^{122}In β^- decay (10.8 s) 1988Ra09,1979Fo10,1979Ch10

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	T. Tamura	NDS 108, 455 (2007)	30-Sep-2006

Parent: ^{122}In: E=2.9×10^2 *14*; J$^\pi$=(8$^-$); T$_{1/2}$=10.8 s *4*; Q(β^-)=6370 *50*; %β^- decay=100.0

1979Ch10: ^{238}U(p,f), E(p) was not given (see 1977ChZO), on-line ms; ^{124}Sn(d,α), enriched target; semi γ, $\gamma\gamma$-coin, $\gamma\gamma$-delayed coin.

1979Fo10: ^{235}U(n,f) E=th, on-line mass separation; on-line chem; semi γ, ce, $\gamma\gamma$-coin, $\beta\gamma$- and $\gamma\gamma$-delayed coin.

Other: 1977ChZO (^{238}U(p,f) E(p)=100 MeV).

The decay scheme is that proposed by 1988Ra09 on the basis of energy sums and $\gamma\gamma$-coin by 1979Fo10 and 1979Ch10.

^{122}Sn Levels

E(level)	J$^\pi$[†]	T$_{1/2}$[‡]	Comments
0.0	0$^+$		
1140.56 *5*	2$^+$		
2142.14 *6*	4$^+$		
2245.89 *6*	5$^-$	7.9 ns *9*	T$_{1/2}$: From $\beta\gamma$(t) measured using plastic and NaI(Tl) detectors (1979Fo10).
2409.14 *11*	7$^-$	7.5 μs *9*	T$_{1/2}$: weighted average of 7.2 μs *10* (1979Ch10) and 9.3 μs *23* (1979Fo10); measured from (1121γ)(γ)(t) (1979Fo10, 1979Ch10).
2653.08 *9*	6$^-$		
2690.18 *14*	(8$^+$)		
2838.19 *15*	6$^-$		
3416.6 *5*	(7$^-$,8$^-$,9$^-$)		
3530.82 *11*	(7$^-$,8$^-$)		
3703.50 *15*	(7$^-$,8$^-$,9$^-$)		
3710.26 *17*	(7$^-$,8$^-$)		

[†] From Adopted Levels.

[‡] For measurement of excited states, see 10.3-s decay.

β^- radiations

E(decay)[†]	E(level)	Iβ^-[‡]	Log *ft*	Comments
(2.95×10^3 *15*)	3710.26	5.5 *8*	5.61 *12*	av Eβ=1222 *70*
(2.96×10^3 *15*)	3703.50	9.5 *18*	5.37 *13*	av Eβ=1225 *70*
3.06×10^3 *40*	3530.82	77 *3*	4.57 *10*	av Eβ=1306 *70* E(decay): from (β)(877γ,1121γ) (1978Al18).
(3.24×10^3 *15*)	3416.6	3.6 *3*	5.97 *10*	av Eβ=1359 *70*
(3.82×10^3[#] *15*)	2838.19	1.0 *2*	6.83 *12*	av Eβ=1631 *71*
(3.97×10^3 *15*)	2690.18	2.7 *11*	6.47 *20*	av Eβ=1701 *71*
(4.01×10^3[#] *15*)	2653.08	3.9 *21*	6.33 *25*	av Eβ=1719 *71*

[†] Values of log *ft* ≈ 6.3, 6.8 for 2653 (6$^-$), 2838 (6$^-$) are not consistent with J^π change from parent state (8$^-$). The apparent feeding (≈ 4 %) may indicate incompleteness of the decay scheme, probably caused from 2 reasons: 1) lack of exact knowledge of dividing the relevant γ's among 10.3-s and 10.8-s isomers in the analysis of mixed source; 2) these 6$^-$ levels possibly be fed by either undetected or unassigned γ's from high-lying levels (Qβ^-=6370 keV).

[‡] Absolute intensity per 100 decays.

[#] Existence of this branch is questionable.

^{122}In β^- decay (10.8 s) 1988Ra09,1979Fo10,1979Ch10 (continued)

$\gamma(^{122}Sn)$

Iγ normalization: Assumed no IT decay and no β^- branching to g.s.

E_γ[†]	I_γ[‡b]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	α[c]	Comments
103.74 *1*	81[&] *6*	2245.89	5^-	2142.14	4^+	E1	0.1639	α(K)=0.1418; α(L)=0.01792; α(M)=0.00345; α(N+..)=0.00075 Mult.: from α(K)exp=0.13 *3* (1979Fo10).
163.48 *20*	66[&] *5*	2409.14	7^-	2245.89	5^-	E2	0.283	α(K)=0.2259; α(L)=0.0457; α(M)=0.00912; α(N+..)=0.00194 Mult.: from α(K)exp=0.23 *5* (1979Fo10).
243.8 *3*	7.0 *10*	2653.08	6^-	2409.14	7^-	[M1]	0.0495	α(K)=0.0429; α(L)=0.00533; α(M)=0.00104; α(N+..)=0.00023
281.03 *9*	5.1 *7*	2690.18	(8^+)	2409.14	7^-	[E1]	0.0102	α(K)=0.00885; α(L)=0.00107; α(M)=0.00021
407.17 *7*	9.5 *12*	2653.08	6^-	2245.89	5^-	[M1]	0.01320	α(K)=0.01145; α(L)=0.00141; α(M)=0.00027
592.27 *14*	3.9 *8*	2838.19	6^-	2245.89	5^-			
692.4 *4*	2.9 *8*	3530.82	$(7^-,8^-)$	2838.19	6^-			
840.4[#] *3*	1.2 *7*	3530.82	$(7^-,8^-)$	2690.18	(8^+)			
877.70 *8*	11.2 *11*	3530.82	$(7^-,8^-)$	2653.08	6^-			
1001.58 *3*	98.4[&] *14*	2142.14	4^+	1140.56	2^+			
1007.5 *4*	3.6 *3*	3416.6	$(7^-,8^-,9^-)$	2409.14	7^-			
1013.4[@] *3*	1.3[@] *3*	3703.50	$(7^-,8^-,9^-)$	2690.18	(8^+)			
1057.2 *4*	1.9 *6*	3710.26	$(7^-,8^-)$	2653.08	6^-			
1105.66 *25*	1.8[&] *5*	2245.89	5^-	1140.56	2^+			
1121.68 *3*	61.2 *23*	3530.82	$(7^-,8^-)$	2409.14	7^-			
1140.55 *5*	100[&] *10*	1140.56	2^+	0.0	0^+	E2		
1294.34[#] *10*	7.1 *10*	3703.50	$(7^-,8^-,9^-)$	2409.14	7^-			
1301.11 *14*	3.6 *5*	3710.26	$(7^-,8^-)$	2409.14	7^-			

[†] From 1988Ra09, unless noted otherwise.
[‡] From 1988Ra09, unless noted otherwise; the ΔIγ′s are calculated from table of 1988Ra09 by multiplying a factor 7.75 to the ΔIγ for the mixed source data (10.3-s (83%) and 10.8-s (17%)), unless otherwise noted; see 1988Ra09 for the information on Iγ and ΔIγ for unplaced γ′s.
[#] Average of 1979Fo10 and 1979Ch10; uncertainty covers approximate range of values from 1979Fo10 and 1979Ch10.
[@] From 1979Ch10; not seen by 1988Ra09.
[&] ΔIγ is subject to dividing error for 10.3-s and 10.8-s isomers.
[a] From adopted gammas, unless noted otherwise.
[b] For absolute intensity per 100 decays, multiply by 1.00 *3*.
[c] 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