

$^{191}\text{Hg}$   $\varepsilon+\beta^+$  decay (50.8 min) [1971Be61,1975Zg01](#)

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia	NDS 195,368 (2024)	1-Dec-2023

Parent:  $^{191}\text{Hg}$ :  $E=128.8$ ;  $J^\pi=13/2^{(+)}$ ;  $T_{1/2}=50.8$  min *I5*;  $Q(\varepsilon)=3206.23$ ;  $\% \varepsilon+\% \beta^+$  decay=100

$^{191}\text{Hg}$ -E: Other: 128.22 ([2021Ko07](#) – NUBASE).

Others: [1954Gi04](#), [1974Va19](#), [1985Va07](#), [1986Be07](#).

[1971Be61](#): Source activity was produced by the  $^{197}\text{Au}(d,8n)$  reaction,  $E=80$  MeV, target thickness=38 mg/cm<sup>2</sup>. For conversion electron measurements, the mercury was evaporated by heating the gold target and deposited onto an appropriate backing mounted on a cooled copper rod. Iron-free beta-ray spectrometer, plastic scintillator, Ge(Li), Si(Li) with Be window. Measured  $E_\gamma$ ,  $I_\gamma$ , conversion electrons, e- $\gamma$  coin,  $\gamma$ - $\gamma$  coin. Deduced level scheme, spin, parity,  $\gamma$ -ray multipolarity.

[1975Zg01](#): Source was produced primarily through the decay of  $^{191}\text{Tl}$ , which was obtained via the  $^{181}\text{Ta}(^{16}\text{O},6n)$  reaction. Measured  $E_\gamma$ , conversion electrons,  $\gamma\gamma$ -coin,  $\gamma\gamma(t)$ . Detectors: Ge(Li), Si(Li). Presented level scheme, no numerical  $E_\gamma$  data are listed.

[1954Gi04](#): Source was produced by  $^{197}\text{Au}(p,7n)$  reaction,  $E=55.65$  MeV. Brookhaven Laboratory permanent magnet 180° spectrographs. Measured conversion electron spectra. Identified lines related to  $^{191}\text{Au}$ .

[1974Va19](#): Source was produced by spallation of lead with 660-MeV protons and separation from  $^{191}\text{Tl}$ . Measured  $E_\gamma$ ,  $I_\gamma$ . Reported  $I_\gamma$  from two sources. Higher population of low spin  $^{191}\text{Hg}$  g.s. was identified from  $I_\gamma(196.3,224.7)$  compared to [1971Be61](#).

[1985Va07](#): Source was produced from a 170 MeV  $^{16}\text{O}$  beam on a hafniumcarbide target, mass-separated and continuously implanted at 50 keV in a high purity Fe foil. The  $\gamma$ -decay was measured by three Ge detectors, one at 0° and other two at 90° to the field direction. Deduced  $\gamma$ -multipolarity,  $\delta$ , magnetic moment of the isomeric state.

[1986Be07](#): Source from  $^{197}\text{Au}(p,7n)$ ,  $E=200$  MeV, mass separation. Measured (ce)(ce)(t), ce- $\gamma(t)$ . Deduced  $T_{1/2}$ ,  $\delta$ . Plastic scintillators, double focused magnetic spectrometer.

Sum of decay energies of this dataset is 3589 keV *324* cf. 3334 keV *32* obtained from  $^{191}\text{Hg}$   $\varepsilon$  decay  $Q(g.s.)$  and branching.

 $^{191}\text{Au}$  Levels

Observed band structures are interpreted by [1975Zg01](#) as collective excitations associated with the proton orbitals  $d_{3/2}$  and  $h_{11/2}$ .

Level scheme is tentative.

$\varepsilon+\beta^+$  population to levels with  $E>1000$  keV implies  $J\geq 9/2$ .

E(level) <sup>†</sup>	$J^\pi$ <sup>‡</sup>	$T_{1/2}$ <sup>‡</sup>	Comments
0.0	$3/2^+$	3.18 h <i>8</i>	
11.1 5	$(1/2^+)$	15.5 ns <i>I5</i>	$T_{1/2}$ : from ce-ce(t) ( <a href="#">1986Be07</a> ).
207.6 6	$(3/2^+)$		
252.5 4	$(5/2^+)$		
266.2 7	$(11/2^-)$	0.92 s <i>II</i>	$T_{1/2}$ : from Adopted Levels.
491.1 8	$(7/2^-)$		
521.0 9	$(5/2^+)$		
540.0 <i>II</i>	$(9/2^-)$	10 ns <i>2</i>	

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<sup>191</sup>Hg ε+β<sup>+</sup> decay (50.8 min) **1971Be61,1975Zg01 (continued)**

<sup>191</sup>Au Levels (continued)

