^{118}Sn(^{32}S,p3nγ) 2004Xi01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Yu. Khazov, A. Rodionov and G. Shulyak	NDS 136, 163 (2016)	14-Jul-2016

2004Xi01: ^{118}Sn(^{32}S,p3nγ), E=165 MeV; measured Eγ, Iγ, $\gamma\gamma$, xγ coin, γ-anisotropy. ^{146}Tb; deduced levels, J^π. Tandem, an array of 12 HPGe detectors each with BGO anti-Compton shield, shell model treatment.

The ^{146}Tb level scheme is built (2004Xi01) on the basis of $\gamma\gamma$ coincidences and transition intensity balance. Spin assignments were made according to obtained γ ray anisotropy and known (1997Co23) multipolarities. Irregular level spacing and many parallel decay branches suggest excitations through the coupling of valence nucleons $\pi h_{11/2}$ and $\nu h^{-1}_{11/2}$ with ^{146}Gd core. No detail experimental results have been given, besides the level scheme figure.

^{146}Tb Levels

E(level)[†‡]	J$^\pi$[#]	T$_{1/2}$[@]	E(level)[†‡]	J$^\pi$[#]	E(level)[†‡]	J$^\pi$[#]
0.0+x[&]	5$^-$	24.1 s *5*	3487.86+x *19*	16$^-$	5277.56+x *23*	(19)
18.73+x *13*	6$^-$		3580.06+x *23*	(15)	5364.98+x *20*	(20)
156.70+x *10*	6$^-$		3584.79+x *20*	17$^-$	5491.87+x *24*	(20)
361.87+x *13*	7$^-$		3691.73+x *20*	(16)	5543.11+x *22*	(20)
779.57+x *13*	10$^+$		3905.13+x *21*	(15)	5580.69+x *22*	(21)
1370.17+x *18*	11$^+$		3945.72+x *22*	(17)	5814.34+x *23*	(21)
2147.40+x *18*	11$^-$		4115.10+x *21*	18$^-$	5945.85+x *25*	(21)
2170.65+x *18*	10$^-$		4140.67+x *20*	(17)	6387.8+x *3*	(22)
2188.31+x *18*	12$^-$		4217.50+x *20*	17$^+$	6493.67+x *22*	(22)
2224.22+x *18*	(12)		4464.75+x *21*	(18)	6495.6+x *3*	(23)
2577.84+x *18*	13$^-$		4506.33+x *22*	(18)	6533.2+x *3*	(22)
2920.96+x *22*	(13)		4579.91+x *21*	19$^-$	6682.3+x *4*	(23)
3085.18+x *18*	(13)		4690.43+x *20*	(18)	7563.8+x *6*	(23)
3149.64+x *21*	(13)$^-$		4775.98+x *22*	(19)	7737.0+x *3*	(23)
3264.44+x *18*	(14$^+$)		4867.31+x *23*	(19)	8003.5+x *3*	(24)
3284.34+x *19*	14$^-$		5075.15+x *21*	(19)	8388.7+x *4*	(25)
3368.02+x *19*	15$^-$		5134.33+x *22*	(19)		

[†] If ΔEγ not given, ±0.20 keV assumed for least-squares fitting.
[‡] From 'Adopted Levels'.
[#] From 2004Xi01; assigned from γ ray anisotropies (2004Xi01) and multipolarities (1997Co23), no details were given.
[@] From Iγ(t) (1993Al03).
[&] The value is not known exactly. It is supposed as 150 keV *110* higher g.s. (from systematics, 2012Au07).

γ(^{146}Tb)

