Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	S. -c. Wu	NDS 106,619 (2005)	1-Nov-2005

Q(β^-)=−6.42×10^3 *3*; S(n)=7898 *19*; S(p)=3.15×10^3 *3*; Q(α)=5774 *5* 2012Wa38
Note: Current evaluation has used the following Q record −6420 60 *7898* 19 *3146* 27 *5774* 5 1993Au05.

^{185}Hg Levels

A significant signature splitting for the 9/2[624] rotational band could be explained in terms of nuclear shape coexistence within the i13/2 subshell: the 9/2[624] rotational band based on a prolate core, and a decoupled rotational band (configuration=i13/2) based on a slightly deformed oblate core. An alternative explanation requires mixing of a K=1/2 configuration with the i13/2 rotational bands, due to a possible hexadecapole deformation and γ asymmetry (1988Ha19). See also 1975Fr08 and 1980Pr01 for theoretical calculations of nuclear deformations, and 1979St04 for a discussion on the odd-particle rotation-aligned coupling scheme.

Cross Reference (XREF) Flags

A ^{161}Dy(^{28}Si,4nγ)
B ^{185}Hg IT decay (21.6 s)

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$	XREF	Comments
0.0[@]	1/2$^-$	49.1 s *10*	AB	%ε+%β^+=94 *1*; %α=6 *1* μ=+0.508 *3* T$_{1/2}$: weighted average of 50 s *2* (1980ToZZ), 48.0 s *15* (1970Ha18), 50 s *2* (1970FiZZ), 43 s *5* (1968De01), and 53 s *4* (1963Ka17). Other: 1982Bo27, 1960Al20, 1953Ra02. J$^\pi$: J from optical pumping with radiation detection (1976Bo09). Experimental μ=+0.508 *3* suggests a 1/2,1/2[521] Nilsson state assignment. %α=6 *1* adopted by evaluator from data of 1970Ha18. See ^{185}Hg(49 s) α decay. %α=5.5 *7* was given by 1970Ha18. μ: Weighted average of +0.509 *4* (1986Ul02) and +0.507 *4* (1976Bo09), optical pumping/radiation detection. <r^2>$^{1/2}$=5.4406 fm 31 for ^{185}Pt based on a global fit to charge radius data for all nuclides (2004An14).
26.1[#@] *5*	3/2$^-$		B	J$^\pi$: 26.1γ M1+E2 to 1/2$^-$.
34[#&] *8*	(7/2)$^-$		AB	J$^\pi$: 65.3γ E3 from 13/2$^+$.
96[@] *1*	(5/2)$^-$		A	J$^\pi$: 96γ (Q) to 1/2$^-$.
99.3[#d] *5*	13/2$^+$	21.6 s *15*	AB	%ε+%β^+=46 *10*; %IT=54 *10*; %$\alpha\approx$0.03 μ=−1.017 *9*; Q=0.20 *33* XREF: A(99). E(level): 1976GrZC looked for Hg K- and L-x rays expected from possible isomeric transitions, but did not observe any. They concluded that the energy of this isomeric level is <15 keV. This upper limit disagrees with 99 keV *8* (1982Bo27). T$_{1/2}$: weighted average of 28 s *5*, 30 s *4* (1982Bo27), 17 s *5* (1970Ha18), and 21 s *1* (1970FiZZ). J$^\pi$: J from optical quantum-beat spectroscopy (1979Kr11) and agreement between experimental and theoretical μ. %IT from 1982Bo27; %α from 1976GrZC, renormalized to %IT=54. μ: Optical pumping with radiation detection (1986Ul02). Other value: −1.07 *7* optical spectroscopy, LASER fluorescence (1979Da06). μ: Isotope shift: 1986Ul02, 1985Kl09, 1979Da06. The large isotope shift measured for ^{185}Hg (J$^\pi$=13/2$^+$) suggests the Nilsson state 13/2$^+$,13/2[606] with a slightly deformed oblate shape, and the Nilsson state 1/2$^-$,1/2[521] for ^{185}Hg (J$^\pi$=1/2$^-$) with

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Adopted Levels, Gammas (continued)

^{185}Hg Levels (continued)

