Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia	NDS 110,999 (2009)	1-Nov-2008

Q(β^-)=−5675 *17*; S(n)=7650 *19*; S(p)=3.69×10^3 *3*; Q(α)=5230 *14* 2012Wa38
Note: Current evaluation has used the following Q record $ −5674 *16* 7650 *18* 3692 *25* 5230 *14* 2003Au03.

^{187}Hg Levels

Cross Reference (XREF) Flags

- A ^{187}Tl ε decay (51 s+15.60 s)
- B ^{191}Pb α decay (1.33 min)
- C ^{163}Dy(^{28}Si,4nγ),

E(level)†	J$^\pi$‡	T$_{1/2}$	XREF	Comments
0.0	3/2$^{(-)}$	1.9 min *3*	AB	%ε+%β^+=100; %α<3.7×10^{-4} μ=−0.594 *4*; Q=−0.75 *25* J$^\pi$: spin measured by optical pumping (1971Bo31), parity from comparison of experimental μ with Schmidt limit for configuration ν p$_{3/2}$. μ,Q: from 1986Ul02 (radiative detection of optical pumping), Q(β^-)Sternheimer shielding corrected. Same values in 1989Ra17 and 2005St24. T$_{1/2}$: from 1970Ha18. In 1970Ha18, half-lives 1.9 min 3 and 2.4 min 3 are measured for 5035α 20 and 4870α 20, respectively, in the ^{187}Hg α decay. 5035α 20 feeding the 3/2$^-$ state in ^{183}Pt at 84.62 keV from this level. %α: Estimated by the evaluator using α T$_{1/2}$ (calculated) from 1997m025. 1970Ha18 reports %α>1.2×10^{-4}, expecting the K X-rays contribution both from the ^{187}Hg g.s. and Isomeric state ε decays. <r^2>$^{1/2}$(^{187}Hg)=5.405 *4* fm (2004An14).
0.0+x[a]	13/2$^{(+)}$	2.4 min *3*	A C	%ε+%β^+=100; %α<3.7×10^{-4} *10* μ=−1.044 *11*; Q=+0.5 *3* Additional information 1. E(level): a level energy of 59 keV 16 deduced from mass doublet method in 2003Au02. μ,Q: μ from 1979Da06 (LASER spectroscopy), Q from 1986Ul02 (radiative detection of optical pumping)-Sternheimer shielding corrected. In 1989Ra17 Q=+0.45 *33*. J$^\pi$: spin measured by pulsed laser beam (1979Kr11). Parity from comparison of experimental μ with Schmidt limit for configuration ν i$_{13/2}$). T$_{1/2}$: from 1970Ha18. Evaluator assumed 4870α 20 from this level. Please see the T$_{1/2}$ comments at the g.s. level. Other: 3 min (1960Al20). %α: Estimated by the evaluator using α T$_{1/2}$ (calculated) from 1997m025. 1970Ha18 reports %α>2.5×10^{-4}, expecting the K X-rays contribution both from the ^{187}Hg g.s. and Isomeric state ε decays.
161.57 *24*	(9/2$^+$)	33 ns	A	T$_{1/2}$: from ^{187}Tl ε decay (1983CoZP). J$^\pi$: This level gets more low-spin feeding compared to the 167.7 keV level and so J^π=11/2$^+$ for the 167.7 keV level suggests 9/2$^+$ for this level. A B(E2) of 1.3 W.u. which is very slow for an E2 transition suggests a 9/2$^+$[624] configuration for this level, consistent with the ground-state Nilsson assignments for all the N=107 isotones (2008WoZY).
167.3+x[#] *4*	(11/2$^+$)		A C	J$^\pi$: This level gets less low-spin feeding compared to the 161.5 keV level and so J^π=11/2$^+$ for this level suggests 9/2$^+$ for the 161.5 keV level (^{187}Tl ε decay – 2008WoZY).
401.8+x[@] *4*	(13/2$^+$)		C	
424.0+x[a] *3*	(17/2$^+$)		A C	

