^{130}Sn β^- decay (3.72 min) 1994WaZU,1987StZO

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 93, 33 (2001)	11-May-2001

Parent: ^{130}Sn: E=0.0; $J^\pi=0^+$; $T_{1/2}$=3.72 min *7*; Q(β^-)=2148 *15*; %β^- decay=100.0

1994WaZU, 1987StZO (also 1988StZQ): measured Eγ, Iγ, $\gamma\gamma$.

Others:

1974Ke08 (also 1973Ke24): measured Eγ, Iγ, $\gamma\gamma$, Eβ, ce. A total of 15 γ rays were reported with this decay, 12 of which were assigned in a level scheme. These results agree with those from 1994WaZU and 1987StZO.

1974Kr20, 1972Iz01: measured Eγ, Iγ, $\gamma\gamma$. A total of six γ rays reported.

Others:

1990St13, 1977Nu01, 1977Lu06: $\beta\gamma$ coin.

1979Bo26: measured Eγ with a curved-crystal spectrometer.

$T_{1/2}$(^{130}Sn g.s.): 1978Iz03 (also 1972Iz01), 1974Gr29, 1974Fo06, 1972FoZA, 1970OsZZ, 1956Pa20.

^{130}Sb Levels

E(level)[†]	J^π[‡]	$T_{1/2}$	Comments
4.8 *2*	$(4,5)^+$	6.3 min *2*	Additional information 1. E(level): from ^{130}Sn β^- decay (1.7 min). This level decays by β^-. $T_{1/2}$: from Adopted Levels. J^π: 4^+ (1994WaZU).
74.82 *4*	$(3,4,5)^+$	3.6 ns *3*	$T_{1/2}$: from $\gamma\gamma$(t) (1974Ke08). J^π: 3^+ (1994WaZU).
267.24 *4*	$(2,3)^+$		J^π: 2^+ (1994WaZU).
346.40 *4*	$(2^+,3^+)$		J^π: 3^+ (1994WaZU).
702.32 *6*	1^+		
731.16 *4*	$(2^+,3^+)$		J^π: 2^+ (1994WaZU).
749.40 *5*	$(2)^+$		J^π: 3^+ (1994WaZU).
818.53 *4*	$(1)^+$		J^π: 2^+ (1994WaZU).
1031.3 *3*			J^π: $(1^+,2^+)$ (1994WaZU).
1047.67 *5*	1^+		
1192.3 *3*			J^π: 1^+ (1994WaZU).
1394.33 *14*	(1^+)		
1460.3 *4*			
1555.9 *3*			

[†] From least-squares adjustment to Eγ's.

[‡] From Adopted Levels, based on log *ft* values and transition multipolarities.

β^- radiations

E(decay)	E(level)	Iβ^-[†]	Log *ft*	Comments
(592 *15*)	1555.9	0.43 *4*	5.4 *1*	av Eβ=187 *6*
(688 *15*)	1460.3	0.19 *2*	5.9 *1*	av Eβ=223 *6*
(754 *15*)	1394.33	0.77 *5*	5.5 *1*	av Eβ=248 *6*
(956 *15*)	1192.3	0.17 *2*	6.5 *1*	av Eβ=329 *7*
(1100 *15*)	1047.67	79 *3*	4.08 *4*	av Eβ=388 *7* E(decay): 910 *130* (1977Nu01) from (70γ)β coin; 1120 *40* (1990St13), 860 *90* (1977Nu01) from (192γ)β coin; 1112 *22* (1990St13), 1050 *60* (1977Nu01), 1140 *50* (1977Lu06) from (229γ)β coin; 1123 *60* (1990St13) from (316γ)β coin; 1112 *18* (1990St13), 1160 *50* (1977Lu06), 1070 *60* (1977Nu01) from (780γ)β coin.
(1117 *15*)	1031.3	0.36 *13*	6.5 *2*	av Eβ=395 *7*
(1329 *15*)	818.53	2.4 *4*	5.9 *2*	av Eβ=485 *7*

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^{130}Sn β^- decay (3.72 min) 1994WaZU,1987StZO (continued)

β^- radiations (continued)

E(decay)	E(level)	Iβ^-[†]	Log *ft*	Comments
(1446 *15*)	702.32	16.1 *5*	5.22 *4*	av Eβ=536 *7* E(decay): 1610 *320* (1977Nu01) from (70γ)β coin; 1429 *54* (1990St13), 1400 *200* (1977Nu01) from (192γ)β coin; 1403 *30* (1990St13), 1490 *90* (1977Lu06), 1280 *80* (1977Nu01) from (435γ)β coin.

[†] Absolute intensity per 100 decays.

$\gamma(^{130}Sb)$

Iγ normalization: Σ (I(γ+ce) of γ's to 4.8 level)=100.