E(level)†	Jπ‡	XREF	Comments
			a strongly deformed prolate shape. Q: Optical pumping with radiation detection (includes Sternheimer correction) (1986Ul02). Other value: 0.9 *17* optical spectroscopy laser fluorescence (includes Sternheimer correction) (1979Da06).
141.0[a] *4*	(9/2)$^-$	A	Jπ: 107.2γ (D+Q) to (7/2)$^-$.
212.7[c] *14*	(9/2$^+$)	A	Jπ: same rotational band was observed in ^{187}Hg and in other N=107 isotones.
280.7[&] *4*	(11/2)$^-$	A	Jπ: 139.9γ D+Q to (9/2)$^-$, 246.5γ E2 to (7/2)$^-$,
329.5[@] *11*	(9/2)$^-$	A	Jπ: 233.5γ Q to (5/2)$^-$.
412.7[b] *9*	(11/2$^+$)	A	Jπ: 200γ (D+Q) to (9/2$^+$), 313γ (D+Q) to 13/2$^+$.
435.7[a] *5*	(13/2)$^-$	A	Jπ: 155γ (D+Q) to (11/2)$^-$, 294.6γ E2 to (9/2)$^-$.
479.8[d] *6*	(17/2)$^+$	A	Jπ: 380.5γ (Q) to 13/2$^+$.
541.2[c] *6*	(17/2)$^+$	A	Jπ: 441.9γ E2 to 13/2$^+$.
549.6[b] *9*	(15/2$^+$)	A	Jπ: 136.8γ (Q) to (11/2$^+$).
612.7[&] *5*	(15/2)$^-$	A	Jπ: 177γ (D+Q) to (13/2)$^-$, 332.1γ E2 to (11/2)$^-$.
633.8[@] *11*	(13/2)$^-$	A	Jπ: 304.3γ E2 to (9/2)$^-$.
806.5[a] *6*	(17/2)$^-$	A	Jπ: 194γ (D+Q) to (15/2)$^-$, 370.7γ E2 to (13/2)$^-$.
906.8[b]	(19/2)$^+$	A	Jπ: 428.4γ M1+E2 to (17/2)$^+$.
1015.3[@] *12*	(17/2)$^-$	A	Jπ: 381.5γ E2 to (13/2)$^-$.
1020.0[&] *6*	(19/2)$^-$	A	Jπ: 213γ (D+Q) to (17/2)$^-$, 407.4γ E2 to (15/2)$^-$.
1030.5[c] *6*	(21/2)$^+$	A	Jπ: 489.4γ E2 to (17/2)$^+$.
1093[d]	(21/2$^+$)	A	Jπ: 614γ (Q) to (17/2)$^+$.
1248.4[a] *6*	(21/2)$^-$	A	Jπ: 228γ (D+Q) to (19/2)$^-$, 441.9γ (Q) to (17/2)$^-$.
1359.9[b] *7*	(23/2)$^+$	A	Jπ: 329γ (D+Q) to (21/2)$^+$, 452.0γ E2 to (19/2)$^+$.
1460.6[@] *13*	(21/2)$^-$	A	Jπ: 445.3γ E2 to (17/2)$^-$.
1495.4[&] *7*	(23/2)$^-$	A	Jπ: 247γ (D+Q) to (21/2)$^-$, 475.4γ E2 to (19/2)$^-$.
1514.3[c] *7*	(25/2)$^+$	A	Jπ: 152γ (D+Q) to (23/2)$^+$, 483.8γ E2 to (21/2)$^+$.
1752.9[a] *8*	(25/2)$^-$	A	Jπ: 504.5γ E2 to (21/2)$^-$.
1886[b]	(27/2)$^+$	A	Jπ: 373γ (D+Q) to (25/2)$^+$, 527.3γ E2 to (23/2)$^+$.
1954.7[@] *13*	(25/2)$^-$	A	Jπ: 494.1γ E2 to (21/2)$^-$.
2029.2[&] *8*	(27/2)$^-$	A	Jπ: 533.8γ E2 to (23/2)$^-$.
2052.0[c] *7*	(29/2)$^+$	A	Jπ: 537.7γ E2 to (25/2)$^+$.
2310.1[a] *9*	(29/2)$^-$	A	Jπ: 557.2γ Q to (25/2)$^-$.
2478.9[b] *8*	(31/2)$^+$	A	Jπ: 427γ (D+Q) to (29/2)$^+$, 591.7γ (Q) to (27/2)$^+$.
2480.5[@] *14*	(29/2)$^-$	A	Jπ: 525.8γ (Q) to (25/2)$^-$.
2611.8[&] *9*	(31/2)$^-$	A	Jπ: 582.6γ E2 to (27/2)$^-$.
2648.3[c] *8*	(33/2)$^+$	A	Jπ: 596.3γ Q to (29/2)$^+$.
2909.2[a] *10*	(33/2)$^-$	A	Jπ: 599.1γ Q to (29/2)$^-$.
3027.5[@] *17*	(33/2)$^-$	A	Jπ: 547γ (Q) to (29/2)$^-$.
3123.7[b] *10*	(35/2$^+$)	A	Jπ: 644.8γ (Q) to (31/2)$^+$.
3236[&]	(35/2)$^-$	A	Jπ: 622.8γ Q to (31/2)$^-$.
3295.2[c] *10*	(37/2)$^+$	A	Jπ: 646.9γ Q to (33/2)$^+$.
3532.7[a] *11*	(37/2)$^-$	A	Jπ: 623.5γ (Q) to (33/2)$^-$.
3617.3 *18*		A	
3810.7 *14*		A	
3867		A	
3899		A	
3982.7 *11*		A	
4176.9 *13*		A	
4581?		A	
4702.7? *15*		A	

