^{128}Sn β^- decay (59.07 min) 1976Nu01,1975Im01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Zoltan Elekes and Janos Timar	NDS 129, 191 (2015)	28-Feb-2015

Parent: ^{128}Sn: E=0.0; $J^\pi=0^+$; $T_{1/2}$=59.07 min *14*; Q(β^-)=1268 *14*; %β^- decay=100.0

1976Nu01: ^{235}U(n,F) chemical separation; semi γ, $\gamma\gamma$; semi-scintillator $\beta\gamma$.

1975Im01: ^{235}U(n,F) chemical separation; semi γ, $\gamma\gamma$.

The decay scheme of ^{128}Sb is that proposed by 1976Nu01. Level energy of the lowest state in this decay scheme has not been fixed (see the comment in ^{128}Sb IT decay).

^{128}Sb Levels

E(level)†	J^π	Comments
0.0	8^-	
0.0+x	5^+	
45.70+x *20*	4^+	
77.8+x *3*	3^+	
152.7+x *3*	$(2,3)^+$	
482.4+x *3*	$(2^+,3^+)$	
635.2+x *3*	1^+	
751.6+x? *4*		E(level): cascade order of 80.9γ and 115.9γ has not been determined.
833.0+x *3*	1^+	

† E(levels) are based on a least-squares fit to the Eγ's from 1976Nu01. Assumed that 80.9γ precedes 115.9γ.

β^- radiations

Iβ normalization: based on Iβ^-(to 635.2+x level)+Iβ^-(to 833.0+x level)=100%.

E(decay)	E(level)	Iβ^-†	Log *ft*	Comments
430	833.0+x	16.1 *25*	4.62 *8*	av Eβ=139 *4* E(decay): from $\beta\gamma$.
630	635.2+x	84 *10*	4.44 *6*	av Eβ=211 *4* E(decay): from $\beta\gamma$.

† Absolute intensity per 100 decays.

$\gamma(^{128}$Sb)

E$_\gamma$†	I$_\gamma$@	E$_i$(level)	J_i^π	E$_f$	J_f^π	Mult.#	α&	Comments
32.1 *2*	6.8 *4*	77.8+x	3^+	45.70+x	4^+	M1	16.5 *4*	α(K)=14.2 *3*; α(L)=1.89 *5*; α(M)=0.374 *9*; α(N)=0.0720 *17*; α(O)=0.00705 *17*
45.7 *2*	22 *1*	45.70+x	4^+	0.0+x	5^+	M1	5.94 *12*	α(K)=5.11 *10*; α(L)=0.665 *13*; α(M)=0.132 *3*; α(N)=0.0254 *5*; α(O)=0.00249 *5*
75.1 *2*	47 *3*	152.7+x	$(2,3)^+$	77.8+x	3^+	M1	1.403 *23*	α(K)=1.209 *20*; α(L)=0.1562 *25*; α(M)=0.0309 *5*; α(N)=0.00597 *10*; α(O)=0.000587 *10*
80.9‡ *2*	0.3 *1*	833.0+x	1^+	751.6+x?				
115.9‡ *2*	0.3 *1*	751.6+x?		635.2+x	1^+			

Continued on next page (footnotes at end of table)

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$\gamma(^{128}Sb)$ (continued)

E_γ [†]	I_γ [@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[&]	Comments
152.7 *2*	11 *1*	635.2+x	1^+	482.4+x	$(2^+,3^+)$	[M1,E2]	0.28 *9*	α(K)=0.23 *7*; α(L)=0.043 *22*; α(M)=0.009 *5*; α(N)=0.0016 *9*; α(O)=0.00014 *6*
404.4 *2*	10 *1*	482.4+x	$(2^+,3^+)$	77.8+x	3^+			
436.7 *2*	7 *1*	482.4+x	$(2^+,3^+)$	45.70+x	4^+			
482.3 *2*	100 *5*	635.2+x	1^+	152.7+x	$(2,3)^+$	[M1]	0.00944	α(K)=0.00819 *12*; α(L)=0.001008 *15*; α(M)=0.000199 *3*; α(N)=3.84×10^{-5} *6*; α(O)=3.82×10^{-6} *6*
557.3 *2*	28 *3*	635.2+x	1^+	77.8+x	3^+			
680.5 *1*	27 *3*	833.0+x	1^+	152.7+x	$(2,3)^+$			

† From 1976Nu01.
‡ Placement uncertain.
# The multipolarities of 32.1γ, 45.8γ, 75.1γ are limited to M1 from intensity balance at the respective levels and sum peak analysis of Kα x ray+Kα x ray, Kα x ray+45.8γ, Kα x ray+75.1γ.
@ For absolute intensity per 100 decays, multiply by 0.590 *60*.
& 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: Relative I_γ