^{148}Ba β^- decay 1984Ch02

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 117, 1 (2014)	1-Oct-2013

Parent: ^{148}Ba: E=0.0; J$^\pi$=0$^+$; $T_{1/2}$=0.612 s *17*; Q(β^-)=5110 *60*; %β^- decay=100.0

Measured: Eγ, Iγ, Ice, $\gamma\gamma$ coin, $\gamma\gamma$(t) coin, $T_{1/2}$, K x ray.

β^- branchings to various levels as given by 1984Ch02 are given in comments. More work needs to be done to get better estimates of these values.

The level scheme is incomplete.

^{148}La Levels

E(level)†	J$^\pi$‡	$T_{1/2}$	Comments
0.0	(2$^-$)	1.26 s *8*	$T_{1/2}$: from Adopted Levels. I$\beta\approx$0 (1984Ch02).
47.21 *3*	(1$^-$,2$^-$)		
56.033 *25*	(1$^+$)	67 ns *4*	$T_{1/2}$: from 1984Ch02 ($\gamma\gamma$(t)).
61.44 *3*	($^-$)		
109.89 *3*	(1$^+$)		
133.668 *24*	($^-$)		
154.49 *4*			
159.42 *6*			
168.71 *4*			
201.26 *5*			
217.86 *4*			
230.46 *5*			
261.08 *5*			
287.08 *5*			
338.80 *10*			
363.85 *7*			
369.22 *4*			
401.15 *7*			
471.89 *5*			
500.22 *5*			
538.08 *11*			
554.13 *11*			
717.22 *9*			
830.67 *11*			
1229.04 *10*			
1252.47 *7*			

† From a least-squares fit to Eγ data.

‡ From Adopted Levels.

β^- radiations

E(decay)	E(level)	Iβ^-†‡	Log *ft*	Comments
(4.64×10^3 *6*)	471.89	7	5.2	av Eβ=1993 *28*
(4.74×10^3 *6*)	369.22	6	5.3	av Eβ=2041 *28*
(4.89×10^3 *6*)	217.86	7	5.3	av Eβ=2112 *28*
(4.98×10^3 *6*)	133.668	9	5.2	av Eβ=2151 *28*
(5.00×10^3 *6*)	109.89	17	5.0	av Eβ=2162 *28*
(5.05×10^3 *6*)	56.033	23	4.8	av Eβ=2188 *28*

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^{148}Ba β^- decay 1984Ch02 (continued)

β^- radiations (continued)

† From net γ transition intensities at each level as estimated by 1984Ch02.
‡ Absolute intensity per 100 decays.

γ(^{148}La)

Iγ normalization: from Iγ(absolute, 56 keV)=29.2% 8 obtained by using the absolute γ intensities from the decay of ^{148}Ce to ^{148}Pr (1983Ar15).

E_γ	I_γ[‡a]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	α[†]	Comments
44.43 *6*	0.7 *1*	154.49		109.89	(1$^+$)			
46.30 *6*	0.2 *1*	201.26		154.49				
47.22 *4*	3.2 *1*	47.21	(1$^-$,2$^-$)	0.0	(2$^-$)	(M1)	9.47	α(K)=8.07 *12*; α(L)=1.109 *16*; α(M)=0.231 *4*; α(N+..)=0.0595 *9* α(N)=0.0507 *8*; α(O)=0.00822 *12*; α(P)=0.000633 *9* Mult.: α(K)exp=9.3 *21* is consistent with M1 or E2. From intensity balance at g.s. Mult must be mainly M1.
48.44 *4*	5.7 *1*	109.89	(1$^+$)	61.44	($^-$)	E1	1.682	α(K)=1.408 *20*; α(L)=0.218 *3*; α(M)=0.0451 *7*; α(N+..)=0.01118 *16* α(N)=0.00965 *14*; α(O)=0.001458 *21*; α(P)=7.79×10^{-5} *11* Mult.: α(K)exp=2.3 *6*.
49.65 *8*	0.5 *1*	159.42		109.89	(1$^+$)			
53.81 *4*	9.8 *2*	109.89	(1$^+$)	56.033	(1$^+$)	M1,E2	13 *7*	α(K)=5.66 *16*; α(L)=6 *5*; α(M)=1.3 *12*; α(N+..)=0.3 *3* α(N)=0.27 *24*; α(O)=0.04 *4*; α(P)=0.00037 *6* Mult.: α(K)exp=6.4 *7*.
56.08 *4*	100.0 *3*	56.033	(1$^+$)	0.0	(2$^-$)	E1	1.140	α(K)=0.959 *14*; α(L)=0.1436 *21*; α(M)=0.0297 *5*; α(N+..)=0.00740 *11* α(N)=0.00637 *9*; α(O)=0.000971 *14*; α(P)=5.41×10^{-5} *8* Mult.: α(K)exp=0.98 *8*.
58.52 *6*	1.1 *1*	217.86		159.42				
61.48 *4*	7.8 *1*	61.44	($^-$)	0.0	(2$^-$)	M1,E2	8 *4*	α(K)=4.1 *4*; α(L)=3 *3*; α(M)=0.7 *6*; α(N+..)=0.17 *14* α(N)=0.15 *13*; α(O)=0.021 *17*; α(P)=0.00026 *4* Mult.: α(K)exp=2.8 *8*.
72.20 *5*	6.6 *6*	133.668	($^-$)	61.44	($^-$)			
84.02 *5*	6.1 *5*	217.86		133.668	($^-$)			
86.44 *4*	6.9 *3*	133.668	($^-$)	47.21	(1$^-$,2$^-$)	M1,E2	2.5 *9*	α(K)=1.63 *24*; α(L)=0.7 *5*; α(M)=0.15 *11*; α(N+..)=0.04 *3* α(N)=0.032 *24*; α(O)=0.005 *4*; α(P)=0.000104 *6* Mult.: α(K)exp=1.4 *2*.
92.40 *5*	2.6 *1*	261.08		168.71				
96.58 *6*	2.0 *2*	230.46		133.668	($^-$)			
98.1[@] *2*	2.6[&] *6*	159.42		61.44	($^-$)			
98.5[@] *2*	9.9[&] *21*	154.49		56.033	(1$^+$)			
107.32 *5*	1.5 *2*	154.49		47.21	(1$^-$,2$^-$)			
109.87 *5*	2.3 *2*	109.89	(1$^+$)	0.0	(2$^-$)			
112.73 *5*	1.5 *1*	168.71		56.033	(1$^+$)			
120.95 *20*	3.0 *6*	230.46		109.89	(1$^+$)			

