] *2*	&	983.78	2$^+$	286.59	4$^+$			
717.1 *3*		1302.27	(5)$^+$	585.21	6$^+$			Mult.: α(K)exp<0.008 (1970Ch28).
780.5 *3*		1066.98	(3)$^+$	286.59	4$^+$	E2	0.00625	α(K)=0.00513 *8*; α(L)=0.000873 *13*; α(M)=0.000198 *3*; α(N+..)=5.28×10^{-5} *8* α(N)=4.62×10^{-5} *7*; α(O)=6.36×10^{-6} *9*; α(P)=2.88×10^{-7} *4* Mult.: α(K)exp=0.0048 *14* (1970Ch28).
860.0 *2*	13 *2*	1445.13	(6)$^+$	585.21	6$^+$	M1+E2	0.008 *3*	α(K)=0.0065 *23*; α(L)=0.0010 *3*; α(M)=0.00022 *7*; α(N+..)=5.9×10^{-5} *18* α(N)=5.1×10^{-5} *15*; α(O)=7.3×10^{-6} *23*; α(P)=3.8×10^{-7} *15* Mult.: α(K)exp=0.0055 *25* (1970Ch28).
884.6 *2*		1171.23	(4)$^+$	286.59	4$^+$	E2	0.00478	α(K)=0.00395 *6*; α(L)=0.000645 *9*; α(M)=0.0001456 *21*; α(N+..)=3.89×10^{-5} *6* α(N)=3.40×10^{-5} *5*; α(O)=4.72×10^{-6} *7*; α(P)=2.22×10^{-7} *4* Mult.: α(K)exp=0.0038 *7* (1970Ch28).
896.0 *2*		983.78	2$^+$	87.77	2$^+$	E2	0.00465	α(K)=0.00385 *6*; α(L)=0.000626 *9*; α(M)=0.0001412 *20*; α(N+..)=3.78×10^{-5} *6* α(N)=3.30×10^{-5} *5*; α(O)=4.58×10^{-6} *7*; α(P)=2.16×10^{-7} *3* Mult.: α(K)exp=0.0037 *7* (1970Ch28).
x960.7[b]								
x965[&] *1*	5[&] *1*							tentative placement from 1551 level by 1970Ar16 rejected by evaluator because later studies failed to confirm IT.
979.2 *2*		1066.98	(3)$^+$	87.77	2$^+$	(E2)	0.00387	α(K)=0.00322 *5*; α(L)=0.000510 *8*; α(M)=0.0001147 *16*; α(N+..)=3.07×10^{-5} *5* α(N)=2.68×10^{-5} *4*; α(O)=3.74×10^{-6} *6*; α(P)=1.81×10^{-7} *3* I(979γ):I(781γ)=177 *15*:37 *4* (1970Ch28). Mult.: α(K)exp=0.0030 *5* (1970Ch28) for 984γ+979γ.
983.8 *2*		983.78	2$^+$	0.0	0$^+$	(E2)	0.00383	α(K)=0.00319 *5*; α(L)=0.000504 *7*; α(M)=0.0001135 *16*; α(N+..)=3.04×10^{-5} *5* α(N)=2.65×10^{-5} *4*; α(O)=3.71×10^{-6} *6*; α(P)=1.79×10^{-7} *3* I(984γ):I(896γ)=89 *8*:100 (1970Ch28). Mult.: α(K)exp=0.0030 *5* (1970Ch28) for 984γ+979γ.
1012.9 *3*		1597.83	(−)	585.21	6$^+$	(M2)	0.01728	α(K)=0.01438 *21*; α(L)=0.00225 *4*; α(M)=0.000506 *7*; α(N+..)=0.0001369 *20* α(N)=0.0001190 *17*; α(O)=1.702×10^{-5} *24*; α(P)=9.06×10^{-7} *13* Mult.: α(K)exp≈0.011 (1970Ch28).
1015.7 *2*		1302.27	(5)$^+$	286.59	4$^+$	E2	0.00359	α(K)=0.00299 *5*; α(L)=0.000469 *7*; α(M)=0.0001055 *15*; α(N+..)=2.83×10^{-5} *4* α(N)=2.47×10^{-5} *4*; α(O)=3.45×10^{-6} *5*; α(P)=1.682×10^{-7} *24* Mult.: α(K)exp=0.0026 *9* (1970Ch28). I(1016γ):I(717γ)=78 *8*:15.1 *20* (1970Ch28).
x1025.7[b] *4*	5.8 *12*							
1083.5 *2*		1171.23	(4)$^+$	87.77	2$^+$	(E2)	0.00315	α(K)=0.00263 *4*; α(L)=0.000407 *6*; α(M)=9.12×10^{-5} *13*; α(N+..)=2.45×10^{-5} *4* α(N)=2.13×10^{-5} *3*; α(O)=3.00×10^{-6} *5*; α(P)=1.481×10^{-7} *21* Mult.: α(K)exp≈0.0020 (1970Ch28). I(1084γ):I(885γ)=51 *3*:107 *9* (1970Ch28).