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Adopted Levels, Gammas (continued)

^{185}Hg Levels (continued)

† Deduced by evaluator from a least-squares fit to adopted γ-ray energies. Uncertainties do not include the 8-keV uncertainty in the energy of 21-s isomer.
‡ Assignments from ^{161}Dy(^{28}Si,4nγ) are based on γ-ray multipolarities and decay patterns, angular distributions, linear polarizations, rotational structure, and on the energy systematics of other odd-A Hg isotopes. Ratios of stretched M1 to E2 intraband γ-ray reduced transition probabilities for transitions deexciting members of the 7/2[514] and 9/2[624] rotational bands are consistent with their Nilsson orbital assignments (1988Ha19). Specific arguments are given with the individual levels.
# From ^{185}Hg IT decay (21 s).
@ Band(A): 1/2(521) rotational band. Prolate shape.
& Band(B): 7/2(514) rotational band. Prolate shape. α=−1/2.
a Band(b): 7/2(514) rotational band. Prolate shape. α=+1/2.
b Band(c): 9/2(624) rotational band. Prolate shape. α=−1/2.
c Band(C): 9/2(624) rotational band. Prolate shape. α=+1/2.
d Band(D): $K^\pi=13/2^+$, decoupled rotational band. configuration=$i_{13/2}$. Prolate shape.

γ(^{185}Hg)

From ^{161}Dy(^{28}Si,4nγ), unless otherwise specified.

E_i(level)	J_i^π	E_γ#	I_γ@	E_f	J_f^π	Mult.&	δ	α[b]	Comments
26.1	3/2−	26.1[a] 5	100[a]	0.0	1/2−	M1+E2	1.3 6	2.2×10^3 5	E_γ: ΔE estimated by evaluator from the conversion electron spectrum of 1982Bo27.
34	(7/2)−	(8 8)		26.1	3/2−				E_γ: Eγ<15 keV, from ^{185}Hg IT decay (21 s).
96	(5/2)−	96 1		0.0	1/2−	(Q)		6.69	
99.3	13/2+	65.3 5	100	34	(7/2)−	E3		1610	B(E3)(W.u.)=0.0019 4 E_γ,I_γ,Mult.: from ^{185}Hg IT decay (21 s). ΔE estimated by evaluator from the conversion electron spectrum of 1982Bo27.
141.0	(9/2)−	107.2 5	100†	34	(7/2)−	(D+Q)			
280.7	(11/2)−	139.9 5	21	141.0	(9/2)−	D+Q			
		246.5 5	100	34	(7/2)−	E2		0.197	
329.5	(9/2)−	233.5 4	100	96	(5/2)−	Q			
412.7	(11/2+)	200 1		212.7	(9/2+)	(D+Q)			
		313 1		99.3	13/2+	(D+Q)			
435.7	(13/2)−	155 1	6‡	280.7	(11/2)−	(D+Q)			
		294.6 4	100	141.0	(9/2)−	E2		0.114	
479.8	(17/2)+	380.5 4	100	99.3	13/2+	(Q)			
541.2	(17/2)+	441.9[c] 4	100[c]	99.3	13/2+	E2		0.0369	
549.6	(15/2+)	136.8 5	100	412.7	(11/2+)	(Q)			
612.7	(15/2)−	177 1	6.3‡	435.7	(13/2)−	(D+Q)			
		332.1 4	100	280.7	(11/2)−	E2		0.080	
633.8	(13/2)−	304.3 4	100	329.5	(9/2)−	E2		0.103	
806.5	(17/2)−	194 1	†	612.7	(15/2)−	(D+Q)			
		370.7 4	100	435.7	(13/2)−	E2		0.0588	
906.8	(19/2)+	358 1	80‡	549.6	(15/2+)	(Q)			
		366 1	90‡	541.2	(17/2)+	(D+Q)			
		428.4 5	100	479.8	(17/2)+	M1+E2			
1015.3	(17/2)−	381.5 4	100	633.8	(13/2)−	E2		0.0543	
1020.0	(19/2)−	213 1	†	806.5	(17/2)−	(D+Q)			

