^{120}In β^- decay (47.3 s)   1988Ra09,1978Ch25

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	K. Kitao, Y. Tendow and A. Hashizume	NDS 96,241 (2002)	1-Dec-2001

Parent: ^{120}In: E=0.0+x; J$^\pi$=(8$^-$); T$_{1/2}$=47.3 s 5; Q(β^-)=5370 40; %β^- decay=100

1988Ra09: ^{120}Sn(n,p) E=14 MeV; semi G.
1978Ch25: ^{238}U(p,F) E=100 MeV; on-line mass separation, semi γ, $\gamma\gamma$.
1979Fo10: ^{235}U(n,F) E=th; on-line mass separation, semi γ, $\gamma\gamma$, $\beta\gamma$, $\gamma\gamma$(t).
1971Li09: ^{120}Sn(n,p) E=14-15 MeV; semi scin γ, $\gamma\gamma$, (K x ray)γ coin.
Others: 1972JoZP, 1964Ka10.
The decay scheme is that proposed by 1978Ch25 and 1988Ra09.
$\gamma\gamma$-coin relations are from 1978Ch25.

^{120}Sn Levels

E(level)[‡]	J$^\pi$[†]	T$_{1/2}$
0.0	0$^+$	stable
1171.23 3	2$^+$	
2194.25 5	4$^+$	
2284.08 15	5$^-$	
2481.43 15	7$^-$	
2749.51 15	6$^-$	
2836.31 16	(8$^+$)	
3446.27 15	(7$^-$,8$^-$)	
3644.28 21	(6$^+$,7$^-$)	

[†] From Adopted Levels.
[‡] From a least-squares fit to E(γ's) by the evaluators.

β^- radiations

log ft values are calculated using Q(β^-)=300 200 estimated by 1997Au04.

E(decay)	E(level)	Iβ^-[†]	Log ft	Comments
(1.73×10^3 4)	3644.28	8.9 11	5.37 20	av Eβ=795 93
(1.92×10^3 4)	3446.27	94 4	4.51 17	av Eβ=886 94
(2.53×10^3 4)	2836.31	<0.1	>7.9	av Eβ=1168 96
(2.89×10^3 4)	2481.43	<8	>6.2	av Eβ=1334 96

[†] Absolute intensity per 100 decays.

γ(^{120}Sn)

Iγ normalization: based on assumption of no β^- feeding to g.s..

E$_\gamma$[†]	I$_\gamma$[†a]	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Mult.[‡]	α[b]	Comments
89.87[@] 16	79 9	2284.08	5$^-$	2194.25	4$^+$	E1	0.246	α(K)=0.213 7; α(L)=0.0271 9; α(M)=0.00523 16; α(N+..)=0.00112 4
197.36 3	81 8	2481.43	7$^-$	2284.08	5$^-$	E2	0.146	α(K)=0.119 4; α(L)=0.0217 7; α(M)=0.00432 13; α(N+..)=0.00093 3

^{120}In β^- **decay (47.3 s)**   **1988Ra09,1978Ch25 (continued)**

$\gamma(^{120}$Sn) (continued)

E_γ[†]	I_γ[†a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[#]	α[b]	Comments
268.08 4	12.5 5	2749.51	6$^-$	2481.43	7$^-$	M1+E2	+0.05 3	0.0386 1	α(K)=0.0334; α(L)=0.00415 1; α(M)=0.00081; α(N+..)=0.00018 Mult.: from (n,n′γ).
354.88 4	12.5 8	2836.31	(8$^+$)	2481.43	7$^-$	D(+Q)	−0.2 2		I_γ: authors′ value of 1.25 is a misprint. Mult.: from Adopted Levels.
465.38 6	7.0 8	2749.51	6$^-$	2284.08	5$^-$	(M1+E2)	+0.03 2	0.0095	α(K)=0.00824; α(L)=0.00101; α(M)=0.00020
609.96 5	13.2 8	3446.27	(7$^-$,8$^-$)	2836.31	(8$^+$)				I_γ: other: 9.9 4 (1978Ch25).
696.75 4	19.7 10	3446.27	(7$^-$,8$^-$)	2749.51	6$^-$				Other: 15.5 5 (1978Ch25).
808.4 4	<1[&]	3644.28	(6$^+$,7$^-$)	2836.31	(8$^+$)				
964.86 4	61.3 22	3446.27	(7$^-$,8$^-$)	2481.43	7$^-$				
1023.02 3	99 3	2194.25	4$^+$	1171.23	2$^+$	E2		0.00123	α(K)=0.00106 4; α(L)=0.00013
1112.7[@] 3	1.0 5	2284.08	5$^-$	1171.23	2$^+$				
1162.78 16	8.4 10	3644.28	(6$^+$,7$^-$)	2481.43	7$^-$				I_γ: other: 4.5 10 (1978Ch25).
1171.22 3	100 3	1171.23	2$^+$	0.0	0$^+$	E2		0.00092	α(K)=0.00079 2

[†] From 1988Ra09, unless otherwise noted.

[‡] From ^{120}Sb ε decay (5.76 d), unless otherwise noted.

[#] From (n,n′γ).

[@] From weighted av from 1988Ra09 and 1978Ch25.

[&] Deduced from intensity balance.

[a] For absolute intensity per 100 decays, multiply by 1.00 3.

[b] 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: I$_{(\gamma+ce)}$ per 100 parent decays

Legend

I$_\gamma$ < 2%×I$_\gamma^{max}$
I$_\gamma$ < 10%×I$_\gamma^{max}$
I$_\gamma$ > 10%×I$_\gamma^{max}$
● Coincidence

(8$^-$)   0.0+x   47.3 s 5

Q$_{\beta-}$=5370 40 %β^-=100

$^{120}_{49}$In$_{71}$

Iβ^-	Log ft
8.9	5.37
94	4.51
<0.1	>7.9
<8	>6.2

(6$^+$,7$^-$)   3644.28
(7$^-$,8$^-$)   3446.27
(8$^+$)   2836.31
6$^-$ 2749.51
7$^-$ 2481.43
5$^-$ 2284.08
4$^+$ 2194.25
2$^+$ 1171.23
0$^+$ 0.0   stable

1162.78 8.4
808.4 <1.0
964.86 61.3
696.75 19.7
609.96 13.2
354.88 D(+Q) 12.5
465.38 (M1+E2) 7.1
268.08 M1+E2 13.0
197.36 E2 93
1112.7 1.0
89.87 E1 98
1023.02 E2 99
1171.22 E2 100

$^{120}_{50}$Sn$_{70}$