^{135}Sn β^-n decay 2005Sh23,2002Sh08

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: ^{135}Sn: E=0.0; $J^\pi=7/2^-$; $T_{1/2}$=530 ms *20*; Q(β^-n)=5300 *SY*; %β^-n decay=21 *3*

^{135}Sn-Q(β^-n): Q(β^-n)=5300 *400* (syst,2003Au02,2009AuZZ).

^{135}Sn-%β^-n decay: %β^-n=21 *3* (2002Sh08). Other: 2001Ko45.

All information is from 2005Sh23, unless stated otherwise.

2005Sh23, 2005Sh53: ^{135}Sn isotope produced in the UC_2(n,f) reaction following bombardment of a W rod with a proton-pulsed beam at E=1.4 GeV. The Sn isotopes were ionized by resonance 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. Yields of spallation-produced Cs nuclei were lowered by several orders of magnitude when using the neutron converter.

2002Sh08: Measured Eγ, Iγ, $\gamma\gamma$, lifetimes, delayed neutron probability using high-efficiency Mainz neutron long counter with 3-ring concentric array of 50 ^{3}He proportional counters, β detector, and Pb-shielded Ge detectors.

^{134}Sb Levels

E(level)[†]	J^π[‡#]	$T_{1/2}$	Comments
0.0	(0$^-$)		
12.9[@] *8*	(1$^-$)		Additional information 1. E(level): From ^{134}Sb in ADOPTED LEVESLS.
278.9 *9*	(7$^-$)	10.07 s *5*	%β^-=100 (2003Au02) E(level): Population of high-spin isomer deduced by 2005Sh23 from ≈10% of total β decay strength observed in intensity of the 318γ and the observation of 115, 297 and 1297 transitions known from its β-decay into ^{134}Te. $T_{1/2}$: from ^{134}Sb in ADOPTED LEVELS.
330.9[@] *4*	(2$^-$)		
383.9[@] *4*	(3$^-$)		
440.9 *8*	(5$^-$)		J^π: 114γ from (4$^-$), 162γ to (7$^-$). $T_{1/2}$: Possible long half-life expected for level based on likely noncollective E2 nature for 162γ. Time-to-amplitude spectrum gated on β start pulses and 162 stop pulses did not permit lifetime observation due to time resolution and low transition intensity.
554.9[@] *7*	(4$^-$)		
616.9 *8*	(6$^-$)		J^π: γ to (5$^-$) and (7$^-$).
884.9 *6*	(1$^-$)		
934.9 *5*	(2$^-$)		
1384.9 *8*	(5$^-$)		J^π: equal intensity transitions to (4$^-$) and (6$^-$).

[†] Deduced by evaluators from least-squares fit to Eγ's.

[‡] Additional information 2.

[#] Assignments based on the assumption that E2 transitions are weak or nonexistent in ^{134}Sb due to small collective enhancement.

[@] Band(A): yrast cascade based on $J^\pi=1^-$ level.

$\gamma(^{134}Sb)$

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Comments
13.0		12.9	(1$^-$)	0.0	(0$^-$)	E_γ: From ^{134}Sb in ADOPTED GAMMAS. Transition not used in least-squares fit to Eγs.
53.0 *5*	1.3 *5*	383.9	(3$^-$)	330.9	(2$^-$)	
114.0 *5*	0.6 *2*	554.9	(4$^-$)	440.9	(5$^-$)	
162.0 *5*	6.3 *1*	440.9	(5$^-$)	278.9	(7$^-$)	
171.0 *5*	3.5 *4*	554.9	(4$^-$)	383.9	(3$^-$)	

Continued on next page (footnotes at end of table)

^{135}Sn β^-n decay 2005Sh23,2002Sh08 (continued)

$\gamma(^{134}Sb)$ (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α [#]	Comments
176.0 *5*	1.0 *2*	616.9	(6$^-$)	440.9	(5$^-$)			
318.0 *5*	18.7 *2*	330.9	(2$^-$)	12.9	(1$^-$)	[M1]	0.0269	α(K)=0.0233 *4*; α(L)=0.00291 *5*; α(M)=0.000574 *9*; α(N+..)=0.0001219 *18* α(N)=0.0001109 *17*; α(O)=1.099×10^{-5} *16*
331.0 *5*	0.23 *7*	330.9	(2$^-$)	0.0	(0$^-$)	[E2]	0.0270	α(K)=0.0227 *4*; α(L)=0.00346 *6*; α(M)=0.000693 *11*; α(N+..)=0.0001428 *22* α(N)=0.0001309 *20*; α(O)=1.182×10^{-5} *18*
338.0 *5*	3.7 *1*	616.9	(6$^-$)	278.9	(7$^-$)			
371.0 *5*	0.83 *7*	383.9	(3$^-$)	12.9	(1$^-$)	[E2]	0.0188	α(K)=0.01592 *24*; α(L)=0.00235 *4*; α(M)=0.000470 *7*; α(N+..)=9.72×10^{-5} *15* α(N)=8.90×10^{-5} *13*; α(O)=8.14×10^{-6} *12*
551.0 *5*	0.8 *1*	934.9	(2$^-$)	383.9	(3$^-$)			
554.0 *5*	0.4 *2*	884.9	(1$^-$)	330.9	(2$^-$)			
604.0 *5*	0.5 *2*	934.9	(2$^-$)	330.9	(2$^-$)			
768.0 *5*	0.48 *8*	1384.9	(5$^-$)	616.9	(6$^-$)			
[x]800	0.8 *4*							E_γ: coin with 318γ.
830.0 *5*	0.2 *1*	1384.9	(5$^-$)	554.9	(4$^-$)			

[†] Additional information 3.
[‡] values quoted in 2005Sh23 are relative to Iγ of 282γ in ^{135}Sb.
[#] 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.