E(level) <sup>†</sup>	J <sup>π</sup> <sup>‡</sup>	E(level) <sup>†</sup>	J <sup>π</sup> <sup>‡</sup>	E(level) <sup>†</sup>	J <sup>π</sup> <sup>‡</sup>	E(level) <sup>†</sup>
662.4 6	(7/2) <sup>+</sup>	911.0 10	(13/2 <sup>-</sup> )	1394.4 13		2129.3 13
686.5 9	(15/2 <sup>-</sup> )	1132.0 12	(11/2 <sup>+</sup> )	1459.7 10	(13/2 <sup>+</sup> )	2174.8 11
782?		1269.0 11	(11/2 <sup>-</sup> )	1482.0 11		2219.0 14
788.7 7	(9/2 <sup>+</sup> )	1341.2 7		1550.1 14		2235.3 14
844.9 8	(13/2 <sup>-</sup> )	1352.0 15	(15/2 <sup>-</sup> )	1629.3 12		2348.5 13
877.1 12	(9/2 <sup>-</sup> )	1355.9 12		2024.6 14		
896.9 11	(11/2 <sup>-</sup> )	1376.5 12	(17/2 <sup>-</sup> )	2041.2 14		

<sup>†</sup> From least-squares fit to E<sub>γ</sub>.

<sup>‡</sup> From Adopted Levels.

ε,β<sup>+</sup> radiations

E(decay)	E(level)	Iβ <sup>+</sup> <sup>‡</sup>	Iε <sup>‡</sup>	Log ft	I(ε+β <sup>+</sup> ) <sup>†‡</sup>	Comments
(986 25)	2348.5		1.9 5	6.58 12	1.9 5	εK=0.7962 9; εL=0.1538 6; εM+=0.05003 24
(1099 25)	2235.3		1.9 5	6.69 12	1.9 5	εK=0.7988 7; εL=0.1519 5; εM+=0.04931 19
(1115 25)	2219.0		1.0 3	6.98 14	1.0 3	εK=0.7991 7; εL=0.1517 5; εM+=0.04922 18
(1159 25)	2174.8		3.5 8	6.47 11	3.5 8	εK=0.7999 6; εL=0.1511 5; εM+=0.04899 17
(1205 25)	2129.3		1.9 5	6.77 12	1.9 5	εK=0.8007 6; εL=0.1505 4; εM+=0.04878 15
(1293 25)	2041.2		0.66 17	7.29 12	0.66 17	εK=0.8020 5; εL=0.1496 4; εM+=0.04840 13
(1309 25)	2024.6		1.0 3	7.13 14	1.0 3	εK=0.8022 5; εL=0.1494 4; εM+=0.04833 13
(1705 25)	1629.3	0.010 2	3.5 5	6.82 7	3.5 5	av Eβ=327 14; εK=0.8041 2; εL=0.1460 3; εM+=0.04706 10
(1784 25)	1550.1	0.0034 11	0.77 22	7.52 13	0.77 22	av Eβ=362 14; εK=0.8034 4; εL=0.1454 3; εM+=0.04683 10
(1852 25)	1482.0	0.008 3	1.4 4	7.30 13	1.4 4	av Eβ=392 15; εK=0.8026 5; εL=0.1448 3; εM+=0.04662 10
(1874 25)	1459.7	0.019 6	2.9 8	6.99 13	2.9 8	av Eβ=402 14; εK=0.8022 6; εL=0.1446 3; εM+=0.04655 10
(1940 25)	1394.4	0.017 5	2.0 5	7.19 11	2.0 5	av Eβ=430 14; εK=0.8010 8; εL=0.1440 3; εM+=0.04635 11
(1958 25)	1376.5	0.0040 13	2.1 6	8.31 <sup>lu</sup> 13	2.1 6	av Eβ=449 14; εK=0.7941 3; εL=0.1539 4; εM+=0.05013 14
(1978 25)	1355.9	0.022 6	2.2 5	7.16 10	2.2 5	av Eβ=447 14; εK=0.8001 8; εL=0.1437 3; εM+=0.04622 11
(1982 25)	1352.0	0.011 3	1.1 3	7.47 12	1.1 3	av Eβ=449 14; εK=0.8001 9; εL=0.1436 3; εM+=0.04621 11
(1993 25)	1341.2	0.050 9	4.7 6	6.83 6	4.8 6	av Eβ=454 14; εK=0.7998 9; εL=0.1435 3; εM+=0.04617 11
(2065 25)	1269.0	≤0.1	≤8	≥6.6	≤8	av Eβ=485 14; εK=0.7977 11; εL=0.1428 4; εM+=0.04592 12 I(ε+β) estimated value. I <sub>γ</sub> (392,487) from this level are not known.
(2202 25)	1132.0	0.037 15	1.8 7	7.35 17	1.8 7	av Eβ=545 14; εK=0.7927 15; εL=0.1413 4; εM+=0.04541 13
(2423 25)	911.0	0.11 3	3.0 9	7.21 13	3.1 9	av Eβ=642 14; εK=0.7810 21; εL=0.1384 5; εM+=0.04444 16
(2437 25)	896.9	0.19 5	4.9 12	7.00 11	5.1 12	av Eβ=648 14; εK=0.7801 21; εL=0.1382 5; εM+=0.04438 16
(2457 25)	877.1	0.052 11	4.9 10	8.34 <sup>lu</sup> 9	5.0 10	av Eβ=661 14; εK=0.7925 5; εL=0.1489 4; εM+=0.04826 12 I(ε+β) estimated value. I <sub>γ</sub> (386) from this level is not known.
(2489 25)	844.9	0.24 9	5.6 21	6.96 17	5.8 22	av Eβ=671 14; εK=0.7766 23; εL=0.1374 5;