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$^{148}Ba\ \beta^-$ decay 1984Ch02 (continued)

$\gamma(^{148}La)$ (continued)

E_γ	I_γ[‡a]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	α[†]	Comments
127.38 *6*	1.6 *2*	261.08		133.668	$(^-)$			
133.53 *4*	13.3 *2*	133.668	$(^-)$	0.0	(2^-)	E2,M1	0.60 *12*	α(K)=0.45 *5*; α(L)=0.11 *6*; α(M)=0.025 *13*; α(N+..)=0.006 *4* α(N)=0.005 *3*; α(O)=0.0008 *4*; α(P)=3.01×10^{-5} *17* Mult.: α(K)exp=0.6 *2*.
145.48 *5*	6.0 *2*	201.26		56.033	(1^+)			
153.39 *8*	1.2 *2*	287.08		133.668	$(^-)$			
156.42 *6*	5.0 *3*	217.86		61.44	$(^-)$			
168.68 *5*	4.6 *3*	168.71		0.0	(2^-)			
174.55 *5*	2.9 *3*	230.46		56.033	(1^+)			
177.06 *6*	2.4 *2*	287.08		109.89	(1^+)			
185.0[@] *2*	1.2[&] *7*	554.13		369.22				
205.13 *9*	2.0 *2*	338.80		133.668	$(^-)$			
212.95 *7*	2.5 *3*	500.22		287.08				
214.96 *5*	8.0 *3*	369.22		154.49				
218.30 *10*	1.2 *3*	217.86		0.0	(2^-)			
230.37 *17*	0.7 *6*	363.85		133.668	$(^-)$			
235.62 *6*	3.6 *2*	369.22		133.668	$(^-)$			
246.66 *6*	4.1 *4*	401.15		154.49				
^{x}256.70 *17*	2.6 *9*							
259.37 *5*	5.5 *3*	369.22		109.89	(1^+)			
270.25 *12*	5.0 *5*	471.89		201.26				
307.79 *6*	3.3 *2*	363.85		56.033	(1^+)			
312.76 *6*	3.2 *5*	369.22		56.033	(1^+)			
317.63 *20*	2.2 *4*	471.89		154.49				
323.63 *12*	2.6 *2*	554.13		230.46				
345.1[@] *2*	0.8[&] *2*	401.15		56.033	(1^+)			
369.3[@] *2*	0.5[&] *2*	538.08		168.71				
390.3[@] *2*	1.6[&] *9*	500.22		109.89	(1^+)			
404.46 *14*	2.2 *2*	538.08		133.668	$(^-)$			
410.65 *7*	5.2 *2*	471.89		61.44	$(^-)$			
415.78 *6*	12.3 *3*	471.89		56.033	(1^+)			
^{x}426.9	2.4 *8*							
444.28 *5*	8.7 *3*	500.22		56.033	(1^+)			
476.6[@] *2*	2.1[&] *8*	538.08		61.44	$(^-)$			
535.2[@] *2*	0.7[&] *4*	1252.47		717.22				
569.6[@] *2*	1.5[&] *7*	830.67		261.08				
583.6[@] *2*	0.6[&] *2*	717.22		133.668	$(^-)$			
600.2[@] *2*	2.2[&] *8*	830.67		230.46				
607.33 *11*	5.9 *5*	717.22		109.89	(1^+)			
661.1[@] *2*	0.8[&] *3*	717.22		56.033	(1^+)			
720.8[@] *2*	2.1[&] *8*	830.67		109.89	(1^+)			
757.15 *13*	1.4 *6*	1229.04		471.89				
774.6[@] *2*	0.6[&] *3*	830.67		56.033	(1^+)			
^{x}872.99 *9*	1.8 *2*							
1011.2[@] *2*	1.9[&] *8*	1229.04		217.86				
1118.82 *7*	3.9 *2*	1252.47		133.668	$(^-)$			
1173.0[@] *2*	1.2[&] *8*	1229.04		56.033	(1^+)			
1196.3[@] *2*	1.6[&] *5*	1252.47		56.033	(1^+)			

