Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Achterberg, O. A. Capurro, G. V. Marti	NDS 110,1473 (2009)	31-May-2008

Q(β^-)=−1.152×10^4 *syst*; S(n)=1.160×10^4 *8*; S(p)=2060 *15*; Q(α)=6577 *3* 2012Wa38
Note: Current evaluation has used the following Q record −11560 syst 11610 *80* 2056 18 *6577* 5 2003Au03.
ΔQ(β)(est)=110 keV (2003Au03).
Q(β^+)=6010 *60* keV (2003Au03).
Theory references:
1972Fa11, calculation of deformation energy surfaces.
1987Be06, shape coexistence studies, PES calculations.
1993Na05, low-spin shape coexistence, reflection asymmetric WS model.
1994Pa29,1994Yo05,1996He02,1996Ta01, discussion of applicability of relativistic mean-field approach in studies of nuclear shapes, binding energies, deformation parameters.

^{178}Hg Levels

Level scheme based on α-γ correlations, $\gamma\gamma$ coincidences, and intensity balances (2000Ko48,2000Ko01,1997Ca16).

Cross Reference (XREF) Flags

A ^{182}Pb α decay
B (HI,xnγ)

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$	XREF	Comments
0.0[#]	0$^+$	266.5 ms *24*	AB	%ε+%β^+≈30; %α≈70 This level decays to the ^{174}Pt g.s. by an unhindered α transition, with Eα=6429 *3* keV, weighted average of 6425 *15* keV (1971Ha03), 6425 *15* keV (1976HoZD), 6430 *6* keV (1979Ha10), 6428 *9* keV (1996Pa01), 6429 *4* keV (2000Ko01), 6429 *5* keV (2004GoZZ). T$_{1/2}$: Average from 0.283 *23* (2004GoZZ), 0.269 *3* (2002Ro17), 0.262 *4* (2000Ko01), 0.287 *23* (1996Pa01), 0.250 *25* (1991Se01), 0.26 *3* (1979Ha10), 0.26 *3* (1976HoZD). J$^\pi$: g.s. of even-even nucleus. %α: ≈60 to ≈80 from systematics, based on b$_\alpha$≈84% (1971Ha03), and b$_\alpha$≈50% (1979Ha10). The quoted value is consistent with calculations in 1998Ak04, which yield 70<%α≤100.
558.00[#] *20*	2$^+$		B	
1012.4[#] *3*	4$^+$		B	
1346.9[#] *4*	6$^+$		B	
1357.8 *6*	(3$^-$)		B	
1447.2 *6*	3$^-$		B	
1743.5[#] *5*	8$^+$		B	
1851.4 *8*	(4$^-$)		B	
1990.2 *5*	5$^-$		B	
2157.0 *8*	(5$^-$)		B	
2201.2[#] *7*	10$^+$		B	
2215.3 *8*	(6$^-$)		B	
2388.6[@] *6*	7$^-$		B	Band head for negative-parity band 2.
2711.6[#] *8*	12$^+$		B	
2730.0[@] *7*	9$^-$		B	
3117.7[@] *8*	11$^-$		B	

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Adopted Levels, Gammas (continued)

^{178}Hg Levels (continued)

E(level)†	Jπ‡	XREF	E(level)†	Jπ‡	XREF	E(level)†	Jπ‡	XREF
3265.2# *9*	14^+	B	3980.4@ *12*	(15^-)	B	4971.9@ *17*	(19^-)	B
3539.1@ *10*	13^-	B	4454.4@ *14*	(17^-)	B	5090.3# *16*	(20^+)	B
3853.8# *11*	16^+	B	4469.3# *14*	(18^+)	B	5534.5@ *18*	(21^-)	B

† The level energies are from a least-squares adjustment to the adopted γ-ray energies.
‡ From (HI,xnγ).
# Band(A): π=+ gs band. Prolate deformed yrast sequence. Levels connected by stretched E2 transitions (2000Ko48,2000Ko01,1999Ca16).
@ Band(B): π=+ band. Interpreted as an octupole−vibration based rotational band with levels connected by stretched E2 transitions (200Ko48,2000Ko01).

γ(^{178}Hg)

For relative γ-ray intensities, see (HI,xnγ) dataset.