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Adopted Levels, Gammas (continued)

γ(^{185}Hg) (continued)

E_i(level)	J_i^π	E_γ[#]	I_γ[@]	E_f	J_f^π	Mult.[&]	α[b]
1020.0	$(19/2)^-$	407.4 *4*	100	612.7	$(15/2)^-$	E2	0.0456
1030.5	$(21/2)^+$	489.4 *2*	100	541.2	$(17/2)^+$	E2	0.0286
1093	$(21/2^+)$	614 *1*	100‡	479.8	$(17/2)^+$	(Q)	
1248.4	$(21/2)^-$	228 *1*	†	1020.0	$(19/2)^-$	(D+Q)	
		441.9[c] *4*	100[c]	806.5	$(17/2)^-$	(Q)	
1359.9	$(23/2)^+$	329 *1*	33‡	1030.5	$(21/2)^+$	(D+Q)	
		452.0 *4*	100	906.8	$(19/2)^+$	E2	0.0348
1460.6	$(21/2)^-$	445.3 *4*	100	1015.3	$(17/2)^-$	E2	0.0362
1495.4	$(23/2)^-$	247 *1*	†	1248.4	$(21/2)^-$	(D+Q)	
		475.4 *4*	100	1020.0	$(19/2)^-$	E2	0.0307
1514.3	$(25/2)^+$	152 *1*	†	1359.9	$(23/2)^+$	(D+Q)	
		419[d] *1*	†	1093	$(21/2^+)$	(Q)	
		483.8 *2*	100	1030.5	$(21/2)^+$	E2	0.0294
1752.9	$(25/2)^-$	504.5 *4*	100	1248.4	$(21/2)^-$	E2	0.0266
1886	$(27/2)^+$	373 *1*	17‡	1514.3	$(25/2)^+$	(D+Q)	
		527.3 *4*	100	1359.9	$(23/2)^+$	E2	0.0239
1954.7	$(25/2)^-$	494.1 *4*	100	1460.6	$(21/2)^-$	E2	0.0279
2029.2	$(27/2)^-$	533.8 *4*	100	1495.4	$(23/2)^-$	E2	0.0233
2052.0	$(29/2)^+$	165[d] *1*	†	1886	$(27/2)^+$	(D+Q)	
		537.7 *4*	100	1514.3	$(25/2)^+$	E2	0.0229
2310.1	$(29/2)^-$	557.2 *5*	100	1752.9	$(25/2)^-$	Q	
2478.9	$(31/2)^+$	427 *1*	25‡	2052.0	$(29/2)^+$	(D+Q)	
		591.7 *5*	100	1886	$(27/2)^+$	(Q)	
2480.5	$(29/2)^-$	525.8 *5*	100	1954.7	$(25/2)^-$	(Q)	
2611.8	$(31/2)^-$	582.6 *5*	100	2029.2	$(27/2)^-$	E2	0.0190
2648.3	$(33/2)^+$	596.3 *4*	100	2052.0	$(29/2)^+$	Q	
2909.2	$(33/2)^-$	599.1 *5*	100	2310.1	$(29/2)^-$	Q	
3027.5	$(33/2)^-$	547 *1*	100‡	2480.5	$(29/2)^-$	(Q)	
3123.7	$(35/2^+)$	644.8 *5*	100	2478.9	$(31/2)^+$	(Q)	
3236	$(35/2)^-$	622.8 *5*	100	2611.8	$(31/2)^-$	Q	
3295.2	$(37/2)^+$	646.9 *5*	100	2648.3	$(33/2)^+$	Q	
3532.7	$(37/2)^-$	623.5 *5*	100	2909.2	$(33/2)^-$	(Q)	
3617.3		589.8 *5*	100	3027.5	$(33/2)^-$		
3810.7		687.0	100	3123.7	$(35/2^+)$		
3867		631 *1*	100	3236	$(35/2)^-$		
3899		663.2 *5*	100	3236	$(35/2)^-$		
3982.7		687.5 *5*	100	3295.2	$(37/2)^+$		
4176.9		644.2 *5*	100	3532.7	$(37/2)^-$		
4581?		682[d] *1*		3899			
4702.7?		720[d] *1*		3982.7			

