Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 177, 509, 2021	4-Jul-2021

Q(β^-)=492.1 *12*; S(n)=5995.2 *16*; S(p)=8205 *23*; Q(α)=−305.4 *27* 2021Wa16

^{203}Hg Levels

Cross Reference (XREF) Flags

A	^{203}Au β^- decay	D	^{202}Hg(d,p)
B	^{203}Hg IT decay (22.1 μs)	E	^{204}Hg(d,t)
C	^{202}Hg(d,pγ)	F	^{208}Pb(^{48}Ca,Xγ),^{238}U(^{48}Ca,Xγ)

E(level)†	J$^\pi$@	$T_{1/2}$	XREF	Comments
0	5/2$^-$	46.610 d *10*	ABCDEF	%β^-=100 μ=+0.8456 *10*; Q=+0.344 *7* J$^\pi$: From optical spectroscopy (1964Re03); π from L(d,p)=3 and μ. $T_{1/2}$: Weighted average of 46.582 d *23* (46.582 d *2* in 1980Ho17, but uncertainty increased to 0.05% by the evaluator), 46.600 d *23* (46.600 d *10* in 1982RuZV, but uncertainty increased to 0.05% by the evaluator), 46.612 d *19* (1983Wa26), 46.639 d *23* (2006Da20) and 46.615 d *27* (2014Un01). Others: 47.00 d *3* (1968La10), 46.60 d *2* (1972MeZQ, superseded by 1982RuZV), 46.76 d *8* (1972Em01), 46.62 d *3* (1982HoZJ, superseded by 2014Un01), 46.6 d *1* (2001Li17) and 46.615 d *27* (2002Un02, superseded by 2014Un01). μ: Recommended (corrected for a diamagnetic shielding) in 2019StZV. Measured values are: +0.84895 *13* (1970Ki05), 0.856 *9* (1970Re14 – corrected for a diamagnetic shielding) and 0.830 *20* (1964Re03). Q: Recommended in 2016St14, based on data in 1970Re14. Others: +0.343 *36* (1986Ul02) and 0.5 *8* (1964Re03). $\delta<r^2>(^{198}Hg,^{203}Hg)$=0.232 fm^2 *4* (stat) *16* (syst) (2021Da01) and $\delta<r^2>(^{198}Hg,^{203}Hg)$=0.2288 fm^2 *36* (stat) (1986Ul02). Dominant configuration: $\nu(f_{5/2}^{-1})$.
7.49 *18*	(1/2$^-$)		A CDE	XREF: D(5)E(5). J$^\pi$: L(d,p)=1; L(d,t)=(1). $T_{1/2}$: Using B(E2)(W.u.)=0.127 for the $\nu(p_{1/2}^{-1})$ (J^π=1/2$^-$) to $\nu(f_{5/2}^{-})$ (J^π=5/2$^-$) E2 transition in ^{205}Pb and $\alpha(7.49\gamma)$=4.1E5, a half-life of ≈6.5 μs could be expected. Dominant configuration: $\nu(p_{1/2}^{-1})$.
50.60 *20*	(3/2$^-$)		A CDE	XREF: D(47)E(46). J$^\pi$: L(d,p)=(1); L(d,t)=1; 43.5 to (1/2$^-$) and 50.8γ to 5/2$^-$.
225.1 *4*	(3/2$^-$)		A CDE	XREF: C(?)D(222)E(219). J$^\pi$: L(d,p)=(1); L(d,t)=1; 217.6γ (M1) to (1/2$^-$).
368.80 *24*	(1/2,3/2,5/2)$^-$		A C E	XREF: C(?)E(364). J$^\pi$: 318.1γ (M1) to (3/2$^-$); direct feeding in ^{203}Au β^- decay (J^π=(3/2$^+$)).
548.76 *15*	(5/2$^-$)		CDE	XREF: E(542). J$^\pi$: L(d,t)=3; L(d,p)=(3,1); 541.2γ (E2) to (1/2$^-$); 548.8γ (M1) to 5/2$^-$.
591.52 *18*	(9/2$^-$)		BC F	J$^\pi$: 591.4γ to 5/2$^-$; shell-model predictions. Dominant configuration=$\nu(f_{5/2}^{-1})\otimes 2^+$.
755.52 *21*	(5/2$^-$)		CDE	XREF: C(?)D(755)E(749). J$^\pi$: L(d,t)=3; 206.8γ to (5/2$^-$).
767‡ *3*	(3/2$^-$)		DE	XREF: D(773). J$^\pi$: L(d,t)=1, (3); L(d,p)=(1).
933.14 *23*	(13/2$^+$)	22.1 μs *10*	BC EF	%IT=100 XREF: E(926).

