^{121}Sb(n,n′γ), ^{120}Sn(p,γ) 1971Ba47,1979Ho28

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	S. Ohya	NDS 111, 1619 (2010)	20-Jan-2009

1971Ba47: neutron sources: ^{7}Li(p,n) and ^{3}H(d,n), E(n)=0.6-1.9 MeV, natural target.
1979Ho28: ^{3}H(p,n) E(n)=1.5-2.7 MeV; Eγ, γ(θ); also studied ^{120}Sn(p,γ) E(p)=3.4 MeV; deduced spins and δ.
The level scheme is that proposed by 1979Ho28 based on energy sums; assignment of observed γ rays were made from threshold behavior and consistencies in the constructed decay scheme to the known levels of ^{121}Sb.
1971Ba47 give a slightly different decay scheme.

^{121}Sb Levels

E(level)‡	Jπ†	Comments
0.0	5/2+	
37.33 *14*	7/2+	
507.63 *10*	3/2+	
573.14 *13*	1/2+	
947.42 *20*	9/2+	
1024.90 *20*	7/2+	
1036.1 *3*	9/2+	
1139.7 *5*	9/2+,11/2+	
1145.0 *3*	9/2+	
1322.3 *3*	(11/2+)	
1385.5 *4*	+	
1407.28 *22*	1/2+,3/2,5/2+	
1427.4 *3*	(11/2)−	
1447.6 *3*	3/2+,5/2+,7/2+	
1471.2 *4*	+	
1474.6 *7*	+	
1509.0 *7*	+	
1519.3 *4*	+	
1590.5 *6*		E(level): The authors report 1590.5 γ transition whose placement to the 37 level. However, a 1590.4 level is reported in (γ,γ′). Evaluators reassign the γ-ray to a 1590.5 level.
1612.7 *8*	+	E(level): The authors report a 1575.4 transition whose placement is either to gs or to the 37 level. A 1612 level is reported in (p,t), so the placement to the 37 level, giving E(Level)=1612.5 is established.
1630.1		
1736.3 *5*	+	
1810.9 *6*	1/2+,3/2+	

† From Adopted Levels.
‡ E(levels) with γ decay are from least-squares fit to Eγ′s.

γ(^{121}Sb)

Eγ†	Iγ‡	Ei(level)	Jiπ	Ef	Jfπ	Comments
37.13	100	37.33	7/2+	0.0	5/2+	Eγ: rounded-off value from adopted gammas.
282.5 *3*	41	1427.4	(11/2)−	1145.0	9/2+	
374.9 *2*	100	1322.3	(11/2+)	947.42	9/2+	
391.3 *2*	59	1427.4	(11/2)−	1036.1	9/2+	
470.34 *13*	6	507.63	3/2+	37.33	7/2+	Iγ: from 1971Ba47.
507.6 *1*	94	507.63	3/2+	0.0	5/2+	Eγ: from adopted gammas. Iγ: from 1971Ba47.
573.16 *13*	100	573.14	1/2+	0.0	5/2+	

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^{121}Sb(n,n′γ), ^{120}Sn(p,γ) 1971Ba47,1979Ho28 (continued)

γ(^{121}Sb) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ [#]	α [@]	Comments
834.2 *2*	52	1407.28	1/2+,3/2,5/2+	573.14	1/2+				
898.1 *3*		1471.2	+	573.14	1/2+				
910.0 *2*	83	947.42	9/2+	37.33	7/2+	M1+E2		0.00189 *21*	α=0.00189 *21*; α(K)=0.00164 *19*; α(L)=0.000201 *19*; α(M)=4.0×10^{-5} *4*; α(N+..)=8.4×10^{-6} *8* α(N)=7.7×10^{-6} *8*; α(O)=7.6×10^{-7} *8* δ: −0.23 *11* or −2.4 *+6−9*.
940.0 *3*	25	1447.6	3/2+,5/2+,7/2+	507.63	3/2+				
947.6 *3*	17	947.42	9/2+	0.0	5/2+				
998.7 *3*	100	1036.1	9/2+	37.33	7/2+	M1+E2		0.00153 *17*	α=0.00153 *17*; α(K)=0.00133 *15*; α(L)=0.000162 *16*; α(M)=3.2×10^{-5} *3*; α(N+..)=6.8×10^{-6} *7* α(N)=6.2×10^{-6} *6*; α(O)=6.1×10^{-7} *7* δ: −0.34 *+20−24* or −1.8 *+60−18*
1024.9 *2*	100	1024.90	7/2+	0.0	5/2+	M1+E2	−1.9 *18*	0.00136 *24*	α=0.00136 *24*; α(K)=0.00118 *21*; α(L)=0.000145 *23*; α(M)=2.9×10^{-5} *5*; α(N+..)=6.1×10^{-6} *10* α(N)=5.5×10^{-6} *9*; α(O)=5.4×10^{-7} *10*
1102.4 *4*	100	1139.7	9/2+,11/2+	37.33	7/2+				
1107.7 *4*	42	1145.0	9/2+	37.33	7/2+	M1+E2	−1.8 *17*	0.00115 *19*	α=0.00115 *19*; α(K)=0.00100 *17*; α(L)=0.000122 *19*; α(M)=2.4×10^{-5} *4*; α(N+..)=5.7×10^{-6} *8* α(N)=4.6×10^{-6} *7*; α(O)=4.6×10^{-7} *8*; α(IPF)=5.9×10^{-7} *6*
1145.0 *4*	58	1145.0	9/2+	0.0	5/2+				
1385.5 *4*	100	1385.5	+	0.0	5/2+				
1406.9 *5*	48	1407.28	1/2+,3/2,5/2+	0.0	5/2+				
1410.2 *4*	75	1447.6	3/2+,5/2+,7/2+	37.33	7/2+				
1437.3 *6*		1474.6	+	37.33	7/2+				
1470.8[&a] *6*		1471.2	+	0.0	5/2+				
1470.8[&a] *6*		1509.0	+	37.33	7/2+				
1473.3[a] *16*		1474.6	+	0.0	5/2+				
1481.8 *6*	25	1519.3	+	37.33	7/2+				
1509.0 *7*		1509.0	+	0.0	5/2+				
1519.3 *4*	75	1519.3	+	0.0	5/2+				
1575.4 *7*	100	1612.7	+	37.33	7/2+				
1590.5 *6*	100	1590.5		0.0	5/2+				
1630.1 *20*	100	1630.1		0.0	5/2+				E_γ: from 1971Ba47.
1736.3 *5*	100	1736.3	+	0.0	5/2+				
1810.9 *6*	100	1810.9	1/2+,3/2+	0.0	5/2+				