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Adopted Levels, Gammas (continued)

^{187}Hg Levels (continued)

E(level)†	Jπ‡	XREF	E(level)†	Jπ‡	XREF	E(level)†	Jπ‡	XREF
437.0+x *4*	(15/2+)	C	1801.4+x[a] *6*	(25/2+)	C	2999.9+x[&] *14*	(33/2−)	C
535.6+x[#] *4*	(15/2+)	C	1922.9+x[#] *5*	(27/2+)	C	3169.4+x[#] *9*	(35/2+)	C
729.8+x[@] *4*	(17/2+)	C	2067.2+x *6*		C	3301.4+x *13*		C
917.0+x[#] *4*	(19/2+)	C	2072.7+x[&] *11*	(25/2−)	C	3435.2+x[@] *10*	(37/2+)	C
1020.2+x[a] *4*	(21/2+)	C	2155.4+x[@] *6*	(29/2+)	C	3714.9+x[&] *17*		C
1078.3+x *4*	(19/2+)	C	2411.4+x[&] *13*	(29/2−)	C	3839.5+x[#] *10*	(39/2+)	C
1175.8+x[@] *4*	(21/2+)	C	2478.6+x *8*	(29/2+)	C	4024.4+x *17*		C
1383.1+x[#] *4*	(23/2+)	C	2524.4+x[#] *7*	(31/2+)	C	4134.2+x[@] *14*	(41/2+)	C
1586.2+x[@] *4*	(25/2+)	C	2773.0+x[@] *8*	(33/2+)	C	4870.2+x?[@] *17*		C
1756.7+x[&] *5*	(21/2−)	C	2791.4+x *8*	(33/2+)	C			

† From a least-squares adjustment to the γ-ray energies.

‡ From interlocking stretched E2 transitions and M1+E2 transitions. The yrast sequence can be determined through the 3435 level (37/2+). Both ΔJ=2 bands are determined from decay of the upper yrast levels. The parities of the other bands are determined by the multipolarities of the transitions and the spins are those proposed by 1988Ha15.

[#] Band(A): ΔJ=2 band, α=−1/2.

[@] Band(B): ΔJ=2 band, α=+1/2.

[&] Band(C): negative parity band.

[a] Band(D): ground-state band.

γ(^{187}Hg)

E_i(level)	J_i^π	E_γ†	I_γ	E_f	J_f^π	Mult.†	α‡	Comments
161.57	(9/2+)	161.5 *3*	100	0.0+x	13/2(+)	[E2]	0.859	B(E2)(W.u.)=1.32 E_γ: From ^{187}Tl ε decay.
167.3+x	(11/2+)	167.3 *5*	100	0.0+x	13/2(+)	D+Q		
401.8+x	(13/2+)	234.5 *5*	100	167.3+x	(11/2+)	D+Q		
424.0+x	(17/2+)	424.0 *3*	100	0.0+x	13/2(+)	E2		
437.0+x	(15/2+)	437.0 *5*	100	0.0+x	13/2(+)	M1+E2		
535.6+x	(15/2+)	133.8 *5*	11 *7*	401.8+x	(13/2+)	D+Q		
		368.4 *5*	100 *19*	167.3+x	(11/2+)	(Q)		
		535.7 *5*	39 *14*	0.0+x	13/2(+)	M1(+E2)		
729.8+x	(17/2+)	194.1 *5*	15 *5*	535.6+x	(15/2+)	M1(+E2)		
		327.9 *5*	100 *27*	401.8+x	(13/2+)	Q		
917.0+x	(19/2+)	187.2 *5*	6.6 *23*	729.8+x	(17/2+)	D+Q		
		381.6 *5*	100 *19*	535.6+x	(15/2+)	E2		
		492.7 *5*	25 *6*	424.0+x	(17/2+)	M1(+E2)		
1020.2+x	(21/2+)	596.1 *3*	100	424.0+x	(17/2+)	E2		
1078.3+x	(19/2+)	641.3 *5*	100 *18*	437.0+x	(15/2+)	E2		
		654.3 *5*	55 *15*	424.0+x	(17/2+)	M1(+E2)		
1175.8+x	(21/2+)	258.7 *5*	6.9 *25*	917.0+x	(19/2+)	M1(+E2)		
		445.9 *5*	100 *19*	729.8+x	(17/2+)	E2		
		752.1 *5*	45 *16*	424.0+x	(17/2+)	(Q)		
1383.1+x	(23/2+)	207.5 *5*	6.3 *22*	1175.8+x	(21/2+)	D+Q		
		362.7 *5*	22 *7*	1020.2+x	(21/2+)	M1+E2		
		466.1 *5*	100 *19*	917.0+x	(19/2+)	E2		
1586.2+x	(25/2+)	203.1 *5*	2.0 *10*	1383.1+x	(23/2+)	D+Q		
		410.2 *5*	18 *4*	1175.8+x	(21/2+)	E2		
		566.0 *3*	100 *18*	1020.2+x	(21/2+)	E2		
1756.7+x	(21/2−)	678.5 *5*	100 *33*	1078.3+x	(19/2+)	E1		

