^{196}Pt(α,2nγ) 1974Ya03,1984Go06,2009Be18

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Huang Xiaolong and Kang Mengxiao	NDS 133, 221 (2016)	1-Dec-2015

1974Ya03: E=24 MeV; measured Eγ, Iγ, and $\gamma\gamma$ coin with Ge(Li).

1984Go06: E=27 MeV; measured $\gamma(\theta)$, $\gamma(\theta$,H), $\gamma(\theta$,H,t).

2009Be18: E=25 MeV α beam produced by the Tandem accelerator at the Institute for Nuclear Physics at the University of Cologne. The HORUS cube γ-ray spectrometer, consisting of eight high-purity germanium detectors and a seven-fold segmented germanium cluster array. γ's detected in coincidence were sorted into fifteen different correlation group matrices. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma\gamma(\theta)$. Comparisons with supersymmetric interacting boson fermion (IBFFA) model calculations and IBA-2 description.

^{198}Hg Levels

E(level)†	J$^\pi$‡	E(level)†	J$^\pi$‡	E(level)†	J$^\pi$‡	E(level)†	J$^\pi$‡
0.0	0^+	1832.1 *3*	2^+	2048.07 *25*	0^+ to 4^+	2219.14 *25*	0^+ to 4^+
411.66 *14*	2^+	1834.53 *19*	4^+	2049?# *6*		2267.1 *4*	2^+
1048.15 *17*	4^+	1846.83 *17*	3^+	2058.4 *3*	6^-	2276.8 *3*	1^+ to 5^+
1087.44 *14*	2^+	1858.75 *23*	2^+	2070.4 *5*	1^+,2^+	2286.7 *9*	$1,2^+$
1401.4 *4*	0^+	1899.1 *3*	1^+,2^+	2090.38 *23*	4^+,5^+	2295.40 *19*	2^+ to 6^+
1419.03 *17*	3^+	1901.2 *5*	(2^+)	2109.3 *4*	$1,2^+$	2319.7 *4*	$1,2^+$
1548.47 *25*	$(1,2^+)$	1909.2 *3*	6^-	2124.7 *3*	6^-,7^-	2331.12 *23*	4^+
1550#	0^+	1910.0 *5*	9^-	2132.2 *4*	1^+,2^+	2337.0 *4*	8^+
1612.18 *19*	2^+	1928.47 *25*	3^-	2134.7 *3*	5^-	2360.3 *4*	3^+
1635.3 *3*	5^-	1959.77 *25*	0^+ to 4^+	2169.3 *9*	2^+	2400# *4*	
1682.8 *3*	7^-	1965?# *6*		2177.08 *23*	$1,2^+$	2515.2 *4*	4^- to 8^-
1760# *15*	0^+	1970.38 *21*	2^+,3,4^+	2201.9 *4*	6^-,7^-	2535.04 *25*	3^-
1815.50 *25*	6^+	2005.7 *10*	0^+ to 4^+	2208.6 *3*	$1,2^+$	2655.8 *4*	1^- to 5^-

† From least-squares fit to Eγ values.

‡ From the γ-ray transition multipolarities and the observed decay pattern (2009Be18).

Level not populated confirmed in the study by 2009Be18.

^{196}Pt(α,2nγ) 1974Ya03,1984Go06,2009Be18 (continued)

$\gamma(^{198}Hg)$

Unplaced transitions are tentatively assigned to ^{198}Hg.