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$^{191}\text{Hg}$   $\varepsilon+\beta^+$  decay (50.8 min) 1971Be61,1975Zg01 (continued) $\varepsilon, \beta^+$  radiations (continued)

<u>E(decay)</u>	<u>E(level)</u>	<u><math>I\beta^+</math> ‡</u>	<u><math>I\varepsilon</math> ‡</u>	<u>Log <math>ft</math></u>	<u><math>I(\varepsilon + \beta^+)</math> †‡</u>	<u>Comments</u>
(2648 25)	686.5	0.60 13	9.9 20	6.77 9	10.5 21	$\varepsilon M += 0.04412$ 17 av $E\beta = 741$ 14; $\varepsilon K = 0.764$ 3; $\varepsilon L = 0.1349$ 6; $\varepsilon M += 0.04326$ 19
(2794 25)	540.0	0.1 1	6 5	8.5 <sup>1u</sup> 4	6 5	av $E\beta = 803$ 14; $\varepsilon K = 0.7852$ 10; $\varepsilon L = 0.1454$ 4; $\varepsilon M += 0.04702$ 13
(3068 25)	266.2	2.2 11	18 9	6.64 22	20 10	av $E\beta = 926$ 15; $\varepsilon K = 0.721$ 4; $\varepsilon L = 0.1263$ 8; $\varepsilon M += 0.04048$ 24

† Uncertainties are from  $\gamma$ -ray intensity balance only, i.e. without the normalization uncertainty.

‡ Absolute intensity per 100 decays.

<sup>191</sup>Hg ε+β<sup>+</sup> decay (50.8 min) **1971Be61,1975Zg01 (continued)**

γ(<sup>191</sup>Au)

I<sub>γ</sub> normalization: From sum of I(γ+ce) to (g.s. and 11 keV level)=100%. The normalization listed as an approximate value due to the 38 (out of 84) unplaced γ's in the level scheme. Total I<sub>γ</sub> of the unplaced γ's is 37% of I(γ+ce) to (g.s. + 11 keV level).

Measured γ-rays, γγ-coin, conversion electrons, γce coin; detectors: Ge(Li), Si(Li) (1971Be61). Mass-separated source. Measured γ-rays, conversion electrons, γγ-coin, γγ(t). Detectors: Ge(Li), Si(Li) (1975Zg01).

