^{111}Sn ε decay (35.3 min) 1981Bu17,1969Ri05,1971Ri03

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 110, 1239 (2009)	1-Feb-2008

Parent: ^{111}Sn: E=0.0; $J^\pi=7/2^+$; $T_{1/2}=35.3$ min *8*; Q(ε)=2451 *7*; %ε+%$β^+$ decay=100.0

%ε+%$β^+$ to g.s. is derived from Iγ(1153γ)/I$β^+$=0.087 *7* (1972Bu41) Iγ/I($γ^±$) and ε/$β^+$=1.98 (theory). Others: Iγ(1153γ)/I$β^+$=0.083 *12* (1967Da11), 0.090 *12* (1968Gr10).

Q(ε)=2530 *30* (1951Mc11) from max E($β^+$)=1510 *30* (1951Mc11).

γγ-coin: 1968Gr10, 1971Ri03. Anticoincidence spectrum studied by 1972Bu41.

^{111}In Levels

E(level)	J^π	$T_{1/2}$[†]	Comments
0.0	$9/2^+$	2.83 d *1*	$T_{1/2}$: from 1972Em01. Others: 2.84 d *3* (1949He06), 2.81 d *1* (1957Ma26), 2.84 d *11* (1968Li08), 2.96 d *8* (1968Sm08).
537.04 *9*	$1/2^-$	7.7 min *2*	
802.4 *6*	$3/2^-$		
1101.19 *14*	$(5/2)^+$		
1152.85 *7*	$11/2^+$		
1186.59 *14*	$1/2^+$		
1217.47 *12*	$(5/2)^+$		
1272.8 *7*			
1280.3 *5*	$3/2^-,5/2^-$		
1350.64 *6*			
1500.90 *8*	$^+$		
1542.59 *7*	$(9/2^+,11/2^+)$		
1610.37 *10*	$9/2^+$		
1753.2 *3*			
1831.02 *16*	5/2,7/2,9/2		
1914.83 *10*	$(7/2^+,9/2^+)$		
2107.00 *8*	$(7/2^+,9/2^+)$		
2178.95 *11*	$(5/2^+,7/2^+)$		
2212.59 *13*	$5/2^+$		
2290.55 *6*	$(5/2^+,7/2^+)$		
2323.29 *10*	$(7/2^+,9/2^+)$		

[†] From Adopted Levels.

ε,$β^+$ radiations

E(decay)	E(level)	Iε[†]	Log *ft*	I(ε+$β^+$)[†]	Comments
(128 *7*)	2323.29	≈0.38	≈4.1	≈0.38	εK=0.799 *7*; εL=0.158 *5*; εM+=0.0425 *15*
(160 *7*)	2290.55	≈0.17	≈4.7	≈0.17	εK=0.816 *4*; εL=0.145 *3*; εM+=0.0385 *8*
(238 *7*)	2212.59	≈0.35	≈4.8	≈0.35	εK=0.8347 *12*; εL=0.1311 *10*; εM+=0.0342 *3*
(272 *7*)	2178.95	≈0.7	≈4.7	≈0.7	εK=0.8388 *9*; εL=0.1279 *7*; εM+=0.03327 *21*
(344 *7*)	2107.00	≈1.6	≈4.5	≈1.6	εK=0.8446 *5*; εL=0.1234 *4*; εM+=0.03193 *12*
(536 *7*)	1914.83	≈4.4	≈4.5	≈4.4	εK=0.8519 *2*; εL=0.11781 *15*; εM+=0.03025 *5*
(620 *7*)	1831.02	≈0.1	≈6.3	≈0.1	εK=0.8536 *2*; εL=0.1165 *1*; εM+=0.02987 *4*
(698 *7*)	1753.2	≈0.05	≈6.7	≈0.05	εK=0.8548 *1*; εL=0.11562 *9*; εM+=0.02960 *3*
(841 *7*)	1610.37	≈1.15	≈5.5	≈1.15	εK=0.8563; εL=0.11442 *6*; εM+=0.02925 *2*
(908 *7*)	1542.59	<0.1	>6.6	<0.1	εK=0.8569; εL=0.11399 *5*; εM+=0.02912 *2*
(950 *7*)	1500.90	≈0.16	≈6.5	≈0.16	εK=0.8572; εL=0.11376 *5*; εM+=0.02905 *2*
(1100 *7*)	1350.64	≈0.1	≈6.8	≈0.1	εK=0.8581; εL=0.11307 *4*; εM+=0.02884 *1*
(1171 *7*)	1280.3	<0.01	>7.9	<0.01	εK=0.8584; εL=0.11280 *3*; εM+=0.028764 *9*
(1178 *7*)	1272.8	≈0.01	≈7.9	≈0.01	εK=0.8584; εL=0.11278 *3*; εM+=0.028756 *9*