$^{168}_{70}Yb_{98}$-4

γ(^{168}Yb) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[d]	Comments
1089.3 *4*		1674.06	(5$^+$)	585.21	6$^+$			I_γ: I(1089γ)/I(123γ) here is much larger than In 6.7-min decay; 1970Ch28 did not report a 1091.6γ known In 6.5-min decay, so possibly the 1089.3γ of 1970Ch28 is a doublet.
1158.5 *3*	3.4 *5*	1445.13	(6)$^+$	286.59	4$^+$			
1164.7 *3*		1451.66	(3)$^+$	286.59	4$^+$			
1185.0 *2*	46 *4*	1770.18	5$^-$	585.21	6$^+$	E1	1.12×10^{-3}	α(K)=0.000937 *14*; α(L)=0.0001275 *18*; α(M)=2.81×10^{-5} *4*; α(N+..)=2.37×10^{-5} *4* α(N)=6.59×10^{-6} *10*; α(O)=9.41×10^{-7} *14*; α(P)=5.07×10^{-8} *7*; α(IPF)=1.608×10^{-5} *24* Mult.: α(K)exp<0.0016 (1970Ch28).
[x]1215.4[b] *4*	9.0 *15*							
1233.5 *2*	9[@] *5*	1819.04	(6$^+$)	585.21	6$^+$	[M1,E2]	0.0034 *10*	α(K)=0.0028 *8*; α(L)=0.00041 *11*; α(M)=9.2×10^{-5} *24*; α(N+..)=3.5×10^{-5} *8* α(N)=2.2×10^{-5} *6*; α(O)=3.1×10^{-6} *9*; α(P)=1.6×10^{-7} *5*; α(IPF)=9.9×10^{-6} *12* Mult.: α(K)exp=0.0027 *9* (1970Ch28) for triplet.
1264.5 *3*		1551.20	(4)$^+$	286.59	4$^+$			Mult.: α(K)exp=0.0020 *9* (1970Ch28) for 1257γ+1265γ (where I(1257γ):I(1265γ)=15 *2*:32 *3*); this favors mult=M1,E2 but does not rule out E1 for one of the transitions.
[x]1289[&] *2*	&							I_γ: 2 *2* In 1970Ar16.
1311.2 *2*		1597.83	(−)	286.59	4$^+$	(E1)	9.91×10^{-4}	α(K)=0.000784 *11*; α(L)=0.0001063 *15*; α(M)=2.34×10^{-5} *4*; α(N+..)=7.72×10^{-5} *11* α(N)=5.49×10^{-6} *8*; α(O)=7.85×10^{-7} *11*; α(P)=4.25×10^{-8} *6*; α(IPF)=7.09×10^{-5} *10* Mult.: α(K)exp<0.0014 (1970Ch28).
1363.9 *2*		1451.66	(3)$^+$	87.77	2$^+$			Mult.: α(K)exp≈0.0012 (1970Ch28). I(1364γ):I(1165γ):I(467γ):I(385γ)=38 *4*:10.2 *15*:9.0 *15*:19.5 *20* (1970Ch28).
1387.5 *2*		1674.06	(5$^+$)	286.59	4$^+$			E_γ: for doubly-placed G. Mult.: α(K)exp<0.0016 (1970Ch28) for doublet dominated by this transition. I_γ: see comment on 1388γ from 1973 level. I(1388γ from 1674):I(1089γ):I(372γ):I(123γ)= 27 *8*:9.0 *17*:5.3 *9*:4.8 *9* (1970Ch28).
1387.5 *2*	8 *8*	1972.70	(5,6$^+$)	585.21	6$^+$			E_γ: for γ which May Be a doublet. I_γ: I(1388γ)=35 *3* for doubly-placed G. based on adopted I(123γ)/I(1388γ from 1674 level)=0.18 *3* and I(123γ)=4.8 *9* here, I(1388γ)=27 *8* from 1674 level, leaving Iγ=8 *8* to Be placed from this level. γ is coincident with 112γ, absent In 6.7-min ε decay. Mult.: α(K)exp<0.0016 (1970Ch28) for doublet.
1413.5 *3*	16.4 *18*	1998.74	(5)$^-$	585.21	6$^+$			Mult.: α(K)exp=0.0013 *6* (1970Ch28).
[x]1449.6[b] *5*	11 *2*							

