^{127}In β^- decay (3.67 s) 2004Ga24,1980De35

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

Parent: ^{127}In: E=420 *65*; J^π=(1/2$^-$); $T_{1/2}$=3.67 s *4*; 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.

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

Configuration from 2004Ga24.

E(level)†	J^π‡	$T_{1/2}$	Comments
0.0	11/2$^-$	2.10 h *4*	Configuration=(ν $h_{11/2}$).
4.9 *4*	3/2$^+$	4.13 min *3*	Configuration=(ν $d_{3/2}$). E(level): from ^{127}In β^- decay (1.09 s).
257.6 *4*	(1/2)$^+$		Configuration=(ν $s_{1/2}$).
646.33 *4*	(9/2)$^-$		Configuration=(^{128}Sn 2$^+$)(ν $(h_{11/2})^{-1}$).
809.9 *4*	(5/2$^+$)		
953.9 *4*	(1/2,3/2)		Configuration=(^{128}Sn 2$^+$)(ν $(d_{3/2})^{-1}$) and/or (^{128}Sn 2$^+$)(ν $(s_{1/2})^{-1}$).
963.73 *10*	(7/2$^-$)		Configuration=(^{128}Sn 2$^+$)(ν $(h_{11/2})^{-1}$).
1090.5 *4*	(1/2,3/2)		Configuration=(^{128}Sn 2$^+$)(ν $(d_{3/2})^{-1}$) and/or (^{128}Sn 2$^+$)(ν $(s_{1/2})^{-1}$).
1233.4 *4*	(3/2$^+$)		Configuration=(^{128}Sn 2$^+$)(ν $(d_{3/2})^{-1}$) and/or (^{128}Sn 2$^+$)(ν $(s_{1/2})^{-1}$).
1331.4 *4*	(5/2$^+$)		Configuration=(ν $d_{5/2}$).
1819.8 *5*	(1/2,3/2)		
2260.2 *10*	(1/2,3/2)		
2886.1 *7*	(1/2,3/2)		
3333.3 *4*	(3/2)		
3397.5 *4*	(1/2,3/2)		
3564.4 *6*	(3/2)		

† From a least-squares fit to E(γ's).

‡ From Adopted Levels.

β^- radiations

E(decay)‡	E(level)	Iβ^-†#@	Log *ft*	Comments
(3.37×10^3 *7*)	3564.4	0.27 *4*	6.7	av Eβ=1416 *34*
(3.53×10^3 *7*)	3397.5	1.46 *20*	6.0	av Eβ=1495 *34*
(3.60×10^3 *7*)	3333.3	6.9 *7*	5.4	av Eβ=1525 *34*
(4.04×10^3 *7*)	2886.1	0.31 *5*	7.0	av Eβ=1736 *34*
(4.67×10^3 *7*)	2260.2	0.52 *10*	7.0	av Eβ=2032 *34*
(5.11×10^3 *7*)	1819.8	0.08 *6*	8.0	av Eβ=2241 *34*
(5.70×10^3 *7*)	1233.4	1.03 *15*	7.1	av Eβ=2519 *34*
(5.84×10^3 *7*)	1090.5	4.2 *5*	6.5	av Eβ=2587 *34*
(5.98×10^3 *7*)	953.9	1.60 *18*	7.0	av Eβ=2652 *34*
(6.67×10^3 *7*)	257.6	36 *3*	5.9	av Eβ=2982 *34*
(6.93×10^3 *7*)	4.9	52 *4*	5.8	av Eβ=3102 *34*

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^{127}In β^- decay (3.67 s) 2004Ga24,1980De35 (continued)

β^- radiations (continued)

† From intensity balance of transitions. Values are, however, still tentative. It is because unobserved γ's from higher levels.
‡ From 1978Al18.
# Absolute intensity per 100 decays.
@ Absolute intensity per 100 decays.

$\gamma(^{127}Sn)$

Iγ normalization: From Σ(Iγ to g.s.)+ Σ(Iγ to 4.9 level)=100, assuming I_β to 4.9 level is 52 *4* per 100 decays and no β feeding to g.s. Others: 0.38 *5* from absolute measurement of 252.70γ (1986Go10).

