^{115}In(α,2nγ) 1995Lo13,1987Io01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	ENSDF	1-Mar-2009

1995Lo13: E=27.2 MeV γ, $\gamma\gamma$, γ(t), $\gamma(\theta)$.
1995LoZZ, 1998Lo15: E=27.3 MeV γ(t).
1990Ko42: E=26, 27 MeV γ, $\gamma\gamma$, γ(t).
1987Io01: E= 27 MeV γ, $\gamma\gamma$, $\gamma(\theta)$, $\gamma(\theta$,H,t).
1980Le05: E= 27 MeV, $\gamma(\theta$,H,t).
1978Su05: E= 22 MeV, γ(t), ce(t).
1975Fr10, 1970He13: E=21– 27 MeV, $\gamma\gamma$-coin, $\gamma(\theta)$, γ(t), Ice/Iγ.
1975Iv02: E= 24 MeV, $\gamma(\theta$,H,t).
1972Me15: E= 25 MeV, $\gamma(\theta$,H,t).
The level scheme is as given by 1995Lo13.
See Adopted Levels for band structure.

^{117}Sb Levels

E(level)	J^π[†]	$T_{1/2}$[‡]	Comments
0	$5/2^+$		
527.32 *8*	$7/2^+$		
923.9 *2*	$3/2^+$	0.52 ps *+17−14*	
1089.38 *14*	$(9/2^+)$		J^π: $J^\pi=7/2^+$ in Adopted Levels.
1160.01 *9*	$9/2^+$	>2 ps	
1310.60 *15*	$(9/2)^+$	2.0 ps *6*	
1322.92 *12*	$11/2^-$	3.8 ns *2*	g=0.971 *17* (1980Le05) $T_{1/2}$: from 1980Le05. Others: 3.9 ns *2* (1978Su05), 3.5 ns *3* (1990Ko42); $T_{1/2}$= 1.5 ns *3*, reported by 1975Fr10 not used.
1396.03 *22*			
1487.73 *18*		0.8 ps *3*	
1534.65 *12*	$11/2^+$		
1536.54 *13*	$(9/2^+)$		
1710.63 *22*	$(11/2^+)$	1.4 ps *+4−3*	
1761.21 *12*	$(9/2^+)$		
1871.59 *13*	$13/2^+$		
2033.39 *24*	$(11/2^+)$		
2040.03 *18*	$(11/2^+)$	1.4 ps *+14−3*	
2187.40 *18*	$(13/2^+)$	0.7 ps *+4−2*	
2228.40 *25*		≈0.5 ps	
2237.60 *14*	$15/2^+$		
2242.01 *24*	$(13/2^+)$		
2323.09 *13*	$(15/2)^-$	>2 ps	
2412.80 *17*	$15/2^-$		
2525.33 *15*	$(17/2)^-$		
2527.3 *3*	$(15/2^+)$		
2624.79 *14*	$17/2^+$	≈1 ps	
2778.6 *3*	$(17/2^+)$	>1.4 ps	
2780.28 *15*	$(19/2)^-$	0.50 ns *15*	$T_{1/2}$: from 1990Ko42.
2841.89 *14*	17/2	1.1 ps *+4−3*	
2845.8 *3*	$(19/2^-)$		
2851.43[#] *25*			E(level): not adopted, not seen in (HI,xnγ).
2875.36 *14*	$(19/2)^-$	<0.2 ns	$T_{1/2}$: from 1990Ko42.
3057.59 *24*	$19/2^+$		
3072.85 *15*	$(21/2)^-$	<0.1 ns	$T_{1/2}$: from 1990Ko42.
3098.48[#] *25*			
3131.0 *8*	$25/2^+$		

Continued on next page (footnotes at end of table)

^{115}In(α,2nγ) 1995Lo13,1987Io01 (continued)

^{117}Sb Levels (continued)

E(level)	J^{π}[†]	$T_{1/2}$[‡]	Comments
3173.98[#] *25*			
3214.31 *15*	19/2$^-$	>1.4 ps	
3230.6 *8*	23/2$^-$	290 ns *5*	g=+0.437 *5* (1987Io01); Q>1.7 (1987Io01) $T_{1/2}$: from 1987Io01.
3416.6 *4*	(23/2$^-$)	1.0 ps *3*	
3495.2[#] *4*			
3502.45[#] *25*			
3522.7 *4*	(21/2$^+$)		
3789.0[#] *4*			E(level): not adopted, not seen in (HI,xnγ).
4001.6 *4*	(23/2$^+$)		

[†] From 1987Io01 and 1995Lo13 based on γ mult.
[‡] From 1995LoZZ and 1998Lo15, unless otherwise noted.
[#] Given only by 1995Lo13.

