^{114}Sn(p,nγ) 1994Ga26

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 113, 515 (2012)	1-Jan-2012

E(p)=7.8,8.0 MeV, enriched target (70%) (1994Ga26).
Measured: γ, γγ, γ(θ), ce, Ge(HP), superconducting magnetic lens Si(Li) detectors (1994Ga26).
E=6.3-8.4, 15 MeV, enriched targets (1976Ka19).
Measured: γ, γγ, nγ, σ(e,eγ), $T_{1/2}$(γ), excit (1976Ka19).
The level scheme is from 1994Ga26. The levels and the transitions deexciting the 495-keV level (173, 136, 90) are not given by 1994Ga26.

^{114}Sb Levels

E(level)	J^{π}†	$T_{1/2}$‡	E(level)	J^{π}†	$T_{1/2}$‡	E(level)	J^{π}†	$T_{1/2}$‡
0.0	3+	3.49 min *3*	501.6 *5*	3−	<1 ns	809.21 *7*	3+	
27.4 *2*	1+		506.96 *4*	0+		869.92 *6*	0+	
45.86 *3*	(2+),3+,4+	<2 ns	565.76 *3*	4+		871.90 *6*	(1+)	
54.63 *3*	3+		572.73 *4*	(2,3)		892.97 *5*	5−	<1 ns
83.54 *3*	(5)		641.51 *6*	5(+)		945.25 *20*	(3)	
83.84 *3*	2+	<2 ns	664.4 *1*	4−	<1 ns	948.73 *20*	4,5,6	
144.90 *3*	2+	<1 ns	664.80 *8*	3+		990.76 *20*	1,2	
264.58 *3*	4+		691.4 *4*	2+		1005.1 *5*		
272.02 *4*	1+	<1 ns	763.62 *4*	1,2+		1017.48 *24*		
344.49 *3*	3+	<1 ns	793.4 *4*	5,6				
492.00 *3*	2+		806.02 *4*	2+				

† From α(K)exp, Hauser-Feshbach analysis and γγ(θ).
‡ From 1976Ka19. The levels at 90,136,173,245,298 keV given by 1976Ka19 are not confirmed by 1994Ga26, so the $T_{1/2}$ have been attributed to the levels where 1994Ga26 have placed the deexciting gammas.

γ(^{114}Sb)

E_{γ}	I_{γ}	E_i(level)	J^{π}_i	E_f	J^{π}_f	Mult.†	α@	Comments
8.8		54.63	3+	45.86	(2+),3+,4+			E_{γ}: from E(level) difference. Transition not observed but required by coin.
27.5 *3*	2.4×10^2 *10*	27.4	1+	0.0	3+			I_{γ}: estimated value.
37.4 *4*		83.54	(5)	45.86	(2+),3+,4+			I_{γ}: Iγ is weak.
45.87 *3*	293 *17*	45.86	(2+),3+,4+	0.0	3+	[M1]	5.98	B(M1)(W.u.)>0.016
54.65 *3*	340 *18*	54.63	3+	0.0	3+	[M1]	3.6	A_2=+0.16 *18*; A_4=−0.20 *27*
56.3 *2*	16 *8*	83.84	2+	27.4	1+			
79.94 *2*	96 *3*	344.49	3+	264.58	4+			
83.5		83.54	(5)	0.0	3+			E_{γ}: from E(level) difference. Transition not observed but suggested by intensity balance arguments.
83.83 *2*	831 *29*	83.84	2+	0.0	3+	[M1]	1.04	A_2=+0.040 *18*; A_4=+0.034 *22* B(M1)(W.u.)>0.0089
90.29 *2*	1000 *35*	144.90	2+	54.63	3+			A_2=+0.027 *17*; A_4=+0.039 *20*
x92.3 *2*	23 *3*							
144.99 *3*	21.3 *11*	144.90	2+	0.0	3+			
147.53 *2*	124 *6*	492.00	2+	344.49	3+			
163.24 *3*	108 *6*	664.4	4−	501.6	3−	M1,(E2)		α(K)exp=0.146 *12* A_2=−0.31 *13*; A_4=−0.21 *17*

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^{114}Sn(p,nγ) 1994Ga26 (continued)

γ(^{114}Sb) (continued)

