^{111}Sb ε decay (75 s) 1976Wi10

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

Parent: ^{111}Sb: E=0.0; J^π=(5/2$^+$); $T_{1/2}$=75 s *1*; Q(ε)=5.06×10^3 *3*; %ε+%β$^+$ decay=100.0
1976Wi10: measured: γ, γγ, semi; source via ^{112}Sn(p,2n) E=28 MeV.
1972Si28: measured: Eβ (magnetic s), βγ-coin (semi).
Others: 1972Si28, 1974De34.
Q(ε)=5100 *50* (1993Au05) mass adjustment, 4470 *50* (1972Si28) from Eβ max=3290 *50* to 154 level.

^{111}Sn Levels

E(level)	J$^\pi$	$T_{1/2}$	Comments
0.0	7/2$^+$	35.3 min *8*	$T_{1/2}$: unweighted av: 1949Hi10, 1951Mc11, 1967Da11, 1969Sh11.
154.48 *3*	5/2$^+$		
254.72 *5*	1/2$^+$	12.5 μs *10*	$T_{1/2}$: from 1978Ho06, γ(t) pulsed beam via ^{110}Cd(22-MeV ^{3}He).
643.58 *11*	3/2$^+$		
755.40 *10*	5/2$^+$		
1032.60 *10*	3/2$^+$		
1151.8 *6*	3/2$^+$,5/2$^+$		
1276.6 *7*	7/2$^+$		
1302.0 *7*	5/2$^+$		
1477.3 *7*	9/2$^+$		
1693.0 *10*	(3/2$^+$,5/2$^+$)		
1823.0 *8*	7/2$^+$		
1995.8 *10*	(3/2$^+$,5/2$^+$)		

ε,β$^+$ radiations

E(decay)	E(level)	Iβ$^+$ †	Iε†	Log *ft*	I(ε+β$^+$)†	Comments
(3.06×10^3 *3*)	1995.8	0.28 *2*	0.19 *2*	6.03 *4*	0.47 *4*	av Eβ=933.94; εK=0.3486; εL=0.04501; εM+=0.01155
(3.24×10^3 *3*)	1823.0	0.63 *5*	0.34 *2*	5.83 *4*	0.97 *7*	av Eβ=1013.20; εK=0.2989; εL=0.03857; εM+=0.009899
(3.37×10^3 *3*)	1693.0	0.13 *1*	0.059 *3*	6.619 *24*	0.19 *1*	av Eβ=1073.04; εK=0.2663; εL=0.03434; εM+=0.008812
(3.58×10^3 *3*)	1477.3	0.25 *1*	0.087 *5*	6.50 *3*	0.34 *2*	av Eβ=1172.79; εK=0.2203; εL=0.02838; εM+=0.007284
(3.76×10^3 *3*)	1302.0	3.2 *2*	0.90 *7*	5.53 *4*	4.1 *3*	av Eβ=1254.21; εK=0.1895; εL=0.02440; εM+=0.006260
(3.78×10^3 *3*)	1276.6	0.29 *3*	0.12 *9*	6.007 *14*	0.41 *4*	av Eβ=1266.04; εK=0.1855; εL=0.02388; εM+=0.006126
(3.91×10^3 *3*)	1151.8	2.9 *2*	0.70 *6*	5.67 *4*	3.6 *3*	av Eβ=1324.26; εK=0.1670; εL=0.02149; εM+=0.005515
(4.03×10^3 *3*)	1032.60	10.4 *10*	2.22 *21*	5.20 *5*	12.6 *12*	av Eβ=1379.92; εK=0.1515; εL=0.01948; εM+=0.004999
(4.30×10^3 *3*)	755.40	4 *4*	0.7 *7*	5.7 *5*	5.2 *52*	av Eβ=1509.94; εK=0.1216; εL=0.01563; εM+=0.004009
(4.42×10^3 *3*)	643.58	38 *3*	5.7 *4*	4.87 *3*	44 *3*	av Eβ=1562.55; εK=0.1116; εL=0.01434; εM+=0.003679
(4.91×10^3 *3*)	154.48	20 *4*	2.0 *4*	5.41 *8*	22 *4*	av Eβ=1793.72; εK=0.07848; εL=0.01007; εM+=0.002584
(5.06×10^3 *3*)	0.0	5 *5*	0.4 *4*	6.1 *5*	5 *5*	av Eβ=1867.06; εK=0.07070; εL=0.009072; εM+=0.002327 I(ε+β$^+$): from Iγ±/Iγ(489γ)=4.8 *4* one gets I(ε+β$^+$)<10% to g.s..

