^{124}In β^- decay (3.12 s) 1979Fo10

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. Katakura, Z. D. Wu	NDS 109, 1655 (2008)	1-Apr-2008

Parent: ^{124}In: E=0.0; $J^\pi=(1)^+$; $T_{1/2}$=3.12 s *10*; Q(β^-)=7360 *50*; %β^- decay=100.0

1979Fo10: ^{235}U(n,F) on-line ms, semi γ ce, $\gamma\gamma$ coin, $\beta\gamma$ delayed coin.

1987Sp09: ^{235}U(n,F) on-line ms; semi γ β, $\beta\gamma$ coin.

1978Al18: ^{235}U(n,F) on-line ms; semi γ β, $\beta\gamma$ coin.

The decay scheme is that proposed by 1979Fo10 on the basis of $\gamma\gamma$-coin and Eγ sums.

^{124}Sn Levels

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
0.0	0^+	2836.32 *10*	3^+	3655.5 *3*	2,3	3917.16 *9*	2^+
1131.64 *5*	2^+	2875.10 *14*	2^+	3710.4 *3*	2^+	4043.8 *5*	$1,2^+$
2101.58 *7*	4^+	2878.35 *21*	2^+	3724.95 *25*	$1,2^+$	4156.0 *3*	2^+
2129.39 *6*	2^+	3109.5 *5*	$1,2^+$	3741.23 *12*	$(2)^+$	4227.9 *3*	$1,2^+$
2192.02 *16*	0^+	3214.19 *11*	2^+	3760.17 *21*	$(0^+,1,2)$	4264.1 *3*	$1,2^+$
2221.52 *7*	4^+	3264.15 *20*	2^+	3761.6 *3*	2^+	4331.4 *4*	$1,2^+$
2366.4 *5*		3293.5 *7*	2,3	3834.3 *7*	$1,2^+$	4470.3 *4*	$1,2^+$
2426.38 *11*	2^+	3333.19 *20*	$2^{(+)}$	3864.12 *14*	$1,2^+$	4528.8 *4*	$1,2^+$
2602.41 *9*	3^-	3396.5 *8*	$1,2^+$	3888.0 *8*	$1,2^+$	4604.6 *7*	$1,2^+$
2702.99 *10*	2^+	3551.51 *18*	(3^-)	3910.7 *9*	2^+		

† From a least-squares fit to Eγ's.

‡ From Adopted Levels.

β^- radiations

E(decay)	E(level)	Iβ⁻†	Log *ft*	Comments
(2.76×10^3 *5*)	4604.6	0.35 *5*	6.14 *8*	av Eβ=1131 *24*
(2.83×10^3 *5*)	4528.8	0.41 *6*	6.12 *8*	av Eβ=1166 *24*
(2.89×10^3 *5*)	4470.3	0.19 *4*	6.49 *10*	av Eβ=1194 *24*
(3.03×10^3 *5*)	4331.4	0.20 *4*	6.56 *10*	av Eβ=1259 *24*
(3.10×10^3 *5*)	4264.1	0.46 *6*	6.23 *7*	av Eβ=1290 *24*
(3.13×10^3 *5*)	4227.9	0.43 *6*	6.29 *7*	av Eβ=1307 *24*
(3.20×10^3 *5*)	4156.0	0.75 *9*	6.09 *7*	av Eβ=1341 *24*
(3.32×10^3 *5*)	4043.8	0.16 *5*	6.82 *14*	av Eβ=1393 *24*
(3.44×10^3 *5*)	3917.16	9.4 *8*	5.12 *5*	av Eβ=1453 *24* E(decay): 3390 *26* from (β)(1315γ) coin (1978Al18).
(3.45×10^3 *5*)	3910.7	0.080 *21*	7.19 *12*	av Eβ=1456 *24*
(3.47×10^3 *5*)	3888.0	0.090 *21*	7.15 *11*	av Eβ=1467 *24*
(3.50×10^3 *5*)	3864.12	1.40 *13*	5.98 *5*	av Eβ=1478 *24*
(3.53×10^3 *5*)	3834.3	0.070 *21*	7.29 *14*	av Eβ=1492 *24*
(3.60×10^3 *5*)	3761.6	1.00 *13*	6.18 *7*	av Eβ=1526 *24*
(3.60×10^3 *5*)	3760.17	0.52 *7*	6.46 *7*	av Eβ=1527 *24*
(3.62×10^3 *5*)	3741.23	2.6 *3*	5.77 *6*	av Eβ=1536 *24*
(3.64×10^3 *5*)	3724.95	0.37 *7*	6.63 *9*	av Eβ=1543 *24*
(3.65×10^3 *5*)	3710.4	0.34 *5*	6.67 *7*	av Eβ=1550 *24*
(3.70×10^3 *5*)	3655.5	0.210 *25*	6.91 *6*	av Eβ=1576 *24*
(3.81×10^3 *5*)	3551.51	1.05 *10*	6.26 *5*	av Eβ=1625 *24*
(3.96×10^3 *5*)	3396.5	0.11 *3*	7.32 *13*	av Eβ=1698 *24*
(4.03×10^3 *5*)	3333.19	0.99 *11*	6.39 *6*	av Eβ=1728 *24*

