^{127}In β^- decay (1.04 s) 2004Ga24

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	A. Hashizume	NDS 112, 1647 (2011)	1-Oct-2009

Parent: ^{127}In: E=1863 *58*; J^π=(21/2$^-$); $T_{1/2}$=1.04 s *10*; Q(β^-)=6510 *30*; %β^- decay=100.0

2004Ga24: ^{235}U(n,F) E=th, on-line mass separation; γ, β, $\gamma\gamma$ coin, $\beta\gamma$ coin.

1980De35: ^{235}U(n,F) E=th, on-line mass separation; γ, β, ce, $\gamma\gamma$ coin, $\beta\gamma$ coin.

1986Go10: ^{235}U(n,F) E=th, on-line mass separation; γ, β, γ(t).

Others: 1975DeZU, 1978Al18, 1979DeZR.

The decay scheme is that proposed by 2004Ga24. Because of the large difference between the β-decay Q-value and the reported maximum level energy, evaluator considers that the decay scheme is not yet complete.

^{127}Sn Levels

Configurations from 2004Ga24, based on the shell model calculations.

E(level)[†]	J^π[#]	$T_{1/2}$[‡]	Comments
0.0	11/2$^-$	2.10 h *4*	
646.34 *4*	(9/2)$^-$		Configuration=((^{128}Sn 2$^+$)(ν h$_{11/2}$)$^{-1}$).
1094.60 *15*	(15/2$^-$)		Configuration=((^{128}Sn 2$^+$)(ν h$_{11/2}$)$^{-1}$).
1242.79 *13*	(13/2$^-$)		Configuration=((^{128}Sn 2$^+$)(ν h$_{11/2}$)$^{-1}$).
1501.5? *4*			The order of feeding 2103.8γ and 406.9γ is not known.
1625.32 *19*			
1810.12 *15*	(15/2$^+$)		
1826.67 *16*	(19/2$^+$)	4.52 μs *15*	Configuration=((^{128}Sn 5$^-$)(ν h$^{-1}_{11/2}$)). $T_{1/2}$: weighted average of 4.4 μs *2* (2008Lo07), 4.8 μs *3* (2004Ga24) and 4.5 μs *3* (2000Pi03); other: 3.1 μs *9* (1980De35).
1916.45 *18*	(19/2$^-$)		
1930.96 *17*	(23/2$^+$)	1.19 μs *13*	$T_{1/2}$: weighted average of 0.9 μs *3* (2008Lo07) and 1.26 μs *15* (2004Ga24). Configuration=((^{128}Sn 7$^-$)(ν h$_{11/2}$)$^{-1}$).
2045.96 *20*	(19/2)		
2047.3 *3*	(19/2$^-$)		
2083.5 *4*			
2165.8 *3*	(19/2)		
2232.09 *20*	(21/2$^+$)		
2311.8 *3*	(19/2,17/2)		
2630.4 *4*	(19/2,21/2)		
2733.82 *24*			
3287.67 *21*			
3605.13 *19*	(19/2$^-$)		Configuration=((^{128}Sn 7$^-$)(ν g$_{7/2}$)$^{-1}$).
3647.22 *24*	(19/2,21/2)		
3860.9 *9*			
3899.5 *11*			

[†] From a least-squares fit to E(γ's).

[‡] γ(t) from ^{127}Sn produced by ^{9}Be(^{238}U,F) and ^{9}Be(^{136}Xe,X) (2008Lo07); γ(t) from ^{127}Sn produced by by ^{233}U(n,F) and ^{239}Pu(n,F) (2000Pi03)); from $\beta\gamma$(t) delayed coincidence (2004Ga24): for all excited states.

[#] From Adopted Levels.

^{127}In β^- decay (1.04 s) 2004Ga24 (continued)

β^- radiations

E(decay)†	E(level)	Iβ⁻‡#	Log *ft*	Comments
(4.47×10^3 *7*)	3899.5	0.68 *18*	6.3	av Eβ=1939 *31*
(4.51×10^3 *7*)	3860.9	0.43 *18*	6.5	av Eβ=1958 *31*
(4.73×10^3 *7*)	3647.22	6.0 *8*	5.4	av Eβ=2059 *31*
(4.77×10^3 *7*)	3605.13	53 *4*	4.5	av Eβ=2079 *31*
(5.09×10^3 *7*)	3287.67	0.9 *6*	6.4	av Eβ=2229 *31*
(5.74×10^3 *7*)	2630.4	0.9 *4*	6.6	av Eβ=2541 *31*
(6.14×10^3 *7*)	2232.09	3.3 *6*	6.2	av Eβ=2730 *31*
(6.21×10^3 *7*)	2165.8	1.0 *8*	6.7	av Eβ=2761 *31*
(6.33×10^3 *7*)	2047.3	4.0 *10*	6.2	av Eβ=2818 *31*
(6.33×10^3 *7*)	2045.96	1.6 *6*	6.6	av Eβ=2818 *31*
(6.46×10^3 *7*)	1916.45	1.6 *6*	6.6	av Eβ=2880 *31*
(6.55×10^3 *7*)	1826.67	16 *6*	5.6	av Eβ=2922 *31*
(6.75×10^3 *7*)	1625.32	1.0 *4*	6.9	av Eβ=3018 *31*
(7.13×10^3 *7*)	1242.79	3.7 *15*	6.4	av Eβ=3199 *31*