† Absolute intensity per 100 decays.

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γ(^{111}Sn)

Iγ normalization: from I($\gamma^{\pm}$)=158 *13* relative to Iγ(489γ)=33, and thus Iβ^+/Iγ(489)=2.40 *20*.

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	α[‡]	Comments
100.24 *3*	2.74 *23*	254.72	1/2$^+$	154.48	5/2$^+$	E2		1.60	α(K)= 1.162; α(L)= 0.352; α(M)= 0.0712; α(N+..)=0.01485 Mult.: from intensity balance at the 254 level mult=E2(+M1), with δ>1.2. From level scheme, ΔJ=2.
154.48 *3*	56.1 *26*	154.48	5/2$^+$	0.0	7/2$^+$	[M1+E2]		0.17	Analogous g7/2 to d5/2 transition in ^{111}Cd: δ(171γ)=−0.144.
388.83	2.9	643.58	3/2$^+$	254.72	1/2$^+$	M1+E2	−0.08 *6*	0.0152 *4*	I_γ: branching: Iγ(389γ):Iγ(489γ):Iγ(644γ)=8.8:100:4.5 (1976Wi10), 6.2 *17*:100:2.5 *10* (1972Si28).
396.2 *3*	0.12	1151.8	3/2$^+$,5/2$^+$	755.40	5/2$^+$				
489.1 *1*	33	643.58	3/2$^+$	154.48	5/2$^+$	M1(+E2)	0.15 *18*	0.0084	α(K)=0.00731; α(L)=0.00089; α(M)=0.00017
546.7	0.11	1302.0	5/2$^+$	755.40	5/2$^+$				
600.8 *3*	0.6	755.40	5/2$^+$	154.48	5/2$^+$				I_γ: branching: Iγ(601γ)/Iγ(755γ)=0.15 (1976Wi10), 0.18 *5* (1976Ma09).
643.6 *3*	1.5	643.58	3/2$^+$	0.0	7/2$^+$				
755.4 *1*	4.06 *23*	755.40	5/2$^+$	0.0	7/2$^+$				
777.8 *3*	2.2	1032.60	3/2$^+$	254.72	1/2$^+$				
877.8 *3*	0.43	1032.60	3/2$^+$	154.48	5/2$^+$				
897.4 *3*	1.6	1151.8	3/2$^+$,5/2$^+$	254.72	1/2$^+$				
997.3 *3*	1.3	1151.8	3/2$^+$,5/2$^+$	154.48	5/2$^+$				
1032.6 *1*	7.9 *7*	1032.60	3/2$^+$	0.0	7/2$^+$				
1067.6	0.11	1823.0	7/2$^+$	755.40	5/2$^+$				
1122.3	0.22	1276.6	7/2$^+$	154.48	5/2$^+$				
1147.5	3.3	1302.0	5/2$^+$	154.48	5/2$^+$				
1150[#] *1*		1151.8	3/2$^+$,5/2$^+$	0.0	7/2$^+$				E_γ: from 1972Si28; unobserved by 1976Wi10. I_γ: Iγ(1150γ)/Iγ(154γ)= 0.040 *5* (1972Si28), 0.082 *18* (1974De34).
1179.5	0.7	1823.0	7/2$^+$	643.58	3/2$^+$				
1276.5	0.12	1276.6	7/2$^+$	0.0	7/2$^+$				
1323.7	0.15	1477.3	9/2$^+$	154.48	5/2$^+$				
1476.5	0.13	1477.3	9/2$^+$	0.0	7/2$^+$				
1538.5	0.16	1693.0	(3/2$^+$,5/2$^+$)	154.48	5/2$^+$				
1841.3	0.39	1995.8	(3/2$^+$,5/2$^+$)	154.48	5/2$^+$				

[†] For absolute intensity per 100 decays, multiply by 1.20 *8*.

[‡] 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.

[#] Placement of transition in the level scheme is uncertain.

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Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 decays through this branch

Legend
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)
- Coincidence