E_i(level)	J_i^π	E_γ†	I_γ	E_f	J_f^π	Mult.#	α‡
558.00	2^+	558.0@ *2*		0.0	0^+	E2	0.0208
1012.4	4^+	454.4@ *2*		558.00	2^+	E2	0.0341
1346.9	6^+	334.5@ *2*		1012.4	4^+	E2	0.0775
1357.8	(3^-)	799.7 *6*		558.00	2^+	(E1)	0.00348
1447.2	3^-	889.1 *6*		558.00	2^+	E1	0.00286
1743.5	8^+	396.6@ *4*		1346.9	6^+	E2	0.0485
1851.4	(4^-)	839.0 *8*		1012.4	4^+	(E1)	0.00318
1990.2	5^-	542.8 *8*	31 *9*	1447.2	3^-	E2	0.0221
		632.2 *8*	59 *10*	1357.8	(3^-)	E2	0.01564
		644.0[a] *8*	<15	1346.9	6^+	(E1)	0.00530
		978.2 *6*	100	1012.4	4^+	E1	0.00240
2157.0	(5^-)	799.1 *8*		1357.8	(3^-)	(E2)	0.00947
2201.2	10^+	457.7@ *4*		1743.5	8^+	E2	0.0335
2215.3	(6^-)	363.9 *8*	100 *5*	1851.4	(4^-)	(E2)	0.0612 *10*
		868.4 *8*	<50	1346.9	6^+	(E1)	0.00298
2388.6	7^-	231.5 *8*	15 *4*	2157.0	(5^-)	(E2)	0.239 *5*
		398.4 *4*	100	1990.2	5^-	E2	0.0479
		644.9 *8*	17 *4*	1743.5	8^+	E1	0.00529
		1041.0[a] *8*	<7	1346.9	6^+	(E1)	0.00214
2711.6	12^+	510.4@ *4*		2201.2	10^+	E2	0.0256
2730.0	9^-	341.4& *4*		2388.6	7^-	E2	0.0732
3117.7	11^-	387.7& *4*		2730.0	9^-	E2	0.0515
3265.2	14^+	553.6@ *4*		2711.6	12^+	E2	0.0211
3539.1	13^-	421.4& *6*		3117.7	11^-	E2	0.0414
3853.8	16^+	588.6@ *6*		3265.2	14^+	E2	0.0184
3980.4	(15^-)	441.3& *6*		3539.1	13^-	(E2)	0.0367
4454.4	(17^-)	474.0& *8*		3980.4	(15^-)	(E2)	0.0307
4469.3	(18^+)	615.5@ *8*		3853.8	16^+	(E2)	0.01660
4971.9	(19^-)	517.5& *8*		4454.4	(17^-)	(E2)	0.0248

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Adopted Levels, Gammas (continued)

$\gamma(^{178}Hg)$ (continued)

E_i(level)	J_i^π	E_γ[†]	E_f	J_f^π	Mult.[#]	α[‡]
5090.3	(20^+)	621.0[@] *8*	4469.3	(18^+)	(E2)	0.01627
5534.5	(21^-)	562.6[&] *8*	4971.9	(19^-)	(E2)	0.0204

[†] From (HI,xnγ). Energy uncertainties estimated by the evaluators, based on the range assumed in 2000Ko48, each depending on its experimental γ-ray intensity.
[‡] Theoretical total internal conversion coefficient for the assumed multipolarity.
[#] Multipolarities from measured angular distributions and directional correlations (2000Ko48,1997Ca16) (see (HI,xnγ) dataset).
[@] Connects levels in g.s. Band 1.
[&] Connects levels in Band 2.
[a] Placement of transition in the level scheme is uncertain.