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Adopted Levels, Gammas (continued)

γ(^{187}Hg) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[†]
1756.7+x	(21/2$^-$)	736.5 *5*	44 *17*	1020.2+x	(21/2$^+$)	(D)
1801.4+x	(25/2$^+$)	625.6 *5*	100 *20*	1175.8+x	(21/2$^+$)	E2
		781 *1*	≈50	1020.2+x	(21/2$^+$)	
1922.9+x	(27/2$^+$)	336.7 *5*	9.5 *4*	1586.2+x	(25/2$^+$)	D+Q
		539.8 *5*	100 *18*	1383.1+x	(23/2$^+$)	E2
2067.2+x		1047.0 *5*	100	1020.2+x	(21/2$^+$)	
2072.7+x	(25/2$^-$)	316 *1*	100	1756.7+x	(21/2$^-$)	
2155.4+x	(29/2$^+$)	232 *1*	≈3.8	1922.9+x	(27/2$^+$)	
		569.4 *5*	100 *23*	1586.2+x	(25/2$^+$)	E2
2411.4+x	(29/2$^-$)	338.7 *5*	100	2072.7+x	(25/2$^-$)	E2
2478.6+x	(29/2$^+$)	677.2 *5*	100	1801.4+x	(25/2$^+$)	(Q)
2524.4+x	(31/2$^+$)	369[#] *1*		2155.4+x	(29/2$^+$)	
		601.5 *5*	100 *27*	1922.9+x	(27/2$^+$)	E2
2773.0+x	(33/2$^+$)	617.6 *5*	100	2155.4+x	(29/2$^+$)	E2
2791.4+x	(33/2$^+$)	636.0 *5*	100	2155.4+x	(29/2$^+$)	Q
2999.9+x	(33/2$^-$)	588.5 *5*	100	2411.4+x	(29/2$^-$)	(Q)
3169.4+x	(35/2$^+$)	645.0 *5*	100	2524.4+x	(31/2$^+$)	E2
3301.4+x		510 *1*	100	2791.4+x	(33/2$^+$)	
3435.2+x	(37/2$^+$)	662.2 *5*	100	2773.0+x	(33/2$^+$)	E2
3714.9+x		715 *1*	100	2999.9+x	(33/2$^-$)	
3839.5+x	(39/2$^+$)	670.1 *5*	100	3169.4+x	(35/2$^+$)	(Q)
4024.4+x		723 *1*	100	3301.4+x		
4134.2+x	(41/2$^+$)	699 *1*	100	3435.2+x	(37/2$^+$)	
4870.2+x?		736[#] *1*	100	4134.2+x	(41/2$^+$)	

[†] From (^{28}Si,4nγ), except otherwise noted.

[‡] 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.

[#] Placement of transition in the level scheme is uncertain.