† From 1978Al18.
‡ From the large difference between Q_β and the maximum level energy proposed, I_β's are still tentative (evaluator).
# Absolute intensity per 100 decays.

$\gamma(^{127}Sn)$

Iγ normalization: From the assumption of no direct β-feedings to the ground state. from the large difference between Q_β and the maximum level energy proposed, is tentative (evaluator).

E_γ†‡	I_γ‡#*b*	E_i(level)	J_i^π	E_f	J_f^π	Mult.&*a*	α@	Comments
16.52 *11*	0.026 *2*	1826.67	(19/2$^+$)	1810.12	(15/2$^+$)	E2	2.32×10^3 *9*	α(L)=1.87×10^3 *7*; α(M)=384 *15*; α(N+..)=67.3 *25* α(N)=65.9 *25*; α(O)=1.36 *5* I_γ: Evaluator assumed relative intensity uncertainty is about 20%. The intensities are estimated from transition intensity balance of 4.52 μs isomer by evaluator.
104.30 *6*	4.1 *4*	1930.96	(23/2$^+$)	1826.67	(19/2$^+$)	[E2]	1.374	α(K)=1.008 *15*; α(L)=0.294 *5*; α(M)=0.0600 *9*; α(N+..)=0.01110 *16* α(N)=0.01063 *16*; α(O)=0.000474 *7*
184.81 *13*	1.65 *20*	1810.12	(15/2$^+$)	1625.32		[M1]	0.1027	α(K)=0.0889 *13*; α(L)=0.01118 *16*; α(M)=0.00219 *3*; α(N+..)=0.000448 *7* α(N)=0.000412 *6*; α(O)=3.58×10^{-5} *5*
219.2 *2*	2.3 *3*	2045.96	(19/2)	1826.67	(19/2$^+$)	[M1]	0.0650	α(K)=0.0563 *8*; α(L)=0.00704 *10*; α(M)=0.001380 *20*; α(N+..)=0.000282 *4* α(N)=0.000260 *4*; α(O)=2.26×10^{-5} *4*
236.0 *2*	1.1 *2*	2045.96	(19/2)	1810.12	(15/2$^+$)	[E2]	0.0789	α(K)=0.0653 *10*; α(L)=0.01097 *16*; α(M)=0.00218 *4*; α(N+..)=0.000424 *6* α(N)=0.000398 *6*; α(O)=2.61×10^{-5} *4*

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^{127}In β^- decay (1.04 s) 2004Ga24 (continued)

$\gamma(^{127}Sn)$ (continued)