$E_{\gamma}^{\ddagger}$	$I_{\gamma}^{\ddagger a}$	$E_i(\text{level})$	$J_i^{\pi}$	$E_f$	$J_f^{\pi}$	Mult.	$\delta$	$\alpha^{\dagger}$	$I_{(\gamma+ce)}^b$	Comments
(11.1 5) 13.7 6		11.1 266.2	(1/2 <sup>+</sup> ) (11/2 <sup>-</sup> )	0.0 252.5	3/2 <sup>+</sup> (5/2 <sup>+</sup> )	(E3)		1.2×10 <sup>7</sup> 4	144 15	E <sub>γ</sub> : from level energy difference. ce(L)/(γ+ce)=0.49 16; ce(M)/(γ+ce)=0.39 14 ce(N)/(γ+ce)=0.10 4; ce(O)/(γ+ce)=0.015 7; ce(P)/(γ+ce)=4.4×10 <sup>-6</sup> 18 α(L)=5.6×10 <sup>6</sup> 17; α(M)=4.5×10 <sup>6</sup> 15 α(N)=1.2×10 <sup>6</sup> 4; α(O)=1.7×10 <sup>5</sup> 6; α(P)=51 13 I <sub>(γ+ce)</sub> : from transition intensity balance at 252 level. Mult.: M2, M3, N,O lines observed in ce-spectrum. Absence of M1 line suggests E2 or E3 multipolarity. Multipolarity not E2 from RUL. This transition was also observed by 1954Gi04.
156 @d 196.5 4	4.5 6	844.9 207.6	(13/2 <sup>-</sup> ) (3/2 <sup>+</sup> )	686.5 11.1	(15/2 <sup>-</sup> ) (1/2 <sup>+</sup> )	M1		1.067 16		α(K)=0.877 13; α(L)=0.1460 22; α(M)=0.0339 5 α(N)=0.00844 13; α(O)=0.001551 23; α(P)=0.0001049 16 Mult.: from α(K)exp=0.9 2 (1971Be61). α(K)=0.1269 19; α(L)=0.0945 15; α(M)=0.0242 4 α(N)=0.00595 9; α(O)=0.000979 15; α(P)=1.311×10 <sup>-5</sup> 19 Mult.: from α(K)exp=0.13 5, ce(K)/ce(L) exp=1.2 6 (1971Be61).
224.9 4	6.0 7	491.1	(7/2 <sup>-</sup> )	266.2	(11/2 <sup>-</sup> )	E2		0.252 4		α(K)=0.1064 16; α(L)=0.0709 12; α(M)=0.01806 30 α(N)=0.00446 7; α(O)=0.000735 12; α(P)=1.107×10 <sup>-5</sup> 16 Mult.: from α(K)exp=0.13 3, ce(K)/ce(L) exp=1.3 4 (1971Be61). α(K)=0.29 4; α(L)=0.0666 19; α(M)=0.01602 32 α(N)=0.00397 8; α(O)=0.000701 21; α(P)=3.3×10 <sup>-5</sup> 5 δ: from α(K)exp=0.29 4, ce(K)/ce(L) exp=4.2 8 (1971Be61).
241 d 241.4 5	21.3 21	782? 252.5	(5/2 <sup>+</sup> )	540.0 11.1	(9/2 <sup>-</sup> ) (1/2 <sup>+</sup> )	E2		0.2005 31		α(K)=0.1064 16; α(L)=0.0709 12; α(M)=0.01806 30 α(N)=0.00446 7; α(O)=0.000735 12; α(P)=1.107×10 <sup>-5</sup> 16 Mult.: from α(K)exp=0.13 3, ce(K)/ce(L) exp=1.3 4 (1971Be61). α(K)=0.29 4; α(L)=0.0666 19; α(M)=0.01602 32 α(N)=0.00397 8; α(O)=0.000701 21; α(P)=3.3×10 <sup>-5</sup> 5 δ: from α(K)exp=0.29 4, ce(K)/ce(L) exp=4.2 8 (1971Be61).
252.6 4	100 10	252.5	(5/2 <sup>+</sup> )	0.0	3/2 <sup>+</sup>	M1+E2	0.89 20	0.37 4		α(K)=0.1064 16; α(L)=0.0709 12; α(M)=0.01806 30 α(N)=0.00446 7; α(O)=0.000735 12; α(P)=1.107×10 <sup>-5</sup> 16 Mult.: from α(K)exp=0.13 3, ce(K)/ce(L) exp=1.3 4 (1971Be61). α(K)=0.29 4; α(L)=0.0666 19; α(M)=0.01602 32 α(N)=0.00397 8; α(O)=0.000701 21; α(P)=3.3×10 <sup>-5</sup> 5 δ: from α(K)exp=0.29 4, ce(K)/ce(L) exp=4.2 8 (1971Be61).
267 @d		788.7	(9/2 <sup>+</sup> )	521.0	(5/2 <sup>+</sup> )					

4

<sup>191</sup>Hg ε+β<sup>+</sup> decay (50.8 min) **1971Be61,1975Zg01 (continued)**

γ(<sup>191</sup>Au) (continued)