$\gamma(^{117}Sb)$

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[@]	α[a]	$I_{(\gamma+ce)}$	Comments
12		1322.92	11/2$^-$	1310.60	(9/2)$^+$				<42	E_γ: not seen, required by decay scheme. Eγ from E(level) difference.
16.4		3230.6	23/2$^-$	3214.31	19/2$^-$	E2		2760	552 *12*	B(E2)(W.u.)=18 *6* $I_{(\gamma+ce)}$: from intensity balance. Mult.: 1987Io01 assigned E2 because if it was E1(α=4.4) or M1(α=16.6) it would have been seen. M2 is excluded from $T_{1/2}$.
58.1		3131.0	25/2$^+$	3072.85	(21/2)$^-$					
61.6 *1*	0.16 *4*	2841.89	17/2	2780.28	(19/2)$^-$					I_γ: from 1987Io01.
99.6 *1*		3230.6	23/2$^-$	3131.0	25/2$^+$					Iγ= 2.0 *6*.
141.5 *2*	4 *1*	3214.31	19/2$^-$	3072.85	(21/2)$^-$					I_γ: from 1987Io01.
163.1 *2*	6.4 *3*	1322.92	11/2$^-$	1160.01	9/2$^+$	E1		0.048		
197.4 *1*	18.0 *3*	3072.85	(21/2)$^-$	2875.36	(19/2)$^-$	M1+E2	0.11 *2*	0.09		α(K)exp=0.082 *4* B(M1)(W.u.)>0.018; B(E2)(W.u.)>2.7
202.2 *2*	29.8 *5*	2525.33	(17/2)$^-$	2323.09	(15/2)$^-$	M1		0.089		α(K)exp=0.076 *3*
250.5 *2*	6.3 *2*	2875.36	(19/2)$^-$	2624.79	17/2$^+$	E1		0.014		α(K)exp=0.0106 *18* B(E1)(W.u.)>1.7×10^{-5}
254.6 *2*		2780.28	(19/2)$^-$	2525.33	(17/2)$^-$	(M1)		0.048		α(K)exp=0.0371 *14* I_γ: masked by ^{118}Sb contaminant; Iγ=12.8 *2* in prompt coin (1987Io01).
292.6 *1*	7.6 *2*	3072.85	(21/2)$^-$	2780.28	(19/2)$^-$	M1+E2	0.14 *4*	0.0374 *4*		α(K)exp=0.0394 *15* B(M1)(W.u.)>0.0023; B(E2)(W.u.)>0.17
316.6 *1*	1.6 *2*	2841.89	17/2	2525.33	(17/2)$^-$					
318.2[&] *2*	15.1 *3*	3098.48		2780.28	(19/2)$^-$					
326.1[&] *2*	4.5 *2*	2851.43		2525.33	(17/2)$^-$					
336.9 *1*	40.8 *5*	1871.59	13/2$^+$	1534.65	11/2$^+$	M1,E2				α(K)exp=0.0208 *10*
339.1[b] *2*		3214.31	19/2$^-$	2875.36	(19/2)$^-$					E_γ: not seen by 1995Lo13.
350.0 *1*	9.9 *3*	2875.36	(19/2)$^-$	2525.33	(17/2)$^-$	M1,E2		0.022 *1*		α(K)exp=0.0207 *13*
366.0 *1*	28.2 *4*	2237.60	15/2$^+$	1871.59	13/2$^+$	M1,E2		0.0193 *4*		α(K)exp=0.0182 *8*
367.7 *2*	0.8 *1*	2780.28	(19/2)$^-$	2412.80	15/2$^-$					α(K)exp=0.0094 *10*
372.5 *2*	4.1 *2*	3214.31	19/2$^-$	2841.89	17/2					
374.6 *1*	59.2 *6*	1534.65	11/2$^+$	1160.01	9/2$^+$	M1,E2		0.0180 *3*		α(K)exp=0.0157 *6*
387.2 *1*	20.9 *5*	2624.79	17/2$^+$	2237.60	15/2$^+$	M1+E2	0.15 *5*	0.0165 *1*		α(K)exp=0.0143 *6* B(M1)(W.u.)=0.280 *5*; B(E2)(W.u.)=32 *21*
393.7[&] *2*	3.7 *2*	3173.98		2780.28	(19/2)$^-$					
396.7[&] *2*	5.0 *2*	3495.2		3098.48						
426.3[&] *2*	2.0 *1*	2187.40	(13/2$^+$)	1761.21	(9/2$^+$)	(E2)				B(E2)(W.u.)=5.E+2 *3*
429.6[&] *2*	2.8 *1*	3502.45		3072.85	(21/2)$^-$					
432.8[&] *2*	7.4 *3*	3057.59	19/2$^+$	2624.79	17/2$^+$					
433.0[&] *2*	8.2 *3*	2845.8	(19/2$^-$)	2412.80	15/2$^-$					