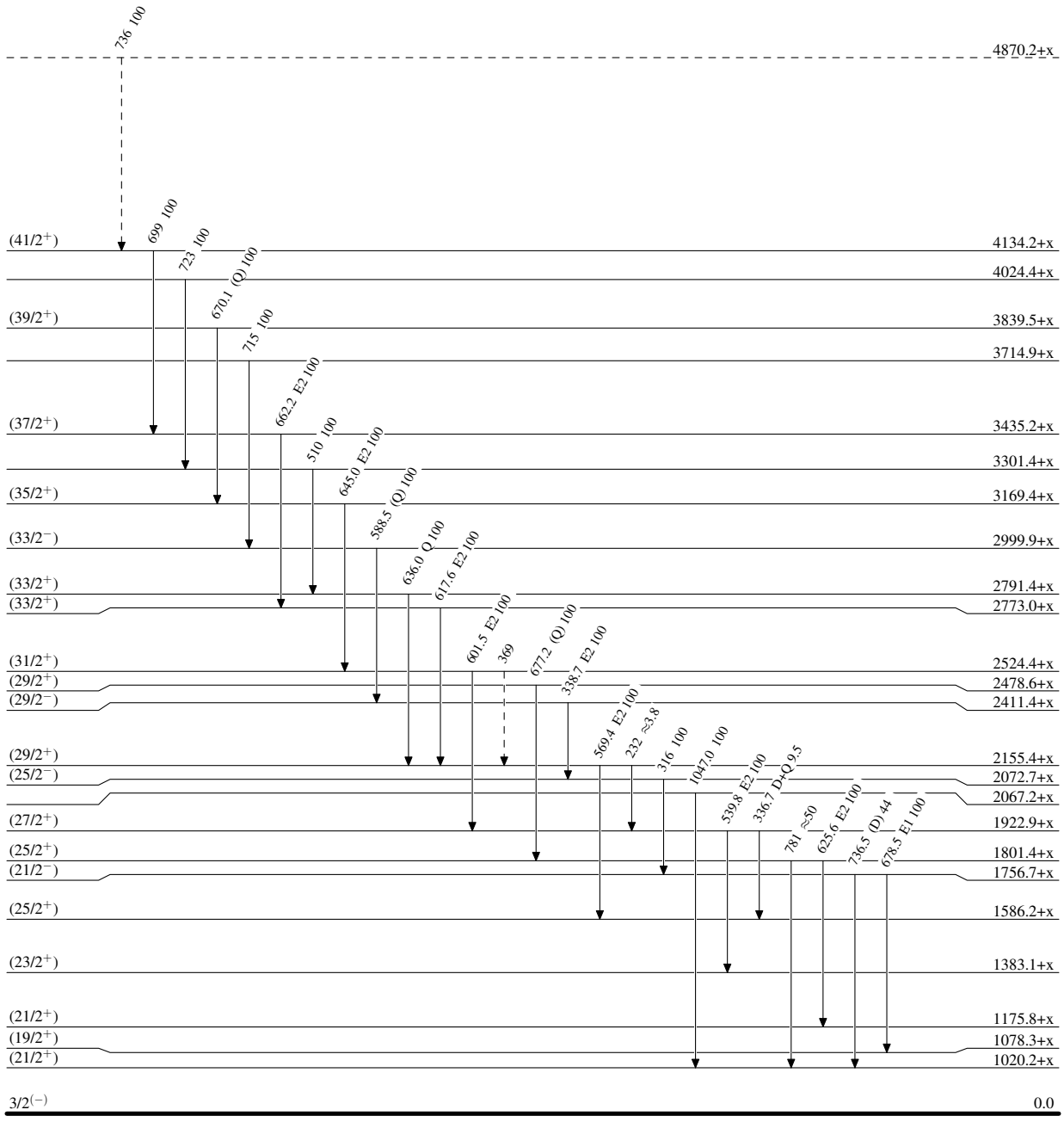
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