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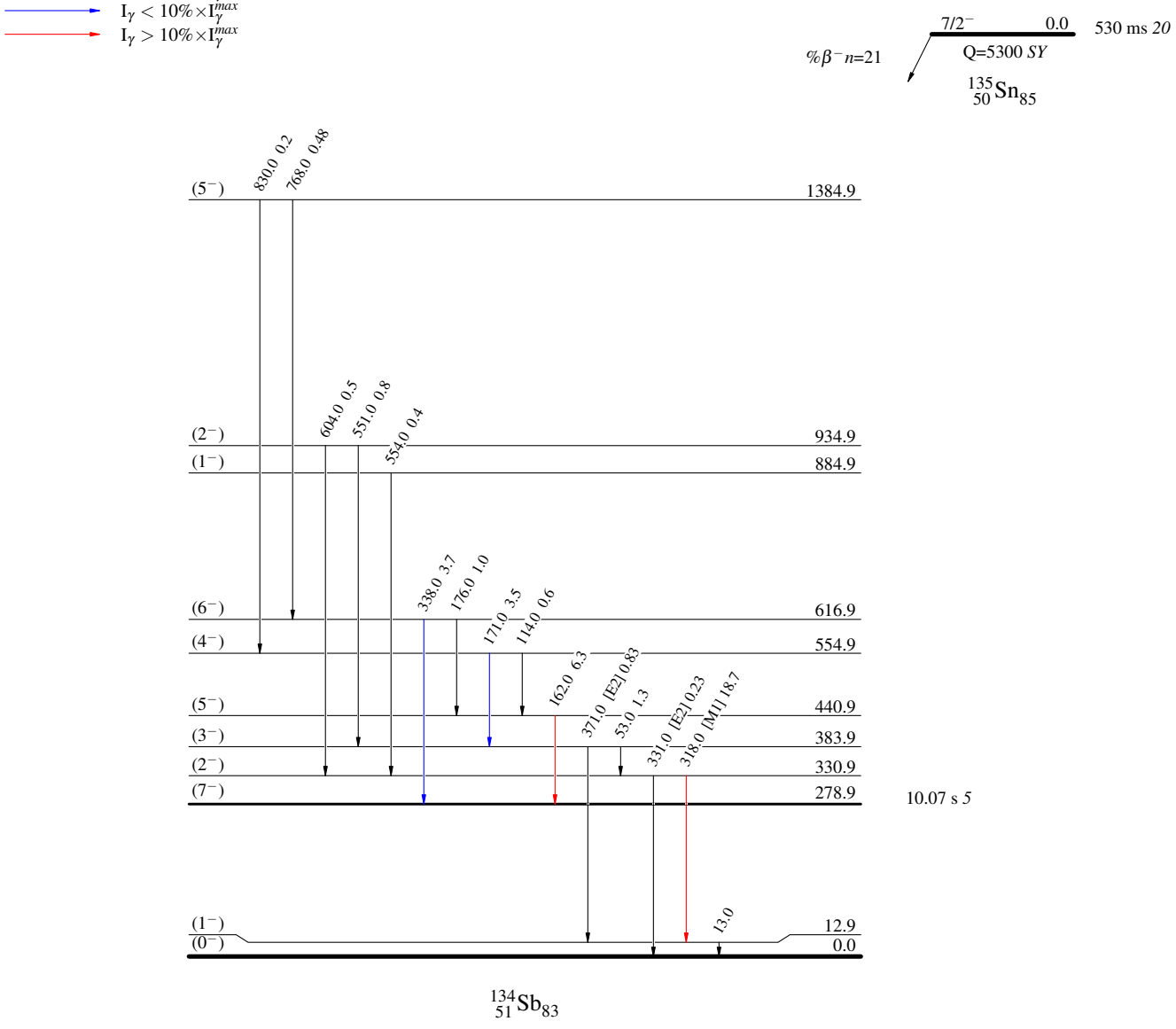
Decay Scheme

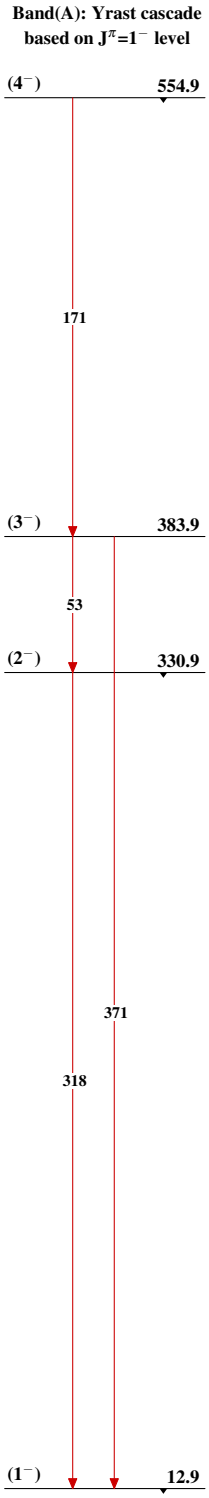
Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



^{135}Sn β^-n decay 2005Sh23,2002Sh08



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