^{115}In(α,2nγ) 1995Lo13,1987Io01 (continued)

$\gamma(^{117}Sb)$ (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[@]	α[a]	Comments
433.5 *2*		3214.31	$19/2^-$	2780.28	$(19/2)^-$				E_γ: not seen by 1995Lo13, but seen in (HI,xnγ).
447.1[&] *2*	0.5 *1*	1536.54	$(9/2^+)$	1089.38	$(9/2^+)$				
457.1 *2*	6.5 *2*	2780.28	$(19/2)^-$	2323.09	$(15/2)^-$	E2		0.010	B(E2)(W.u.)=1.5 *5*
462.4 *2*	5.0 *2*	2875.36	$(19/2)^-$	2412.80	$15/2^-$				α(K)exp=0.013 *3*
465.1[&] *2*	3.2 *1*	3522.7	$(21/2^+)$	3057.59	$19/2^+$	M1+E2	0.11 *3*		
478.9[&] *2*	1.3 *1*	4001.6	$(23/2^+)$	3522.7	$(21/2^+)$	M1+(E2)	0.04 *4*		
480.8[&] *2*	1.2 *1*	2242.01	$(13/2^+)$	1761.21	$(9/2^+)$	(E2)			
518.8 *1*	2.7 *1*	2841.89	17/2	2323.09	$(15/2)^-$				
527.3 *1*	100 *3*	527.32	$7/2^+$	0	$5/2^+$	M1(+E2)	−0.06 *6*	0.0077	
547.8 *2*	1.0 *1*	3072.85	$(21/2)^-$	2525.33	$(17/2)^-$				E_γ: seen by 1975Fr10.
552.3[&] *2*	3.2 *3*	2040.03	$(11/2^+)$	1487.73					
552.3 *1*	10.8 *4*	2875.36	$(19/2)^-$	2323.09	$(15/2)^-$	E2		0.006	B(E2)(W.u.)>0.54
570.8[&] *2*	6.7 *2*	3416.6	$(23/2^-)$	2845.8	$(19/2^-)$				
589.6 *2*	4.7 *2*	3214.31	$19/2^-$	2624.79	$17/2^+$	E1			B(E1)(W.u.)<0.00029
591.2 *2*	4.9 *2*	2778.6	$(17/2^+)$	2187.40	$(13/2^+)$	E2			B(E2)(W.u.)<1.6×10^2
604.2 *2*	7.7 *2*	2841.89	17/2	2237.60	$15/2^+$	M1(+E2)	0.02 *4*		B(M1)(W.u.)=0.057 *21*; B(E2)(W.u.)=0.05 *+20−5* Mult.: E1 in Adopted Levels from (HI,xnγ).
632.8 *2*	2.6 *2*	1160.01	$9/2^+$	527.32	$7/2^+$	(E2)			B(E2)(W.u.)<2.5
671.9[&] *2*	6.9 *2*	1761.21	$(9/2^+)$	1089.38	$(9/2^+)$				
702.9 *2*	6.0 *2*	2237.60	$15/2^+$	1534.65	$11/2^+$	(E2)		0.003	
711.7 *2*	6.1 *2*	1871.59	$13/2^+$	1160.01	$9/2^+$	(E2)		0.003	
753.2 *1*	6.4 *2*	2624.79	$17/2^+$	1871.59	$13/2^+$	(E2)		0.0027	α(K)exp=0.0029 *9* B(E2)(W.u.)=2.E+1 *+20−2*
783.2 *3*	6.5 *2*	1310.60	$(9/2)^+$	527.32	$7/2^+$	M1+E2	−0.16 *8*		B(M1)(W.u.)=0.0036 *11*; B(E2)(W.u.)=0.11 *11*
795.5 *2*	30.0 *7*	1322.92	$11/2^-$	527.32	$7/2^+$	M2		0.007	α(K)exp=0.0065 *4*
801.6 *2*		3214.31	$19/2^-$	2412.80	$15/2^-$				E_γ: not seen by 1995Lo13, but seen in (HI,xnγ).
816.7[&] *2*	4.5 *2*	2527.3	$(15/2^+)$	1710.63	$(11/2^+)$	(E2)			
868.7[&] *2*	0.8 *1*	1396.03		527.32	$7/2^+$				
876.7[&] *2*	5.2 *2*	2187.40	$(13/2^+)$	1310.60	$(9/2)^+$	E2			B(E2)(W.u.)=33 *19*
891.3 *2*	3.1 *2*	3214.31	$19/2^-$	2323.09	$(15/2)^-$				
917.8[&] *2*	2.6 *1*	2228.40		1310.60	$(9/2)^+$				
923.9 *2*		923.9	$3/2^+$	0	$5/2^+$				
937.6[&] *2*	3.8 *1*	3789.0		2851.43					
944.0[&] *2*	2.1 *1*	2033.39	$(11/2^+)$	1089.38	$(9/2^+)$				
960.4[&] *2*	12.6 *3*	1487.73		527.32	$7/2^+$				
1000.2 *1*	67.0 *8*	2323.09	$(15/2)^-$	1322.92	$11/2^-$	E2			α(K)exp=0.00118 *13* B(E2)(W.u.)<8.3
1009.2[&] *2*	9.0 *3*	1536.54	$(9/2^+)$	527.32	$7/2^+$	M1+E2	−0.4 *3*		
1089.4 *2*		1089.38	$(9/2^+)$	0	$5/2^+$				I_γ: the authors were unable to resolve the doublet.