E_γ ‡	I_γ ‡&	E_i(level)	J_i^π	E_f	J_f^π	Mult. #	α †	Comments
137 @a *1*	@	1090.5	(1/2,3/2)	953.9	(1/2,3/2)			
144.02 *16*	0.27 *4*	953.9	(1/2,3/2)	809.9	$(5/2^+)$	[M1]	0.203	α(K)=0.175 *3*; α(L)=0.0222 *4*; α(M)=0.00435 *7*; α(N+..)=0.000890 *13* α(N)=0.000819 *12*; α(O)=7.10×10^{-5} *11*
252.70 *4*	100	257.6	$(1/2)^+$	4.9	$3/2^+$	M1	0.0446	α(K)exp=0.039 *2* (1980De35); K/L=7.3 *4* (1980De35) α(K)=0.0387 *6*; α(L)=0.00482 *7*; α(M)=0.000944 *14*; α(N+..)=0.000193 *3* α(N)=0.0001776 *25*; α(O)=1.549×10^{-5} *22* I$_\gamma$: 43 *3* per 100 decays; weighted average of 43.5 *23* (1993RuZW) and 38 *5* (1986Go10). Mult.: from α(K)exp and K/L.
317.61 *16*	0.032 *6*	963.73	$(7/2^-)$	646.33	$(9/2)^-$	[M1]	0.0247	α(K)=0.0214 *3*; α(L)=0.00265 *4*; α(M)=0.000518 *8*; α(N+..)=0.0001060 *15* α(N)=9.75×10^{-5} *14*; α(O)=8.52×10^{-6} *12*
646.34 *4*	0.032 *6*	646.33	$(9/2)^-$	0.0	$11/2^-$	M1	0.00427 *6*	α(K)exp<0.004 α=0.00427 *6*; α(K)=0.00372 *6*; α(L)=0.000449 *7*; α(M)=8.78×10^{-5} *13*; α(N+..)=1.80×10^{-5} *3* α(N)=1.654×10^{-5} *24*; α(O)=1.456×10^{-6} *21*
696.4 *3*	0.69 *7*	953.9	(1/2,3/2)	257.6	$(1/2)^+$			
805.00 *5*	0.27 *4*	809.9	$(5/2^+)$	4.9	$3/2^+$			
832.83 *15*	5.3 *5*	1090.5	(1/2,3/2)	257.6	$(1/2)^+$			
948.90 *17*	2.7 *3*	953.9	(1/2,3/2)	4.9	$3/2^+$			
963.61 *12*	0.9 *2*	963.73	$(7/2^-)$	0.0	$11/2^-$			
975.8 *4*	1.3 *2*	1233.4	$(3/2^+)$	257.6	$(1/2)^+$			
1073.8 *8*	0.027 *7*	1331.4	$(5/2^+)$	257.6	$(1/2)^+$			
1085.62 *18*	6.6 *6*	1090.5	(1/2,3/2)	4.9	$3/2^+$			
1169.7 *9*	1.2 *2*	2260.2	(1/2,3/2)	1090.5	(1/2,3/2)			
1228.4 *3*	1.1 *2*	1233.4	$(3/2^+)$	4.9	$3/2^+$			
1326.47 *9*	0.54 *6*	1331.4	$(5/2^+)$	4.9	$3/2^+$			
1513.0 *9*	0.43 *9*	3333.3	(3/2)	1819.8	(1/2,3/2)			
1814.8 *3*	0.61 *10*	1819.8	(1/2,3/2)	4.9	$3/2^+$			

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^{127}In β^- decay (3.67 s) 2004Ga24,1980De35 (continued)

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

E_γ ‡	I_γ ‡&	E_i(level)	J_i^π	E_f	J_f^π
2001.9 *7*	0.57 *6*	3333.3	(3/2)	1331.4	$(5/2^+)$
2242.8 *2*	0.96 *11*	3333.3	(3/2)	1090.5	(1/2,3/2)
2369.5 *3*	0.95 *11*	3333.3	(3/2)	963.73	$(7/2^-)$
2628.5 *6*	0.71 *9*	2886.1	(1/2,3/2)	257.6	$(1/2)^+$
3075.62 *10*	9.6 *10*	3333.3	(3/2)	257.6	$(1/2)^+$
3139.8 *2*	3.4 *4*	3397.5	(1/2,3/2)	257.6	$(1/2)^+$
3306.7 *4*	0.62 *7*	3564.4	(3/2)	257.6	$(1/2)^+$
3328.20 *19*	3.6 *4*	3333.3	(3/2)	4.9	$3/2^+$

† Theoretical conversion coefficients are calculated using BrIcc code for the multipolarity indicated.
‡ 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.
# The multipolarities in brackets were assumed by evaluator to obtain transition intensities, and are not used for spin and parity determination. For the estimation of J^π, see adopted files.
@ From the drawing of decay scheme (1980De35); weak, no intensity is given. Not reported by 2004Ga24.
& For absolute intensity per 100 decays, multiply by 0.40 *4*.
a Placement of transition in the level scheme is uncertain.

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Decay Scheme

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

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

(1/2$^-$) 420 3.67 s *4*
Q_{β^-}=6510 *30* $\%\beta^-$=100
$^{127}_{49}In_{78}$

Iβ⁻	Log *ft*		
0.27	6.7	(3/2)	3564.4
1.46	6.0	(1/2,3/2)	3397.5
6.9	5.4	(3/2)	3333.3
0.31	7.0	(1/2,3/2)	2886.1
0.52	7.0	(1/2,3/2)	2260.2
0.08	8.0	(1/2,3/2)	1819.8
		(5/2$^+$)	1331.4
1.03	7.1	(3/2$^+$)	1233.4
4.2	6.5	(1/2,3/2)	1090.5
		(7/2$^-$)	963.73
1.60	7.0	(1/2,3/2)	953.9
		(5/2$^+$)	809.9
		(9/2)$^-$	646.33
36	5.9	(1/2)$^+$	257.6
52	5.8	3/2$^+$	4.9
		11/2$^-$	0.0

3306.7 0.25; 3139.8 1.36; 3328.20 1.44; 3075.62 3.8; 2369.5 0.38; 2242.8 0.38; 2001.9 0.23; 1513.0 0.17; 2628.5 0.28; 1169.7 0.52; 1814.8 0.24; 1326.47 0.22; 1073.8 0.011; 1228.4 0.48; 975.8 0.56; 1085.62 2.6; 832.83 2.1; 137; 963.61 0.40; 317.61 [M1] 0.013; 948.90 1.08; 696.4 0.28; 144.02 [M1] 0.130; 805.00 0.108; 646.34 M1 0.013; 252.70 M1 42

4.13 min *3*
2.10 h *4*

$^{127}_{50}Sn_{77}$