$^{121}In\ \beta^-$ decay (23.1 s) 1976Fo02

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	S. Ohya	NDS 111, 1619 (2010)	20-Jan-2009

Parent: ^{121}In: E=0.0; J^π=9/2$^+$; $T_{1/2}$=23.1 s *6*; Q(β^-)=3363 *27*; %β^- decay=100.0

The decay scheme is that proposed by 1976Fo02 based on energy sums and $\gamma\gamma$-coincidence data.

^{121}Sn Levels

E(level)[†]	J^π[‡]	$T_{1/2}$	Comments
0.0	3/2$^+$	27.03 h *4*	
6.30 *6*	11/2$^-$	43.9 y *5*	
60.34 *2*	1/2$^+$		
663.62 *6*	7/2$^-$,9/2$^-$		
869.23 *5*	5/2$^+$		
925.58 *5*	7/2$^+$	0.25 ns *6*	$T_{1/2}$: from (β)(925.57γ)(t) (1976Fo02).

† E(levels) are based on a least-squares fit to the E(γ's) of 1976Fo02.

‡ From Adopted Levels.

β^- radiations

E(decay)	E(level)	Iβ^-[†]	Log *ft*	Comments
(2.44×10^3 *3*)	925.58	100 *10*	4.33 *5*	av Eβ=984 *13*

† Absolute intensity per 100 decays.

$\gamma(^{121}Sn)$

Iγ normalization: From the assumption of 100% β^- feeding to 926 level. Feedings to 6.3 and 664 levels can be neglected. The intensity balance at 664 level suggests negligible direct β^- feeding, and log *ft*=6.5 for feeding of the 6.3 level gives I(β^-)=2.5%. This log *ft* is characteristic of 11/2$^-$ to 9/2$^+$ transitions in this mass region.

E_γ	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	α ‡	$I_{(\gamma+ce)}$ †	Comments
(6.29 *8*)		6.30	11/2$^-$	0.0	3/2$^+$	[M4]		8.7×10^{10} *10*		α(L)=5.6×10^{10} *6*; α(M)=2.6×10^{10} *3*; α(N+..)=4.7×10^9 *6* α(N)=4.7×10^9 *6*; α(O)=1.38×10^7 *14* E_γ: from energy difference between 919.28γ and 925.57γ. Mult.: from decay scheme. $I_{(\gamma+ce)}$: The isomeric 6.30 level is fed in 11.3% *6* of the decays of ^{121}In β^- decay (23.1 s). See ^{121}Sn IT decay and ^{121}Sn β^- decay (43.9 y) for radiation from this isomer.
56.35 *2*	0.19 *2*	925.58	7/2$^+$	869.23	5/2$^+$	M1+E2	0.68 *17*	5.9 *10*		α(K)=4.5 *7*; α(L)=2.5 *8*; α(M)=0.51 *16*; α(N+..)=0.09 *3* α(N)=0.09 *3*; α(O)=0.0031 *7* Mult.: from α deduced intensity balance at 869 level in ^{121}In β^- decay (23.1 s).
60.34 *2*		60.34	1/2$^+$	0.0	3/2$^+$	M1		2.40	0.22 *4*	ce(K)/(γ+ce)=0.609 *5*; ce(L)/(γ+ce)=0.0782 *13*; ce(M)/(γ+ce)=0.0154 *3*; ce(N+)/(γ+ce)=0.00313 *6* ce(N)/(γ+ce)=0.00288 *5*; ce(O)/(γ+ce)=0.000249 *5* Mult.: from α(L)exp=0.20 *5*. $I_{(\gamma+ce)}$: expected from 808γ-60γ cascade.
261.96 *3*	7.9 *5*	925.58	7/2$^+$	663.62	7/2$^-$,9/2$^-$	E1		0.01230		α(K)=0.01069 *15*; α(L)=0.001301 *19*; α(M)=0.000253 *4*; α(N+..)=5.12×10^{-5} *8* α(N)=4.73×10^{-5} *7*; α(O)=3.88×10^{-6} *6* Mult.: from α(K)exp=0.008 *4*.
657.32 *7*	7.1 *5*	663.62	7/2$^-$,9/2$^-$	6.30	11/2$^-$	M1,E2		0.0038 *3*		α=0.0038 *3*; α(K)=0.0033 *3*; α(L)=0.000411 *21*; α(M)=8.1×10^{-5} *4*; α(N+..)=1.64×10^{-5} *10* α(N)=1.51×10^{-5} *8*; α(O)=1.29×10^{-6} *12* Mult.: α(K)exp=0.009 *5* allows mult=M1, E2, M2, or E3. The placement in in the decay scheme requires DPI=no, so mult=M1,E2.
808.7 *2*	0.22 *4*	869.23	5/2$^+$	60.34	1/2$^+$					
869.31 *10*	1.1 *1*	869.23	5/2$^+$	0.0	3/2$^+$					
919.28 *7*	4.2 *3*	925.58	7/2$^+$	6.30	11/2$^-$					

$\gamma(^{121}Sn)$ (continued)

E_γ	I_γ[†]	E_i(level)	J^π_i	E_f	J^π_f	Mult.	α[‡]	Comments
925.57 *7*	87 *6*	925.58	7/2$^+$	0.0	3/2$^+$	(E2)	0.001531 *22*	α=0.001531 *22*; α(K)=0.001328 *19*; α(L)=0.0001644 *23*; α(M)=3.21×10^{-5} *5*; α(N+..)=6.54×10^{-6} α(N)=6.03×10^{-6} *9*; α(O)=5.11×10^{-7} *8* Mult.: from α(K)exp=0.0012 *4* and decay scheme.
[x]1092.8 *4*	0.34 *3*							

[†] For absolute intensity per 100 decays, multiply by 1.00 *7*.

[‡] 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.

$^{121}_{50}Sn_{71}$-3

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