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Adopted Levels, Gammas (continued)

^{203}Hg Levels (continued)

E(level)[†]	Jπ[@]	XREF	Comments
			Jπ: 341.5γ to (9/2⁻); shell-model predictions. $T_{1/2}$: Weighted average of 21 μs *5* (1964Br27), 27 μs *5* (1986Ze03) and 21.9 μs *10* (2011St21). Dominant configuration: $\nu(i^{-1}_{13/2})$.
1027[‡] *4*		E	
1044[‡] *4*	(3/2⁻)	E	Jπ: L(d,t)=1.
1117.98 *20*		C E	XREF: E(1111).
1307.94 *25*	(17/2⁺)	F	Jπ: 374.8γ (E2) to (13/2⁺).
1332[‡] *5*		E	
1344[#] *5*	(3/2⁻)	D	Jπ: L(d,p)=1.
1375?[‡] *6*		E	
1468[‡] *6*	(7/2⁻)	E	Jπ: L(d,t)=3.
1488.26 *23*		CD	XREF: C(?)D(1481).
1582[#] *6*		D	
1643[‡] *7*	(7/2⁻)	E	Jπ: L(d,t)=3.
1756[‡] *7*	(7/2⁻)	E	Jπ: L(d,t)=3.
1763[‡] *7*	(7/2⁻)	DE	XREF: D(1766). Jπ: L(d,t)=3.
1825[‡] *7*		E	
1836[‡] *7*	(7/2⁻)	DE	XREF: D(1841). Jπ: L(d,t)=(3).
1944[‡] *8*		E	
1984[‡] *8*		E	
2007[‡] *8*		E	
2013.3 *3*	(21/2⁺)	F	Jπ: 705.4γ to (17/2⁺).
2032[#] *8*	(9/2⁺)	DE	XREF: E(2030). Jπ: L(d,p)=(4,2).
2111[‡] *8*	(7/2⁻)	E	Jπ: L(d,t)=3, (4).
2121[#] *9*	(9/2⁺)	D	Jπ: L(d,p)=(4,2).
2206[‡] *9*		E	
2226[‡] *9*		E	
2367[‡] *9*		DE	XREF: D(2362?).
2451[‡] *10*		E	
2612[‡] *10*		E	
2639?[#] *11*		D	
2695[#] *11*	(5/2⁺)	D	Jπ: L(d,p)=(2).
2713[#] *11*	(5/2⁺)	D	Jπ: L(d,p)=(2,4).
2759[#] *11*	(9/2⁺)	D	Jπ: L(d,p)=(4,2).
2961.6 *3*	(23/2⁻)	F	Jπ: 948.3γ to (21/2⁺); shell model predictions.
2974[#] *12*	(5/2⁺)	D	Jπ: L(d,p)=(2,4).
3017[#] *12*		D	
3054[#] *12*	(5/2⁺)	D	Jπ: L(d,p)=(2,4).
3079.6 *3*	(25/2⁺)	F	Jπ: 1066.3γ to (21/2⁺).
3097[#] *12*		D	
3139[#] *13*		D	
3153.3 *4*	(27/2⁻)	F	Jπ: 74γ E1 to (25/2⁺), 191.6γ E2 to (23/2⁻).
3155[#] *13*		D	

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Adopted Levels, Gammas (continued)

^{203}Hg Levels (continued)