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^{124}In β^- decay (3.12 s) 1979Fo10 (continued)

β^- radiations (continued)

E(decay)	E(level)	Iβ^-[†]	Log *ft*	Comments
(4.07×10^3 *5*)	3293.5	0.21 *5*	7.08 *11*	av Eβ=1747 *24*
(4.10×10^3 *5*)	3264.15	1.30 *14*	6.30 *6*	av Eβ=1761 *24*
(4.15×10^3 *5*)	3214.19	25 *3*	5.04 *6*	av Eβ=1784 *24* E(decay): 4120 *40* from (β)(3214γ) coin (1987Sp09). Other: 3930 *60* from av of values from $\beta\gamma$ coin (1978Al18).
(4.25×10^3 *5*)	3109.5	0.15 *4*	7.31 *12*	av Eβ=1834 *24*
(4.48×10^3 *5*)	2878.35	1.30 *22*	6.47 *8*	av Eβ=1943 *24*
(4.48×10^3 *5*)	2875.10	0.65 *23*	6.78 *16*	av Eβ=1945 *24*
(4.52×10^3 *5*)	2836.32	3.5 *4*	6.06 *6*	av Eβ=1963 *24*
(4.66×10^3 *5*)	2702.99	1.90 *25*	6.38 *7*	av Eβ=2026 *24*
(4.76×10^3 *5*)	2602.41	1.0 *7*	6.7 *3*	av Eβ=2074 *24*
(4.93×10^3 *5*)	2426.38	1.84 *18*	6.51 *5*	av Eβ=2157 *24*
(4.99×10^3 *5*)	2366.4	0.12 *4*	7.72 *15*	av Eβ=2186 *24*
(5.14×10^3 *5*)	2221.52	0.9 *4*	6.89 *20*	av Eβ=2255 *24*
(5.17×10^3 *5*)	2192.02	0.80 *9*	6.96 *6*	av Eβ=2269 *24*
5.31×10^3 *8*	2129.39	17.7 *20*	5.64 *6*	av Eβ=2298 *24* E(decay): 5310 *80* from (β)(2129γ) coin (1987Sp09). Other: 5100 *150* (1978Al18).
(5.26×10^3 *5*)	2101.58	2.4 *6*	6.51 *11*	av Eβ=2312 *24*
(6.23×10^3 *5*)	1131.64	20 *7*	5.92 *16*	av Eβ=2772 *24* 6230 *140* from (β)(1132γ) coin (1987Sp09).

[†] Absolute intensity per 100 decays.

γ(^{124}Sn)

Iγ normalization: From no β^- branching to g.s.
Assignment to the decay of the 3$^+$, ^{124}In parent was made by γ-ray measurement of chemically separated source of ^{124}Cd (J^π=0$^+$) (1979Fo10).
α(K)exp from Ice(K)/Iγ by 1979Fo10.

