^{126}Sn β^- decay 1976Sm01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	H. Iimura, J. Katakura, S. Ohya	NDS 180, 1 (2022)	1-Oct-2021

Parent: ^{126}Sn: E=0.0; $J^\pi=0^+$; $T_{1/2}=2.18\times10^5$ y *10*; Q(β^-)=378 *30*; %β^- decay=100.0
The decay scheme is that proposed by 1976Sm01 on the basis of $\gamma\gamma$-coin and Eγ sums.
1976Sm01: ^{235}U(n,F) mass separation; γ, ce, $\gamma\gamma$, $\beta\gamma$, γce coin semi; $\beta\gamma$(t) scin-scin γce(t) scin-semi.
2010Fe02:Fission product;plasma-mass spectrometry;semi(HPGe);γ,Iγ,; liquid scin.;β.
Others: 1971Or04, 1962Dr01.
See also ^{126}Sb IT decay.

^{126}Sb Levels

E(level)†	J^π#	$T_{1/2}$‡	Comments
0.0	(8^-)	12.35 d *6*	$T_{1/2}$: from Adopted Levels.
17.7 *3*	(5^+)	19.15 min *9*	$T_{1/2}$: from Adopted Levels.
40.4 *3*	(3^-)	≈11 s	$T_{1/2}$: from analysis of delayed coin (30-90γ)(14-21γ)(t), (true coin)/(accidental)=0.0002. Computer analysis gave 11.1 s *10.5*.
83.0 *3*	(2^-,3^-,4^-)	5.1 ns *3*	$T_{1/2}$: from (21.7γ)(42.6γ)(t).
104.6 *3*	(3^+)	553 ns *5*	$T_{1/2}$: from (<250β)(42.6γ,64.3γ,86.9γ)(t). Other:0.5 μs *1* (1971Or04).
127.9 *3*	(2^+)	78.0 ns *5*	$T_{1/2}$: from (<250β)(23.3γ,87.6γ)(t).

† E(levels) are based on a least-squares fit (by evaluators) to Eγ's.
‡ From 1976Sm01, unless otherwise noted.
# Spin and parity values are those given under the Adopted Levels.

β^- radiations

E(decay)	E(level)	Iβ^-†	Log *ft*	Comments
250 *30*	127.9	≈100	≈12.3	av Eβ=70.2 *94*

† Absolute intensity per 100 decays.

γ(^{126}Sb)

Iγ normalization: From a ratio of the sum of the absolute intensities of the 42.641, 64.281, 86.938 and 87.567-keV γ-rays (2010Fe02)) to that of the relative intensities (1976Sm01).

Relative intensity of conversion electron

electron line	intensity	electron line	intensity
k42.6	3.3	142.6	0.29
l17.7	10.7	k86.9+k87.6	28
l21.6+(M+N)17.7+		164.3	0.66
l22.7+l23.3	90	l86.9+87.7	8.5
(M+N)21.6+(M+N)22.7+		(M+N)86.9+	
(M+N)23.3	24	(M+N)87.6	2.1
k64.3	5.4		

normalized to the value of 5.4 for the k64.3 line.
Typical uncertainties in peak area are 15 % for the strong lines.

E_γ[‡]	I_γ[#@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[&]	Comments
17.7 *3*	1.6×10^{-4} *3*	17.7	(5^+)	0.0	(8^-)	(E3)	3.2×10^5 *4*	α(L)=2.4×10^5 *3*; α(M)=5.9×10^4 *7*; α(N)=1.06×10^4 *12*; α(O)=6.5×10^2 *8* E_γ: From electron measurement. I_γ: calculated value from assumptions that %IT=18.6 *6*, α=3.2×10^5.
21.646 *10*	3.4 *3*	104.6	(3^+)	83.0	$(2^-,3^-,4^-)$	(E1)	2.09 *3*	α(L)=1.689 *24*; α(M)=0.332 *5*
22.70 *7*	0.27 *3*	40.4	(3^-)	17.7	(5^+)	(M2)	718 *15*	α(L)=570 *12*; α(M)=122.9 *25*; α(N)=23.5 *5*; α(O)=2.09 *5* I_γ: uncertainty of 10 % is assigned by the evaluators as that for the other γ rays.
23.280 *10*	17.3 *17*	127.9	(2^+)	104.6	(3^+)	(M1)	6.07 *9*	α(L)=4.89 *7*; α(M)=0.969 *14*; α(N)=0.187 *3* Mult.: E2<6% (1976Sm01).
42.641 *10*	1.29 *5*	83.0	$(2^-,3^-,4^-)$	40.4	(3^-)	(M1)	7.27 *10*	α(K)=6.26 *9*; α(L)=0.816 *12*; α(M)=0.1616 *23*; α(N)=0.0311 *5*; α(O)=0.00305 *5* I_γ: from the absolute intensity of 0.47 *1* (2010Fe02). other; 1.35 *14* (1976Sm01).
64.281 *10*	21.4 *5*	104.6	(3^+)	40.4	(3^-)	(E1)	0.651 *10*	α(K)=0.559 *8*; α(L)=0.0748 *11*; α(M)=0.01468 *21* I_γ: from the absolute intensity of 7.80 *18* (2010Fe02). other; 25.9 *26* (1976Sm01).
86.938 *10*	23.5 *9*	104.6	(3^+)	17.7	(5^+)	(E2)	2.71 *4*	α(K)=1.83 *3*; α(L)=0.706 *10*; α(M)=0.1462 *21*; α(N+..)=0.266 *4* I_γ: from the absolute intensity of 8.59 *19* (2010Fe02). other; 24.1 *24* (1976Sm01).
87.567 *10*	100	127.9	(2^+)	40.4	(3^-)	(E1)	0.274 *4*	α(K)=0.237 *4*; α(L)=0.0372 *6*; α(M)=0.00453 *7*; α(N+..)=0.00136 *16* I_γ: The absolute intensity is 38.4 *9* (2010Fe02).

[†] From Ice and transition rates (1976Sm01).
[‡] From 1976Sm01.
[#] From 1976Sm01, unless otherwise noted.
[@] For absolute intensity per 100 decays, multiply by 0.365 *11*.
[&] 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.

^{126}Sn β^- decay 1976Sm01

Decay Scheme

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