E_γ[†‡]	I_γ[‡#b]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&a]	α[@]	Comments
257.3 *7*	3.1 *4*	2083.5		1826.67	(19/2$^+$)	[M1]	0.0426 *7*	α(K)=0.0369 *6*; α(L)=0.00459 *8*; α(M)=0.000900 *15*; α(N+..)=0.000184 *3* α(N)=0.000169 *3*; α(O)=1.477×10^{-5} *24*
301.14 *13*	2.3 *3*	2232.09	(21/2$^+$)	1930.96	(23/2$^+$)	[M1]	0.0283	α(K)=0.0245 *4*; α(L)=0.00304 *5*; α(M)=0.000595 *9*; α(N+..)=0.0001218 *18* α(N)=0.0001120 *16*; α(O)=9.78×10^{-6} *14*
359.58 *13*	3.5 *4*	3647.22	(19/2,21/2)	3287.67		[M1]	0.0180	α(K)=0.01561 *22*; α(L)=0.00192 *3*; α(M)=0.000376 *6*; α(N+..)=7.70×10^{-5} *11* α(N)=7.08×10^{-5} *10*; α(O)=6.20×10^{-6} *9*
395.6 *7*	1.3 *4*	2311.8	(19/2,17/2)	1916.45	(19/2$^-$)	[M1]	0.01414	α(K)=0.01228 *18*; α(L)=0.001507 *23*; α(M)=0.000295 *5*; α(N+..)=6.04×10^{-5} *9* α(N)=5.55×10^{-5} *9*; α(O)=4.86×10^{-6} *8*
405.4 *3*	3.0 *4*	2232.09	(21/2$^+$)	1826.67	(19/2$^+$)	[M1]	0.01330	α(K)=0.01155 *17*; α(L)=0.001417 *20*; α(M)=0.000277 *4*; α(N+..)=5.68×10^{-5} *8* α(N)=5.22×10^{-5} *8*; α(O)=4.57×10^{-6} *7*
406.9 *7*	1.7 *3*	1501.5?		1094.60	(15/2$^-$)	[M1]	0.01318	α(K)=0.01145 *17*; α(L)=0.001404 *21*; α(M)=0.000274 *4*; α(N+..)=5.62×10^{-5} *9* α(N)=5.17×10^{-5} *8*; α(O)=4.53×10^{-6} *7*
464.6 *4*	1.11 *21*	2630.4	(19/2,21/2)	2165.8	(19/2)			
501.9 *10*	0.5 *2*	2733.82		2232.09	(21/2$^+$)			
567.26 *15*	10.4 *10*	1810.12	(15/2$^+$)	1242.79	(13/2$^-$)			
583.2 *5*	1.70 *20*	2630.4	(19/2,21/2)	2047.3	(19/2$^-$)			
646.34 *4*	3.0 *5*	646.34	(9/2)$^-$	0.0	11/2$^-$	M1,E2	0.0040 *3*	α(K)exp<0.004 α=0.0040 *3*; α(K)=0.0034 *3*; α(L)=0.000430 *21*; α(M)=8.4×10^{-5} *4*; α(N+..)=1.71×10^{-5} *10* α(N)=1.58×10^{-5} *8*; α(O)=1.34×10^{-6} *12*
650.5 *9*	0.9 *3*	2733.82		2083.5				
688.0 *3*	1.7 *2*	2733.82		2045.96	(19/2)			
715.52 *4*	46 *4*	1810.12	(15/2$^+$)	1094.60	(15/2$^-$)			
732.04 *11*	9.4 *10*	1826.67	(19/2$^+$)	1094.60	(15/2$^-$)			
803.2 *9*	3.2 *5*	2733.82		1930.96	(23/2$^+$)			
821.89 *11*	4.8 *5*	1916.45	(19/2$^-$)	1094.60	(15/2$^-$)			
871.4 *2*	6.2 *6*	3605.13	(19/2$^-$)	2733.82				
952.8 *3*	10.4 *10*	2047.3	(19/2$^-$)	1094.60	(15/2$^-$)			
974.7 *8*	1.7 *3*	3605.13	(19/2$^-$)	2630.4	(19/2,21/2)			
979.1 *5*	3.0 *4*	1625.32		646.34	(9/2)$^-$			
1071.3 *5*	5.7 *7*	2165.8	(19/2)	1094.60	(15/2$^-$)			

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^{127}In β^- decay (1.04 s) 2004Ga24 (continued)

$\gamma(^{127}Sn)$ (continued)

E_γ[†‡]	I_γ[‡#b]	E_i(level)	J_i^π	E_f	J_f^π
1094.7 *2*	100	1094.60	(15/2$^-$)	0.0	11/2$^-$
1217.4 *10*	1.1 *4*	2311.8	(19/2,17/2)	1094.60	(15/2$^-$)
1242.71 *15*	14.8 *14*	1242.79	(13/2$^-$)	0.0	11/2$^-$
1293.3 *2*	2.4 *3*	3605.13	(19/2$^-$)	2311.8	(19/2,17/2)
1373.1 *7*	1.0 *3*	3605.13	(19/2$^-$)	2232.09	(21/2$^+$)
1439.4 *3*	3.4 *4*	3605.13	(19/2$^-$)	2165.8	(19/2)
1461.02 *13*	4.6 *5*	3287.67		1826.67	(19/2$^+$)
1521.8 *5*	2.3 *2*	3605.13	(19/2$^-$)	2083.5	
1558.5 *9*	4.0 *6*	3605.13	(19/2$^-$)	2047.3	(19/2$^-$)
1689.0 *3*	1.6 *2*	3605.13	(19/2$^-$)	1916.45	(19/2$^-$)
1778.3 *2*	26.8 *27*	3605.13	(19/2$^-$)	1826.67	(19/2$^+$)
1819.7 *7*	3.5 *6*	3647.22	(19/2,21/2)	1826.67	(19/2$^+$)
2103.6 *4*	1.7 *2*	3605.13	(19/2$^-$)	1501.5?	
2510.3 *2*	10.8 *11*	3605.13	(19/2$^-$)	1094.60	(15/2$^-$)
2766.3 *8*	0.5 *2*	3860.9		1094.60	(15/2$^-$)
2804.9 *11*	0.8 *2*	3899.5		1094.60	(15/2$^-$)

† From 2004Ga24.
‡ For unplaced transitions that could belong to 3.67-s, 1.09-s, and/or 1.04-s, β^- decay, see 1.09-s β^- decay.
# From 2004Ga24. Relative to Iγ(1094.7γ)=100.
@ Theoretical conversion coefficients are calculated using BrIcc code for the multipolarity indicated.
& From α(K)exp (1980De35).
a To obtain I_γ normalization, the multipolarities in brackets were assumed to calculate conversion coefficients. The assumed multipolarities are not used for spin and parity determinations (evaluator).
b For absolute intensity per 100 decays, multiply by 0.85 *5*.