E$_\gamma$[†]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	I$_{(\gamma+ce)}$[‡]	E$_\gamma$[†]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	I$_{(\gamma+ce)}$[‡]
40.9[#]	2188.31+x	12$^-$	2147.40+x	11$^-$	5.3	203.8	3691.73+x	(16)	3487.86+x	16$^-$	≤1.4
53.6[#]	2224.22+x	(12)	2170.65+x	10$^-$	4.3	205.2	361.87+x	7$^-$	156.70+x	6$^-$	8.2
76.7	2224.22+x	(12)	2147.40+x	11$^-$	1.3	214.2	5491.87+x	(20)	5277.56+x	(19)	6.7
83.7	3368.02+x	15$^-$	3284.34+x	14$^-$	40	233.6	5814.34+x	(21)	5580.69+x	(21)	6.3
96.9	3584.79+x	17$^-$	3487.86+x	16$^-$	21	247.3	4464.75+x	(18)	4217.50+x	17$^+$	14
107.7	6495.6+x	(23)	6387.8+x	(22)	3.7	266.5	8003.5+x	(24)	7737.0+x	(23)	≤1.4
119.8	3487.86+x	16$^-$	3368.02+x	15$^-$	36	269.6	4775.98+x	(19)	4506.33+x	(18)	4.7
138.0	156.70+x	6$^-$	18.73+x	6$^-$	≤1.4	271.9	4217.50+x	17$^+$	3945.72+x	(17)	≤1.4
148.8	6682.3+x	(23)	6533.2+x	(22)	≤1.4	289.8	5364.98+x	(20)	5075.15+x	(19)	6.3
156.7	156.70+x	6$^-$	0.0+x	5$^-$	7.2	312.5	4217.50+x	17$^+$	3905.13+x	(15)	3.4
176.8	4867.31+x	(19)	4690.43+x	(18)	4.8	315.6	3580.06+x	(15)	3264.44+x	(14$^+$)	6.7
199.1	3284.34+x	14$^-$	3085.18+x	(13)	3.8	323.6	3691.73+x	(16)	3368.02+x	15$^-$	3.4

Continued on next page (footnotes at end of table)

^{118}Sn(^{32}S,p3nγ) 2004Xi01 (continued)

γ(^{146}Tb) (continued)

E_γ [†]	E_i(level)	J_i^π	E_f	J_f^π	$I_{(\gamma+ce)}$ [‡]	Comments
343.1	361.87+x	7^-	18.73+x	6^-	92	
343.5	3264.44+x	(14^+)	2920.96+x	(13)	2.9	
358.4	5134.33+x	(19)	4775.98+x	(19)	5.8	
365.7	3945.72+x	(17)	3580.06+x	(15)	5.3	
384.7	5075.15+x	(19)	4690.43+x	(18)	4.8	
385.4	8388.7+x	(25)	8003.5+x	(24)	3.8	
389.5	2577.84+x	13^-	2188.31+x	12^-	61	
408.9	5543.11+x	(20)	5134.33+x	(19)	7.7	
417.7	779.57+x	10^+	361.87+x	7^-	99	
449.4	5814.34+x	(21)	5364.98+x	(20)	8.2	
454.0	5945.85+x	(21)	5491.87+x	(20)	6.7	
464.9	4579.91+x	19^-	4115.10+x	18^-	8.7	
525.8	4217.50+x	17^+	3691.73+x	(16)	4.6	
530.3	4115.10+x	18^-	3584.79+x	17^-	18	
549.8	4690.43+x	(18)	4140.67+x	(17)	7.4	
558.4	4775.98+x	(19)	4217.50+x	17^+	4.4	
560.8	4506.33+x	(18)	3945.72+x	(17)	6.7	
571.8	3149.64+x	$(13)^-$	2577.84+x	13^-	4.7	
573.3	6387.8+x	(22)	5814.34+x	(21)	10	
587.5	6533.2+x	(22)	5945.85+x	(21)	6.7	
590.7	1370.17+x	11^+	779.57+x	10^+	100	
640.9	3905.13+x	(15)	3264.44+x	(14^+)	4.3	
652.9	4140.67+x	(17)	3487.86+x	16^-	7.4	
669.5	5134.33+x	(19)	4464.75+x	(18)	≤1.4	
696.7	2920.96+x	(13)	2224.22+x	(12)	4.8	
706.6	3284.34+x	14^-	2577.84+x	13^-	61	
713.5	5580.69+x	(21)	4867.31+x	(19)	4.8	
729.8	4217.50+x	17^+	3487.86+x	16^-	15	
777.3	2147.40+x	11^-	1370.17+x	11^+	13	
785.1	5364.98+x	(20)	4579.91+x	19^-	≤1.4	
800.5	2170.65+x	10^-	1370.17+x	11^+	10	
818.2	2188.31+x	12^-	1370.17+x	11^+	76	
854.0	2224.22+x	(12)	1370.17+x	11^+	1.4	
896.8	3085.18+x	(13)	2188.31+x	12^-	8.2	
916.8	5134.33+x	(19)	4217.50+x	17^+	2.9	
949.5	6493.67+x	(22)	5543.11+x	(20)	18	E_γ: Poor fit: the energy level difference equals 950.6 *3*.
960.2	5075.15+x	(19)	4115.10+x	18^-	4.8	
1000.8	5580.69+x	(21)	4579.91+x	19^-	≤1.4	
1040.2	3264.44+x	(14^+)	2224.22+x	(12)	7.7	
1070.8	7563.8+x	(23)	6493.67+x	(22)	6.3	
1078.4	5543.11+x	(20)	4464.75+x	(18)	9.6	
1105.8	4690.43+x	(18)	3584.79+x	17^-	4.8	
1162.3	5277.56+x	(19)	4115.10+x	18^-	≤1.4	
1244.2	7737.0+x	(23)	6493.67+x	(22)	7.7	
1376.5	5491.87+x	(20)	4115.10+x	18^-	≤1.4	
1692.6	5277.56+x	(19)	3584.79+x	17^-	3.7	