E$_\gamma$[@]	I$_\gamma$[@a]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[&]	δ[&]	Comments
[x]339.9[†] *3*	0.11 *2*							
[x]409.60[†] *20*	0.31 *4*							
[x]449.33[†] *20*	0.32 *4*							
[x]496.5[†] *6*	0.22 *3*							
[x]549.0[†] *3*	0.21 *4*							
574.1 *3*	0.15 *3*	2702.99	2$^+$	2129.39	2$^+$	D+Q	−0.4 *+4−8*	Unplaced γ in 1979Fo10 but intensity is consistent with (n,n$'\gamma$) data. Placement is by evaluators.
614.67 *15*	0.64 *5*	2836.32	3$^+$	2221.52	4$^+$	(M1+E2)		
707.00 *10*	2.0 *2*	2836.32	3$^+$	2129.39	2$^+$	M1+E2	+2.1 *3*	
[x]820.3[†] *4*	0.14 *3*							
[x]849.73[†] *20*	0.34 *3*							
969.94[‡] *5*	3.0 *5*	2101.58	4$^+$	1131.64	2$^+$	E2		
[x]977.15[†] *15*	0.28 *5*							
997.79 *5*	21.1 *15*	2129.39	2$^+$	1131.64	2$^+$	M1+E2	+3.2 *+7−5*	I$_\gamma$: other: 17 *2* (1986Go10).
1042.12 *15*	1.2 *1*	3917.16	2$^+$	2875.10	2$^+$			

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^{124}In β^- decay (3.12 s) 1979Fo10 (continued)

$\gamma(^{124}Sn)$ (continued)

E_γ[@]	I_γ[@ a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	δ[&]	α[b]	Comments
1060.38 *15*	0.80 *7*	2192.02	0^+	1131.64	2^+	E2			
1089.85 *5*	3.2 *3*	2221.52	4^+	1131.64	2^+	E2			
1131.64[‡] *5*	68 *6*	1131.64	2^+	0.0	0^+	E2		9.85×10^{-4}	α(K)=0.000855 *12*; α(L)=0.0001039 *15*; α(M)=2.03×10^{-5} *3*; α(N+..)=5.50×10^{-6} *8* α(N)=3.81×10^{-6} *6*; α(O)=3.27×10^{-7} *5*; α(IPF)=1.366×10^{-6} *20* Mult.: from adopted gammas.
1138.4 *3*	0.47 *15*	3741.23	$(2)^+$	2602.41	3^-				
1164.1 *7*	0.21 *4*	3293.5	2,3	2129.39	2^+	D,D+Q			
1204.1 *3*	0.19 *4*	3333.19	$2^{(+)}$	2129.39	2^+				
1214.26 *20*	0.65 *5*	3917.16	2^+	2702.99	2^+				
1234.8 *5*	0.12 *3*	2366.4		1131.64	2^+				
1294.72 *15*	0.73 *7*	2426.38	2^+	1131.64	2^+	M1+E2	−0.21 *2*		
1314.73 *5*	4.5 *4*	3917.16	2^+	2602.41	3^-				
1330.2 *4*	0.25 *3*	3551.51	(3^-)	2221.52	4^+				
1352.6 *4*	0.25 *3*	4227.9	$1,2^+$	2875.10	2^+				
1450.1 *6*	0.25 *3*	3551.51	(3^-)	2101.58	4^+	(D,D+Q)			
[x]1452.6[†] *4*	0.28 *4*								
1470.70 *10*	6.0 *5*	2602.41	3^-	1131.64	2^+	E1+M2	+0.05 *2*		
1490.9 *4*	0.19 *2*	3917.16	2^+	2426.38	2^+				
1519.36 *20*	1.0 *1*	3741.23	$(2)^+$	2221.52	4^+				
1526.1 *3*	0.21 *2*	3655.5	2,3	2129.39	2^+	D,D+Q			
1571.31 *10*	2.4 *2*	2702.99	2^+	1131.64	2^+	M1+E2	−0.27 *4*		
1611.3 *4*	0.36 *3*	3741.23	$(2)^+$	2129.39	2^+				
1640.1 *6*	0.18 *5*	3741.23	$(2)^+$	2101.58	4^+				
[x]1672.3[†] *6*	0.11 *4*								
1695.63 *20*	0.38 *4*	3917.16	2^+	2221.52	4^+				
1704.60 *20*	0.90 *8*	2836.32	3^+	1131.64	2^+	(M1+E2)	+1.5 *3*		
1734.69 *20*	0.39 *4*	3864.12	$1,2^+$	2129.39	2^+				
1743.54 *20*	2.1 *2*	2875.10	2^+	1131.64	2^+	M1+E2	+5.6 *+11−8*		
1746.70 *20*	1.3 *2*	2878.35	2^+	1131.64	2^+	M1+E2	+0.67 *8*		
[x]1762.7[†] *9*	0.08 *3*								
1787.71 *20*	0.44 *4*	3917.16	2^+	2129.39	2^+				
1815.3 *3*	0.19 *4*	3917.16	2^+	2101.58	4^+				
[x]1856.0[†] *4*	0.23 *4*								
[x]1907.2[†] *6*	0.19 *4*								
2082.53 *15*	3.4 *3*	3214.19	2^+	1131.64	2^+	M1+E2	+1.2 *5*		
2129.21 *20*	0.59 *5*	2129.39	2^+	0.0	0^+	E2			
2201.3 *3*	0.58 *5*	3333.19	$2^{(+)}$	1131.64	2^+	(M1+E2)	+1.1 *6*		
2419.77 *20*	0.55 *5*	3551.51	(3^-)	1131.64	2^+				
2426.39 *15*	1.3 *1*	2426.38	2^+	0.0	0^+	E2			
2593.5 *3*	0.19 *4*	3724.95	$1,2^+$	1131.64	2^+				
2609.89 *15*	0.60 *6*	3741.23	$(2)^+$	1131.64	2^+				
2628.50 *20*	0.52 *6*	3760.17	$(0^+,1,2)$	1131.64	2^+				
[x]2699.6[†#] *4*	0.54 *5*								
2732.36 *20*	0.44 *4*	3864.12	$1,2^+$	1131.64	2^+				
[x]2781.3[†] *5*	0.18 *4*								
3024.4 *3*	0.19 *4*	4156.0	2^+	1131.64	2^+				
3109.5 *5*	0.15 *3*	3109.5	$1,2^+$	0.0	0^+				