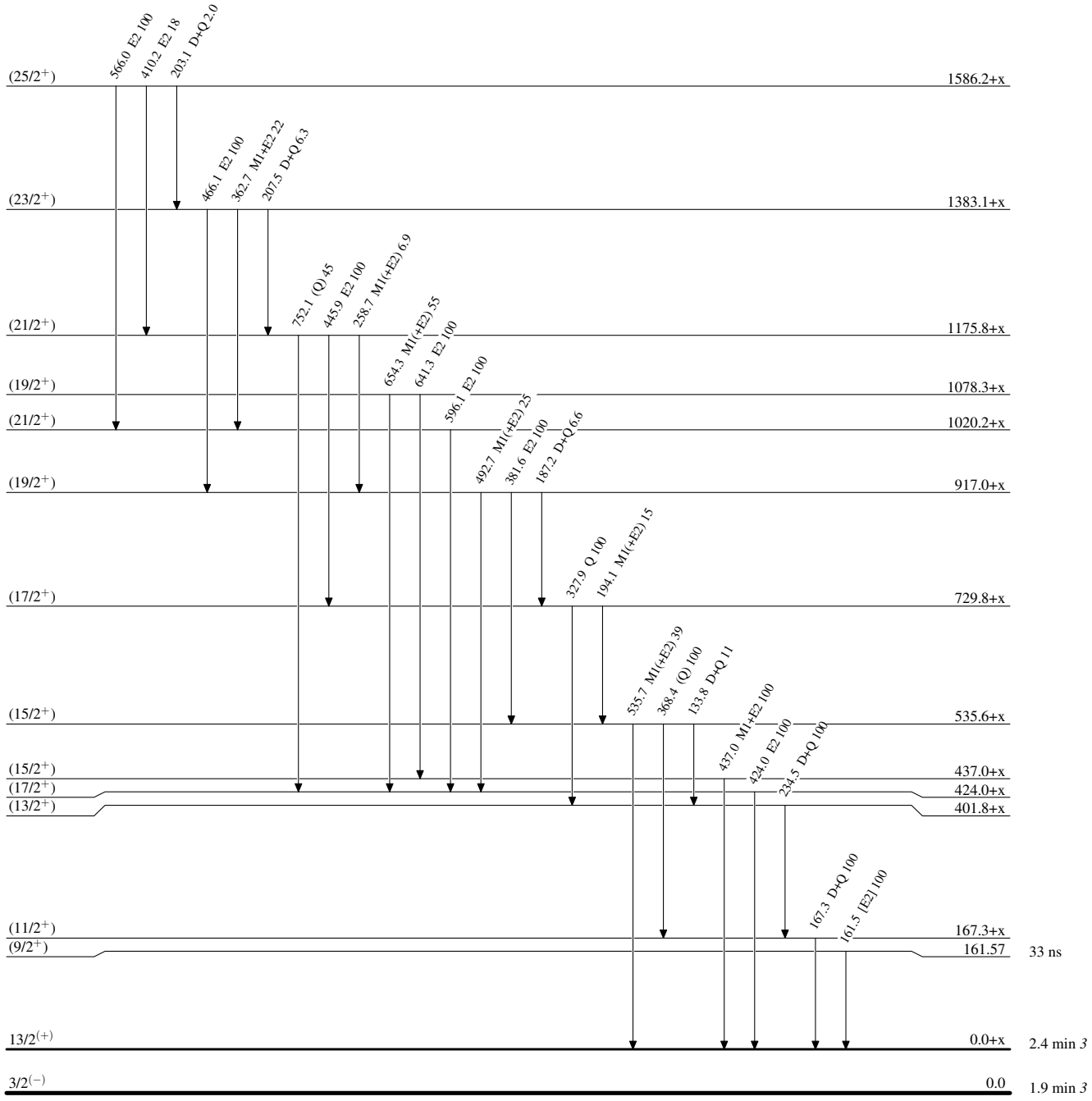


$^{187}_{80}Hg_{107}$

Adopted Levels, Gammas

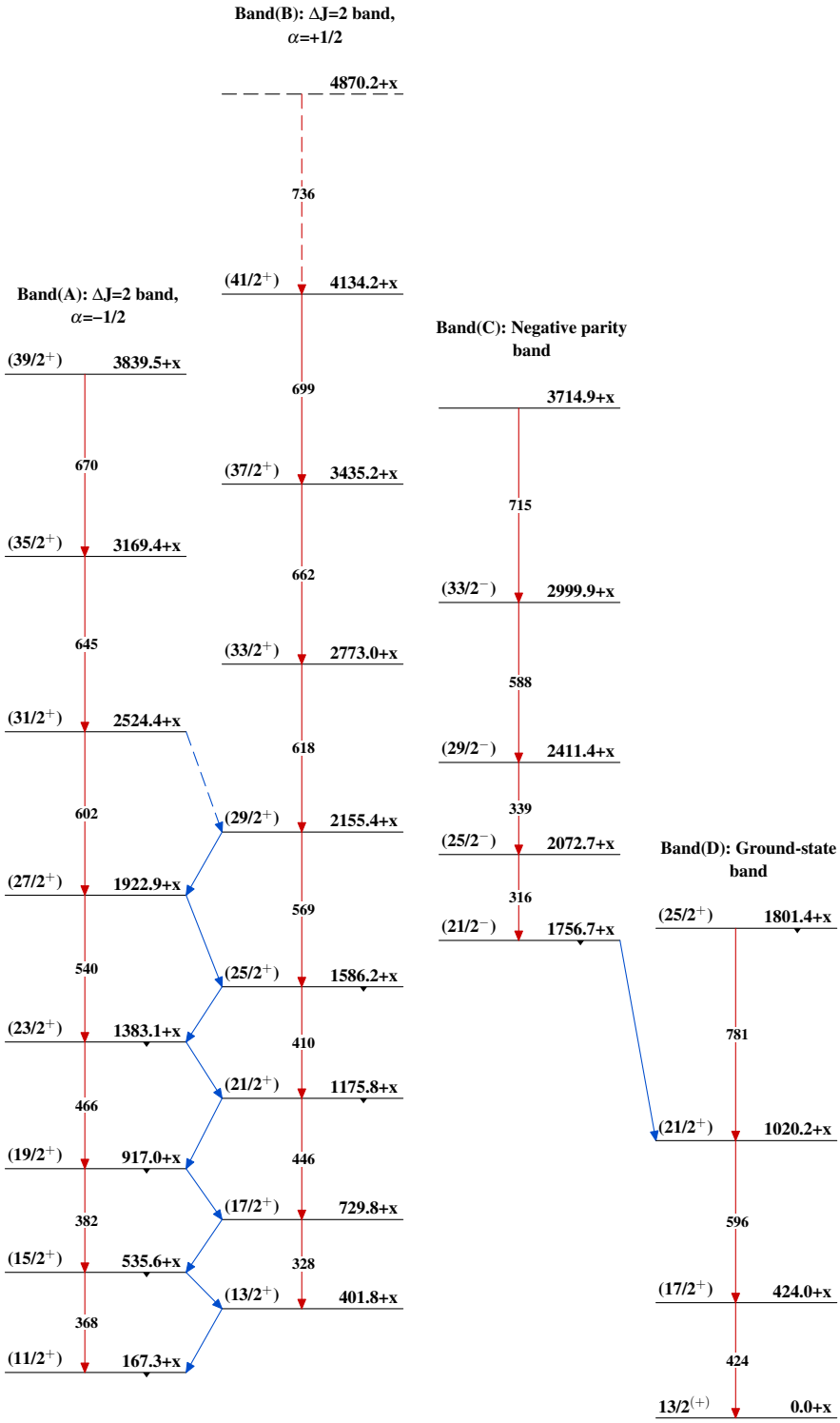
Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{187}_{80}Hg_{107}$

Adopted Levels, Gammas



$^{187}_{80}Hg_{107}$