† Weak.
‡ Complex line, Iγ is from coincidence data.
# Uncertainties have been deduced by evaluator from authors′ estimates of 0.2 keV to 0.5 keV in ^{161}Dy(^{28}Si,4nγ). ΔE=1 keV for for energies quoted to the nearest keV.
@ Relative uncertainties are 10 to 30%.
& From γ(θ) and linear polarization measurements, and by assuming spin and parities from the level scheme (1988Ha19).
a From ^{185}Hg IT decay (21 s).
b Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation

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Adopted Levels, Gammas (continued)

$\gamma(^{185}Hg)$ (continued)

based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

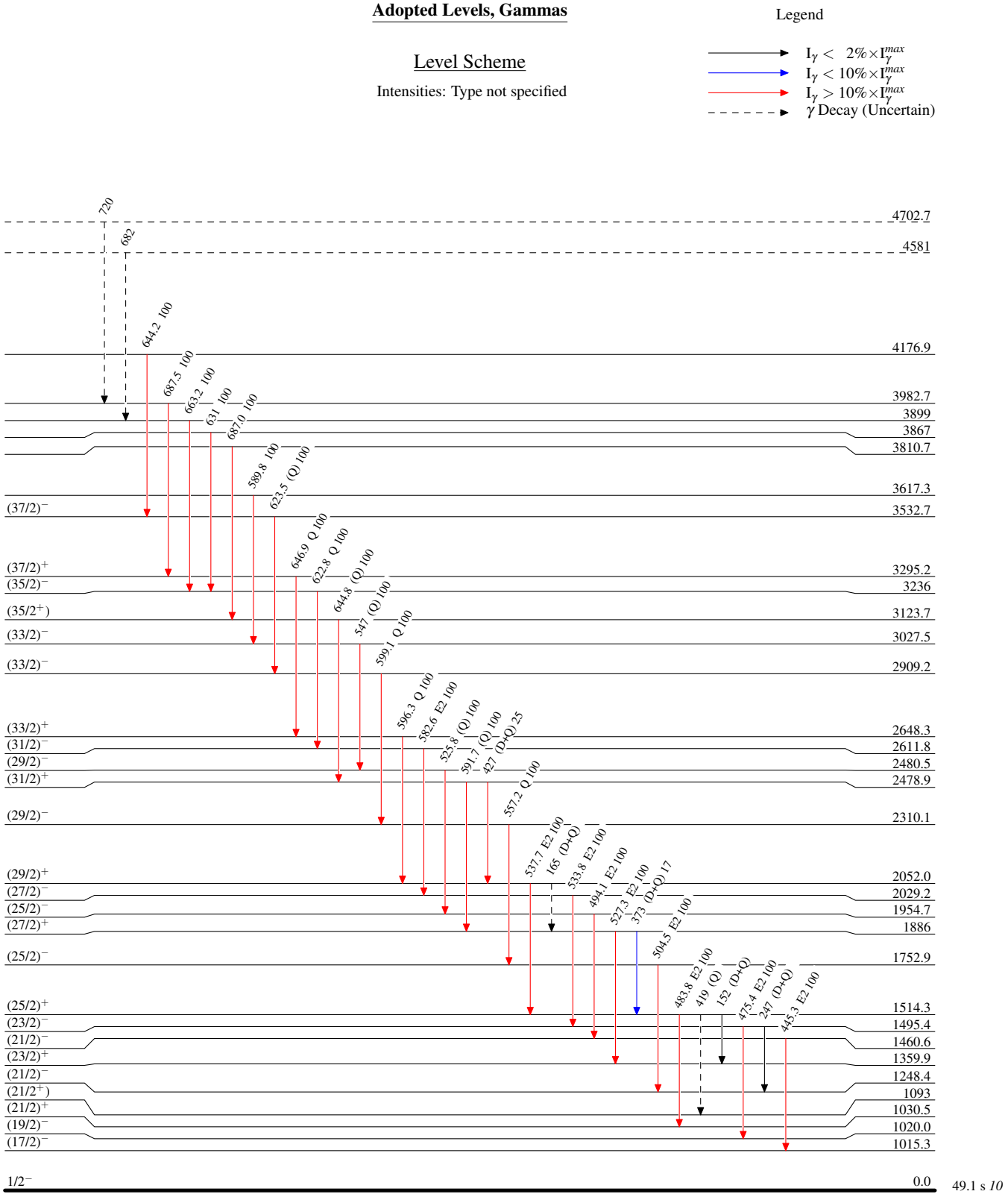
[c] Multiply placed with intensity suitably divided.

