^{134}Sn β^- decay 2005Sh23

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	K. Abu Saleem, Z. Wu, S. Chaudhury, D, Bernard, E. Browne	ENSDF	31-Jan-2011

Parent: ^{134}Sn: E=0.0; $J^\pi=0^+$; $T_{1/2}$=1.050 s *11*; Q(β^-)=7.84×10^3 *15*; %β^- decay=100.0

^{134}Sn-$T_{1/2}$: Adopted value.

^{134}Sn-Q(β^-): from 2003Au03.

^{134}Sn isotope produced in UC_2(n,f) reaction following bombardment of a W rod with proton pulses at E=1.4 GeV. Sn isotopes ionized by resonance ionization laser ion source (RILIS) and separated using the ISOLDE general purpose mass separator (GPS). Measured Eγ, Iγ, $\gamma\gamma$, $\beta\gamma$ coin, γ(t), $\gamma\gamma$(t) with five large Ge detectors.

^{134}Sb Levels

E(level)[†]	J^π[‡#]	Comments
0.0	(0$^-$)	
12.9[a] *8*	1$^-$	Additional information 1.
331.04[a] *23*	2$^-$	
384.0[a] *3*	3$^-$	
884.94 *25*	1$^-$	
934.94 *24*	2$^-$	Additional information 2.
1331.0? *5*	(2$^-$)	
1900.0 *4*	(1$^-$)[@]	
2170.0 *4*	(1$^-$)[@]	
2429.7 *3*	(1$^-$)[@]	
3775[&] *50*		%n=100

[†] Deduced by evaluators from least-squares fit to γ-ray energies.

[‡] Additional information 3.

[#] Assignments based on assumption that E2 transitions will be weak or nonexistent in ^{134}Sb due to small collective enhancement, unless otherwise stated.

[@] From log *ft* and γ rays to $J^\pi=2^-$ and $J^\pi=1^-$ levels only.

[&] Multiplet de-excited by emission of β^- delayed neutrons (1990Fo03).

[a] Band(A): yrast cascade.

β^- radiations

E(decay)	E(level)	Iβ^-[#]	Log *ft*[†]	Comments
(4.07×10^3 *16*)	3775	17[‡] *13*		
(5.41×10^3 *15*)	2429.7	0.13 *7*	7.4	av Eβ=2379 *71*
(5.67×10^3 *15*)	2170.0	0.13 *8*	7.5	av Eβ=2502 *71*
(5.94×10^3 *15*)	1900.0	0.13 *8*	7.6	av Eβ=2630 *71*
(6.51×10^3[@] *15*)	1331.0?			
(6.91×10^3 *15*)	934.94	1.1 *6*	9.0[1u]	av Eβ=3069 *72*
(6.96×10^3 *15*)	884.94	10 *5*	6.0	av Eβ=3110 *71*
(7.84×10^3 *15*)	0.0	71 *14*	5.4	av Eβ=3528 *71* Iβ^-: From Σ Ti(g.s. + 13-keV)=197 (3), β^-n= 17% 13, and Iγ normalization=0.06 (3). Iβ(g.s. + 13-keV)=100% − (17% 13) − (0.06 *3*)x(197 *3*) = 71% 14. β^- feedings to other levels are from γ-ray transition intensity balances.

Continued on next page (footnotes at end of table)

^{134}Sn β^- decay 2005Sh23 (continued)

β^- radiations (continued)

† Deduced by evaluators.
‡ Followed by emission of β^- delayed neutrons.
# Absolute intensity per 100 decays.
@ Existence of this branch is questionable.

$\gamma(^{134}Sb)$

Iγ normalization: From Iγ(872)=6% 3 (1990Fo03). %β^-n=17 *13* (1975As04).