Eγ	Iγ	Ei(level)	J^π_i	E_f	J^π_f	Mult.†	Comments
181.15 *3*	41.7 *24*	264.58	4+	83.54	(5)		
188.18 *2*	423 *25*	272.02	1+	83.84	2+	M1,(E2)	A_2=+0.01 *3*; A_4=+0.02 *4* α(K)exp=0.092 *7*
209.94 *2*	217 *10*	264.58	4+	54.63	3+	M1,(E2)	A_2=−0.19 *3*; A_4=+0.07 *4* α(K)exp=0.069 *4*
218.8 *3*	5.1 *10*	264.58	4+	45.86	(2+),3+,4+		
228.28 *4*	17.0 *9*	892.97	5−	664.4	4−	M1,E2	α(K)exp=0.059 *13*
234.93 *3*	47.7 *24*	506.96	0+	272.02	1+		A_2=−0.04 *9*; A_4=+0.04 *12* α(K)exp=0.058 *9*
244.65 *2*	684 *24*	272.02	1+	27.4	1+	M1,(E2)	A_2=+0.13 *5*; A_4=+0.11 *6* α(K)exp=0.0449 *25*
256.6 *3*	12.6 *5*	763.62	1,2+	506.96	0+		
264.56 *2*	310 *11*	264.58	4+	0.0	3+	M1,E2	A_2=−0.25 *4*; A_4=+0.05 *6* α(K)exp=0.0401 *25*
271.8 *5*	32 *10*	763.62	1,2+	492.00	2+		
298.62 *2*	422 *13*	344.49	3+	45.86	(2+),3+,4+	M1,E2	A_2=+0.02 *4*; A_4=−0.01 *5* α(K)exp=0.0287 *16*
301.0 *3*	20 *3*	572.73	(2,3)	272.02	1+		
320.4 *2*	29.0 *12*	664.80	3+	344.49	3+		
344.49 *2*	113 *26*	344.49	3+	0.0	3+	M1,E2	A_2=+0.35 *9*; A_4=+0.22 *10* α(K)exp=0.0211 *14*
346.8 *5*	<20	691.4	2+	344.49	3+		α(K)exp=0.0187 *10* Mult.: α(K)exp is for the 346 and 347γ. Iγ: from Iγ(346.8+347.12 γ′s)=368 *9*.
347.12 *6*	363 *12*	492.00	2+	144.90	2+	M1,E2	α(K)exp=0.0187 *10* A_2=+0.23 *5*; A_4=+0.12 *6* Mult.: α(K)exp is for the 346 and 347γ. Iγ: from branching in ε decay.
356.72 *9*	29.2 *8*	501.6	3−	144.90	2+	E1	α(K)exp=0.0054 *55* A_2=−0.23 *15*; A_4=+0.14 *18* B(E1)(W.u.)>4.1×10^{-7}
ˣ365.68 *5*	5.22 *14*						
376.93 *5*	55.2 *22*	641.51	5(+)	264.58	4+		A_2=+0.02 *20*; A_4=+0.55 *23*
379.93 *6*	59.9 *16*	871.90	(1+)	492.00	2+		
ˣ392.8 *3*	12 *3*						
408.15 *2*	86.7 *24*	492.00	2+	83.84	2+	M1,(E2)	A_2=+0.07 *5*; A_4=+0.04 *6* α(K)exp=0.0136 *12*
419.35 *3*	55.6 *16*	691.4	2+	272.02	1+	M1,(E2)	α(K)exp=0.0131 *12* A_2=−0.18 *10*; A_4=+0.08 *13*
437.39 *3*	157 *5*	492.00	2+	54.63	3+	M1,E2	A_2=+0.04 *8*; A_4=+0.08 *9* α(K)exp=0.0106 *12*
453.4 *3*	3.3 *8*	945.25	(3)	492.00	2+		
455.79 *2*	236 *7*	501.6	3−	45.86	(2+),3+,4+	E1	α(K)exp=0.0026 *5* A_2=−0.11 *3*; A_4=−0.01 *4* B(E1)(W.u.)>1.6×10^{-6}
461.56 *10*	43.6 *24*	806.02	2+	344.49	3+	M1,E2	α(K)exp=0.0087 *24*
464.6 *3*	19.3 *12*	809.21	3+	344.49	3+		
479.56 *3*	315 *13*	506.96	0+	27.4	1+	M1,(E2)	A_2=+0.12 *10*; A_4=+0.18 *13* α(K)exp=0.0090 *8*
483.78 *22*	24.1 *9*	990.76	1,2	506.96	0+		
501.58 *3*	182 *6*	501.6	3−	0.0	3+	E1	A_2=+0.39 *5*; A_4=0.00 *7* α(K)exp=0.0019 *3* B(E1)(W.u.)>9.3×10^{-7}
519.89 *3*	135 *10*	664.80	3+	144.90	2+	M1,(E2)	α(K)exp=0.0072 *6* A_2=−0.39 *11*; A_4=+0.01 *14*
528.8 *4*	12 *4*	793.4	5,6	264.58	4+		