Continued on next page (footnotes at end of table)

^{111}Sn ε decay (35.3 min) 1981Bu17,1969Ri05,1971Ri03 (continued)

ε,β+ radiations (continued)

E(decay)	E(level)	Iβ+ †	Iε†	Log *ft*	I(ε+β+)†	Comments
(1234 *7*)	1217.47		≈0.02	≈7.6	≈0.02	εK=0.8584; εL=0.11257 *4*; εM+=0.028696 *9*
(1264 *7*)	1186.59		≈0.1	≈6.9	≈0.1	εK=0.8583; εL=0.11245 *4*; εM+=0.02866 *1*
(1298 *7*)	1152.85	≈2.×10^{-5}	≈0.02	≈7.6	≈0.02	av Eβ=128.9 *34*; εK=0.85806 *9*; εL=0.11230 *4*; εM+=0.02862 *1*
(1350 *7*)	1101.19	≈0.00064	≈0.30	≈6.5	≈0.30064	av Eβ=151.5 *35*; εK=0.8573 *2*; εL=0.11204 *5*; εM+=0.02855 *2*
(1649 *7*)	802.4	<0.0005	<0.02	>7.9	<0.0205	av Eβ=281.3 *35*; εK=0.8369 *11*; εL=0.10865 *16*; εM+=0.02766 *4*
(2451 *7*)	0.0	30.2	62.7	4.7	92.9	av Eβ=634.8 *36*; εK=0.581 *4*; εL=0.0747 *5*; εM+=0.01899 *12*

† Absolute intensity per 100 decays.

^{111}Sn ε decay (35.3 min) 1981Bu17,1969Ri05,1971Ri03 (continued)

γ(^{111}In)

Iγ normalization: for I(γ+ce)=8.8 to g.s. + %ε+%$β^+$=91.2 to g.s..

E_γ[†]	I_γ[†#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[@]	Comments
265.2 *6*	3.3 *3*	802.4	3/2$^-$	537.04	1/2$^-$	M1	0.036	α(K)= 0.0311; α(L)=0.00382; α(M)=0.00074; α(N+..)=0.00016
288 *1*	1.0 *5*	1831.02	5/2,7/2,9/2	1542.59	(9/2$^+$,11/2$^+$)			
298.2 *11*	1.2 *5*	1101.19	(5/2)$^+$	802.4	3/2$^-$	E1		α(K)=0.00715; α(L)=0.00086; α(M)=0.00016 E_γ: other: 300 *1* (1972Bu41,1971Ri03).
304.2 *6*	0.6 *3*	1914.83	(7/2$^+$,9/2$^+$)	1610.37	9/2$^+$			
325.5 *7*	1.3 *5*	1542.59	(9/2$^+$,11/2$^+$)	1217.47	(5/2)$^+$			
372.31 *19*	16.0 *8*	1914.83	(7/2$^+$,9/2$^+$)	1542.59	(9/2$^+$,11/2$^+$)			
403 *1*	0.4 *2*	1753.2		1350.64				
442 *1*	1.2 *4*	1542.59	(9/2$^+$,11/2$^+$)	1101.19	(5/2)$^+$			
457.56 *9*	14.4 *8*	1610.37	9/2$^+$	1152.85	11/2$^+$	M1(+E2)		
496.8 *3*	2.5 *4*	2107.00	(7/2$^+$,9/2$^+$)	1610.37	9/2$^+$			
537.22 *9*	9.5 *8*	537.04	1/2$^-$	0.0	9/2$^+$	M4	0.15	α(K)= 0.1229; α(L)=0.02076 E_γ: others: 536.2 *3* (1969Ri05), 536.77 (1976MeZD).
564.34 *9*	11.5 *8*	2107.00	(7/2$^+$,9/2$^+$)	1542.59	(9/2$^+$,11/2$^+$)			
569.2 *3*	1.5 *4*	2178.95	(5/2$^+$,7/2$^+$)	1610.37	9/2$^+$			
601 *1*	0.5 *2*	2212.59	5/2$^+$	1610.37	9/2$^+$			
607.1 *5*	0.6 *2*	2107.00	(7/2$^+$,9/2$^+$)	1500.90	$^+$			
613.4 *3*	1.9 *3*	1831.02	5/2,7/2,9/2	1217.47	(5/2)$^+$			
637.03 *19*	4.5 *3*	2178.95	(5/2$^+$,7/2$^+$)	1542.59	(9/2$^+$,11/2$^+$)			
650.05 *15*	3.0 *10*	1186.59	1/2$^+$	537.04	1/2$^-$			E_γ: other: 650.6 *8* (1969Ri05). I_γ: others: 3.0 *9* (1969Ri05), 3.9 *7* (1972Bu41).
669.4 *4*	0.5 *3*	2212.59	5/2$^+$	1542.59	(9/2$^+$,11/2$^+$)			
680.2 *6*	1.6 *3*	2290.55	(5/2$^+$,7/2$^+$)	1610.37	9/2$^+$			
[x]703.4 *12*	1.4 *5*							
729.85 *10*	1.4 *3*	1831.02	5/2,7/2,9/2	1101.19	(5/2)$^+$			
743.3 *5*	1.4 *3*	1280.3	3/2$^-$,5/2$^-$	537.04	1/2$^-$			
747.97 *9*	1.8 *4*	2290.55	(5/2$^+$,7/2$^+$)	1542.59	(9/2$^+$,11/2$^+$)			
761.97 *12*	55.8 *19*	1914.83	(7/2$^+$,9/2$^+$)	1152.85	11/2$^+$			
813.8 *3*	2.0 *6*	1914.83	(7/2$^+$,9/2$^+$)	1101.19	(5/2)$^+$			
890.0 *6*	2.2 *5*	2107.00	(7/2$^+$,9/2$^+$)	1217.47	(5/2)$^+$			
954.05 *13*	19.2 *8*	2107.00	(7/2$^+$,9/2$^+$)	1152.85	11/2$^+$			
962.0 *5*	0.6 *3*	2178.95	(5/2$^+$,7/2$^+$)	1217.47	(5/2)$^+$			
995.0 *6*	0.8 *3*	2212.59	5/2$^+$	1217.47	(5/2)$^+$			
1006.0 *4*	1.1 *3*	2107.00	(7/2$^+$,9/2$^+$)	1101.19	(5/2)$^+$			
1026.43 *14*	11.0 *8*	2178.95	(5/2$^+$,7/2$^+$)	1152.85	11/2$^+$			I_γ: misprinted as 1.1 *8* in authors′ table 1. See authors′ table 2. Others: 9.7 *6* (1972Bu41), 7.9 (1976MeZD).
1059.4 *4*	0.7 *3*	2212.59	5/2$^+$	1152.85	11/2$^+$			
1101.18 *24*	24 *2*	1101.19	(5/2)$^+$	0.0	9/2$^+$	E2	0.0010	
1110.8 *3*	2.9 *4*	2212.59	5/2$^+$	1101.19	(5/2)$^+$			

