

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	D. De Frenne and A. Negret	NDS	109,943 (2008)	1-May-2007

$Q(\beta^-) = -3254$ 14; $S(n) = 9039$ 16; $S(p) = 3563$ 13; $Q(\alpha) = -786$ 15 [2012Wa38](#)

Note: Current evaluation has used the following Q record $-318\text{E}+1$ 5 9197 213565 17-770 30 [2003Au03](#).

 ^{106}In LevelsCross Reference (XREF) Flags

A ^{106}Sn ε decay (115 s)
B $^{106}\text{Cd}(p,n\gamma)$
C (HI,xn γ)

E(level) [†]	J π [#]	T _{1/2}	XREF	Comments
0.0	7 ⁺	6.2 min 1	ABC	$\% \varepsilon + \% \beta^+ = 100$ $\mu = 4.916$ 6 (1985Lo18 , 1989Ra17) $Q = +0.97$ 6 (1989Ra17) rms charge radius: 4.5364 fm 96 (2004An14). T _{1/2} : from γ -decay curves (1978Hu06). Others: 6.35 min 20 (1976Fl14), 6.26 min 24 (1972Me02); γ -decay curves. J^π : J from NMR of on-line oriented ^{106}In (1987Va27) π from log $ft = 5.77$ and 5.90 to 6 ⁺ levels. μ : From optical hfs, isotope shifts. Other: 4.921 13 (1985Va06).
28.6 3	(2) ⁺	5.2 min 1	A	$\% \varepsilon + \% \beta^+ = 100$ From B(E4)(W.u.) ≤ 30 and $\alpha(28.6\gamma) = 8.17 \times 10^5$ one gets branching (IT) $< 0.04\%$. T _{1/2} : from γ -decay curves (1978Hu06). Others: 5.3 min 2 (1976Fl14), 5.33 min 6 (1972Me02), 5.32 min 5 (1969St18), 5.3 min 1 (1966Ca09); γ -decay curves. J^π : $J^\pi = 2^+$ suggested from strong γ feeding from 1 ⁺ levels; ε decay to 1795-keV level ($J^\pi = 0^+$) with log $ft = 7.10$ almost excludes $J^\pi = 3^+$ if decay schemes is complete, which is very probably not the case due to large Q value in ^{106}Sn ε, β^+ decay. log $f^{1u}t < 8.5$ for β branches to 632, 1494, 1716, 2104, 2253, and 2347 levels almost excludes $\pi = -$. $J^\pi = 3^+$ suggested from Hauser-Feshbach calculations. 1988Ba10 suggest 2 ⁺ from ^{106}Sn ε decay. E(level): from observation of γ decay of 390-keV level to $J^\pi = 7^+$ g.s. and 28.6-keV levels in $^{106}\text{Cd}(p,n\gamma)$.
123.2 1	(6,7,8,9 ⁺)		B	J^π : J > 5 from Hauser-Feshbach calculations. Observed γ to 7 ⁺ suggests $J^\pi < 9^+$.
147.18 [‡] 4	(7 ⁺)		C	Configuration = $\pi g_{9/2}^{-1} \otimes \nu g_{7/2}$.
151.1 4	(2) ⁺ @		AB	J^π : J = 1 or 2 from Hauser-Feshbach calculation. $\pi = +$ from allowed β transition (log $ft = 5.1$) and M1 to 28.6 level.
203.7 4	(3) ⁺ @		AB	J^π : J from Hauser-Feshbach calculations. $\pi = +$ from M1 to (2) ⁺ .
223.60 15	(5) &		B	
253.0 4	(3) ⁺ @		A	J^π : J = 3 from Hauser-Feshbach calculations $\pi = +$ from M1 s to (2) ⁺ .
306.2 4	(4) &		B	
390.0 3	(6)		B	J^π : γ to (4) level and J > 5 from Hauser-Feshbach calculations.
506.3 5	(1 ⁺)		AB	J^π : from log $ft > 5.5$ from 0 ⁺ .
753.3 5	(3,4) &		B	
758.9 4	(6,7)		B	J^π : γ to (5) suggests J ≤ 7 . $J^\pi > 5$ from Hauser-Feshbach calculations.
820.52 9	(8 ⁺)		C	Configuration = $\pi g_{9/2}^{-1} \otimes \nu g_{7/2}$.
893.0 6	1 ⁺		AB	J^π : from log $ft = 3.7$ from 0 ⁺ .
1117.62 13	(8 ⁺)		C	Configuration = $\pi g_{9/2}^{-1} \otimes \nu^3$, 4-qp state.
1218.7 9	1 ⁺		AB	J^π : from log $ft = 3.6$ from 0 ⁺ .
1307.08 7	(9 ⁺)		C	Configuration = $\pi g_{9/2}^{-1} \otimes \nu^3$, 4-qp state.