$E_\gamma$ ‡	$I_\gamma$ ‡ <sup>a</sup>	$E_i$ (level)	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult.	$\delta$	$\alpha^\dagger$	Comments
269.0 <sup>#</sup>		521.0	(5/2 <sup>+</sup> )	252.5	(5/2 <sup>+</sup> )				$\alpha(K)=0.382$ ; $\alpha(L)=0.0631$ ; $\alpha(M)=0.0146$ ; $\alpha(N+..)=0.00456$
274.1 <sup>10</sup>	23 <sup>5</sup>	540.0	(9/2 <sup>-</sup> )	266.2	(11/2 <sup>-</sup> )	M1+E2	-0.096 <sup>15</sup>	0.422 <sup>7</sup>	$\alpha(K)=0.347$ 6; $\alpha(L)=0.0577$ 10; $\alpha(M)=0.01337$ 23 $\alpha(N)=0.00333$ 6; $\alpha(O)=0.000612$ 11; $\alpha(P)=4.13 \times 10^{-5}$ 7 Mult.: from $\alpha(K)\text{exp}=0.31$ 8, $\text{ce}(K)/\text{ce}(L)\text{exp}=5.8$ 17 (1971Be61). $\delta$ : from nuclear orientation (1985Va07). ce data yields 0.4 4.
<sup>x</sup> 301.6 <sup>10</sup>	1.7 <sup>4</sup>								
<sup>x</sup> 331.6 <sup>9</sup>	7.6 <sup>19</sup>								
343.3 <sup>10</sup>	2.6 <sup>10</sup>	1132.0	(11/2 <sup>+</sup> )	788.7	(9/2 <sup>+</sup> )	M1		0.230 <sup>4</sup>	$\alpha(K)=0.1897$ 30; $\alpha(L)=0.0312$ 5; $\alpha(M)=0.00723$ 12 $\alpha(N)=0.001800$ 29; $\alpha(O)=0.000331$ 5; $\alpha(P)=2.25 \times 10^{-5}$ 4 Mult.: from $\alpha(K)\text{exp}=0.18$ 8.
357.0 <sup>c</sup> <sup>4</sup>	8.5 <sup>c</sup> <sup>17</sup>	896.9	(11/2 <sup>-</sup> )	540.0	(9/2 <sup>-</sup> )	M1+E2	-0.25 <sup>4</sup>	0.199 <sup>4</sup>	$\alpha(K)=0.1631$ 34; $\alpha(L)=0.0274$ 5; $\alpha(M)=0.00635$ 10 $\alpha(N)=0.001582$ 26; $\alpha(O)=0.000290$ 5; $\alpha(P)=1.93 \times 10^{-5}$ 4 Mult., $\delta$ : from nuclear orientation (1985Va07).
357.0 <sup>cd</sup> <sup>4</sup>	8.5 <sup>c</sup> <sup>17</sup>	1269.0	(11/2 <sup>-</sup> )	911.0	(13/2 <sup>-</sup> )	M1+E2	0.7 <sup>4</sup>	0.16 <sup>4</sup>	$\alpha(K)=0.128$ 32; $\alpha(L)=0.0241$ 30; $\alpha(M)=0.0057$ 6 $\alpha(N)=0.00141$ 16; $\alpha(O)=0.000255$ 32; $\alpha(P)=1.5 \times 10^{-5}$ 4 Mult., $\delta$ : from $\alpha(K)\text{exp}=0.13$ 3 (1971Be61).
371.0 <sup>4</sup>	11.0 <sup>12</sup>	911.0	(13/2 <sup>-</sup> )	540.0	(9/2 <sup>-</sup> )	E2		0.0558 <sup>8</sup>	$\alpha(K)=0.0372$ 5; $\alpha(L)=0.01406$ 20; $\alpha(M)=0.00350$ 5 $\alpha(N)=0.000865$ 13; $\alpha(O)=0.0001466$ 21; $\alpha(P)=4.05 \times 10^{-6}$ 6 Mult.: from $\alpha(K)\text{exp}=0.043$ 10, $\text{ce}(K)/\text{ce}(L)\text{exp} \approx 1.5$ (1971Be61).
386.0 <sup>#</sup>		877.1	(9/2 <sup>-</sup> )	491.1	(7/2 <sup>-</sup> )				
392.0 <sup>#</sup>		1269.0	(11/2 <sup>-</sup> )	877.1	(9/2 <sup>-</sup> )				
409.7 <sup>9</sup>	4.9 <sup>10</sup>	662.4	(7/2 <sup>+</sup> )	252.5	(5/2 <sup>+</sup> )	M1		0.1433 <sup>22</sup>	$\alpha(K)=0.1182$ 18; $\alpha(L)=0.01934$ 29; $\alpha(M)=0.00448$ 7 $\alpha(N)=0.001115$ 17; $\alpha(O)=0.0002052$ 31; $\alpha(P)=1.394 \times 10^{-5}$ 21 Mult.: from $\alpha(K)\text{exp}=0.16$ 4 (1971Be61).
420.3 <sup>6</sup>	32.6 <sup>33</sup>	686.5	(15/2 <sup>-</sup> )	266.2	(11/2 <sup>-</sup> )	E2		0.0400 <sup>6</sup>	$\alpha(K)=0.0278$ 4; $\alpha(L)=0.00920$ 14; $\alpha(M)=0.002272$ 34 $\alpha(N)=0.000562$ 8; $\alpha(O)=9.61 \times 10^{-5}$ 14; $\alpha(P)=3.06 \times 10^{-6}$ 4 Mult.: from $\alpha(K)\text{exp}=0.027$ 5 and $\text{ce}(K)/\text{ce}(L)\text{exp}=2.5$ 8 (1971Be61).
441.0 <sup>10</sup>	2.0 <sup>5</sup>	1352.0	(15/2 <sup>-</sup> )	911.0	(13/2 <sup>-</sup> )				
455 <sup>@</sup>		662.4	(7/2 <sup>+</sup> )	207.6	(3/2 <sup>+</sup> )				
<sup>x</sup> 457.8 <sup>10</sup>	1.0 <sup>3</sup>								
487.0 <sup>#d</sup>		1269.0	(11/2 <sup>-</sup> )	782?					not adopted.
511.0 <sup>8</sup>	4.0 <sup>8</sup>	1355.9		844.9	(13/2 <sup>-</sup> )				Mult.: observed Ice(K) consistent with E2 reported by authors (1971Be61).
521.5 <sup>d</sup> <sup>7</sup>	6.9 <sup>9</sup>	521.0	(5/2 <sup>+</sup> )	0.0	3/2 <sup>+</sup>	E2(+M1)	3.3 <sup>4</sup>	0.02333 <sup>34</sup>	$\alpha(K)=0.01721$ 25; $\alpha(L)=0.00465$ 7; $\alpha(M)=0.001133$ 17 $\alpha(N)=0.000281$ 4; $\alpha(O)=4.87 \times 10^{-5}$ 7; $\alpha(P)=1.908 \times 10^{-6}$ 27 Mult., $\delta$ : from $\alpha(K)\text{exp}=0.021$ 5 (1971Be61).