E_i(level)	J_i^π	E_γ[‡]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[#c]	α[b]	Comments
411.66	2^+	411.6 *2*	100	0.0	0^+	E2		0.0440	α(K)=0.0300 *5*; α(L)=0.01057 *15*; α(M)=0.00263 *4* α(N)=0.000656 *10*; α(O)=0.0001154 *17*; α(P)=3.95×10^{-6} *6* E_γ: Other: 411.8 *2* (1974Ya03). $\gamma(\theta)$: A_2=+0.20 *3* (1984Go06).
1048.15	4^+	636.5 *2*	100	411.66	2^+	E2		0.01541	α(K)=0.01173 *17*; α(L)=0.00280 *4*; α(M)=0.000678 *10* α(N)=0.0001692 *24*; α(O)=3.06×10^{-5} *5*; α(P)=1.556×10^{-6} *22* E_γ: Other: 636.1 *9* (1974Ya03). $\gamma(\theta)$: A_2=+0.26 *2* (1984Go06).
1087.44	2^+	675.7 *2*	100 *10*	411.66	2^+	M1+E2	+0.95 *+23−19*	0.028 *3*	α(K)=0.023 *3*; α(L)=0.0041 *4*; α(M)=0.00096 *8* α(N)=0.000239 *20*; α(O)=4.5×10^{-5} *4*; α(P)=3.2×10^{-6} *4* E_γ: Other: 675.8 *2* (1974Ya03).
		1087.5 *2*	20 *4*	0.0	0^+	E2		0.00513	α(K)=0.00414 *6*; α(L)=0.000752 *11*; α(M)=0.0001767 *25* α(N)=4.42×10^{-5} *7*; α(O)=8.21×10^{-6} *12*; α(P)=5.43×10^{-7} *8* E_γ: Other: 1087.4 *8* (1974Ya03).
1401.4	0^+	990.0 *4*		411.66	2^+	E2		0.00616	α(K)=0.00494 *7*; α(L)=0.000928 *13*; α(M)=0.000219 *3* α(N)=5.48×10^{-5} *8*; α(O)=1.014×10^{-5} *15*; α(P)=6.49×10^{-7} *10* E_γ: Other: 989.7 *8* (1974Ya03).
		1401.7[&d]		0.0	0^+	E0			
1419.03	3^+	331.5 *2*	26 *6*	1087.44	2^+				
		370.7 *2*	10 *2*	1048.15	4^+				
		1007.4 *2*	100 *10*	411.66	2^+	M1+E2	+1.1 *+5−3*	0.0100 *17*	α(K)=0.0082 *14*; α(L)=0.00139 *20*; α(M)=0.00032 *5* α(N)=8.1×10^{-5} *12*; α(O)=1.53×10^{-5} *23*; α(P)=1.12×10^{-6} *20* E_γ: Other: 1007.7 *4* (1974Ya03).
1548.47	$(1,2^+)$	1136.8 *2*		411.66	2^+				
		1548.4[&d]		0.0	0^+				
1612.18	2^+	564.0 *3*		1048.15	4^+				
		1200.5 *2*		411.66	2^+	M1+E2	−0.25 *14*	0.0093 *5*	α(K)=0.0077 *4*; α(L)=0.00123 *6*; α(M)=0.000285 *12* α(N)=7.1×10^{-5} *3*; α(O)=1.35×10^{-5} *6*; α(P)=1.05×10^{-6} *5*; α(IPF)=6.69×10^{-6} *23*
		1611.8 *8*		0.0	0^+				
1635.3	5^-	587.1 *2*	100	1048.15	4^+	E1(+M2)	−0.04 *3*	0.0066 *6*	α(K)=0.0055 *5*; α(L)=0.00087 *9*; α(M)=0.000200 *21* α(N)=5.0×10^{-5} *5*; α(O)=9.3×10^{-6} *10*; α(P)=6.6×10^{-7} *7* E_γ: Other: 587.3 *2* (1974Ya03). $\gamma(\theta)$: A_2=−0.16 *4* (1984Go06).
1682.8	7^-	47.74[&d]		1635.3	5^-	E2		170.7	α(L)=127.8 *18*; α(M)=33.3 *5* α(N)=8.23 *12*; α(O)=1.355 *19*; α(P)=0.001526 *22*
1815.50	6^+	767.3 *2*	100	1048.15	4^+	E2(+M3)	+0.01 *5*	0.0103 *6*	α(K)=0.0081 *5*; α(L)=0.00171 *10*; α(M)=0.000410 *24* α(N)=0.000102 *6*; α(O)=1.87×10^{-5} *12*; α(P)=1.07×10^{-6} *8*

$^{198}_{80}Hg_{118}$-2

^{196}Pt(α,2nγ) 1974Ya03,1984Go06,2009Be18 (continued)