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^{124}In β^- decay (3.12 s) 1979Fo10 (continued)

$\gamma(^{124}Sn)$ (continued)

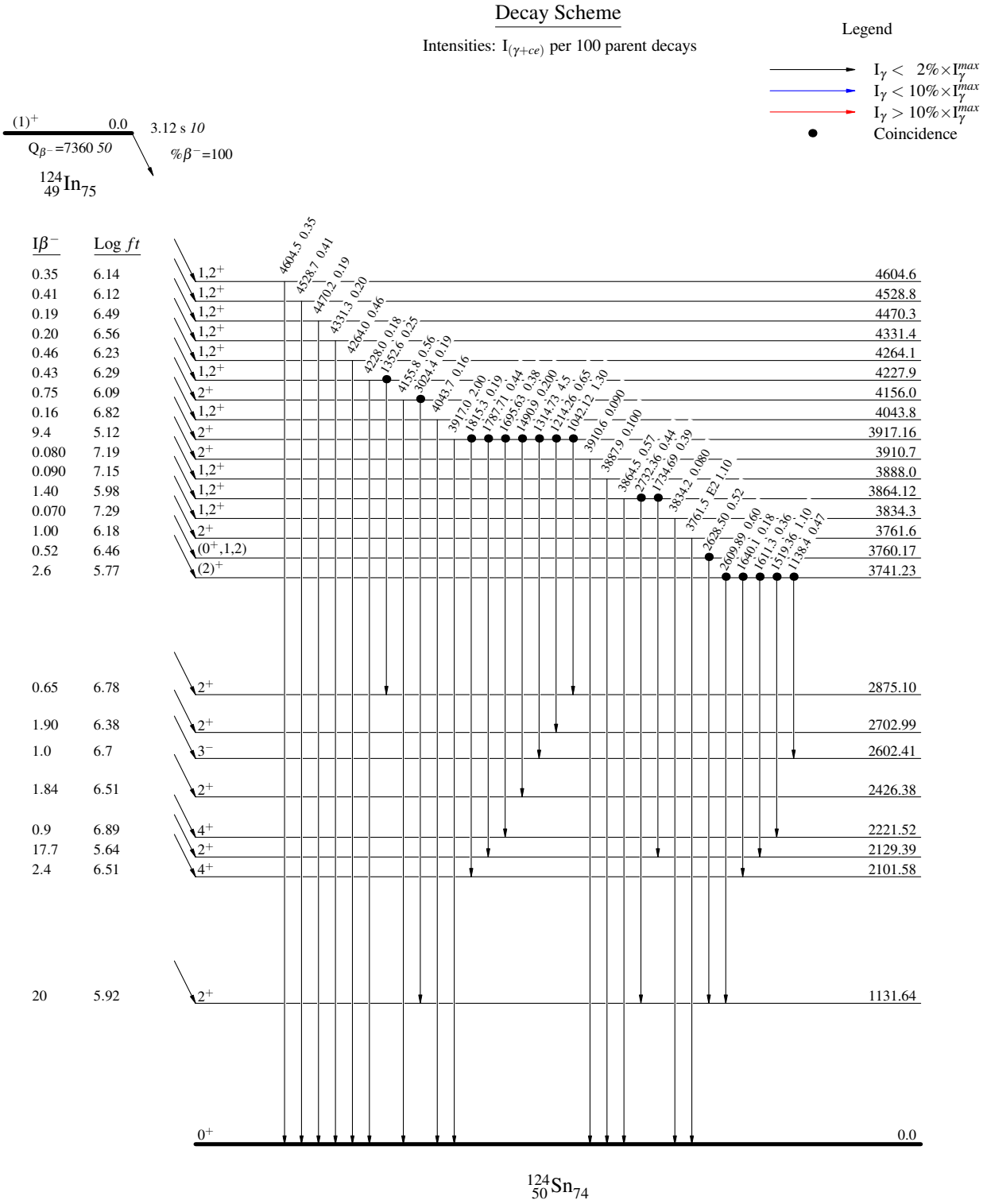
E_γ[@]	I_γ[@a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]
3214.15 *15*	21.5 *20*	3214.19	2^+	0.0	0^+	E2
3264.10 *20*	1.3 *1*	3264.15	2^+	0.0	0^+	E2
3333.0 *4*	0.22 *4*	3333.19	$2^{(+)}$	0.0	0^+	(Q)
3396.5 *8*	0.11 *3*	3396.5	$1,2^+$	0.0	0^+	
3710.3 *3*	0.34 *4*	3710.4	2^+	0.0	0^+	
3724.5 *4*	0.18 *4*	3724.95	$1,2^+$	0.0	0^+	
3761.5 *3*	1.0 *1*	3761.6	2^+	0.0	0^+	E2
3834.2 *7*	0.07 *2*	3834.3	$1,2^+$	0.0	0^+	
3864.5 *4*	0.57 *5*	3864.12	$1,2^+$	0.0	0^+	
3887.9 *8*	0.09 *2*	3888.0	$1,2^+$	0.0	0^+	
3910.6 *9*	0.08 *2*	3910.7	2^+	0.0	0^+	
3917.0 *3*	1.9 *2*	3917.16	2^+	0.0	0^+	
4043.7 *5*	0.16 *4*	4043.8	$1,2^+$	0.0	0^+	
4155.8 *6*	0.56 *6*	4156.0	2^+	0.0	0^+	
4228.0 *4*	0.18 *4*	4227.9	$1,2^+$	0.0	0^+	
4264.0 *3*	0.46 *5*	4264.1	$1,2^+$	0.0	0^+	
4331.3 *4*	0.20 *3*	4331.4	$1,2^+$	0.0	0^+	
4470.2 *4*	0.19 *3*	4470.3	$1,2^+$	0.0	0^+	
4528.7 *4*	0.41 *5*	4528.8	$1,2^+$	0.0	0^+	
4604.5 *7*	0.35 *4*	4604.6	$1,2^+$	0.0	0^+	

† Isomeric assignment uncertain (1979Fo10).
‡ Weighted av from ^{124}In β^- decay (3.7 s) and ^{124}In β^- decay (3.11 s).
# $I\gamma/I\gamma(1577\gamma)$=0.22 *3* compared with 0.22 *3* in (n,n′γ) for Eγ=2701.31 *8* suggests that this transition might deexcite 2703 level.
@ From 1979Fo10.
& From adopted gammas.
a For absolute intensity per 100 decays, multiply by 1.00 *7*.
b 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.
x γ ray not placed in level scheme.

^{124}In β^- decay (3.12 s) 1979Fo10

Decay Scheme

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



^{124}In β^- decay (3.12 s) 1979Fo10

Decay Scheme (continued)

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