E(level)†	Jπ@	$T_{1/2}$	XREF	Comments
3220# *13*			D	
3271# *13*	(9/2+)		D	Jπ: L(d,p)=(4,2).
3305# *13*	(9/2+)		D	Jπ: L(d,p)=(4,2).
3358# *13*			D	
3515# *14*			D	
3539# *14*			D	
3586# *14*			D	
3613# *14*			D	
3632# *15*	(1/2+)		D	Jπ: L(d,p)=(0,2).
3642# *15*	(1/2+)		D	Jπ: L(d,p)=(0,2).
3673# *15*			D	
3693.5 *4*	(29/2−)		F	Jπ: 540.2γ to (27/2−); shell model predictions.
3706# *15*			D	
3756# *15*			D	
3776# *15*			D	
3792.5 *4*	(31/2−)		F	Jπ: 99γ to (29/2−), 639.2γ to (27/2−).
3812# *15*	(5/2+)		D	Jπ: L(d,p)=(2).
3841# *15*	(5/2+)		D	Jπ: L(d,p)=(2).
3863# *16*			D	
3881# *16*			D	
3932# *16*			D	
3946# *16*	(5/2+)		D	Jπ: L(d,p)=2.
3959# *16*			D	
3989# *16*	(5/2+)		D	Jπ: L(d,p)=(2).
4006# *16*			D	
4030# *16*			D	
4087# *16*	(1/2+)		D	Jπ: L(d,p)=(0).
4192# *17*			D	
4225# *17*			D	
4284# *17*	(3/2+)		D	Jπ: L(d,p)=2,4.
4317# *17*	(3/2+)		D	Jπ: L(d,p)=2,4.
4348?# *17*			D	
4453# *18*			D	
4488?# *18*			D	
4587.7 *4*	(31/2−,35/2−)		F	Jπ: 795.4γ to (31/2−); 218.5γ E1 from (33/2+).
4681.9 *4*	(33/2−)		F	Jπ: 889.4γ to (31/2−), 988.4γ to (29/2−).
4805.7 *4*	(33/2+)		F	Jπ: 218.5γ E1 to (31/2−,35/2−), 1013.2γ to (31/2−).
5174.2 *4*	(35/2+)		F	Jπ: 368.6γ M1 to (33/2+), 492.2γ to (33/2−).
5319.7 *4*	(39/2+)	7.8 ns *15*	F	%IT=100 Jπ: 145.5γ E2 to (35/2+). $T_{1/2}$: From 261γ+533γ+847γ+1320γ (start)−369γ+639γ+1013γ+1066γ (stop)(Δt) (2011Sz01).
5852.5 *5*	(43/2+)		F	Jπ: 532.8γ to (39/2+).
6699.9 *5*	(45/2−)		F	Jπ: 847.4γ to (43/2+); shell model predictions.
6961.0 *5*	(49/2−)		F	Jπ: 261.0γ E2 to (45/2−), 1108γ to (43/2+).
7394.2 *5*	(47/2−)		F	Jπ: 433γ to (49/2−), 694.4γ to (45/2−).
7526.8 *6*	(47/2−)		F	Jπ: 565.5γ to (49/2−); shell model predictions.
8281.3 *5*	(53/2+)	146 ns *30*	F	%IT=100

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Adopted Levels, Gammas (continued)

^{203}Hg Levels (continued)

E(level)†	XREF	Comments
		J^π: 753.9γ to (47/2$^-$), 1320.3γ to (49/2$^-$); shell model predictions. $T_{1/2}$: From 2152γ (start)−261γ+533γ+847γ+1320γ (stop)(Δt) (2011Sz01). Configuration=$\pi(h^{-2}_{11/2})\nu(i^{-3}_{13/2})$.
10434.3 *11*	F	

† From a least-squares fit to Eγ, unless otherwise stated.
‡ From ^{204}Hg(d,t).
# From ^{202}Hg(d,p).
@ From the deduced gamma-ray transition multipolarities in ^{202}Hg(d,pγ) and ^{208}Pb(^{48}Ca,xγ),^{238}U(^{48}Ca,xγ), and L transfer values in ^{202}Hg(d,p) and ^{204}Hg(d,t), unless otherwise stated.