$\gamma(^{198}Hg)$ (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[#c]	α[b]	Comments
									E_γ: Other: 767.4 *2* (1974Ya03). $\gamma(\theta)$: A_2=+0.28 *9* (1984Go06).
1832.1	2^+	745.0[&d]		1087.44	2^+				
		1420.5 *4*		411.66	2^+	M1(+E2)	−0.18[@] *3*	0.00623 *10*	α(K)=0.00511 *8*; α(L)=0.000815 *13*; α(M)=0.000188 *3* α(N)=4.72×10^{-5} *7*; α(O)=8.95×10^{-6} *14*; α(P)=6.99×10^{-7} *11*; α(IPF)=6.78×10^{-5} *10*
		1832.1 *4*		0.0	0^+				
1834.53	4^+	747.2 *4*	32 *6*	1087.44	2^+	E2(+M3)	−0.07 *10*	0.012 *4*	α(K)=0.009 *3*; α(L)=0.0020 *7*; α(M)=0.00047 *17* α(N)=0.00012 *5*; α(O)=2.2×10^{-5} *8*; α(P)=1.2×10^{-6} *6*
		786.2 *4*	68 *14*	1048.15	4^+	M1+E2	−0.39 *23*	0.026 *3*	α(K)=0.0212 *23*; α(L)=0.0035 *4*; α(M)=0.00081 *8* α(N)=0.000203 *19*; α(O)=3.8×10^{-5} *4*; α(P)=2.9×10^{-6} *4*
		1423.0 *2*	100 *10*	411.66	2^+				
1846.83	3^+	234.6 *2*		1612.18	2^+				
		759.4 *2*		1087.44	2^+	M1+E2	−0.56 *16*	0.0260 *22*	α(K)=0.0214 *18*; α(L)=0.00357 *25*; α(M)=0.00083 *6* α(N)=0.000208 *15*; α(O)=3.9×10^{-5} *3*; α(P)=2.9×10^{-6} *3*
		789.8 *2*							E_γ: 789.8 in Table I of 2009Be18 is a misprint.
		1435.1 *2*		411.66	2^+	M1(+E2)	+0.00 *11*	0.00618 *10*	α(K)=0.00506 *8*; α(L)=0.000806 *13*; α(M)=0.000186 *3* α(N)=4.67×10^{-5} *7*; α(O)=8.86×10^{-6} *14*; α(P)=6.93×10^{-7} *11*; α(IPF)=7.49×10^{-5} *11*
1858.75	2^+	771.0 *8*		1087.44	2^+				
		810.4[&d]		1048.15	4^+				
		1447.1 *2*		411.66	2^+	M1(+E2)	−0.20[@] *5*	0.00594 *11*	α(K)=0.00486 *9*; α(L)=0.000775 *14*; α(M)=0.000179 *3* α(N)=4.49×10^{-5} *8*; α(O)=8.51×10^{-6} *15*; α(P)=6.65×10^{-7} *12*; α(IPF)=7.90×10^{-5} *13*
		1859 *1*		0.0	0^+				
1899.1	$1^+,2^+$	498.0 *4*		1401.4	0^+				
		1486.5 *8*		411.66	2^+				
		1899.0 *4*		0.0	0^+				
1901.2	(2^+)	853.0[&d]		1048.15	4^+				
		1489.5 *4*	100	411.66	2^+	(M1+E2)	−0.23[@] *8*	0.00552 *13*	α(K)=0.00449 *11*; α(L)=0.000716 *17*; α(M)=0.000166 *4* α(N)=4.15×10^{-5} *10*; α(O)=7.87×10^{-6} *19*; α(P)=6.15×10^{-7} *15*; α(IPF)=9.79×10^{-5} *20*
1909.2	6^-	225.8 *4*	100 *10*	1682.8	7^-	M1(+E2)	+0.50[@] *+3−4*	0.68 *10*	α(K)=0.54 *10*; α(L)=0.1069 *23*; α(M)=0.0254 *4* α(N)=0.00635 *10*; α(O)=0.00118 *3*; α(P)=7.7×10^{-5} *15*
		273.9 *2*	22 *5*	1635.3	5^-	M1+E2	−0.9 *+3−5*	0.32 *7*	α(K)=0.25 *7*; α(L)=0.056 *4*; α(M)=0.0135 *7* α(N)=0.00337 *17*; α(O)=0.00062 *4*; α(P)=3.5×10^{-5} *9*
1910.0	9^-	227.2 *4*	100	1682.8	7^-	E2		0.254	α(K)=0.1243 *19*; α(L)=0.0977 *16*; α(M)=0.0251 *4* α(N)=0.00624 *10*; α(O)=0.001061 *17*; α(P)=1.562×10^{-5} *23* E_γ: Other: 227.1 *2* (1974Ya03).
1928.47	3^-	1516.8 *2*	100	411.66	2^+				
1959.77	0^+ to 4^+	1548.1 *2*	100	411.66	2^+				