E_γ	I_γ†	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α‡	Comments
13.0	4.84 *70*	12.9	1^-	0.0	(0^-)		34.4 *5*	E_γ: From ^{134}Sb in ADOPTED GAMMAS. Transition not used in least-squares fit to γ-ray energies.
53.0 *5*	0.9 *3*	384.0	3^-	331.04	2^-	[M1+E2]	10 *7*	α(K)=5.4 *22*; α(L)=4 *4*; α(M)=0.8 *7*; α(N+..)=0.15 *13* α(N)=0.14 *12*; α(O)=0.009 *8* I_γ: Other values: 2.1 *6* (2002Ko53), 6 *1* (1990Fo03).
318.0 *5*	62 *2*	331.04	2^-	12.9	1^-			I_γ: Other values: 52 *3* (2002Ko53), 60 *2* (1990Fo03).
331.0 *5*	1.6 *2*	331.04	2^-	0.0	(0^-)			
371.0 *5*	0.6 *1*	384.0	3^-	12.9	1^-			
551.0 *5*	9 *1*	934.94	2^-	384.0	3^-			I_γ: Other values: 4.9 *8* (2002Ko53).
554.0 *5*	38 *1*	884.94	1^-	331.04	2^-			I_γ: Other values: 29 *2* (2002Ko53), 31 *2* (1990Fo03).
604.0 *5*	3.8 *3*	934.94	2^-	331.04	2^-			I_γ: Other values: 2.4 *3* (2002Ko53).
872.0 *5*	100 *1*	884.94	1^-	12.9	1^-			
885.0 *5*	24.1 *2*	884.94	1^-	0.0	(0^-)			
922.0 *5*	8.0 *1*	934.94	2^-	12.9	1^-			I_γ: Other values: 9 *3* (2002Ko53), 8 *2* (1990Fo03).
935.0 *5*	0.31 *9*	934.94	2^-	0.0	(0^-)			
947.0# *5*	0.4 *3*	1331.0?	(2^-)	384.0	3^-			E_γ: 947 transition could be alternatively placed as depopulating a 1278 keV level in ^{134}Sb. Placement from 1331 level suggested by 2005Sh23 based upon observation of 1000 transition and γ energy sums.
965.0 *5*	0.5 *3*	1900.0	(1^-)	934.94	2^-			
1000.0# *5*	0.2 *2*	1331.0?	(2^-)	331.04	2^-			E_γ: Observed as weak peak in laser-on singles spectrum only.
1015.0 *5*	1.1 *1*	1900.0	(1^-)	884.94	1^-			
1235.0 *5*	0.81 *8*	2170.0	(1^-)	934.94	2^-			
1285.0 *5*	0.9 *2*	2170.0	(1^-)	884.94	1^-			
1495.0 *5*	0.92 *4*	2429.7	(1^-)	934.94	2^-			
1545.0 *5*	0.45 *4*	2429.7	(1^-)	884.94	1^-			
1569.0 *5*	0.59 *9*	1900.0	(1^-)	331.04	2^-			
1839.0 *5*	0.5 *2*	2170.0	(1^-)	331.04	2^-			
2098.0 *5*	0.30 *6*	2429.7	(1^-)	331.04	2^-			
2417.0 *5*	0.55 *5*	2429.7	(1^-)	12.9	1^-			

† For absolute intensity per 100 decays, multiply by 0.06 *3*.
‡ 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.
# Placement of transition in the level scheme is uncertain.