$\gamma(^{203}Hg)$

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.	α&	Comments
7.49	(1/2$^-$)	(7.49 *18*)		0	5/2$^-$			Eγ: From the level energy difference.
50.60	(3/2$^-$)	43.5‡ *5*	100‡ *3*	7.49	(1/2$^-$)			
		50.8‡ *5*	93‡ *3*	0	5/2$^-$			
225.1	(3/2$^-$)	217.6‡ *3*	100‡	7.49	(1/2$^-$)	(M1)@	0.874	α(K)=0.717 *11*; α(L)=0.1204 *18*; α(M)=0.0280 *4* α(N)=0.00703 *11*; α(O)=0.001330 *20*; α(P)=0.0001018 *15*
368.80	(1/2,3/2,5/2)$^-$	318.1‡ *3*	100‡ *10*	50.60	(3/2$^-$)	(M1)@	0.308	α(K)=0.253 *4*; α(L)=0.0421 *6*; α(M)=0.00979 *14* α(N)=0.00246 *4*; α(O)=0.000465 *7*; α(P)=3.56×10^{-5} *5*
		368.9‡ *3*	96‡ *9*	0	5/2$^-$			
548.76	(5/2$^-$)	498.3# *2*	31# *6*	50.60	(3/2$^-$)			
		541.2# *2*	48# *10*	7.49	(1/2$^-$)	(E2)@	0.0223	α(K)=0.01644 *23*; α(L)=0.00445 *7*; α(M)=0.001088 *16* α(N)=0.000272 *4*; α(O)=4.87×10^{-5} *7*; α(P)=2.18×10^{-6} *3*
		548.8# *2*	100# *20*	0	5/2$^-$	(M1)@	0.0718	α(K)=0.0591 *9*; α(L)=0.00971 *14*; α(M)=0.00225 *4* α(N)=0.000565 *8*; α(O)=0.0001069 *15*; α(P)=8.25×10^{-6} *12*
591.52	(9/2$^-$)	591.4# *2*	100#	0	5/2$^-$			
755.52	(5/2$^-$)	206.8# *2*	100#	548.76	(5/2$^-$)			
933.14	(13/2$^+$)	341.5 *2*	100	591.52	(9/2$^-$)	[M2]	0.898	B(M2)(W.u.)=0.00462 *21* α(K)=0.692 *10*; α(L)=0.1570 *23*; α(M)=0.0381 *6* α(N)=0.00961 *14*; α(O)=0.00180 *3*; α(P)=0.0001279 *18*
1117.98		362.5# *2*	23# *4*	755.52	(5/2$^-$)			
		569.3# *2*	100# *20*	548.76	(5/2$^-$)	(E1,E2)@		α(K)=0.010 *5*; α(L)=0.0024 *15*
1307.94	(17/2$^+$)	374.8 *1*	100	933.14	(13/2$^+$)	(E2)	0.0565	α(exp)<0.16 (2011Sz01) α(K)=0.0372 *6*; α(L)=0.01456 *21*; α(M)=0.00364 *6* α(N)=0.000908 *13*; α(O)=0.0001588 *23*; α(P)=4.87×10^{-6} *7*

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Adopted Levels, Gammas (continued)