[†] From 1979Ho28.
[‡] From 1979Ho28, photon branching from each level. The authors state that the uncertainties in the branchings are about 4%.

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^{121}Sb(n,n′γ), ^{120}Sn(p,γ) 1971Ba47,1979Ho28 (continued)

γ(^{121}Sb) (continued)

From γ(θ) (1979Ho28).
@ 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.
& Multiply placed.
a Placement of transition in the level scheme is uncertain.

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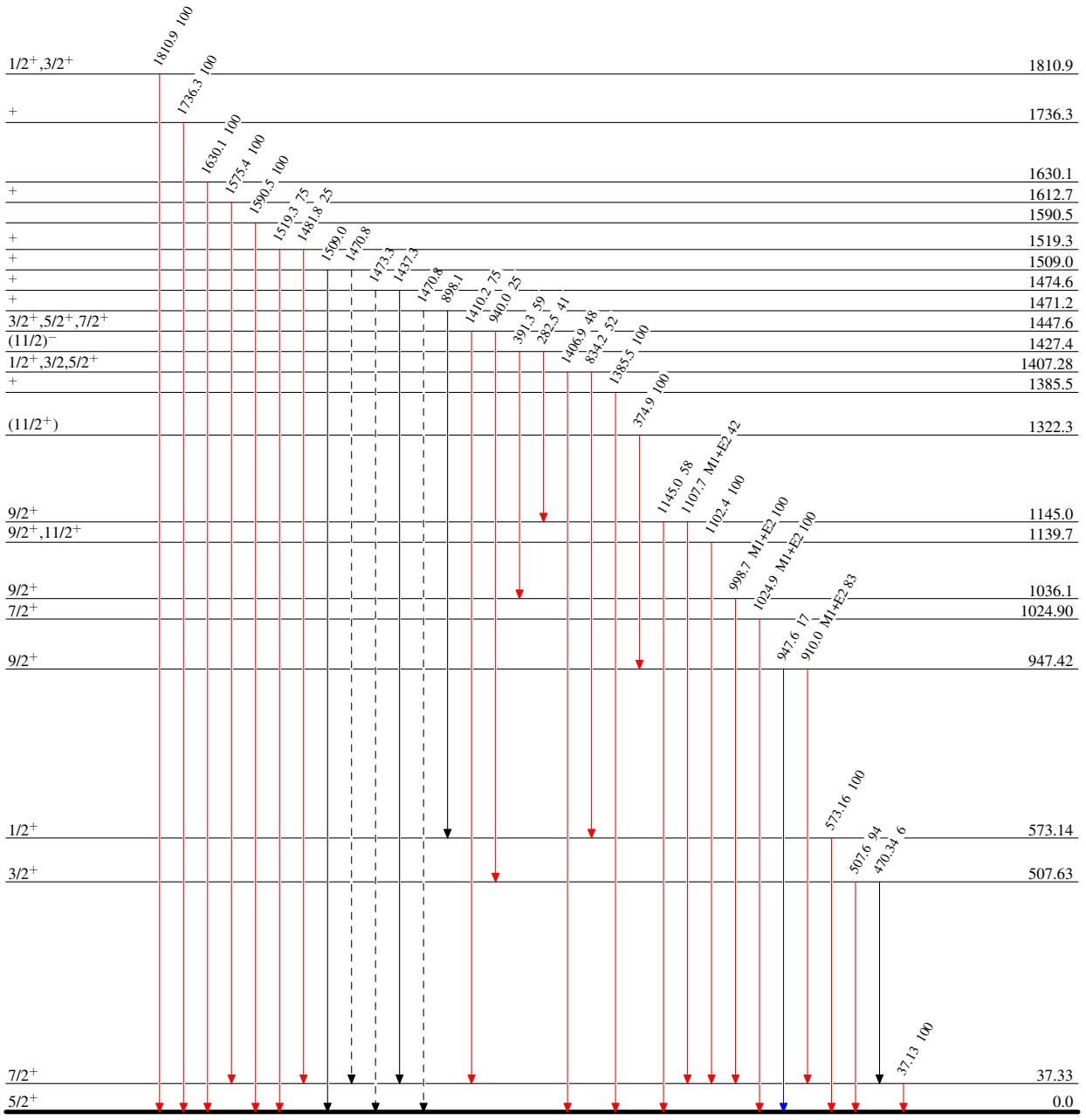
Level Scheme

Intensities: Relative I_γ

Legend

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



$^{121}_{51}Sb_{70}$