E$_\gamma$[†]	I$_\gamma$[†#]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[‡]	α[@]	Comments
69.09 *5*	2.36 *10*	818.53	(1)$^+$	749.40	(2)$^+$	M1	2.0	
70.01 *5*	50.9 *3*	74.82	(3,4,5)$^+$	4.8	(4,5)$^+$	M1	1.740	α(K)= 1.500; α(L)= 0.1933; α(M)= 0.0381; α(N+..)=0.00883 α(K)exp=1.45 *35*; K/L=7.0 E$_\gamma$: others: 70.0 *1* (1974Ke08), 70.0 *2* (1974Kr20), 69.673 *3* (1979Bo26).
192.419 *13*	100.0 *1*	267.24	(2,3)$^+$	74.82	(3,4,5)$^+$	M1,E2	0.11 *2*	α(K)exp=0.086 *15*; K/L=5.9 E$_\gamma$: from 1979Bo26. Eγ=192.37 *5* (1987StZO).
229.14 *5*	29.15 *5*	1047.67	1$^+$	818.53	(1)$^+$	M1,E2	0.077 *13*	α(K)exp=0.060 *15*; K/L=6.1
271.6 *1*	0.09 *3*	346.40	(2$^+$,3$^+$)	74.82	(3,4,5)$^+$			
316.48 *5*	1.99 *4*	1047.67	1$^+$	731.16	(2$^+$,3$^+$)			
341.61 *5*	4.01 *4*	346.40	(2$^+$,3$^+$)	4.8	(4,5)$^+$			
345.1 *2*	0.37 *3*	1047.67	1$^+$	702.32	1$^+$			
384.80 *8*	1.27 *8*	731.16	(2$^+$,3$^+$)	346.40	(2$^+$,3$^+$)			
403.2 *3*	0.52 *4*	749.40	(2)$^+$	346.40	(2$^+$,3$^+$)			
435.05 *5*	20.42 *8*	702.32	1$^+$	267.24	(2,3)$^+$	M1,E2	0.013 *2*	α(K)exp=0.011 *2* E$_\gamma$: other: 434.83 *4* (1979Bo26).
472.2 *1*	1.12 *5*	818.53	(1)$^+$	346.40	(2$^+$,3$^+$)			
482.0 *1*	2.01 *5*	749.40	(2)$^+$	267.24	(2,3)$^+$			
551.37 *5*	2.70 *7*	818.53	(1)$^+$	267.24	(2,3)$^+$			
627.51 *6*	3.95 *7*	702.32	1$^+$	74.82	(3,4,5)$^+$			
656.3 *1*	0.88 *4*	731.16	(2$^+$,3$^+$)	74.82	(3,4,5)$^+$			
663.7 *2*	0.48 *4*	1394.33	(1$^+$)	731.16	(2$^+$,3$^+$)			
674.6 *2*	0.67 *6*	749.40	(2)$^+$	74.82	(3,4,5)$^+$			
692.3 *5*	0.18 *3*	1394.33	(1$^+$)	702.32	1$^+$			
701.6 *2*	0.34 *3*	1047.67	1$^+$	346.40	(2$^+$,3$^+$)			
726.37 *5*	0.87 *4*	731.16	(2$^+$,3$^+$)	4.8	(4,5)$^+$			
729.3 *5*	0.17 *1*	1460.3		731.16	(2$^+$,3$^+$)			
743.66 *5*	24.07 *7*	818.53	(1)$^+$	74.82	(3,4,5)$^+$			
744.58 *8*	3.70 *3*	749.40	(2)$^+$	4.8	(4,5)$^+$			
757.9 *5*	0.11 *3*	1460.3		702.32	1$^+$			
763.6 *5*	0.43 *19*	1031.3		267.24	(2,3)$^+$			
780.44 *5*	84.22 *8*	1047.67	1$^+$	267.24	(2,3)$^+$	M1,E2		α(K)exp=0.0024 *7*
825.9 *6*	0.26 *3*	1555.9		731.16	(2$^+$,3$^+$)			
925.1 *3*	0.26 *3*	1192.3		267.24	(2,3)$^+$			
956.7 *3*	0.10 *3*	1031.3		74.82	(3,4,5)$^+$			
1047.3 *2*	0.32 *3*	1394.33	(1$^+$)	346.40	(2$^+$,3$^+$)			E$_\gamma$: level-energy difference=1047.9.

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^{130}Sn β^- decay (3.72 min) 1994WaZU,1987StZO (continued)

$\gamma(^{130}Sb)$ (continued)

E_γ [†]	I_γ [†#]	E_i(level)	J_i^π	E_f	J_f^π
1128.0 *10*	0.17 *3*	1394.33	(1^+)	267.24	$(2,3)^+$
1288.3 *3*	0.38 *3*	1555.9		267.24	$(2,3)^+$

† From 1987StZO.
‡ From α(K)exp and K/L (1974Ke08).
# For absolute intensity per 100 decays, multiply by 0.67 *2*.
@ 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.

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Decay Scheme

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