$^{168}_{70}Yb_{98}$-5

γ(^{168}Yb) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [#]	α [d]	Comments
1463.5 *3*		1551.20	(4)$^+$	87.77	2$^+$			Mult.: α(K)exp<0.0018 (1970Ch28) consistent with E1 or E2. I(1463γ):I(1265γ):I(380γ):I(100γ)=21 *3*:32 *3*:10.9 *17*:4.8 *10* (1970Ch28).
1483.6 *2*	72 *9*	1770.18	5$^-$	286.59	4$^+$	E1	9.26×10^{-4}	α(K)=0.000634 *9*; α(L)=8.56×10^{-5} *12*; α(M)=1.89×10^{-5} *3*; α(N+..)=0.000187 *3* α(N)=4.42×10^{-6} *7*; α(O)=6.33×10^{-7} *9*; α(P)=3.44×10^{-8} *5*; α(IPF)=0.000182 *3*
1510.0 *4*		1597.83	(−)	87.77	2$^+$			Mult.: α(K)exp<0.0007 (1970Ch28). I(1510γ):I(1311γ):I(1013γ)=4.4 *10*:33 *3*:7.1 *10* (1970Ch28), or 12 *4*:7 *2*:12 *2* (for doublet) In 1970Ar16; note that branching from 1970Ch28 disagrees with that adopted from ε decay (6.7 min).
1525.1 *5*	4.5 *10*	2110.6	(5$^-$,6$^-$,7$^-$)	585.21	6$^+$			
x1529& *2*	&							I_γ: 2 *2* In 1970Ar16.
1533.3 *5*	2.9 *9*	1819.04	(6$^+$)	286.59	4$^+$			
x1669.2[b] *10*	≈1.5							
1686.0 *5*	20 *4*	1972.70	(5,6$^+$)	286.59	4$^+$			
1712.0 *5*	≈2	1998.74	(5)$^-$	286.59	4$^+$			
x1897.6[b] *10*								
x1902.5[b]								
x1956.5[b] *10*	≈0.5							
x2031.5[b] *12*								
x2042.3[b] *15*								
x2054.0[b] *15*								
x2355& *2*	&							I_γ: 7 *3* In 1970Ar16.

[†] From 1970Ch28, except where noted.

[‡] From 1970Ch28. Iγ is included here for γ rays which appear to occur only with ^{168}Lu(5.5 min) decay. Otherwise, branching information from 1970Ch28 for the mixed parent decay is given In a comment on the highest energy transition from the level In question.

[#] From α(K)exp values based on Ice(K) data In 1970Ch28, except As noted. 1970Ch28 normalized their γ and ce intensity scales by assuming pure E2 for the following transitions: 87.7γ, 198.8γ, 298.8γ, 884.6γ, 896.1γ, 979.2γ+983.8γ. However, the 885γ, 896γ and 979γ are not ΔJ=2 transitions, so May have a D admixture. 1999Ba65 recommend using only the 299γ for normalization; this would give α(K)exp values 24% higher than deduced In 1970Ch28. if, instead, only the 199γ were used, No adjustment of α(K)exp from 1970Ch28 would Be called for. 1970Ch28 do not give Ice(K) for the 88γ. both the 199γ and 299γ have weak transitions from 6.7-min ^{168}Lu decay nearby; these might not have been resolved by 1970Ch28, but their impact on α(K)exp values whose uncertainties are≥20% probably is not significant. The evaluator quotes α(K)exp from 1970Ch28 below but, when making multipolarity assignments, takes into account the possibility that α(K)exp May Be systematically low by about 10%.

[@] In ^{168}Lu(5.5 min) ε decay, a 1233γ deexcites the 1819 level. In ^{168}Lu(6.7 min) ε decay, a 1233γ deexcites both a 1233 and a 2405 level, each peculiar to that decay. Thus, the 1233γ (Iγ=32 *3*) reported by 1970Ch28 from their mixed source will Be a triplet. From I(1233γ doublet):I(1420γ)=21 *2*:62 *10* In 6.7-min decay and I(1420γ)=68 *7* from 1970Ch28′s mixed source, I(1233γ)=23 *4* can Be attributed to the 6.7 min component, implying Iγ=9 *5* for the 5.5-min component.

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

^{168}Lu ε decay (5.5 min) 1972Ch44,1970Ch28 (continued)

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

& From 1970Ar16. Parent isomer undetermined, but absence of γ In ^{168}Lu ε decay (6.7 min) study In 1999Ba65 favors assignment to ^{168}Lu ε decay (5.5 min).

[a] Reported by 1972Ch44 and 1973Ch28. These high-resolution studies of the γ spectrum showed the Eγ=111.8 *3*, Iγ=98 *15* transition (1970Ch28) to be two lines (Eγ=111.4, Eγ=112.4) of similar intensity.