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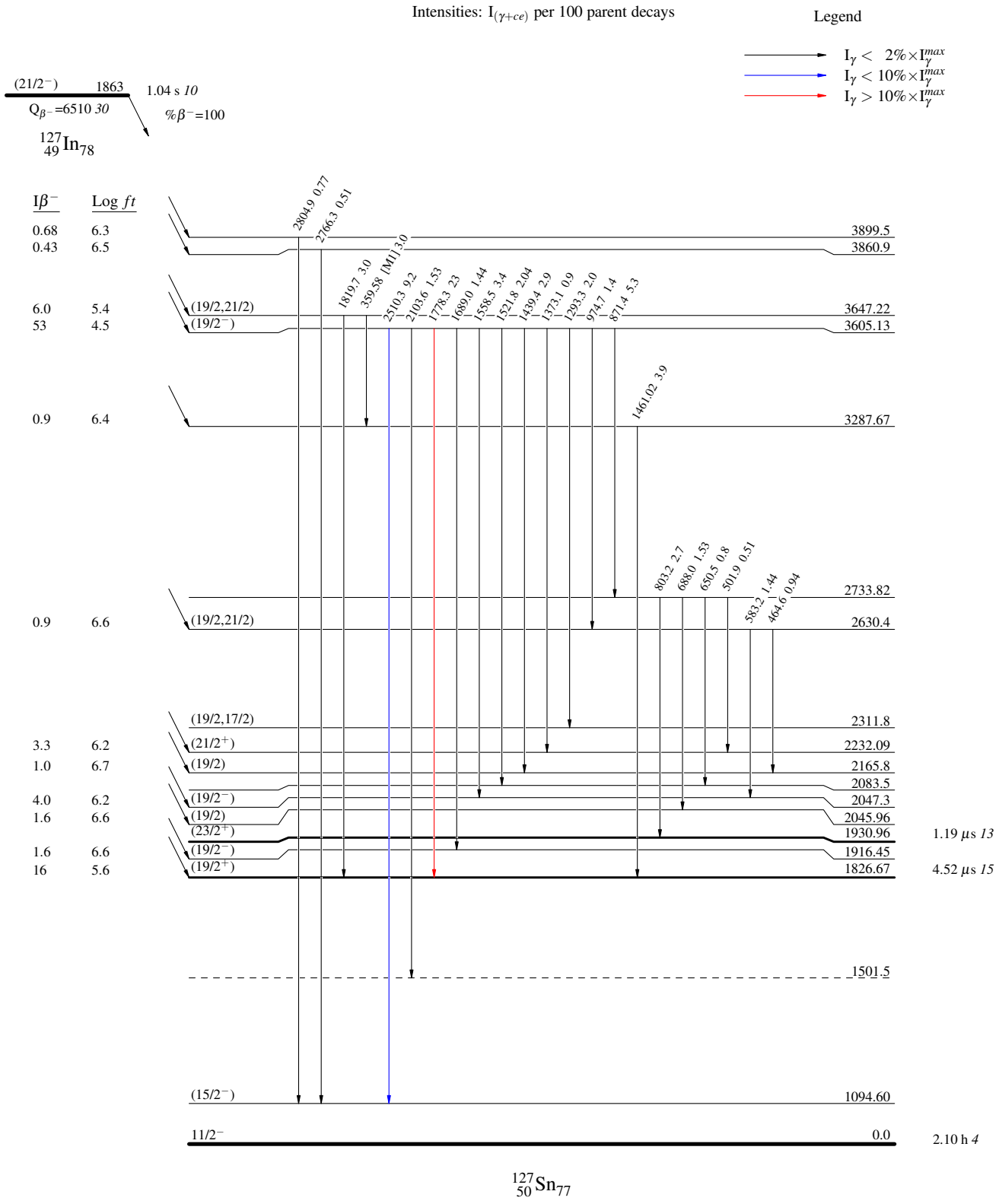
Decay Scheme

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



^{127}In β^- decay (1.04 s) 2004Ga24

Decay Scheme (continued)

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