γ(^{203}Hg) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.	α[&]	Comments
1488.26		370.4[#] *2*	100[#]	1117.98				
		555.0[#] *2*	[#]	933.14	(13/2$^+$)			
2013.3	(21/2$^+$)	705.4 *1*	100	1307.94	(17/2$^+$)			
2961.6	(23/2$^-$)	948.3 *1*	100	2013.3	(21/2$^+$)			
3079.6	(25/2$^+$)	1066.3 *1*	100	2013.3	(21/2$^+$)			
3153.3	(27/2$^-$)	74	100 *50*	3079.6	(25/2$^+$)	E1	0.193	α(exp)<2.0 (2011Sz01) α(L)=0.1480 *21*; α(M)=0.0348 *5* α(N)=0.00853 *12*; α(O)=0.001485 *21*; α(P)=6.61×10^{-5} *10*
		191.6 *2*	72.5 *25*	2961.6	(23/2$^-$)	E2	0.453	α(exp)=0.42 *8* (2011Sz01) α(K)=0.188 *3*; α(L)=0.199 *3*; α(M)=0.0515 *8* α(N)=0.01279 *19*; α(O)=0.00216 *4*; α(P)=2.35×10^{-5} *4*
3693.5	(29/2$^-$)	540.2 *1*	100	3153.3	(27/2$^-$)			
3792.5	(31/2$^-$)	99		3693.5	(29/2$^-$)			Intensity could not be determined because of contaminant U x rays.
		639.2 *1*	100	3153.3	(27/2$^-$)			
4587.7	(31/2$^-$,35/2$^-$)	795.4 *1*	100	3792.5	(31/2$^-$)			
4681.9	(33/2$^-$)	889.4 *2*	100 *14*	3792.5	(31/2$^-$)			
		988.4 *2*	19 *5*	3693.5	(29/2$^-$)			
4805.7	(33/2$^+$)	218.5 *2*	20.0 *18*	4587.7	(31/2$^-$,35/2$^-$)	E1	0.0595	α(exp)<0.1 (2011Sz01) α(K)=0.0487 *7*; α(L)=0.00830 *12*; α(M)=0.00193 *3* α(N)=0.000479 *7*; α(O)=8.74×10^{-5} *13*; α(P)=5.28×10^{-6} *8*
		1013.2 *1*	100 *7*	3792.5	(31/2$^-$)			
5174.2	(35/2$^+$)	368.6 *2*	100 *11*	4805.7	(33/2$^+$)	M1	0.207	α(exp)=0.21 *14* (2011Sz01) α(K)=0.1698 *24*; α(L)=0.0282 *4*; α(M)=0.00655 *10* α(N)=0.001643 *24*; α(O)=0.000311 *5*; α(P)=2.39×10^{-5} *4*
		492.2 *2*	50 *4*	4681.9	(33/2$^-$)			
5319.7	(39/2$^+$)	145.5 *1*	100	5174.2	(35/2$^+$)	E2	1.235	α(exp)=1.8 *8* (2011Sz01) α(K)=0.351 *5*; α(L)=0.662 *10*; α(M)=0.1724 *25* α(N)=0.0428 *7*; α(O)=0.00716 *11*; α(P)=4.56×10^{-5} *7* B(E2)(W.u.)=7.0 *+17−11*
5852.5	(43/2$^+$)	532.8 *1*	100	5319.7	(39/2$^+$)			
6699.9	(45/2$^-$)	847.4 *1*	100	5852.5	(43/2$^+$)			
6961.0	(49/2$^-$)	261.0 *1*	100 *12*	6699.9	(45/2$^-$)	E2	0.1629	α(exp)<0.25 (2011Sz01) α(K)=0.0885 *13*; α(L)=0.0559 *8*; α(M)=0.01429 *21* α(N)=0.00355 *5*; α(O)=0.000608 *9*; α(P)=1.125×10^{-5} *16*
		1108[a]	<3.5	5852.5	(43/2$^+$)			
7394.2	(47/2$^-$)	433[a] *1*	<57	6961.0	(49/2$^-$)			
		694.4 *2*	100 *14*	6699.9	(45/2$^-$)			
7526.8	(47/2$^-$)	565.5 *4*	100	6961.0	(49/2$^-$)			
8281.3	(53/2$^+$)	753.9 *5*	11 *4*	7526.8	(47/2$^-$)	[E3]	0.0275	α(K)=0.0191 *3*; α(L)=0.00636 *9*; α(M)=0.001583 *23* α(N)=0.000396 *6*; α(O)=7.10×10^{-5} *10*; α(P)=3.02×10^{-6} *5* B(E3)(W.u.)=2.1 *+10−8*

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Adopted Levels, Gammas (continued)

$\gamma(^{203}Hg)$ (continued)

E_i(level)	E_γ †	I_γ †	E_f	J^π_f	Mult.	α&	Comments
8281.3	887.4 *4*	15 *5*	7394.2	$(47/2^-)$	[E3]	0.0183	α(K)=0.01338 *19*; α(L)=0.00377 *6*; α(M)=0.000925 *13* α(N)=0.000232 *4*; α(O)=4.20×10^{-5} *6*; α(P)=2.05×10^{-6} *3* B(E3)(W.u.)=0.92 *+39−32*
	1320.3 *2*	100 *11*	6961.0	$(49/2^-)$	[M2]	0.0179	α(K)=0.01461 *21*; α(L)=0.00252 *4*; α(M)=0.000590 *9* α(N)=0.0001482 *21*; α(O)=2.80×10^{-5} *4*; α(P)=2.14×10^{-6} *3*; α(IPF)=9.05×10^{-6} *13* B(M2)(W.u.)=0.00119 *+31−22*
10434.3	2153 *1*	100	8281.3	$(53/2^+)$			

† From ^{208}Pb(^{48}Ca,xγ),^{238}U(^{48}Ca,xγ), unless otherwise stated.
‡ From ^{203}Au β^- decay.
# From ^{202}Hg(d,pγ).
@ From ce in ^{202}Hg(d,pγ) (1986Ze03).
& Additional information 1.
a Placement of transition in the level scheme is uncertain.