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^{114}Sn(p,nγ) 1994Ga26 (continued)

γ(^{114}Sb) (continued)

E_γ	I_γ	E_i(level)	J^π_i	E_f	J^π_f	Mult.[†]	Comments
534.03 *14*	30.6 *11*	806.02	2+	272.02	1+		
544.3 *5*	42.3 *15*	809.21	3+	264.58	4+		
545.33 *3*	362 *14*	572.73	(2,3)	27.4	1+		A_2=−0.18 *5*; A_4=−0.03 *8*
565.76 *3*	127 *9*	565.76	4+	0.0	3+	M1,E2	A_2=−0.22 *8*; A_4=+0.07 *11* α(K)exp=0.0059 *8*
580.84 *5*	94 *4*	664.80	3+	83.84	2+	(M1),E2	α(K)exp=0.0042 *6*
597.98 *12*	80 *12*	869.92	0+	272.02	1+	M1,E2	α(K)exp=0.0050 *9*
600.7 *5*	15 *6*	945.25	(3)	344.49	3+		
618.9 *5*	15 *7*	763.62	1,2+	144.90	2+		
636.72 *3*	248 *10*	691.4	2+	54.63	3+	M1,(E2)	α(K)exp=0.0043 *4* A_2=+0.13 *10*; A_4=+0.23 *12*
664.26 *4*	253 *11*	691.4	2+	27.4	1+		α(K)exp=0.0035 *4*
[x]672.40 *16*	20.9 *10*						
679.82 *4*	95 *4*	763.62	1,2+	83.84	2+	M1,E2	α(K)exp=0.0034 *4*
684.15 *20*	8.8 *12*	948.73	4,5,6	264.58	4+		
718.8 *9*	60 *40*	990.76	1,2	272.02	1+		I_γ: estimated value.
722.14 *7*	100 *8*	806.02	2+	83.84	2+		A_2=+0.42 *17*; A_4=+0.26 *20*
726.9 *1*	200 *6*	871.90	(1+)	144.90	2+	M1,(E2)	α(K)exp=0.00306 *23*
736.00 *9*	234 *9*	763.62	1,2+	27.4	1+	M1,(E2)	α(K)exp=0.00307 *22*
745.7 *4*	38.7 *14*	1017.48		272.02	1+		
751.4 *3*	30 *4*	806.02	2+	54.63	3+		
778.62 *5*	152 *5*	806.02	2+	27.4	1+	M1,E2	α(K)exp=0.0025 *3* A_2=−0.31 *5*; A_4=−0.05 *5*
800.3 *4*	10.0 *19*	945.25	(3)	144.90	2+		
806.2 *3*	16.5 *8*	806.02	2+	0.0	3+		
809.22 *7*	59.6 *22*	809.21	3+	0.0	3+	M1,E2	α(K)exp=0.0018 *5*
842.5 *5*	79 *6*	869.92	0+	27.4	1+		
844.4 *5*	56 *14*	871.90	(1+)	27.4	1+		
845.9 *5*	56 *23*	990.76	1,2	144.90	2+		
860.2 *5*	≤61.5[‡]	1005.1		144.90	2+	[#]	
861.4 *5*	≤61.5[‡]	945.25	(3)	83.84	2+	[#]	
933.6 *3*	29.6 *19*	1017.48		83.84	2+		

[†] The internal conversion coefficients were normalized with the ^{116}Sb transitions present in the target (9%).

[‡] Iγ=59.2 *23* for 860.2+861.4 γ′s.