$^{117}_{51}Sb_{66}$-4

^{115}In(α,2nγ) 1995Lo13,1987Io01 (continued)

$\gamma(^{117}Sb)$ (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[a]	Comments
1089.8 *2*		2412.80	$15/2^-$	1322.92	$11/2^-$	(E2)		α(K)exp=0.00097 *21* I_γ: the authors were unable to resolve the doublet.
1160.0 *1*	82 *3*	1160.01	$9/2^+$	0	$5/2^+$	E2	0.001	α(K)exp=0.00095 *9* B(E2)(W.u.)<3.8
1183.3[&] *2*	14.2 *3*	1710.63	$(11/2^+)$	527.32	$7/2^+$	(E2)		B(E2)(W.u.)=5.1 *15*
1233.8[&] *2*	2.0 *1*	1761.21	$(9/2^+)$	527.32	$7/2^+$			
1310.5 *2*	33.6 *8*	1310.60	$(9/2)^+$	0	$5/2^+$	E2		α(K)exp=0.00077 *33* B(E2)(W.u.)=1.8 *6*
1322.9 *2*	61.3 *9*	1322.92	$11/2^-$	0	$5/2^+$	E3		α(K)exp=0.00116 *18*
1512.7[&] *2*	2.5 *1*	2040.03	$(11/2^+)$	527.32	$7/2^+$	(E2)		B(E2)(W.u.)=0.7 *7*
1536.6[&] *2*	1.3 *1*	1536.54	$(9/2^+)$	0	$5/2^+$			
1761.3[&] *2*	1.8 *1*	1761.21	$(9/2^+)$	0	$5/2^+$			

[†] From 1987Io01, unless otherwise noted.
[‡] From 1995Lo13, unless otherwise noted.
[#] From α(K)exp (1975Fr10) and $\gamma(\theta)$ (1995Lo13).
[@] From $\gamma(\theta)$ (1995Lo13).
[&] Seen only by 1995Lo13.
[a] 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.
[b] Placement of transition in the level scheme is uncertain.