[b] Unplaced γ from 1970Ch28. Parent isomer unknown, but absence of γ In ^{168}Lu ε decay (6.7 min) study In 1999Ba65 favors assignment to ^{168}Lu ε decay (5.5 min).

[c] From analogies between the well-known 5^- and 6^- and 7^- levels (and depopulating γ's) in ^{164}Er and their apparent counterparts in ^{168}Yb.

[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.

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

[x] γ ray not placed in level scheme.

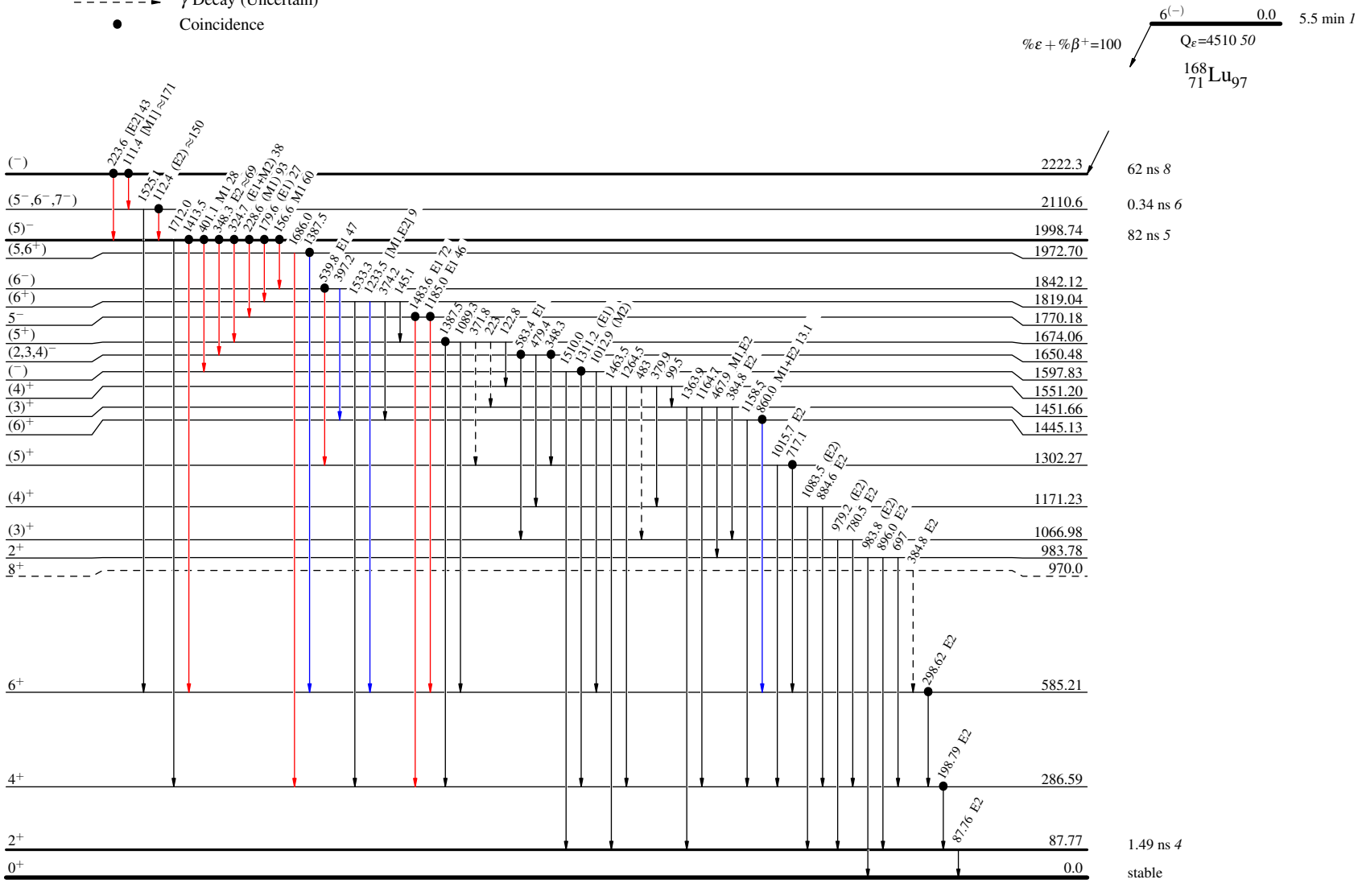
$^{168}_{70}Yb_{98}$-7

^{168}Lu ε decay (5.5 min) 1972Ch44,1970Ch28

Decay Scheme

Intensities: Relative $I_{(\gamma+ce)}$

Legend
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)
- Coincidence



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

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