[#] α(K)exp=0.0020 *5* for 860.2+861.4 γ′s.

[@] 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.

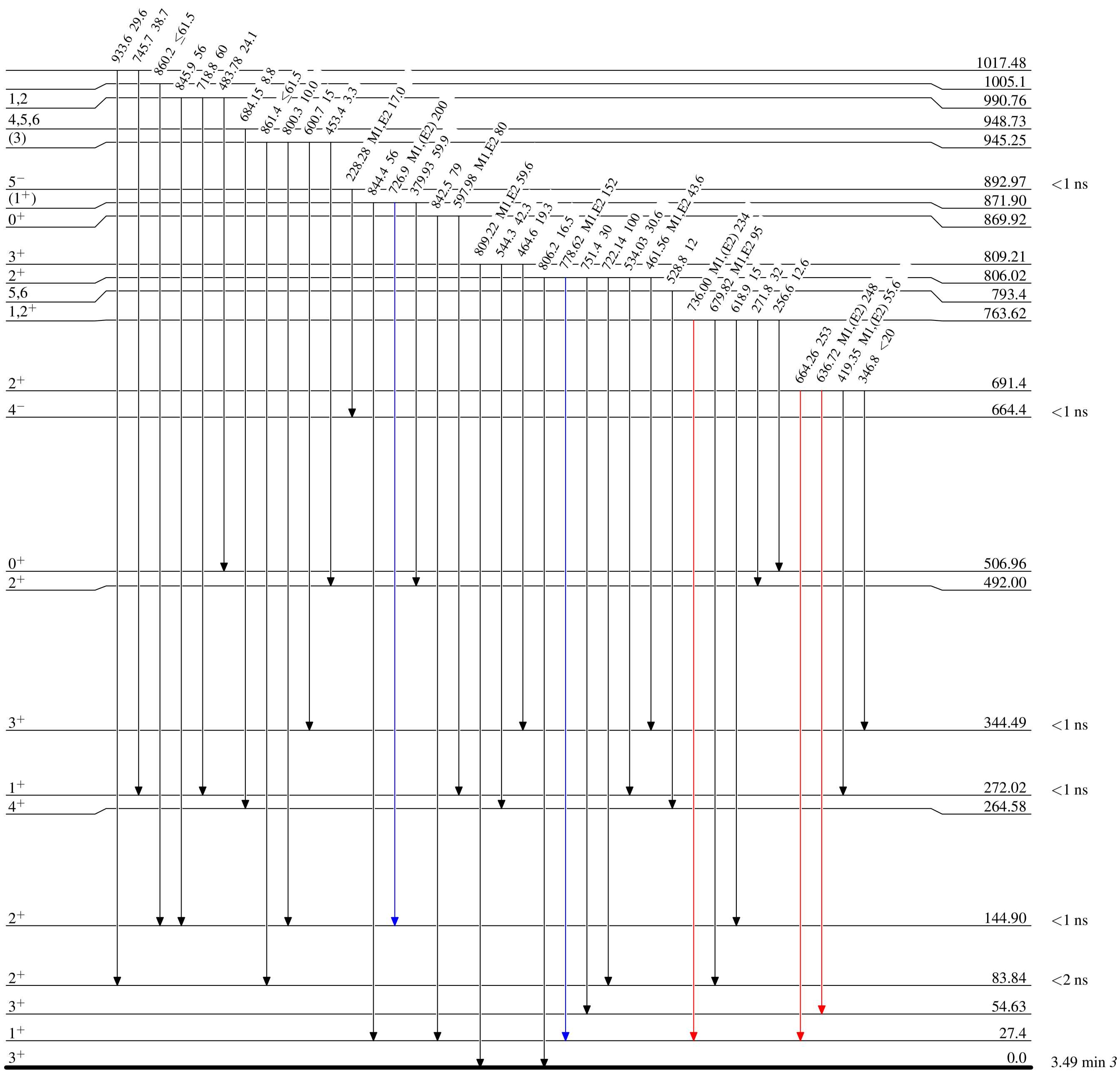
^{114}Sn(p,nγ) 1994Ga26

Level Scheme

Intensities: Relative I_γ

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$



$^{114}_{51}Sb_{63}$

^{114}Sn(p,nγ) 1994Ga26

Level Scheme (continued)

Intensities: Relative I_γ