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

Adopted Levels, Gammas

Level Scheme

Intensities: Type not specified

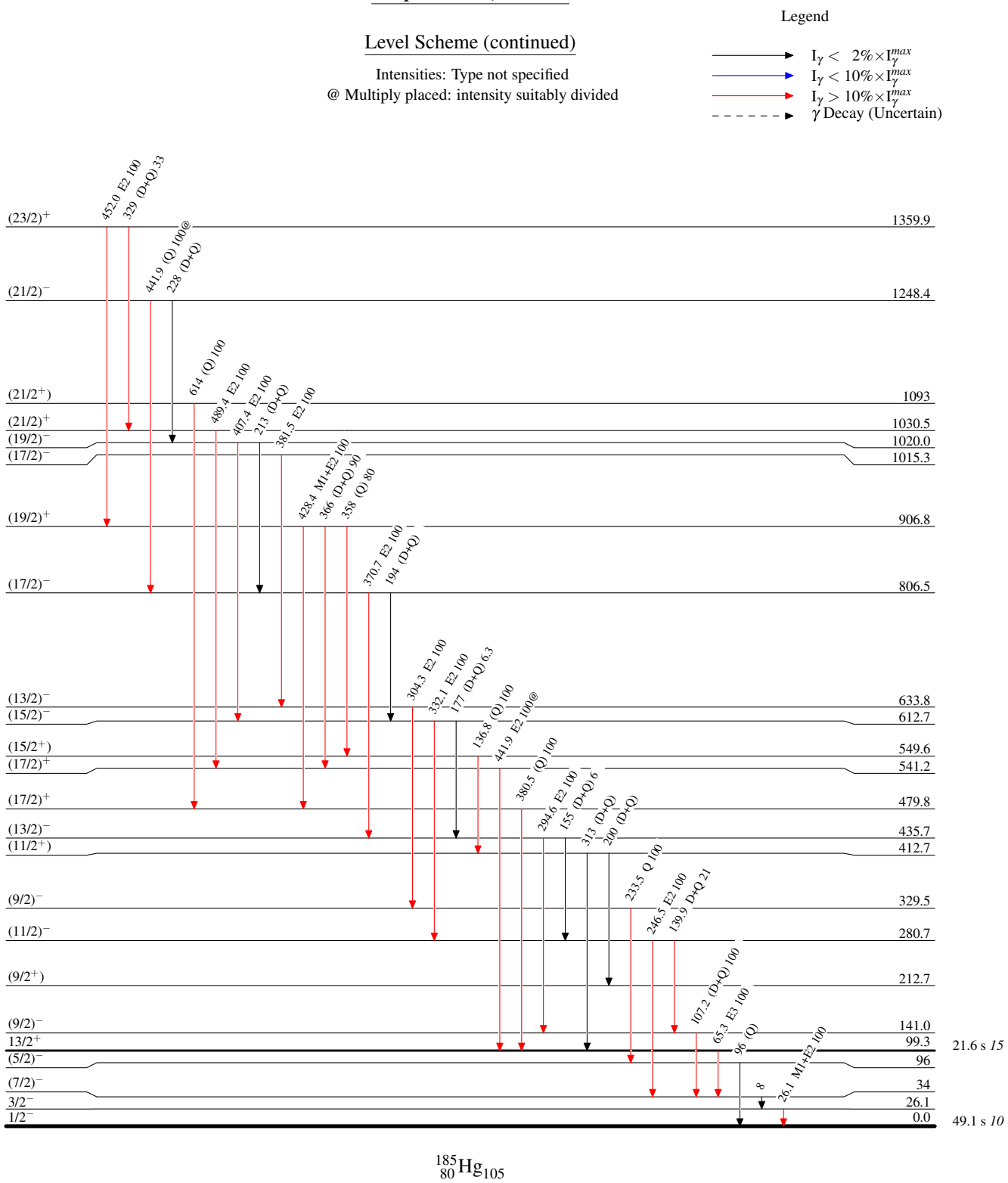


$^{185}_{80}Hg_{105}$