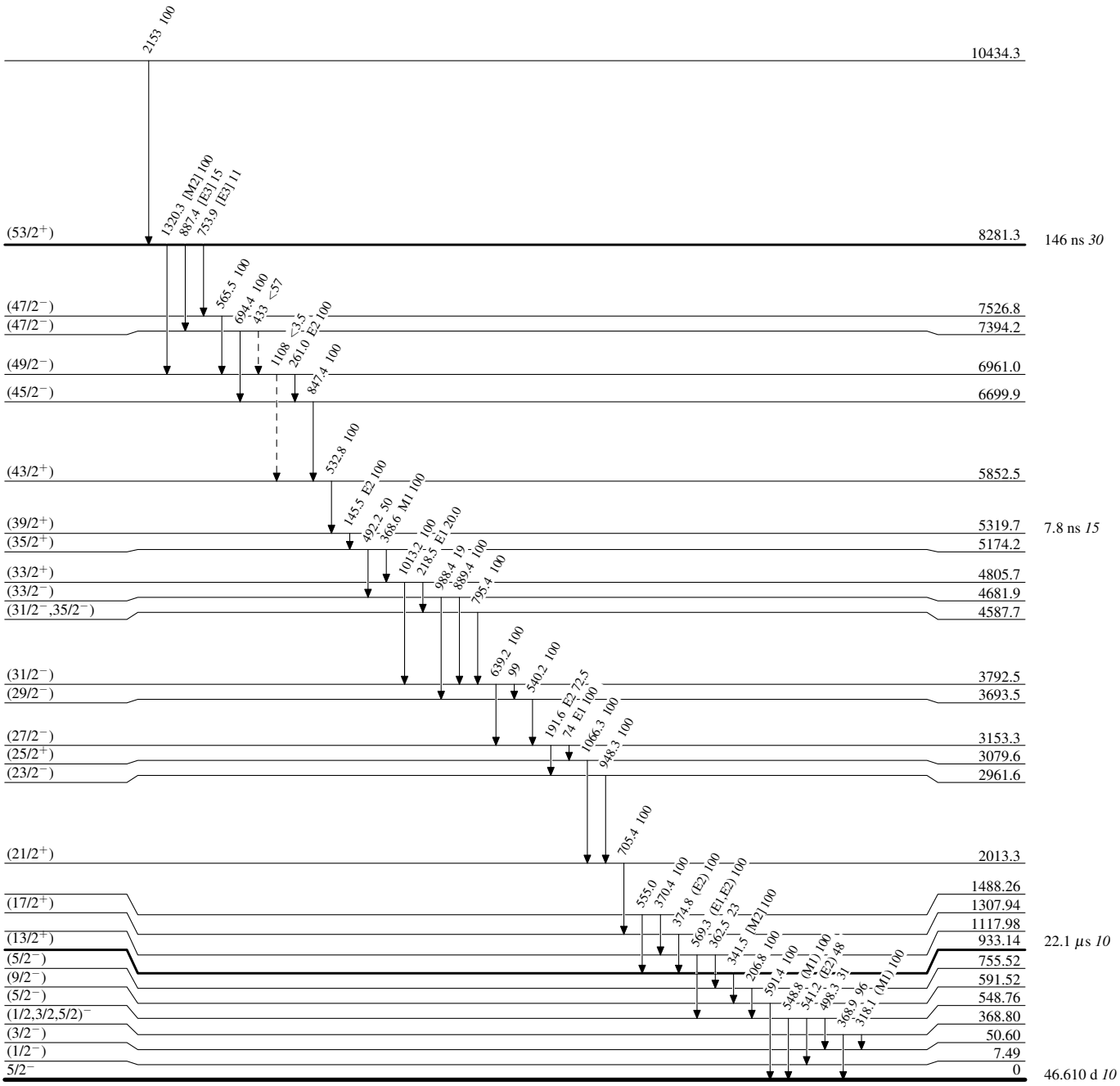
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

– – – – – – ► γ Decay (Uncertain)



$^{203}_{80}Hg_{123}$

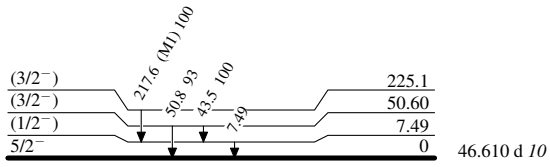
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{203}_{80}Hg_{123}$