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^{148}Ba β^- decay 1984Ch02 (continued)

γ(^{148}La) (continued)

† Additional information 1.
‡ Relative intensity deduced from singles spectra.
# From α(K)exp.
@ Deduced from coincidence spectra. The evaluator has assumed $\Delta E\gamma$=0.2 keV.
& Deduced from coincidence spectra.
[a] For absolute intensity per 100 decays, multiply by 0.292 *8*.
[x] γ ray not placed in level scheme.

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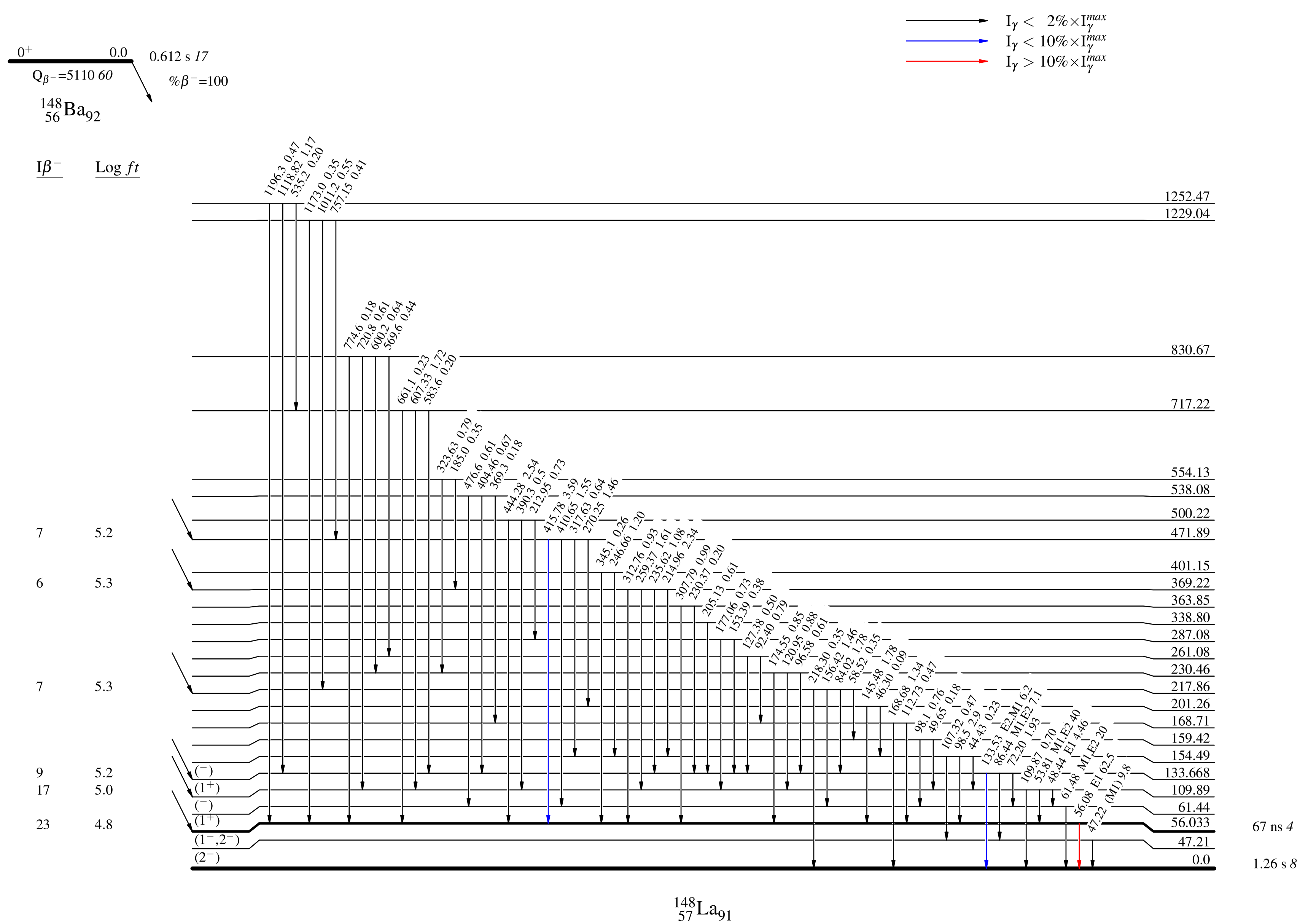
Decay Scheme

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



$^{148}_{57}La_{91}$-5