$^{111}_{49}In_{62}$-3

^{111}Sn ε decay (35.3 min) 1981Bu17,1969Ri05,1971Ri03 (continued)

γ(^{111}In) (continued)

E_γ [†]	I_γ [†#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ	Comments
1138.0 *5*	1.0 *3*	2290.55	(5/2$^+$,7/2$^+$)	1152.85	11/2$^+$			
1152.98 *11*	100	1152.85	11/2$^+$	0.0	9/2$^+$	E2+M1	+0.4 *1*	α(K)=0.00091; α(L)=0.00011 Mult.: δ=+ 0.4 *1* from A_2= 0.27 *3* (1978He10) via (α,2nγ).
1170.1 *3*	1.8 *5*	2323.29	(7/2$^+$,9/2$^+$)	1152.85	11/2$^+$			
1217.50 *14*	6.8 *4*	1217.47	(5/2)$^+$	0.0	9/2$^+$	E2		
1272.8 *7*	1.0 *3*	1272.8		0.0	9/2$^+$			
[x]1311 *1*	0.4							
1350.6 *6*	1.2 *4*	1350.64		0.0	9/2$^+$			
1500.54 *8*	6.3 *6*	1500.90	$^+$	0.0	9/2$^+$			
1542.75 *15*	27.8 *16*	1542.59	(9/2$^+$,11/2$^+$)	0.0	9/2$^+$			
1610.47 *22*	49.5 *18*	1610.37	9/2$^+$	0.0	9/2$^+$			
1753.2 *3*	1.5 *3*	1753.2		0.0	9/2$^+$			
1914.70 *21*	75 *3*	1914.83	(7/2$^+$,9/2$^+$)	0.0	9/2$^+$			
2107.13 *13*	16.5 *9*	2107.00	(7/2$^+$,9/2$^+$)	0.0	9/2$^+$			
2179.50 *25*	10.5 *8*	2178.95	(5/2$^+$,7/2$^+$)	0.0	9/2$^+$			
2212.09 *22*	8.8 *8*	2212.59	5/2$^+$	0.0	9/2$^+$			
2290.52 *7*	2.2 *3*	2290.55	(5/2$^+$,7/2$^+$)	0.0	9/2$^+$			
2323.30 *10*	12.5 *8*	2323.29	(7/2$^+$,9/2$^+$)	0.0	9/2$^+$			