[†] From fig. 3 of 2004Xi01, ΔEγ=0.2 keV is assumed by evaluators for each γ ray.

[‡] Obtained in relative units by evaluators from fig. 3 of 2004Xi01 according to claim that 'the widths of arrows indicate the relative transition intensities'. Systematic inaccuracy Δ(Iγ+ce)≈0.5 for each transition intensity is estimated (evaluators).

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

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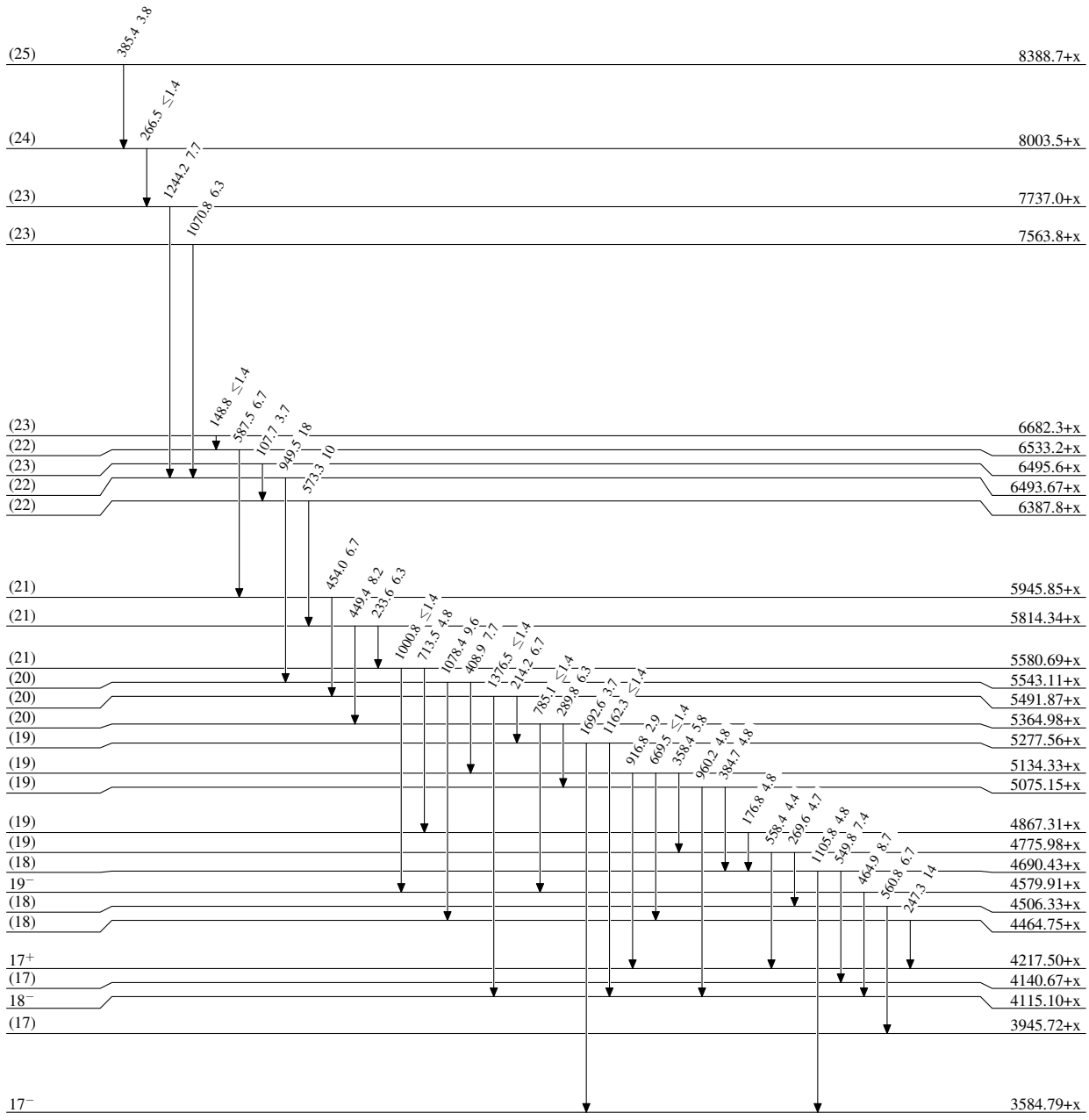
Level Scheme