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Adopted Levels, Gammas (continued) ^{106}In Levels (continued)

E(level) [†]	J ^π [#]	XREF	Comments
1406.82 17	(9 ⁺)	C	Configuration= $\pi g_{9/2}^{-1} \otimes \nu^3$, 4-qp state.
1419.36 ^a 5	(8 ⁻)	C	Member of $\pi g_{9/2}^{-1} \otimes \nu h_{11/2}$ multiplet.
1602.2 15	1 ⁺	A	J ^π : from log <i>ft</i> =4.76 from 0 ⁺ .
1628.30 ^a 15	(9 ⁻)	C	Member of $\pi g_{9/2}^{-1} \otimes \nu h_{11/2}$ multiplet.
1713.69 20	(10 ⁺)	C	Configuration= $\pi g_{9/2}^{-1} \otimes \nu^3$, 4-qp state.
1925.3 15	1 ⁺	A	J ^π : from log <i>ft</i> =4.44 from 0 ⁺ .
1956.96 22	(11 ⁺)	C	Configuration= $\pi g_{9/2}^{-1} \otimes \nu^3$, 4-qp state.
2148.41 ^a 15	(10 ⁻)	C	Member of $\pi g_{9/2}^{-1} \otimes \nu h_{11/2}$ multiplet.
2174.21 23	(11 ⁺)	C	Configuration= $\pi g_{9/2}^{-1} \otimes \nu^3$, 4-qp state.
2730.88 ^a 15	(11 ⁻)	C	(9) ⁻ , 1628 coupled to first 2 ⁺ in ^{106}Sn .
3182.19 ^a 16	(12 ⁻)	C	(10) ⁻ , 2148 coupled to first 2 ⁺ in ^{106}Sn .
3217.00 ^b 17	(12 ⁻)	C	
3456.93 ^a 16	(13 ⁻)	C	
3638.81 ^b 21	(13 ⁻)	C	
3783.23 ^a 17	(14 ⁻)	C	
4007.10 ^b 23	(14 ⁻)	C	
4331.58 ^a 22	(15 ⁻)	C	
4486.4 ^b 3	(15 ⁻)	C	
4980.3 ^b 6	(16 ⁻)	C	
5483.2 ^b 7	(17 ⁻)	C	

[†] Calculated using least-squares procedure using all available data.

[‡] Mixed configurations: $\pi g_{9/2}^{-1} \otimes \nu d_{5/2}$ and $\pi g_{9/2}^{-1} \otimes \nu g_{7/2}$. The dominant component for each is listed under comments.

[#] Unless noted otherwise, from band structure and $\gamma(\theta)$ in (HI,xn γ).

@ From log *ft* values and/or measured $\alpha(K)\text{exp}$'s in ^{106}Sn ε decay scheme and/or Hauser-Feshbach calc in $^{106}\text{Cd}(p,n\gamma)$.

& From Hauser-Feshbach calc in $^{106}\text{Cd}(p,n\gamma)$.

^a Band(A): Negative parity yrast structure.

^b Band(B): (12⁻) sequence.

 $\gamma(^{106}\text{In})$

E _i (level)	J _i ^π	E _γ	I _γ [†]	E _f	J _f ^π	Mult. [‡]
123.2	(6,7,8,9 ⁺)	123.20 10	100	0.0	7 ⁺	
147.18	(7 ⁺)	147.18 4	100	0.0	7 ⁺	
151.1	(2) ⁺	122.50 10	100	28.6	(2) ⁺	M1
203.7	(3) ⁺	52.60 10	100	151.1	(2) ⁺	M1
223.60	(5)	100.40 10	100	123.2	(6,7,8,9 ⁺)	
253.0	(3) ⁺	49.30 10	15	203.7	(3) ⁺	M1
		101.90 10	10	151.1	(2) ⁺	M1
		224.40 20	100	28.6	(2) ⁺	
306.2	(4)	155.10 10	100	151.1	(2) ⁺	
390.0	(6)	83.80 20		306.2	(4)	
		266.8 3		123.2	(6,7,8,9 ⁺)	
506.3	(1 ⁺)	253.30 20	93	253.0	(3) ⁺	
		355.0 1	3.4	151.1	(2) ⁺	
		477.5 3	100	28.6	(2) ⁺	
753.3	(3,4)	247.0 10		506.3	(1 ⁺)	
		447.0 10		306.2	(4)	
		602.3 3		151.1	(2) ⁺	
		725.0 10		28.6	(2) ⁺	

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Adopted Levels, Gammas (continued)

$\gamma(^{106}\text{In})$ (continued)							
$E_i(\text{level})$	J_i^π	E_γ	$I_\gamma^\dagger$	E_f	J_f^π	Mult. [‡]	Comments
758.9	(6,7)	369.0 3		390.0	(6)		
		535.0 10		223.60	(5)		
820.52	(8 ⁺)	673.38 9	100 9	147.18	(7 ⁺)		
		820.2 2	42 7	0.0	7 ⁺		
893.0	1 ⁺	386.8 3	100	506.3	(1 ⁺)		
		864.0 10	62	28.6	(2) ⁺		
1117.62	(8 ⁺)	970.3 2	95 19	147.18	(7 ⁺)		
		1117.8 2	100 19	0.0	7 ⁺		
1218.7	1 ⁺	326.0 10	21 12	893.0	1 ⁺		
		712.0 10	73	506.3	(1 ⁺)		
		1190.0 5	100	28.6	(2) ⁺		
1307.08	(9 ⁺)	1307.08 7	100	0.0	7 ⁺		
1406.82	(9 ⁺)	586.24 17	100	820.52	(8 ⁺)		
1419.36	(8 ⁻)	1272.1 3	4.7 12	147.18	(7 ⁺)		
		1419.35 5	100 5	0.0	7 ⁺	D+Q	$\Delta J=1,0$ and $\delta=0$ or -11.4 in $^{90}\text{Zr}(^{19}\text{F},3n\gamma)$ (1981Wi10).
1602.2	1 ⁺	1096.3	100	506.3	(1 ⁺)		
1628.30	(9 ⁻)	208.9 2	100 3	1419.36	(8 ⁻)	D+Q	$\Delta J=1,0$ and $\delta=-0.03$ or 1.3 in $^{90}\text{Zr}(^{19}\text{F},3n\gamma)$ (1981Wi10).
		510.71 14	11.3 12	1117.62	(8 ⁺)		
1713.69	(10 ⁺)	306.79 18	47 8	1406.82	(9 ⁺)		
		406.8 3	100 30	1307.08	(9 ⁺)		
1925.3	1 ⁺	1419.4	100	506.3	(1 ⁺)		
1956.96	(11 ⁺)	243.27 10	100	1713.69	(10 ⁺)		
2148.41	(10 ⁻)	520.10 3	100	1628.30	(9 ⁻)	D+Q	$\Delta J=2,1,0$ and $\delta=+8.1$ or -0.17 or $+0.6$ in $^{90}\text{Zr}(^{19}\text{F},3n\gamma)$ (1981Wi10).
2174.21	(11 ⁺)	460.52 11	100	1713.69	(10 ⁺)		
2730.88	(11 ⁻)	582.46 4	100 4	2148.41	(10 ⁻)	D+Q	$\Delta J=1,0$ and $\delta=-0.05$ or 1.15 in $^{90}\text{Zr}(^{19}\text{F},3n\gamma)$ (1981Wi10).
		1102.7 3	6.7 11	1628.30	(9 ⁻)		
3182.19	(12 ⁻)	451.30 5	100 6	2730.88	(11 ⁻)	D+Q	$\Delta J=1$ and $\delta=-0.01$ in $^{90}\text{Zr}(^{19}\text{F},3n\gamma)$ (1981Wi10).
		1034.1 2	10 2	2148.41	(10 ⁻)		
		1225 [#]		1956.96	(11 ⁺)		
3217.00	(12 ⁻)	486.07 8	100	2730.88	(11 ⁻)		
3456.93	(13 ⁻)	239.27 11	14.6 16	3217.00	(12 ⁻)		
		274.74 3	100 4	3182.19	(12 ⁻)	D+Q	$\Delta J=1$ and $\delta=-0.07$ in $^{90}\text{Zr}(^{19}\text{F},3n\gamma)$ (1981Wi10).
3638.81	(13 ⁻)	421.69 14	100 11	3217.00	(12 ⁻)		
		457.2 3	52 10	3182.19	(12 ⁻)		
3783.23	(14 ⁻)	326.30 5	100	3456.93	(13 ⁻)	D+Q	$\Delta J=1$ and $\delta=-0.03$ in $^{90}\text{Zr}(^{19}\text{F},3n\gamma)$ (1981Wi10).
4007.10	(14 ⁻)	368.29 8	100	3638.81	(13 ⁻)		
4331.58	(15 ⁻)	548.35 14	100	3783.23	(14 ⁻)		
4486.4	(15 ⁻)	479.27 16	100	4007.10	(14 ⁻)		
4980.3	(16 ⁻)	493.9 5	100	4486.4	(15 ⁻)		
5483.2	(17 ⁻)	502.9 4	100	4980.3	(16 ⁻)		

[†] Relative photon branchings for each level decaying by more than one γ ray were taken from ^{106}Sn ε decay or (HI,xn γ).[‡] From $\alpha(\text{K})\text{exp}$ and $\alpha(\text{L})\text{exp}$ in ^{106}Sn ε decay.[#] Placement of transition in the level scheme is uncertain.

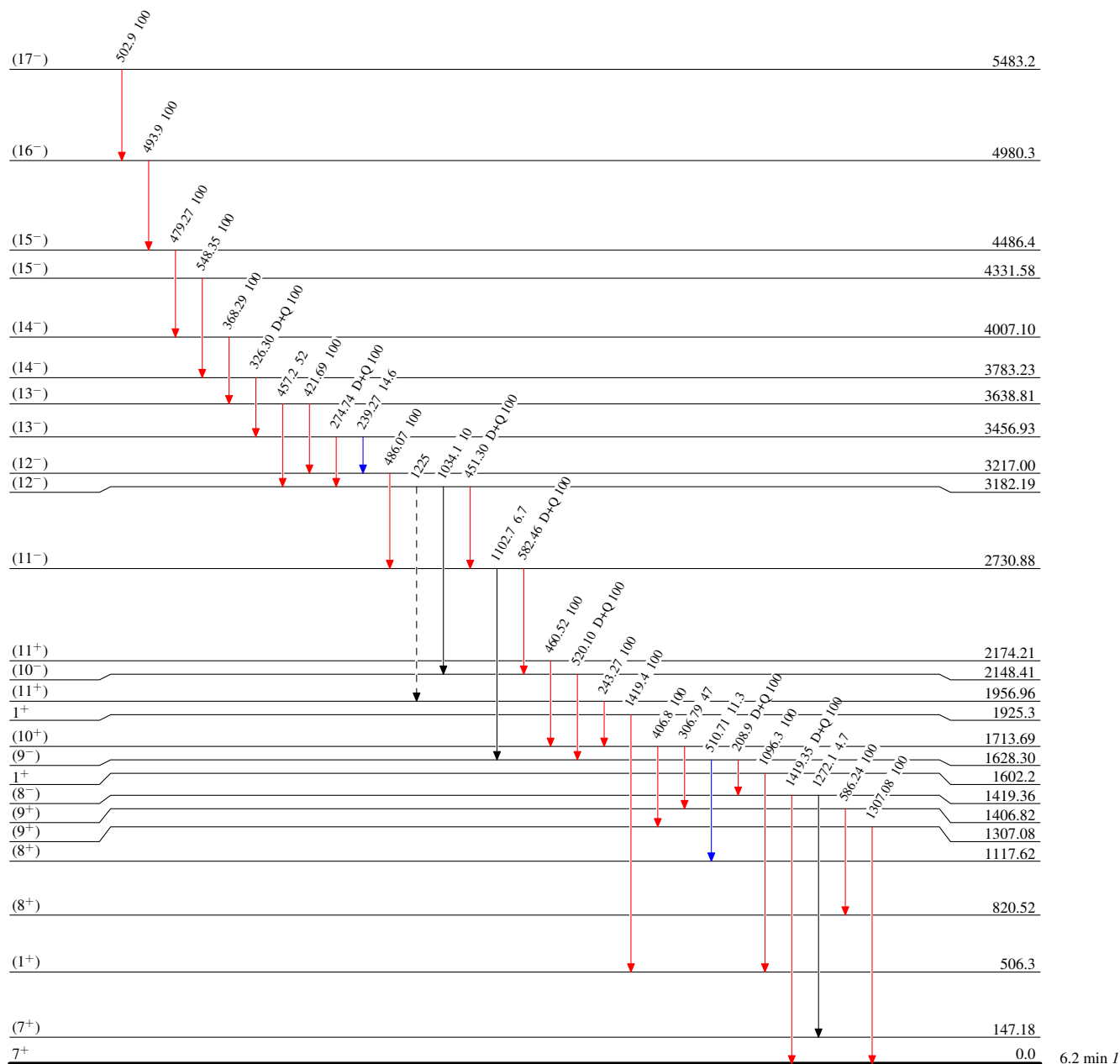
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Type not specified

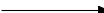
- $\longrightarrow$ $I_\gamma < 2\% \times I_\gamma^{\max}$
 $\longrightarrow$ $I_\gamma < 10\% \times I_\gamma^{\max}$
 $\longrightarrow$ $I_\gamma > 10\% \times I_\gamma^{\max}$
 $\longrightarrow$ γ Decay (Uncertain)

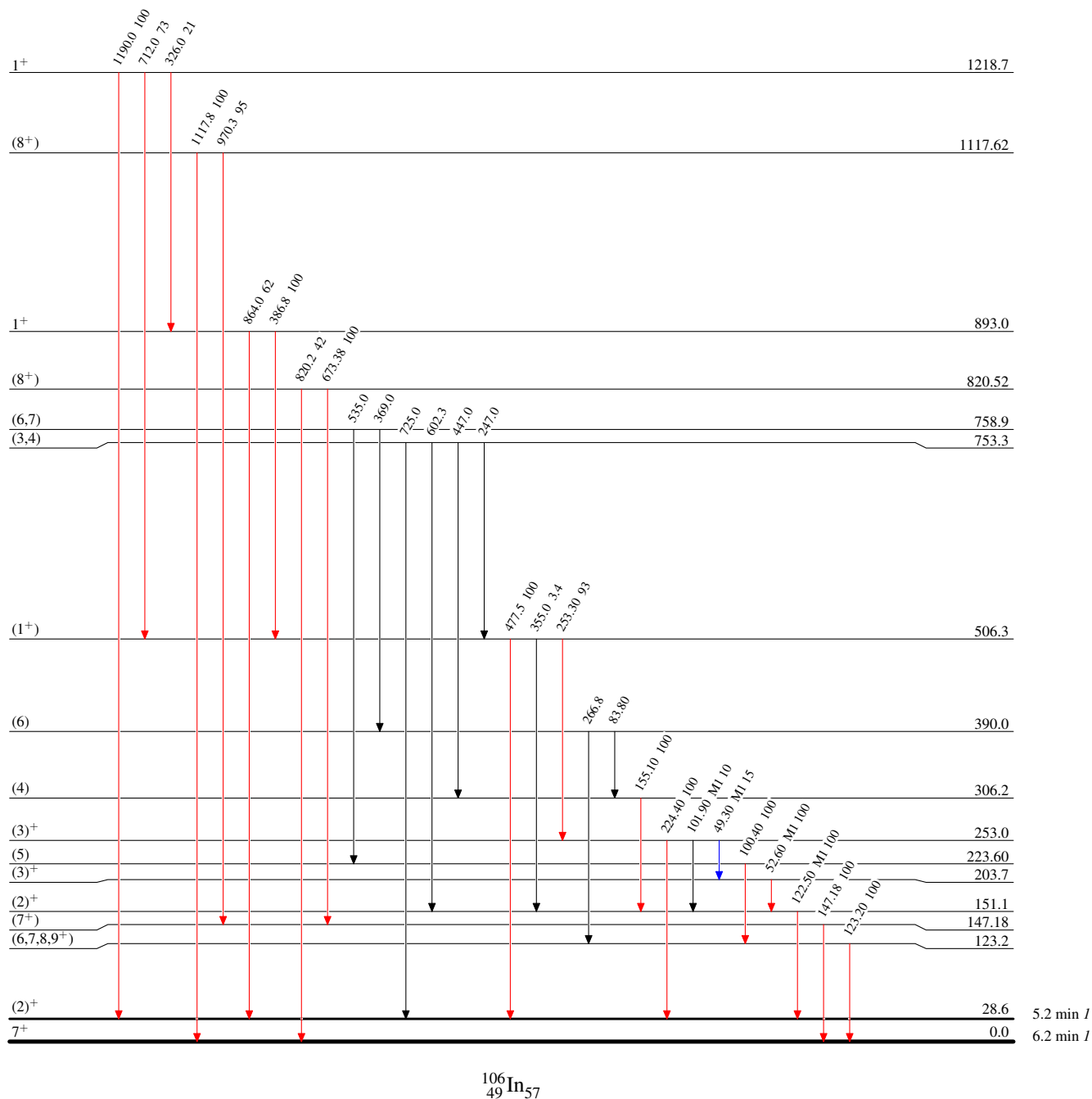


Adopted Levels, Gammas**Level Scheme (continued)**

Intensities: Type not specified

Legend

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



Adopted Levels, Gammas