$^{117}_{51}Sb_{66}$-5

^{115}In(α,2nγ) 1995Lo13,1987Io01

Level Scheme

Intensities: Relative I_γ

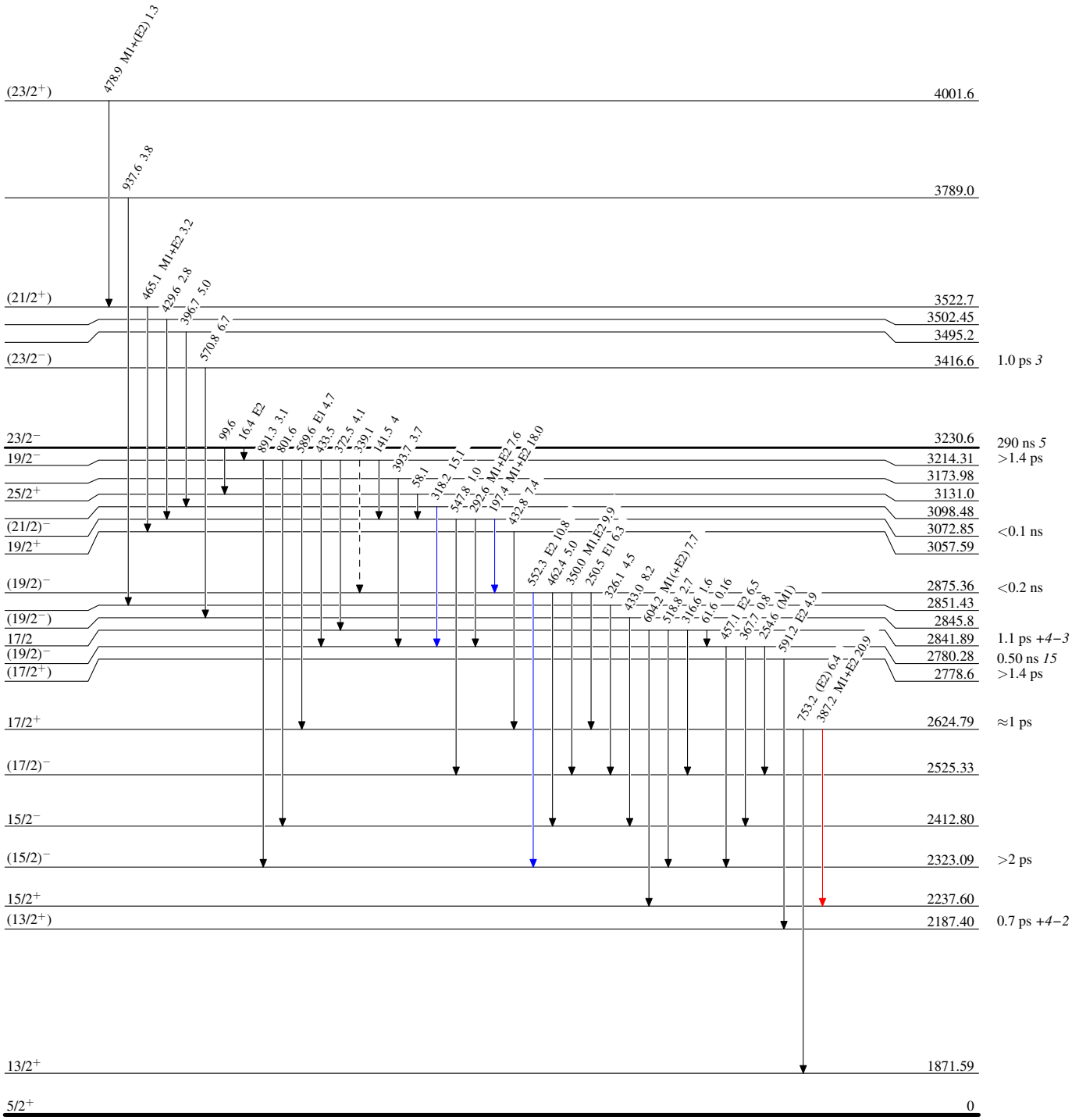
Legend

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

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

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

γ Decay (Uncertain)