$^{146}_{65}Tb_{81}$

Legend

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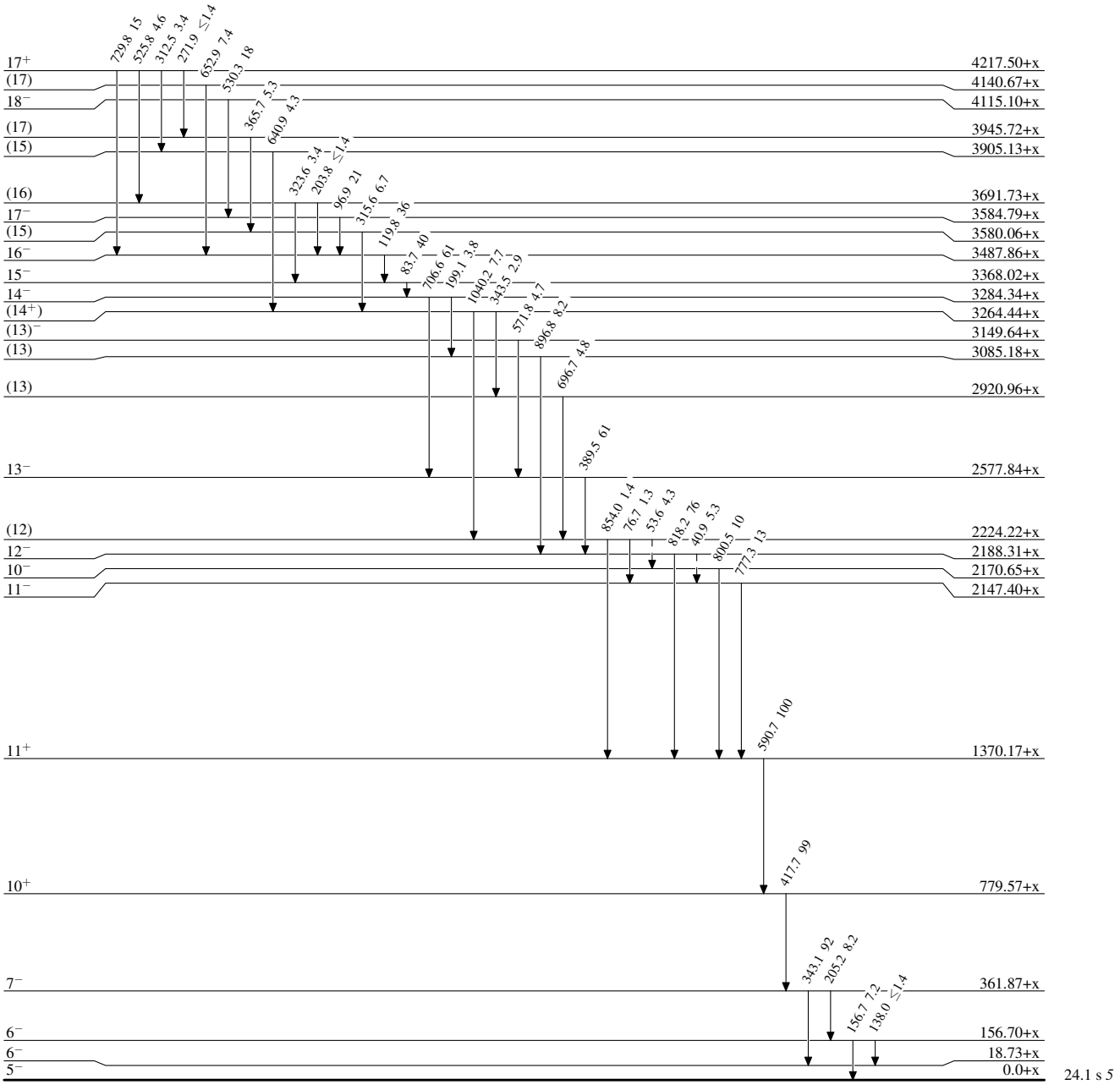
Level Scheme (continued)

- - - - - - ► γ Decay (Uncertain)



$^{146}_{65}Tb_{81}$