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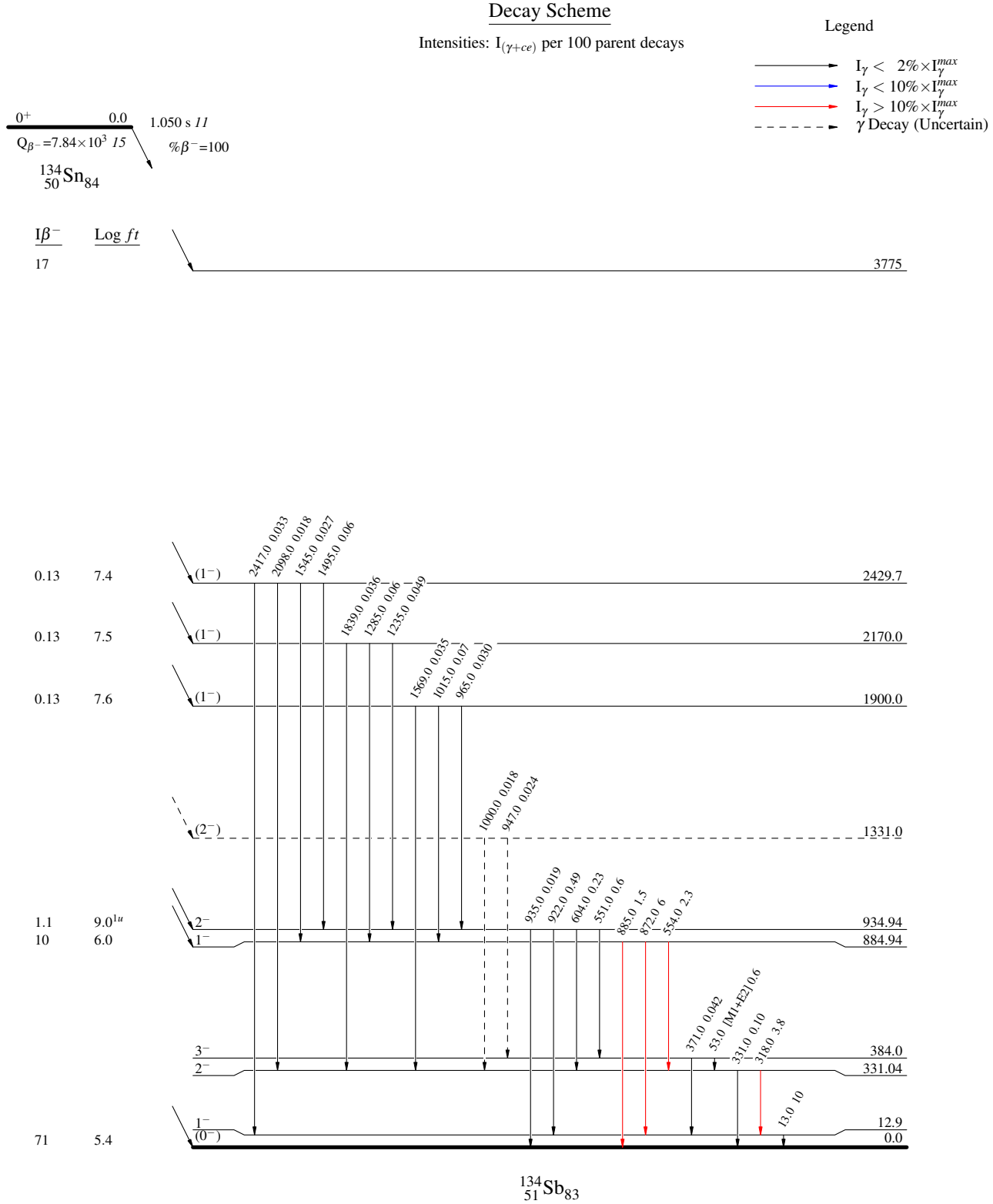
Decay Scheme

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



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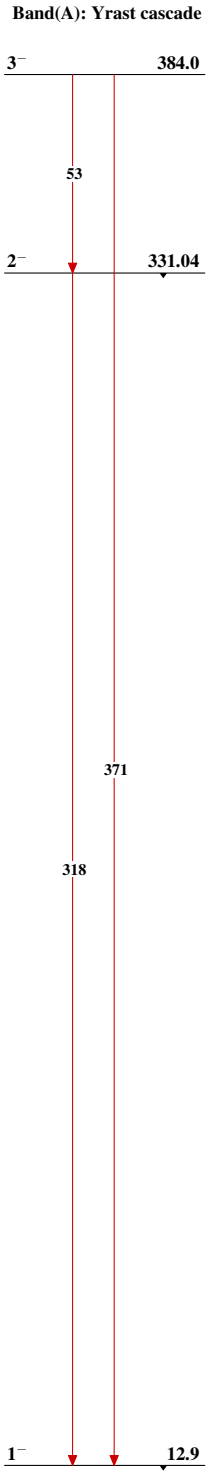

$^{134}_{51}Sb_{83}$