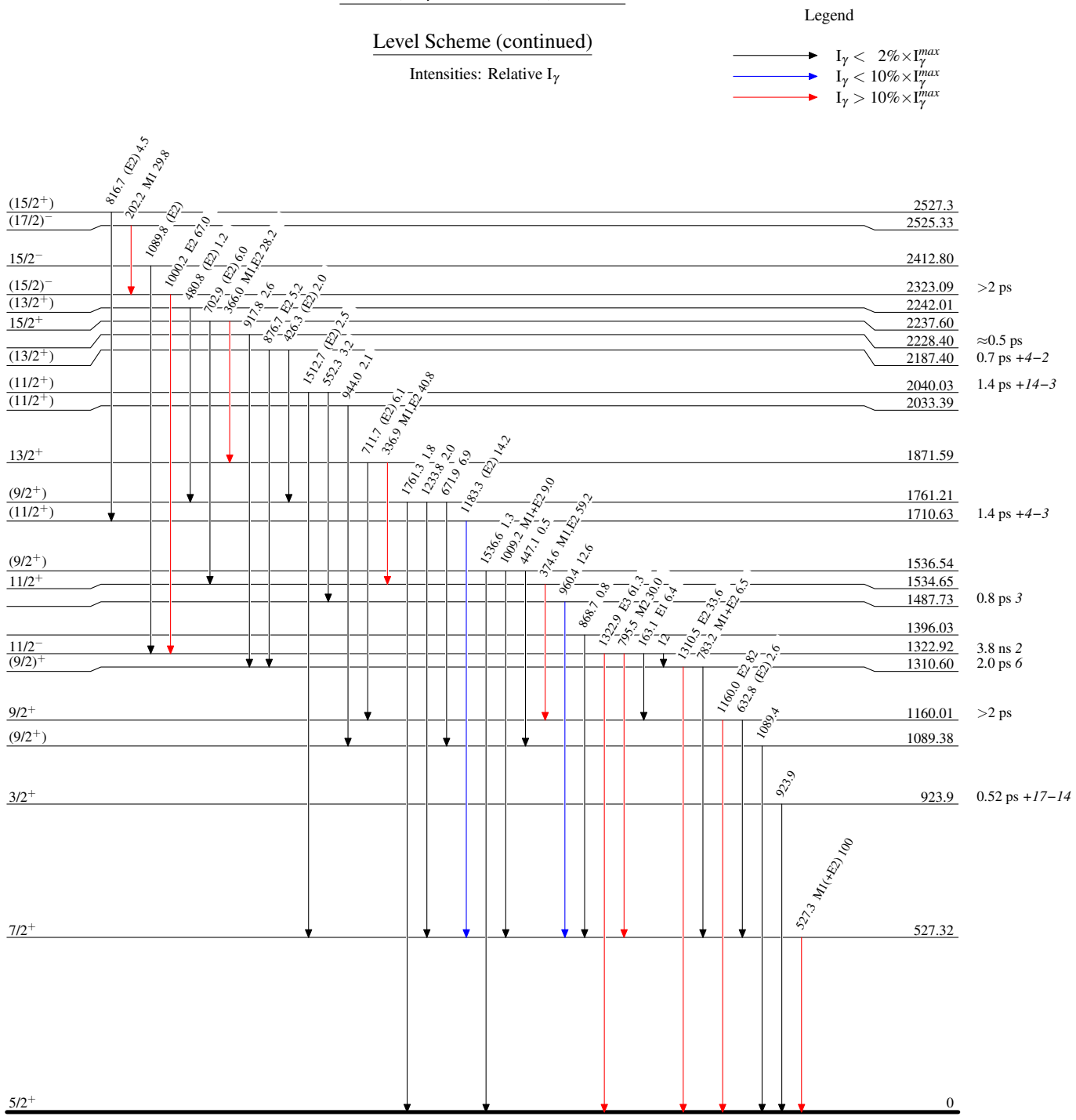


$^{117}_{51}Sb_{66}$

^{115}In(α,2nγ) 1995Lo13,1987Io01

Level Scheme (continued)

Intensities: Relative I_γ



$^{117}_{51}Sb_{66}$