<sup>191</sup>Hg ε+β<sup>+</sup> decay (50.8 min) **1971Be61,1975Zg01** (continued)

γ(<sup>191</sup>Au) (continued)

E <sub>γ</sub> <sup>‡</sup>	I <sub>γ</sub> <sup>‡a</sup>	E <sub>i</sub> (level)	J <sub>i</sub> <sup>π</sup>	E <sub>f</sub>	J <sub>f</sub> <sup>π</sup>	Mult.	δ	α <sup>†</sup>	Comments
536.1 6	14.1 16	788.7	(9/2 <sup>+</sup> )	252.5	(5/2) <sup>+</sup>	(E2)		0.02184 31	α(K)=0.01621 23; α(L)=0.00428 6; α(M)=0.001041 15 α(N)=0.000258 4; α(O)=4.48×10 <sup>-5</sup> 6; α(P)=1.799×10 <sup>-6</sup> 26 Mult.: from α(K)exp=0.023 5 (1971Be61).
<sup>x</sup> 545.6 5	2.7 5								
<sup>x</sup> 546.0 10	0.9 3								
549.5 10	3.6 9	1394.4		844.9	(13/2 <sup>-</sup> )				
552.5 10	2.8 7	1341.2		788.7	(9/2 <sup>+</sup> )				
578.7 4	30.9 31	844.9	(13/2 <sup>-</sup> )	266.2	(11/2 <sup>-</sup> )	M1+E2	0.34 5	0.0536 14	α(K)=0.0441 11; α(L)=0.00727 16; α(M)=0.00168 4 α(N)=0.000419 9; α(O)=7.70×10 <sup>-5</sup> 17; α(P)=5.16×10 <sup>-6</sup> 14 Mult.: from α(K)exp=0.050 9, ce(K)/ce(L) exp=5.9 14 (1971Be61). δ: from nuclear orientation (1985Va07). ce data yields 0.0 5.
<sup>x</sup> 597.0 10	1.4 3								
610.6 <sup>d</sup> 6	8.2 17	877.1	(9/2 <sup>-</sup> )	266.2	(11/2 <sup>-</sup> )	M1+E2	1.1 +9-4	0.032 9	α(K)=0.025 7; α(L)=0.0046 10; α(M)=0.00109 21 α(N)=0.00027 5; α(O)=4.9×10 <sup>-5</sup> 10; α(P)=2.9×10 <sup>-6</sup> 9 Mult.,δ: from α(K)exp=0.025 7 (1971Be61).
637.1 7	2.5 6	1482.0		844.9	(13/2 <sup>-</sup> )				
644.5 10	1.5 4	911.0	(13/2 <sup>-</sup> )	266.2	(11/2 <sup>-</sup> )				
662.0 10	2.0 5	662.4	(7/2) <sup>+</sup>	0.0	3/2 <sup>+</sup>				
671.0 7	5.2 13	1459.7	(13/2 <sup>+</sup> )	788.7	(9/2 <sup>+</sup> )				
678.6 7	3.8 7	1341.2		662.4	(7/2) <sup>+</sup>				
<sup>x</sup> 683.2 10	2.3 6								
690.0 7	3.8 10	1376.5	(17/2 <sup>-</sup> )	686.5	(15/2 <sup>-</sup> )				
718.0 7	5.4 8	1629.3		911.0	(13/2 <sup>-</sup> )				
732.8 10	0.9 2	1629.3		896.9	(11/2 <sup>-</sup> )				
777.8 8	3.0 8	1269.0	(11/2 <sup>-</sup> )	491.1	(7/2 <sup>-</sup> )				
820.8 <sup>&amp;</sup> 10	2.1 5	1341.2		521.0	(5/2 <sup>+</sup> )				
<sup>x</sup> 829.0 10	1.4 4								
863.6 10	1.4 4	1550.1		686.5	(15/2 <sup>-</sup> )				
<sup>x</sup> 887.0 8	3.2 8								
<sup>x</sup> 897.0 10	1.0 3								
<sup>x</sup> 908.3 10	1.3 4								
<sup>x</sup> 938.3 10	2.0 6								
<sup>x</sup> 949.4 10	1.0 3								
<sup>x</sup> 954.8 10	1.1 3								
<sup>x</sup> 970.0 10	1.4 4								
<sup>x</sup> 996.4 8	4.1 10								
1002.7 <sup>d</sup> 10	2.7 7	1269.0	(11/2 <sup>-</sup> )	266.2	(11/2 <sup>-</sup> )				
<sup>x</sup> 1040.7 10	0.9 3								
<sup>x</sup> 1045.6 10	1.1 3								

6

<sup>191</sup>Hg ε+β<sup>+</sup> decay (50.8 min) **1971Be61,1975Zg01** (continued)

γ(<sup>191</sup>Au) (continued)

<u>E<sub>γ</sub><sup>‡</sup></u>	<u>I<sub>γ</sub><sup>‡a</sup></u>	<u>E<sub>i</sub>(level)</u>	<u>J<sub>i</sub><sup>π</sup></u>	<u>E<sub>f</sub></u>	<u>J<sub>f</sub><sup>π</sup></u>	<u>E<sub>γ</sub><sup>‡</sup></u>	<u>I<sub>γ</sub><sup>‡a</sup></u>	<u>E<sub>i</sub>(level)</u>	<u>E<sub>f</sub></u>	<u>J<sub>f</sub><sup>π</sup></u>
<sup>x</sup> 1057.0 <i>IO</i>	1.4 4					<sup>x</sup> 1447.8 <i>IO</i>	2.7 7			
<sup>x</sup> 1091.3 <i>IO</i>	2.1 5					<sup>x</sup> 1473.1 <i>IO</i>	1.1 3			
1109.3 <sup>d</sup> <i>IO</i>	3.1 8	1376.5	(17/2 <sup>-</sup> )	266.2	(11/2 <sup>-</sup> )	1488.3 <i>IO</i>	1.3 3	2174.8	686.5	(15/2 <sup>-</sup> )
<sup>x</sup> 1165.0 <i>IO</i>	1.5 4					<sup>x</sup> 1491.3 <i>IO</i>	1.7 4			
<sup>x</sup> 1257.1 <i>IO</i>	0.9 3					1503.6 <i>IO</i>	3.5 9	2348.5	844.9	(13/2 <sup>-</sup> )
1284.4 <i>IO</i>	3.4 9	2129.3		844.9	(13/2 <sup>-</sup> )	<sup>x</sup> 1511.7 <i>IO</i>	1.4 3			
<sup>x</sup> 1307.3 <i>IO</i>	1.7 4					<sup>x</sup> 1525.0 <i>IO</i>	1.2 3			
1329.8 <i>IO</i>	5.1 13	2174.8		844.9	(13/2 <sup>-</sup> )	1532.5 <i>IO</i>	1.8 5	2219.0	686.5	(15/2 <sup>-</sup> )
1338.1 <i>IO</i>	1.9 5	2024.6		686.5	(15/2 <sup>-</sup> )	1548.8 <i>IO</i>	3.4 9	2235.3	686.5	(15/2 <sup>-</sup> )
<sup>x</sup> 1348.0 <i>IO</i>	1.0 3					<sup>x</sup> 1632.8 <i>IO</i>	1.0 3			
1354.7 <i>IO</i>	1.2 3	2041.2		686.5	(15/2 <sup>-</sup> )	<sup>x</sup> 1672.0 <i>IO</i>	1.6 4			
<sup>x</sup> 1364.7 <i>IO</i>	1.5 4					<sup>x</sup> 1739.4 <i>IO</i>	2.5 6			
<sup>x</sup> 1383.7 <i>IO</i>	1.0 3					<sup>x</sup> 1759.6 <i>IO</i>	1.7 4			
<sup>x</sup> 1391.8 <i>IO</i>	1.9 5					1864.0 <sup>d</sup> <i>IO</i>	1.1 3	2129.3	266.2	(11/2 <sup>-</sup> )
<sup>x</sup> 1434.0 <i>IO</i>	1.3 3					1908.1 <sup>d</sup> <i>IO</i>	2.8 7	2174.8	266.2	(11/2 <sup>-</sup> )
<sup>x</sup> 1441.1 <i>IO</i>	1.4 3									

† Additional information 1.

‡ From 1971Be61, unless stated otherwise. Authors state that for the less intense lines ΔEγ=1 keV and ΔIγ is 20% to 30%.

# Observed in coincidence spectra only (1971Be61).

@ Observed by 1975Zg01 only.

& Placed on level scheme by 1975Zg01.

<sup>a</sup> For absolute intensity per 100 decays, multiply by ≈0.55.

<sup>b</sup> Absolute intensity per 100 decays.

<sup>c</sup> Multiply placed with undivided intensity.

<sup>d</sup> Placement of transition in the level scheme is uncertain.

<sup>x</sup> γ ray not placed in level scheme.

$^{191}\text{Hg}$   $\epsilon$  decay (50.8 min)  $^{1971}\text{Be61},^{1975}\text{Zg01}$

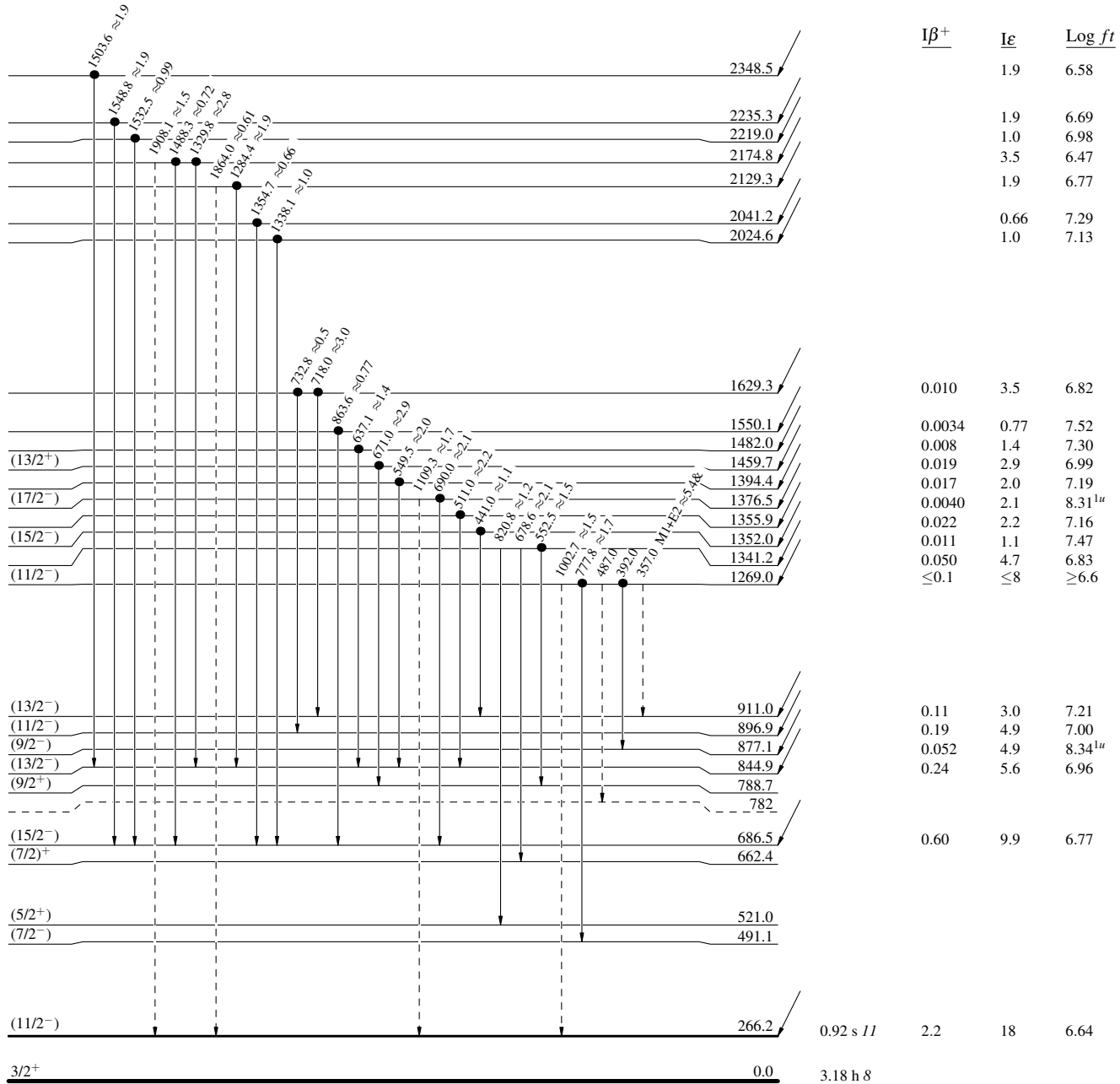
Decay Scheme

Legend

- $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- $I_\gamma > 10\% \times I_\gamma^{\text{max}}$
- - - -  $\gamma$  Decay (Uncertain)
- Coincidence

Intensities:  $I_{(\gamma+ce)}$  per 100 parent decays  
& Multiply placed: undivided intensity given

$^{13/2^{+}}$  128 50.8 min 15  
 $Q_\epsilon = 3206.23$   
 $^{191}_{80}\text{Hg}_{111}$   
 $\% \epsilon + \% \beta^+ = 100$



$^{191}_{79}\text{Au}_{112}$



$^{191}\text{Hg}$   $\epsilon$  decay (50.8 min) 1971Be61,1975Zg01

Decay Scheme (continued)

Legend

- $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- $I_\gamma > 10\% \times I_\gamma^{\text{max}}$
- - - -→  $\gamma$  Decay (Uncertain)
- Coincidence

Intensities:  $I_{(\gamma+ce)}$  per 100 parent decays  
& Multiply placed: undivided intensity given