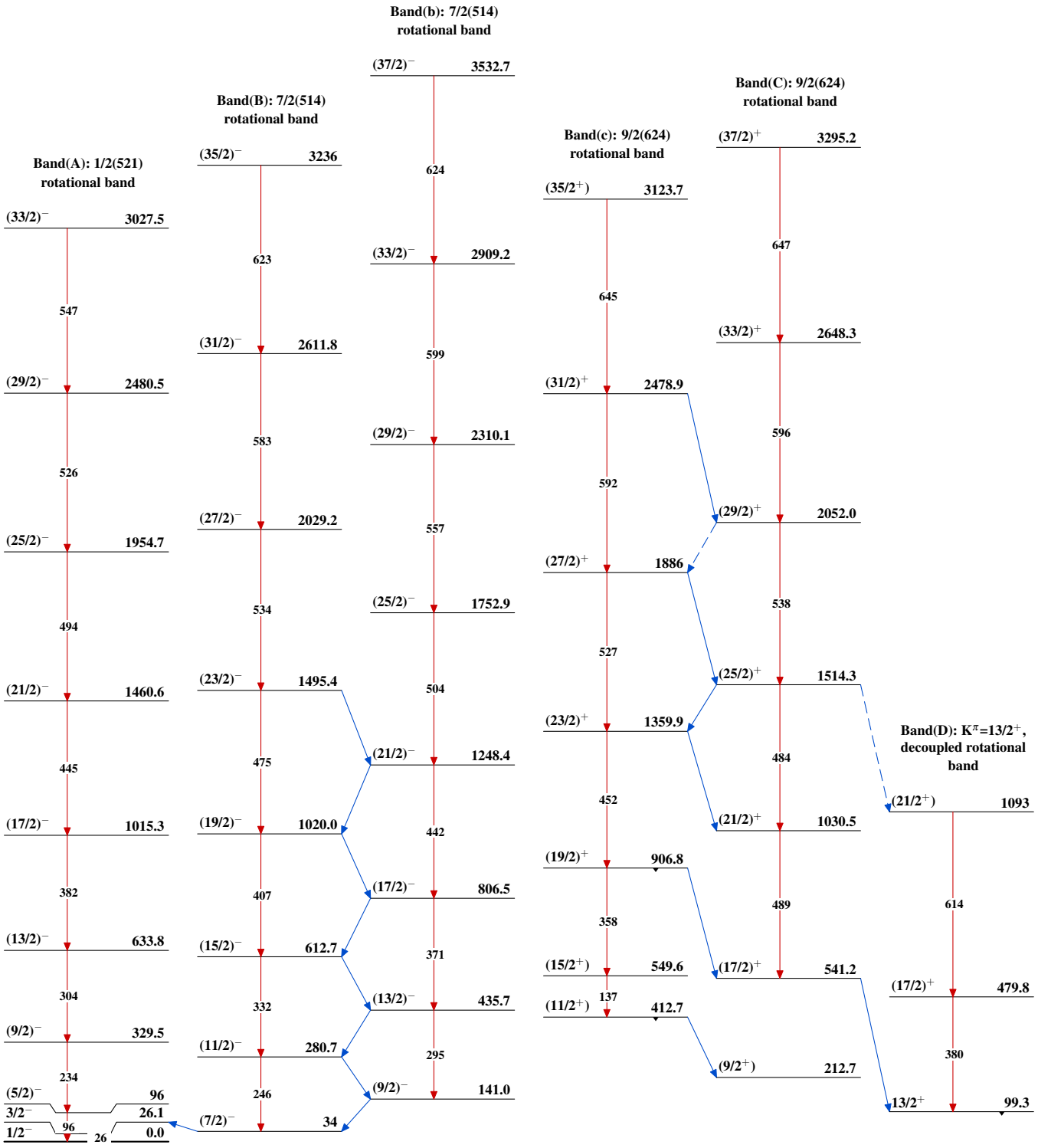
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Type not specified
@ Multiply placed: intensity suitably divided



Adopted Levels, Gammas



$^{185}_{80}Hg_{105}$