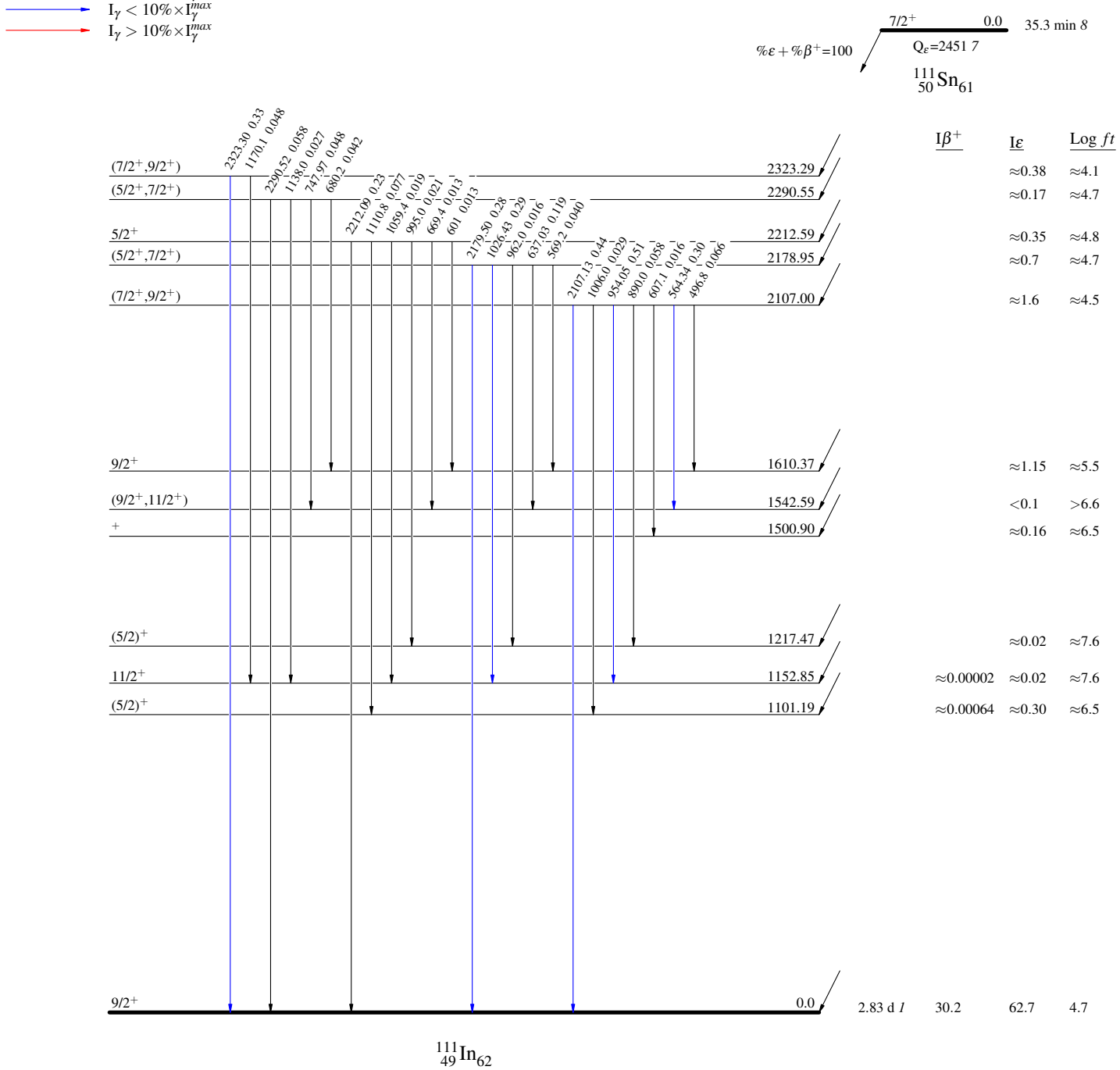
[†] From 1981Bu17, unless otherwise noted.
[‡] Except as noted, multipolarities are deduced from α(K)exp and γ(θ) measurements from (p,nγ) reaction (1976Di03).
[#] For absolute intensity per 100 decays, multiply by 0.0265 *40*.
[@] Total theoretical internal conversion coefficients, calculated using 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.

$^{111}_{49}In_{62}$-4

^{111}Sn ε decay (35.3 min) 1981Bu17,1969Ri05,1971Ri03

Decay Scheme

Intensities: I_γ per 100 parent decays



^{111}Sn ε decay (35.3 min) 1981Bu17,1969Ri05,1971Ri03

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays