Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Huang Xiaolong, Zhou Chunmei	NDS 104,283 (2005)	1-Jan-2002

Q(β^-)=−3591 *18*; S(n)=8915 *21*; S(p)=3802 *17*; Q(α)=2641 *19* 2012Wa38
Note: Current evaluation has used the following Q record −3592 17 *8916* 20 *3804* 17 *2628* 20 2003Au03.

^{197}Tl Levels

For weak-coupling description of intruder states, see 1988Ar12.
For interacting boson model, see 1987Se03.
For quasiparticle-photon model, see 1986Le15.

Cross Reference (XREF) Flags

A	^{197}Tl IT decay (0.54 s)	D	^{201}Bi α decay (59.1 min)
B	^{197}Pb ε decay (8 min)	E	^{197}Au(^{3}He,3nγ)
C	^{197}Pb ε decay (43 min)	F	^{197}Au(α,4nγ)

E(level)†	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0	1/2$^+$	2.84 h *4*	ABCDEF	%ε+%β^+=100 J$^\pi$: J=1/2 from (1957Br32,1976Ek03) atomic beam and π=+ from optical spectroscopy (μ analysis) (1966Da15,1976Fu06,1978LeZA). Interpreted as 3s1/2 proton-hole state. HF(5240α)<1.8 (1980Sc26) for α decay from 1/2$^+$ in ^{201}Bi isomer (59 min). μ=+1.58 *2* (^{205}Tl standard, 2001StZZ,1989Ra17,1966Da15) optical,+1.59 *9* (2001StZZ,1989Ra17,1984Be40). T$_{1/2}$: from 1961Ju05. Others: 2.8 h *4* (1955An01), 2.8 h *2* (1955Kn34), 2.7 h *2* (1957An53), 2.83 h *15* (1979Br12). Change of mean-square charge radius Δ<r^2>=−0.394 (fm)^2 *41* (1989MeZZ).
385.77 *6*	3/2$^+$		ABC EF	J$^\pi$: M1+E2 γ to 1/2$^+$ (g.s.).
608.22‡ *8*	9/2$^-$	0.54 s *1*	A C EF	%IT=100 J$^\pi$: (222γ)(386γ)(θ), E3 γ to 3/2$^+$. T$_{1/2}$: from 1953He57. Others: 0.55 s *10* (1957An54), 0.53 s *3* (1963Di10), 0.55 s *2* (1965Sc18).
761.17 *5*	5/2$^+$		B E	J$^\pi$: J=5/2 from γ(θ) to 3/2$^+$ in ^{197}Au(^{3}He,3nγ), π=+ from E2 γ to 1/2$^+$ (g.s.).
995.85‡ *9*	11/2$^-$		C EF	J$^\pi$: J=11/2 from γ(θ) to 9/2$^-$ in ^{197}Au(α,4nγ), π=− from M1+E2 γ to 9/2$^-$.
1155.96 *8*	3/2$^+$		B	J$^\pi$: γ's to 1/2$^+$,3/2$^+$,5/2$^+$ are M1.
1257.38 *12*	1/2$^-$,3/2$^-$,5/2$^-$		B	J$^\pi$: E1 γ to 3/2$^+$.
1281.81 *7*	3/2$^+$,5/2$^+$		B	J$^\pi$: M1 γ to 5/2$^+$, E2(+M1) γ to 3/2$^+$.
1303.86‡ *9*	13/2$^-$		C EF	J$^\pi$: intraband M1+E2 cascade, E2 crossover transitions. Iγ-branching ratios via (α,4nγ) disagree with (^{3}He,3nγ) and ^{197}Pb decay (43 min).
1382.53 *10*	11/2$^-$		C	J$^\pi$: M1+E2 γ to 9/2$^-$, log *ft*=6.95 from 13/2$^+$. Interpreted as h11/2 shell-model state (1979CoZI); ^{195}Tl analog populated at 1361.
1501.66 *10*	9/2$^-$,11/2$^-$		C	J$^\pi$: γ's to 9/2$^-$ and 11/2$^-$ are M1+E2.
1553.40 *12*	13/2$^-$		C EF	J$^\pi$: M1+E2 γ to 11/2$^-$, 558γ(θ) in ^{197}Au(α,4nγ).
1605.18 *10*	(1/2$^+$,3/2$^+$,5/2$^+$)		B	J$^\pi$: (E2) γ to 5/2$^+$, (M1) γ to 3/2$^+$.
1647.01 *8*	3/2$^+$,5/2$^+$		B	J$^\pi$: γ's to 3/2$^+$ and 5/2$^+$ are M1(+E2).
1662.93 *10*	3/2$^+$,5/2$^+$		B	J$^\pi$: M1 γ to 5/2$^+$, log *ft*=6.02 *19* from 3/2$^-$.

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Adopted Levels, Gammas (continued)

^{197}Tl Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$	XREF	Comments
1674.63 *8*	$3/2^+,5/2^+$		B	Jπ: M1 γ to $5/2^+$, E2(+M1) γ to $3/2^+$.
1719.90[‡] *10*	$15/2^-$		C EF	Jπ: intraband M1+E2 cascade, E2 crossover transitions. Branching: Iγ(416γ)/Iγ(724γ)=1.0 *2* (^{197}Au(α,4nγ)), 0.61 *8* (^{197}Pb ε decay (43 min)).
1803.06 *13*	$(11/2^-,13/2^-)$		C	Jπ: (M1) γ to $9/2^-,11/2^-$; log *ft*=7.72 *14* from $13/2^+$.
1849.33 *12*	$(1/2^+,3/2^+,5/2^+)$		B	Jπ: (E2) γ to $5/2^+$, log *ft*=6.33 *19* from $3/2^-$.
1854.02 *8*	$(1/2^+,3/2^+,5/2^+)$		B	Jπ: (E2) γ to $5/2^+$, log *ft*=5.67 *19* from $3/2^-$.
1953.64 *10*	$11/2^-$		C E	Jπ: γ's to $9/2^-,11/2^-,13/2^-$ are M1+E2; log *ft*=6.65 *14* from $13/2^+$.
1970.16 *12*	$(3/2^+,5/2^+)$		B	Jπ: (M1) γ to $5/2^+$, log *ft*=6.27 *20* from $3/2^-$.
1994.51 *12*	$13/2^-$		C	Jπ: M1+E2 γ to $11/2^-$, M1 γ from $15/2^-$.
1999.06 *13*	$11/2^-,13/2^-$		C	Jπ: M1(+E2) γ to $11/2^-$, log *ft*=7.61 *12* from $13/2^+$.
2010.66 *11*	$13/2^-$		C	Jπ: γ's to $11/2^-,13/2^-,15/2^-$ are M1.
2018.91[‡] *13*	$17/2^-$		C F	Jπ: intraband M1+E2 cascade, E2 crossover transitions. Branching: Iγ(299γ)/Iγ(715γ)=0.47 *10* (^{197}Au(α,4nγ)), 0.25 *5* (^{197}Pb ε decay (43 min)).
2033.42 *11*	$11/2^-,13/2^-$		C	Jπ: M1 γ to $11/2^-$, log *ft*=7.20 *15* from $13/2^+$.
2041.06 *12*	$17/2^-$		C EF	Jπ: M1+E2 γ to $15/2^-$, E2 γ to $13/2^-$; (321γ)(737γ)(θ) in ^{197}Au(α,4nγ). Branching: Iγ(321γ)/Iγ(737γ)=0.67 *17* (^{197}Au(α,4nγ)), 0.27 *4* (^{197}Pb ε decay (43 min)).
2072.66 *22*			B	
2113.53 *10*	$13/2^-$		C	Jπ: γ's to $11/2^-,13/2^-,15/2^-$ are M1; E2 γ to $9/2^-$.
2114.38[#] *17*	$15/2^+$		EF	Jπ: γ(θ) to $13/2^-$ is E1 in ^{197}Au(α,4nγ) and $15/2^+$ bandhead.
2175.03 *14*			C	
2218.29 *14*	$11/2^-,13/2^-,15/2^-$		C	Jπ: E2 γ to $11/2^-$, log *ft*=7.34 *15* from $13/2^+$.
2266.6[#] *3*	$(17/2)^+$		F	Jπ: M1+E2 γ to $15/2^+$ bandhead.
2302.78 *14*	$(11/2)^-,(13/2)^-$		C	Jπ: E2(+M1) γ to $11/2^-$, log *ft*=7.24 *16* from $13/2^+$.
2327.55 *15*	$(11/2)^-,(13/2)^-$		C	Jπ: E2(+M1) γ to $11/2^-$, log *ft*=7.39 *16* from $13/2^+$.
2345.57 *7*	$(3/2^+,5/2^+)$		B	Jπ: (M1) γ to $5/2^+$, log *ft*=5.51 *23* from $3/2^-$.
2367.57 *11*	$(11/2^-,13/2^-)$		C	Jπ: (M1) γ to $11/2^-$, log *ft*=6.99 *19* from $13/2^+$.
2411.99 *17*	$(11/2^-,13/2^-)$		C	Jπ: (M1+E2) γ to $11/2^-$, log *ft*=7.43 *17* from $13/2^+$.
2426.49[‡] *15*	$19/2^-$		F	Jπ: intraband M1+E2 cascade, E2 crossover transitions.
2429.39 *9*	$1/2,3/2,5/2^{(+)}$		B	Jπ: log *ft*=5.84 *24* from $3/2^-$, γ to $1/2^+$.
2456.88 *13*	$11/2^-,13/2^-$		C	Jπ: γ's to $11/2^-,13/2^-$ are M1.
2462.5[#] *4*	$19/2^+$		F	Jπ: intraband M1+E2 cascade, E2 crossover transitions.
2498.85 *12*	$11/2^-,13/2^-$		C	Jπ: γ's to $11/2^-$ and $13/2^-$ are M1.
2529.7 *4*		18 ns *4*	F	$T_{1/2}$: from γ(t) pulsed beam in ^{197}Au(α,4nγ).
2569.66 *15*	$15/2^-$		C	Jπ: M1 γ to $17/2^-$, log *ft*=7.14 *18* from $13/2^+$.
2597.49[‡] *18*	$21/2^-$		F	Jπ: intraband M1+E2 cascade, E2 crossover transitions.
2783.32 *11*	$11/2^-,13/2^-$		C	Jπ: M1 γ to $11/2^-$, log *ft*=6.71 *12* from $13/2^+$.
2801.6[#] *4*	$(21/2)^+$		F	Jπ: intraband M1+E2 cascade, E2 crossover transitions.
2820.27 *11*			C	
2861.2[‡] *3*	$(23/2)^-$		F	Jπ: intraband M1+E2 γ decay to $21/2^-$.
3067.7[‡] *4*	$(25/2)^-$		F	Jπ: intraband M1+E2 γ decay to $(23/2)^-$.
3147.5[#] *4*	$(23/2)^+$		F	Jπ: intraband M1+E2 cascade, E2 crossover transitions.
3170.3[‡] *4*	$(27/2^-)$		F	E(level): alternate E(level)=3174.7 for inverted 102.6γ-107.2γ cascade. Jπ: intraband (M1+E2) γ decay to $(25/2^-)$.
3277.5[‡] *5*	$(29/2^-)$		F	Jπ: intraband (M1+E2) γ decay to $(27/2^-)$.
3568.6[#] *4*	$(25/2)^+$		F	Jπ: intraband M1+E2 cascade, E2 crossover transitions.
3690.0 *5*			F	

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Adopted Levels, Gammas (continued)

^{197}Tl Levels (continued)

E(level)[†]	J^π	XREF	Comments
3761.1[#] *5*	$(27/2^+)$	F	J^π: intraband (M1+E2) γ decay to $(25/2)^+$.
3965.7[#] *5*	$(29/2^+)$	F	J^π: intraband (M1+E2) γ decay to $(27/2^+)$.

[†] For the states connecting γ's, E(levels) are from adopted γ radiations using least-squares fit to data.

[‡] Band(A): Regular dipole band 1. $\Delta J=1$ sequence populated up to $J=29/2^-$. For E(level) spacings in neighboring odd-A isotopes and for triaxial rotor predictions, see 1975To08,1978Li10.

[#] Band(B): Regular dipole band 2. $15/2^+$ THREE-PARTICLE configuration=$((\pi\ h_{9/2})(\nu\ i_{13/2}))(\nu$,LOW-J). $\Delta J=1$ sequence populated up to $J^\pi=29/2^+$. See 1978Li10 for comparison with $15/2^+$ band in ^{195}Tl, and $J=5^-,7^-,9^-,11^-$ states in ^{196}Hg.

Adopted Levels, Gammas (continued)

γ(^{197}Tl)

E_i(level)	J_i^π	E_γ[†]	I_γ[†&]	E_f	J_f^π	Mult.[†]	δ[†]	α[b]	Comments
385.77	3/2$^+$	385.85 *10*	100	0.0	1/2$^+$	M1+E2	+1.7 *3*	0.094 *13*	
608.22	9/2$^-$	222.45[#] *5*	100[#]	385.77	3/2$^+$	E3[#]		2.28	B(E3)(W.u.)=0.011 *11*
761.17	5/2$^+$	375.48[‡] *10*	96[‡] *8*	385.77	3/2$^+$	M1[‡]		0.22	
		761.14[‡] *10*	100[‡] *8*	0.0	1/2$^+$	E2[‡]		0.011	
995.85	11/2$^-$	387.72 *11*	100	608.22	9/2$^-$	M1+E2	−0.50 *16*	0.174 *16*	
1155.96	3/2$^+$	394.74[‡] *15*	55[‡] *12*	761.17	5/2$^+$	M1[‡]		0.194	
		769.84[‡] *18*	67[‡] *10*	385.77	3/2$^+$	M1[‡]		0.034	
		1156.09[‡] *10*	100[‡] *7*	0.0	1/2$^+$	M1(+E2)[‡]	0.6[‡] *+11−6*	0.010 *4*	
1257.38	1/2$^-$,3/2$^-$,5/2$^-$	871.61[‡] *10*	100[‡]	385.77	3/2$^+$	E1[‡]		0.0031	
1281.81	3/2$^+$,5/2$^+$	520.70[‡] *11*	28[‡] *3*	761.17	5/2$^+$	M1[‡]		0.094	
		896.09[‡] *10*	100[‡] *25*	385.77	3/2$^+$	E2(+M1)[‡]	≥1.3[‡]	0.011 *4*	
		1281.5[‡] *2*	7.9[‡] *23*	0.0	1/2$^+$				
1303.86	13/2$^-$	307.9 *2*	31 *4*	995.85	11/2$^-$	M1+E2	−0.17 *3*	0.372 *3*	
		695.62 *10*	100 *8*	608.22	9/2$^-$	E2		0.013	
1382.53	11/2$^-$	774.26 *10*	100	608.22	9/2$^-$	M1+E2	0.7 *3*	0.026 *5*	
1501.66	9/2$^-$,11/2$^-$	506.00 *19*	49 *5*	995.85	11/2$^-$	M1+E2	1.0 *+7−4*	0.064 *18*	
		893.28 *10*	100 *12*	608.22	9/2$^-$	M1+E2	1.1 *+7−5*	0.015 *5*	
1553.40	13/2$^-$	557.80 *10*	100	995.85	11/2$^-$	M1+E2	−0.8 *2*	0.056 *7*	
1605.18	(1/2$^+$,3/2$^+$,5/2$^+$)	844.18[‡] *11*	100 *11*	761.17	5/2$^+$	(E2)[‡]	[‡]	0.009	
		1219.21[‡] *12*	64[‡] *7*	385.77	3/2$^+$	(M1)[‡]		0.010	
1647.01	3/2$^+$,5/2$^+$	885.43[‡] *20*	11[‡] *2*	761.17	5/2$^+$	M1(+E2)[‡]	0.6[‡] *+40−6*	0.020 *11*	
		1261.23[‡] *10*	100[‡] *8*	385.77	3/2$^+$	M1(+E2)[‡]	1.2[‡] *+12−6*	0.006 *2*	
		1647.14[‡] *11*	28[‡] *2*	0.0	1/2$^+$				
1662.93	3/2$^+$,5/2$^+$	901.68[‡] *11*	100[‡] *12*	761.17	5/2$^+$	M1[‡]		0.023	
		1277.27[‡] *16*	47[‡] *7*	385.77	3/2$^+$				
		1663.03[‡] *21*	19[‡] *3*	0.0	1/2$^+$				
1674.63	3/2$^+$,5/2$^+$	913.45[‡] *14*	44[‡] *6*	761.17	5/2$^+$	M1[‡]		0.022	
		1288.86[‡] *10*	100[‡] *8*	385.77	3/2$^+$	E2(+M1)[‡]	≥0.4[‡]	0.006 *3*	
		1674.62[‡] *11*	61[‡] *6*	0.0	1/2$^+$				
1719.90	15/2$^-$	416.21 *11*	61 *5*	1303.86	13/2$^-$	M1+E2[@]	−0.23[@] *3*	0.162 *2*	Mult.: other: M1 in ^{197}Pb ε decay (43 min).
		724.11 *10*	100 *7*	995.85	11/2$^-$	E2		0.012	
1803.06	(11/2$^-$,13/2$^-$)	301.05 *16*	100 *14*	1501.66	9/2$^-$,11/2$^-$	(M1)		0.404	
		1195.03 *12*	42 *6*	608.22	9/2$^-$				
1849.33	(1/2$^+$,3/2$^+$,5/2$^+$)	1088.16[‡] *11*	100[‡]	761.17	5/2$^+$	(E2)[‡]		0.0054	

$^{197}_{81}Tl_{116}$-4

Adopted Levels, Gammas (continued)

γ(^{197}Tl) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†&]	E_f	J_f^π	Mult.[†]	δ[†]	α[b]
1854.02	(1/2$^+$,3/2$^+$,5/2$^+$)	1092.82[‡] *11*	54[‡] *5*	761.17	5/2$^+$	(E2)[‡]		0.0054
		1854.04[‡] *10*	100[‡] *8*	0.0	1/2$^+$			
1953.64	11/2$^-$	400.68 *13*	3.3 *4*	1553.40	13/2$^-$			
		649.59 *12*	12 *1*	1303.86	13/2$^-$	(M1+E2)	≥0.2	0.032 *19*
		957.70 *10*	100 *8*	995.85	11/2$^-$	M1+E2	1.1 *+5−3*	0.013 *2*
		1345.46 *10*	15 *2*	608.22	9/2$^-$	E2(+M1)	≥0.5	0.004 *4*
1970.16	(3/2$^+$,5/2$^+$)	1208.99[‡] *11*	100[‡]	761.17	5/2$^+$	(M1)[‡]		0.011
1994.51	13/2$^-$	274.50[c] *11*	15 *2*	1719.90	15/2$^-$			
		492.95 *12*	32 *3*	1501.66	9/2$^-$,11/2$^-$	E2		0.029
		998.59 *10*	100 *8*	995.85	11/2$^-$	M1+E2	1.2 *+9−5*	0.011 *3*
1999.06	11/2$^-$,13/2$^-$	616.42 *10*	100	1382.53	11/2$^-$	M1(+E2)	0.41 *+35−41*	0.054 *10*
2010.66	13/2$^-$	290.95 *11*	100 *9*	1719.90	15/2$^-$	M1		0.443
		456.7 *12*	<93	1553.40	13/2$^-$			
		627.87 *18*	21 *3*	1382.53	11/2$^-$	(M1)		0.057
		706.84 *11*	100 *13*	1303.86	13/2$^-$	M1		0.042
		1014.74 *17*	4.3 *13*	995.85	11/2$^-$			
2018.91	17/2$^-$	298.96 *20*	25 *5*	1719.90	15/2$^-$	M1+E2	≈−0.14[@]	≈0.406
		715.07 *12*	100 *9*	1303.86	13/2$^-$	E2		0.013
2033.42	11/2$^-$,13/2$^-$	651.09 *11*	100 *11*	1382.53	11/2$^-$	M1		0.052
		1037.43 *14*	42 *6*	995.85	11/2$^-$			
		1425.05 *12*	37 *4*	608.22	9/2$^-$			
2041.06	17/2$^-$	321.17 *11*	27 *3*	1719.90	15/2$^-$	M1+E2[@]	≈−0.09[@]	≈0.34
		737.19 *11*	100 *7*	1303.86	13/2$^-$	E2[@]		0.012
2072.66		815.28[‡] *19*	100[‡]	1257.38	1/2$^-$,3/2$^-$,5/2$^-$			
2113.53	13/2$^-$	393.74 *16*	18 *3*	1719.90	15/2$^-$	M1		0.20
		611.79 *14*	26 *3*	1501.66	9/2$^-$,11/2$^-$	E2		0.018
		809.74 *12*	16 *2*	1303.86	13/2$^-$	M1		0.030
		1117.66 *10*	100 *8*	995.85	11/2$^-$	M1+E2	1.2 *+7−4*	0.008 *2*
		1505.21 *15*	3.7 *10*	608.22	9/2$^-$			
2114.38	15/2$^+$	560.9[@] *2*	100[@] *10*	1553.40	13/2$^-$	E1[@]		0.007
		810.6[@] *2*	19[@] *4*	1303.86	13/2$^-$	E1[@]		0.004
2175.03		792.50 *10*	100	1382.53	11/2$^-$			
2218.29	11/2$^-$,13/2$^-$,15/2$^-$	835.76 *10*	100	1382.53	11/2$^-$	E2		0.009
2266.6	(17/2)$^+$	152.2[@] *2*	100[@]	2114.38	15/2$^+$	M1+E2[@]	≈−0.10[@]	≈2.69
2302.78	(11/2)$^-$,(13/2)$^-$	920.25 *10*	100	1382.53	11/2$^-$	E2(+M1)	≥0.8	0.011 *5*
2327.55	(11/2)$^-$,(13/2)$^-$	945.02 *11*	100	1382.53	11/2$^-$	E2(+M1)	≥0.8	0.011 *4*
2345.57	(3/2$^+$,5/2$^+$)	1063.77[‡] *11*	14[‡] *8*	1281.81	3/2$^+$,5/2$^+$			
		1584.49[‡] *10*	43[‡] *4*	761.17	5/2$^+$	(M1)[‡]		

$^{197}_{81}Tl_{116}$-5

Adopted Levels, Gammas (continued)

γ(^{197}Tl) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †&	E_f	J_f^π	Mult.†	δ†	α[b]
2345.57	(3/2+,5/2+)	2345.45‡ *10*	100‡ *8*	0.0	1/2+			
2367.57	(11/2−,13/2−)	413.7 *3*	41 *12*	1953.64	11/2−	(M1)		0.171
		985.02 *14*	59 *6*	1382.53	11/2−			
		1063.77 *11*	100 *61*	1303.86	13/2−	(E2)		0.006
		1371.69 *14*	43 *5*	995.85	11/2−			
		1759.4 *5*	23 *4*	608.22	9/2−			
2411.99	(11/2−,13/2−)	1029.46 *13*	100	1382.53	11/2−	(M1+E2)	1.0 *+60−8*	0.011 *5*
2426.49	19/2−	385.2@ *2*	31@ *12*	2041.06	17/2−			
		407.8@ *2*	42@ *6*	2018.91	17/2−	M1+E2@	−0.28@ *6*	0.168 *4*
		706.6@ *2*	100@ *13*	1719.90	15/2−	E2@		0.013
2429.39	1/2,3/2,5/2(+)	1147.57‡ *15*	42‡ *6*	1281.81	3/2+,5/2+			
		2043.77‡ *10*	100‡ *9*	385.77	3/2+			
		2429.02‡ *15*	28‡ *4*	0.0	1/2+			
2456.88	11/2−,13/2−	446.26 *13*	76 *9*	2010.66	13/2−	M1		0.14
		457.9		1999.06	11/2−,13/2−			
		1074.31 *11*	100 *10*	1382.53	11/2−	M1(+E2)	0.58 *+81−58*	0.012 *4*
2462.5	19/2+	195.9@ *2*	100@ *17*	2266.6	(17/2)+	M1+E2@	≈−0.1@	≈1.314
		347.9@c *2*	12@ *3*	2114.38	15/2+	(E2)@		0.073
2498.85	11/2−,13/2−	488.24 *10*	100 *8*	2010.66	13/2−	M1		0.11
		499.60 *13*	29 *6*	1999.06	11/2−,13/2−	M1		0.104
		545.29 *12*	14 *4*	1953.64	11/2−	(M1)		0.083
2529.7		263.1@ *2*	100@	2266.6	(17/2)+			
2569.66	15/2−	528.68 *14*	100 *12*	2041.06	17/2−	M1		0.090
		550.69 *14*	62 *9*	2018.91	17/2−	M1		0.081
		574.7 *10*	59 *12*	1994.51	13/2−	M1		0.072
2597.49	21/2−	171.0@ *2*	100@ *10*	2426.49	19/2−	M1(+E2)@		1.3[a] *6*
		556.7@ *4*	37@ *20*	2041.06	17/2−			
		578.5@ *2*	65@ *18*	2018.91	17/2−	E2@		0.020
2783.32	11/2−,13/2−	829.93 *24*	31 *8*	1953.64	11/2−	M1		0.028
		1479.21 *11*	100 *8*	1303.86	13/2−	(E2)		0.003
		1787.59 *18*	28 *4*	995.85	11/2−			
		2175.31 *14*	29 *4*	608.22	9/2−			
2801.6	(21/2)+	339.1@ *2*	100@ *16*	2462.5	19/2+	M1+E2@	≈−0.14@	≈0.288
		534.7c *5*	28 *12*	2266.6	(17/2)+	E2		0.024
2820.27		1516.37 *15*	53 *6*	1303.86	13/2−			
		1824.41 *11*	100 *9*	995.85	11/2−			
		2212.07 *14*	42 *5*	608.22	9/2−			

$^{197}_{81}Tl_{116}$-6

Adopted Levels, Gammas (continued)

γ(^{197}Tl) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †&	E_f	J_f^π	Mult.†	δ†	α[b]
2861.2	(23/2)$^-$	263.7@ 2	100@	2597.49	21/2$^-$	(M1+E2)@		0.37[a] 21
3067.7	(25/2)$^-$	206.5@ 2	100@ 15	2861.2	(23/2)$^-$	M1+E2@		0.8[a] 4
		470.3@[c] 2	24@ 10	2597.49	21/2$^-$	(E2)@		0.033
3147.5	(23/2)$^+$	345.8@ 2	100@ 21	2801.6	(21/2)$^+$	M1+E2@	−0.20@ 5	0.269 5
		685.3@ 5	50@ 22	2462.5	19/2$^+$	E2@		0.014
3170.3	(27/2$^-$)	102.6@ 2	100@	3067.7	(25/2)$^-$	(M1+E2)@		6.9[a] 15
3277.5	(29/2$^-$)	107.2@ 2	100@	3170.3	(27/2$^-$)	(M1+E2)@		5.9[a] 15
3568.6	(25/2)$^+$	421.3@ 2	62@ 24	3147.5	(23/2)$^+$	M1(+E2)@		0.10[a] 6
		767.0@ 2	100@ 19	2801.6	(21/2)$^+$	E2@		0.011
3690.0		412.5@ 2	100@	3277.5	(29/2$^-$)			
3761.1	(27/2$^+$)	192.6@ 2	100@ 21	3568.6	(25/2)$^+$	(M1+E2)@		0.9[a] 5
		613.5@ 2	50@ 29	3147.5	(23/2)$^+$			
3965.7	(29/2$^+$)	204.6@ 2	100@	3761.1	(27/2$^+$)	(M1+E2)@		0.8[a] 4

† From ^{197}Pb ε decay (43 min), except as noted.
‡ From ^{197}Pb ε decay (8 min).
# From ^{197}Tl IT decay (0.54 s).
@ From ^{197}Au(α,4nγ).
& Relative photon branching from each level.
[a] From α=[α(M1)+α(E2)]/2 and Δα=[α(M1)-α(E2)]/2.
[b] 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.
[c] Placement of transition in the level scheme is uncertain.

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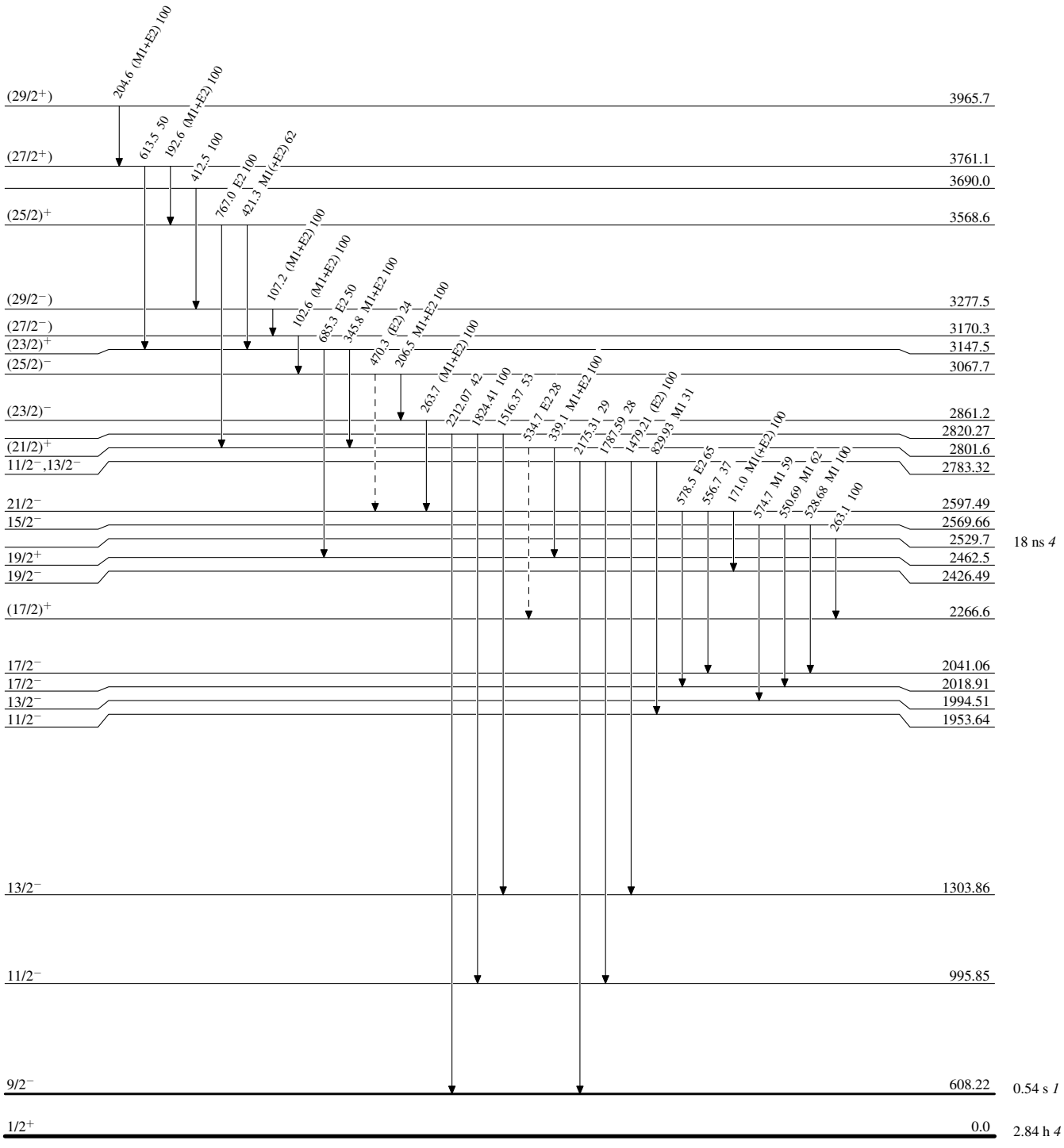
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{197}_{81}Tl_{116}$

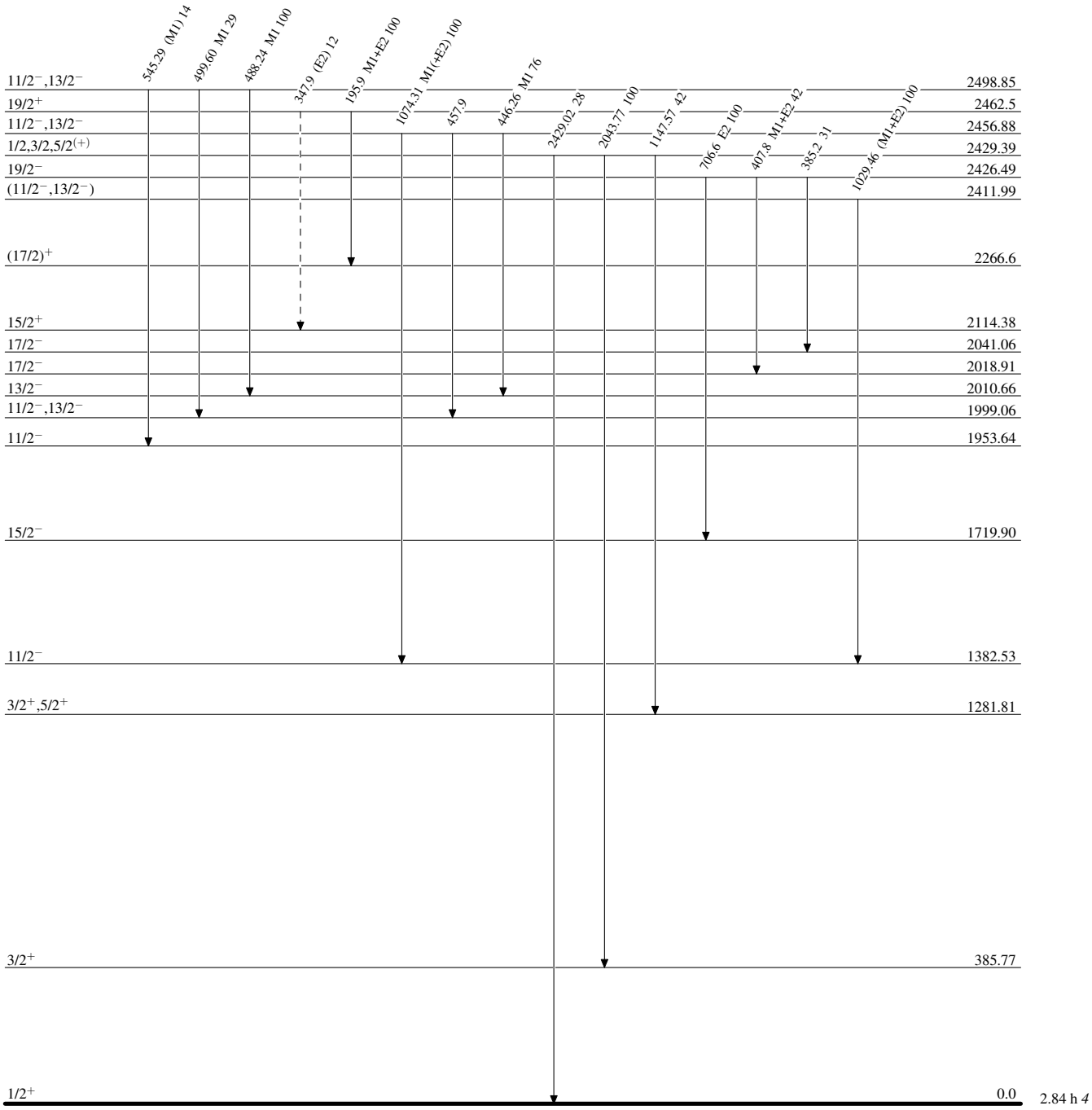
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{197}_{81}Tl_{116}$

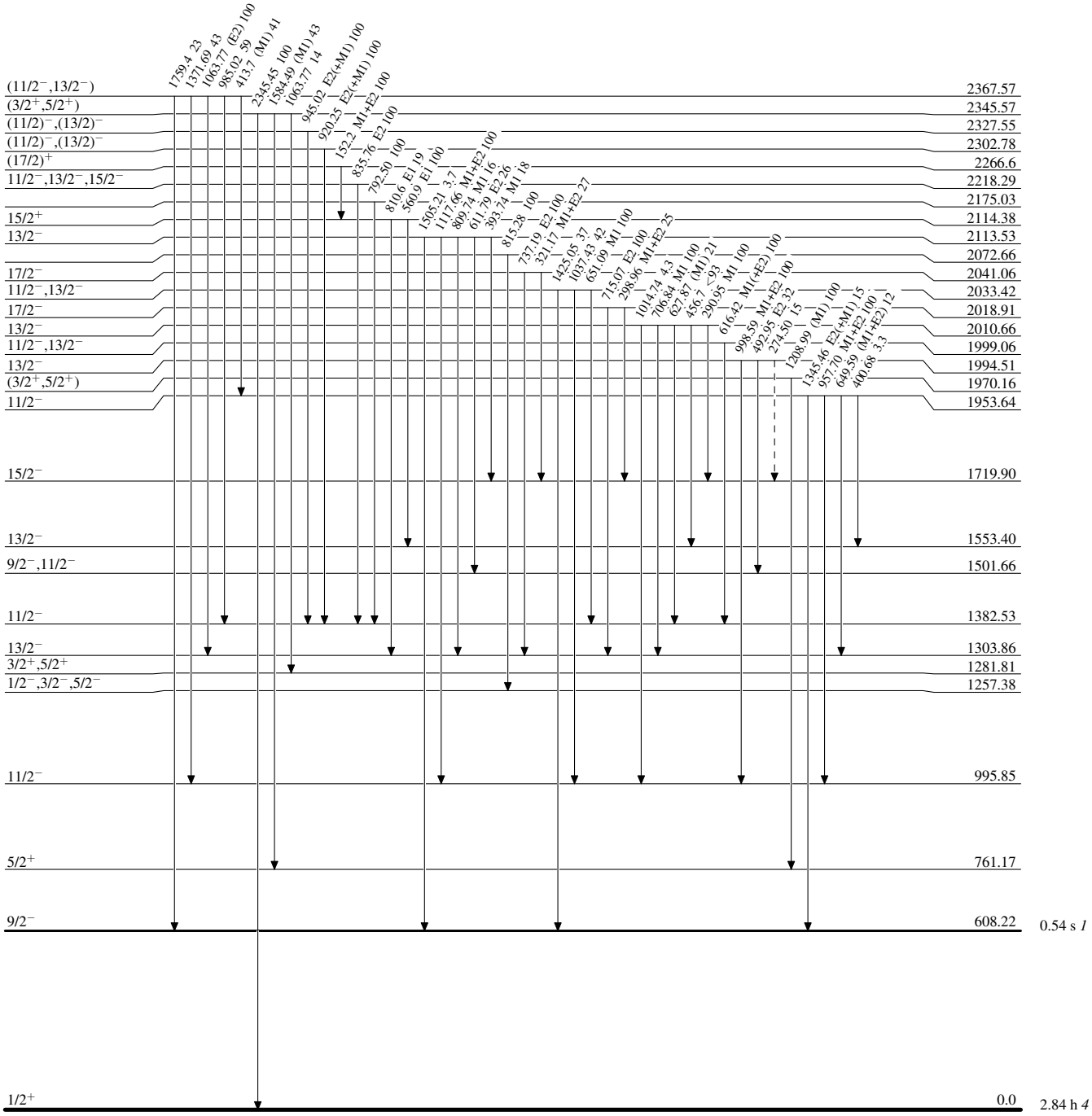
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