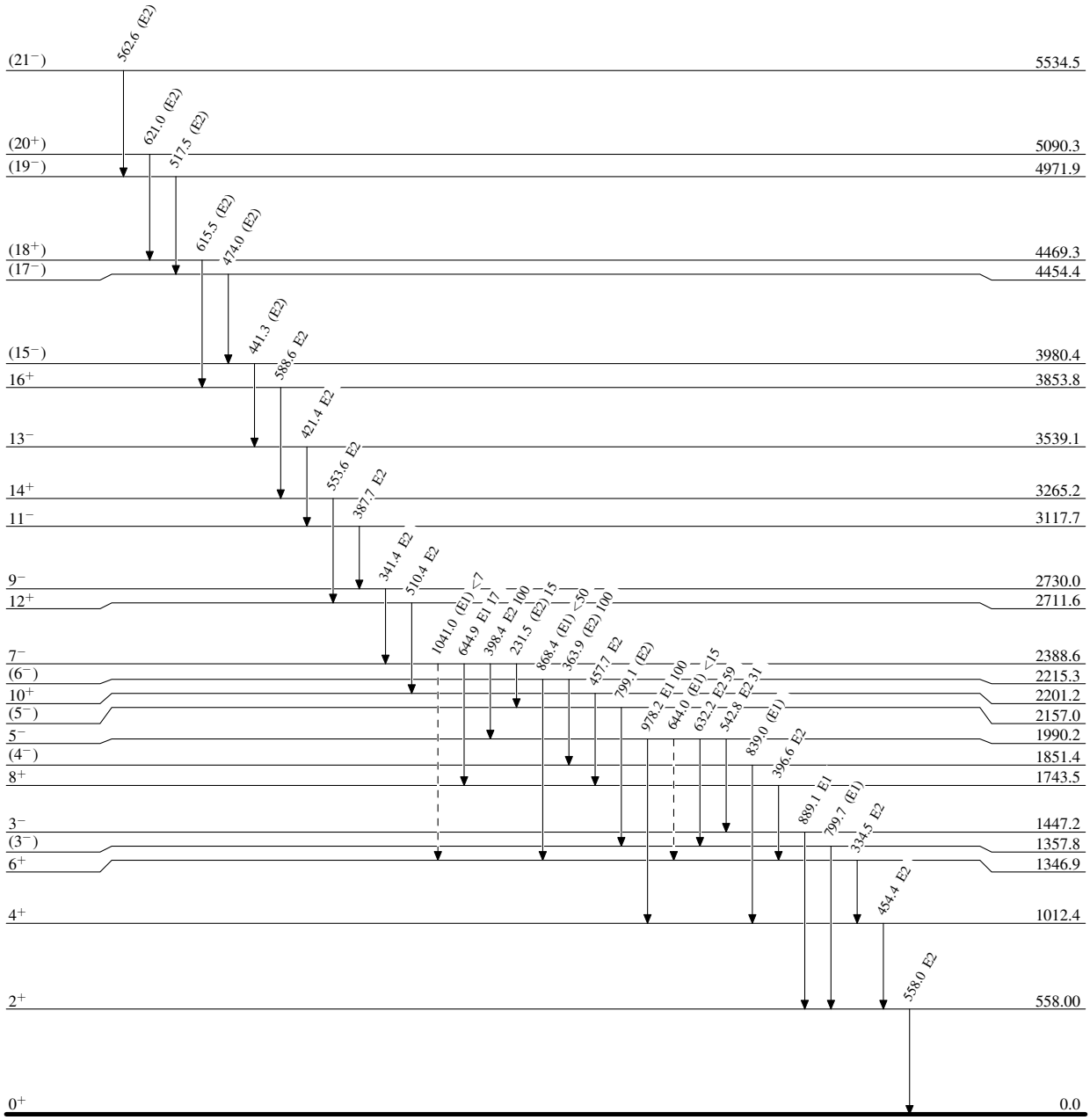
Adopted Levels, Gammas

Legend

Level Scheme

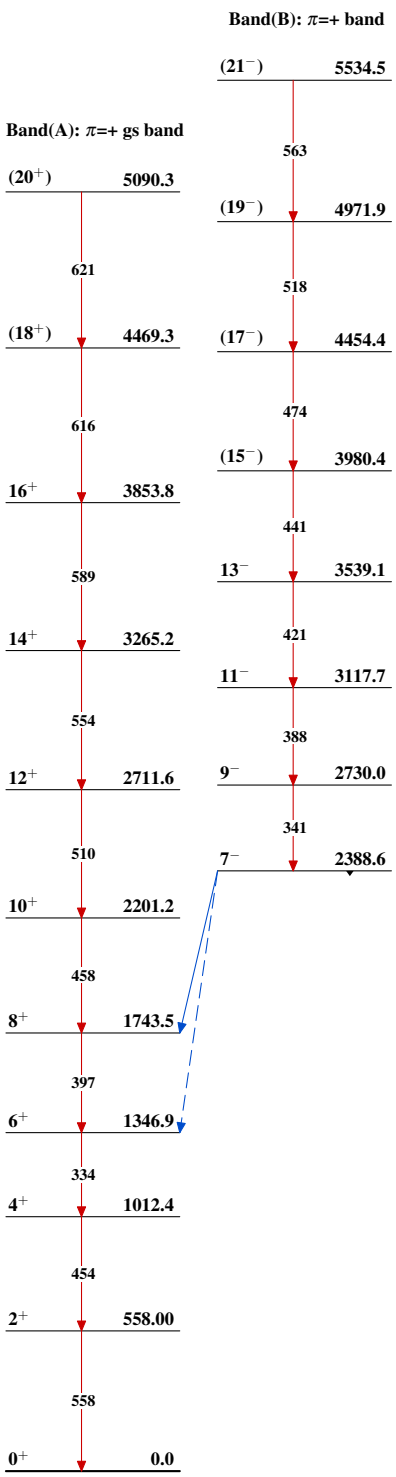
Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{178}_{80}Hg_{98}$

Adopted Levels, Gammas



$^{178}_{80}Hg_{98}$