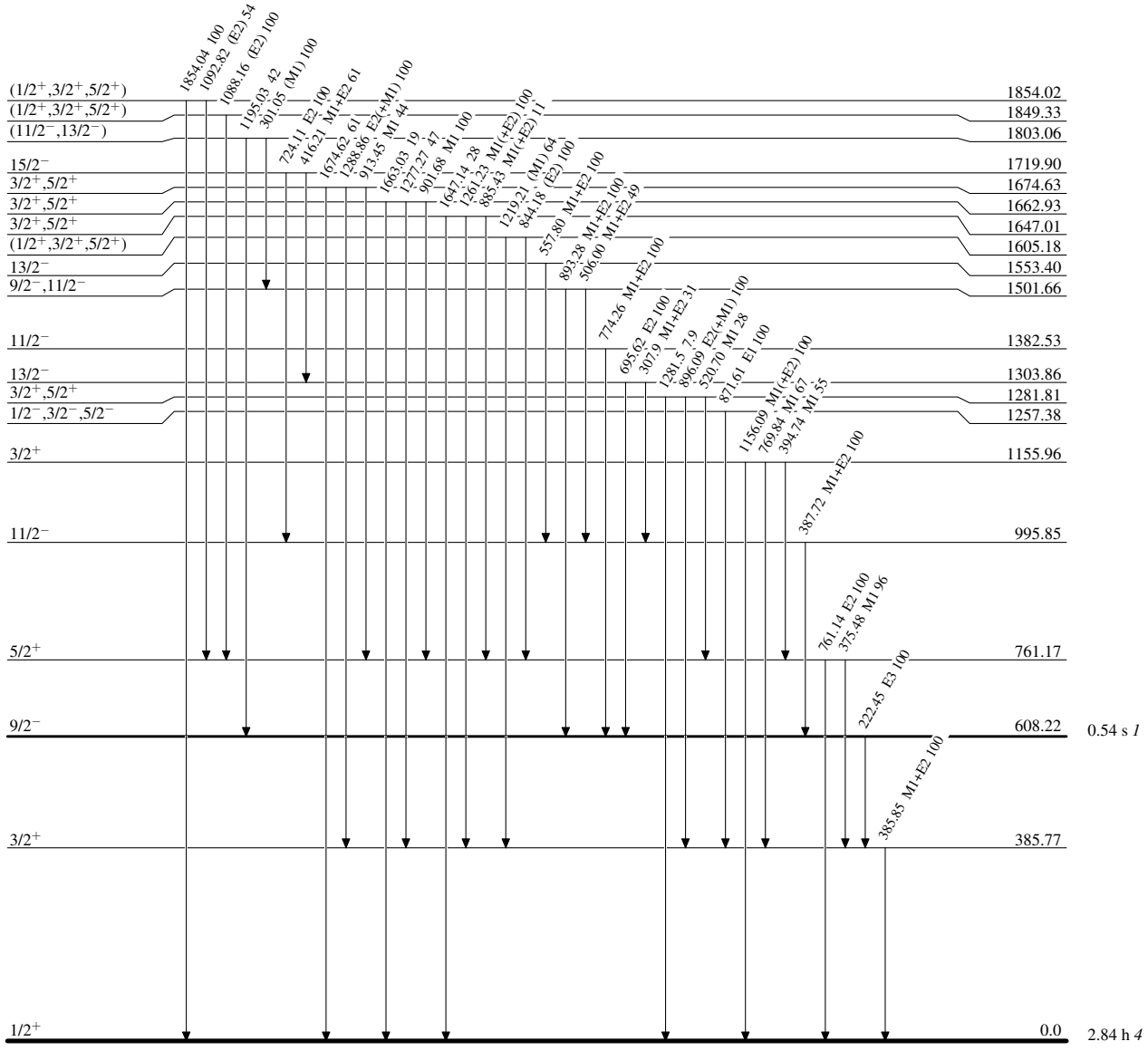


$^{197}_{81}Tl_{116}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



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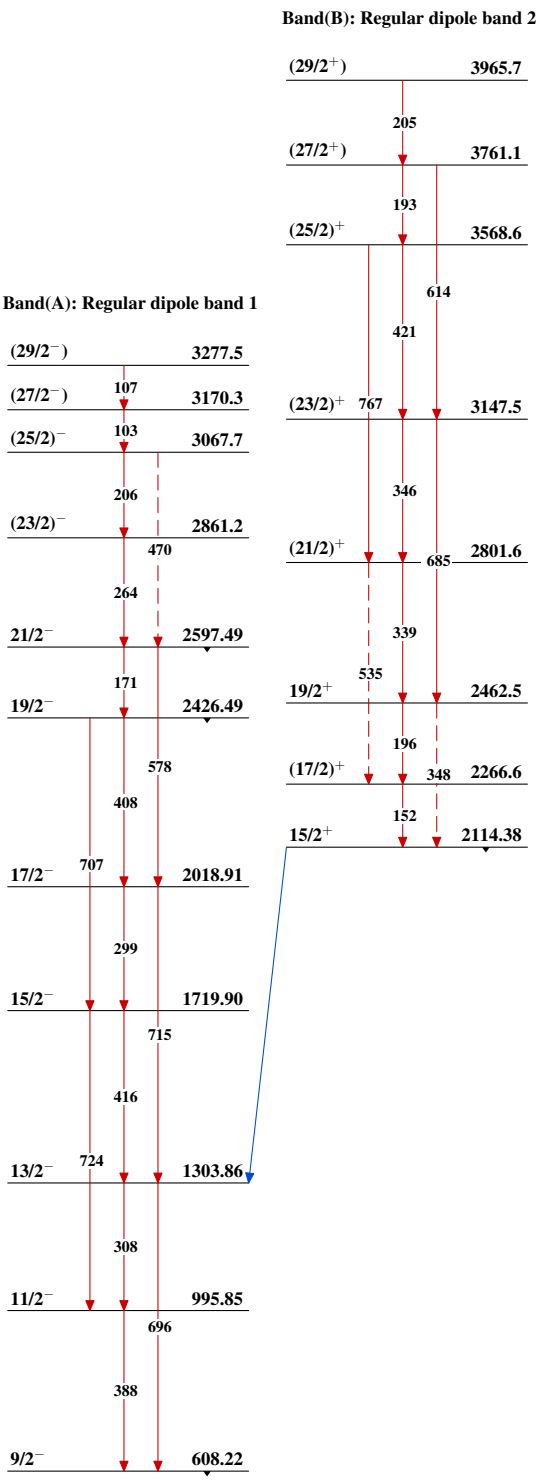
Adopted Levels, Gammas



$^{197}_{81}Tl_{116}$