$^{198}_{80}Hg_{118}$-3

^{196}Pt(α,2nγ) 1974Ya03,1984Go06,2009Be18 (continued)

$\gamma(^{198}Hg)$ (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[#c]	α[b]	Comments
1970.38	$2^+,3,4^+$	883.0 *4*		1087.44	2^+				
		922.6 *4*		1048.15	4^+				
		1558.6 *2*		411.66	2^+				
2005.7	0^+ to 4^+	1594 *1*	100	411.66	2^+				
2048.07	0^+ to 4^+	1636.4 *2*	100	411.66	2^+				
2058.4	6^-	149.2 *2*		1909.2	6^-				
		375.4 *2*		1682.8	7^-				
		423.3 *2*		1635.3	5^-	M1+E2	−1.78 *23*	0.065 *6*	α(K)=0.050 *5*; α(L)=0.0120 *6*; α(M)=0.00290 *13* α(N)=0.00072 *3*; α(O)=0.000131 *7*; α(P)=6.8×10^{-6} *7* E_γ: Other: 422.3 *8* (1974Ya03).
2070.4	$1^+,2^+$	1658.7 *4*	100	411.66	2^+				
2090.38	$4^+,5^+$	274.7 *4*		1815.50	6^+				
		671.3 *2*		1419.03	3^+				
		1042.6 *4*		1048.15	4^+				
2109.3	$1,2^+$	1697.4 *4*		411.66	2^+				
		2110.0 *8*		0.0	0^+				
2124.7	$6^-,7^-$	215.5 *2*	19 *4*	1909.2	6^-	M1(+E2)	+0.4[@] *+3−4*	0.81 *12*	α(K)=0.65 *12*; α(L)=0.1233 *19*; α(M)=0.0292 *7* α(N)=0.00730 *15*; α(O)=0.001359 *22*; α(P)=9.2×10^{-5} *17*
		441.6 *2*	54 *11*	1682.8	7^-	M1		0.1274	α(K)=0.1048 *15*; α(L)=0.01732 *25*; α(M)=0.00402 *6* α(N)=0.001009 *15*; α(O)=0.000191 *3*; α(P)=1.469×10^{-5} *21* E_γ: Other: 441.7 *4* (1974Ya03).
		489.5 *2*	100 *10*	1635.3	5^-				
2132.2	$1^+,2^+$	1044.7 *8*		1087.44	2^+				
		1720.6 *4*		411.66	2^+				
2134.7	5^-	452.2 *2*		1682.8	7^-				
		499.1 *2*		1635.3	5^-				
2169.3	2^+	336.5[&d]		1832.1	2^+				
		621.0[&d]		1548.47	$(1,2^+)$				E_γ: Other: 620.8 *2* (1974Ya03).
		1121.1[&d]		1048.15	4^+				
		1757.6 *8*		411.66	2^+				
		2168.7[&d]		0.0	0^+				
2177.08	$1,2^+$	318.9[&d]		1858.75	2^+				
		758.0 *2*		1419.03	3^+				
		1089.8 *4*		1087.44	2^+				
		1765.5 *8*		411.66	2^+				
		2177.7[&d]		0.0	0^+				
2201.9	$6^-,7^-$	292.7 *2*		1909.2	6^-				
		519.1 *2*		1682.8	7^-	M1		0.0831	α(K)=0.0684 *10*; α(L)=0.01125 *16*; α(M)=0.00261 *4* α(N)=0.000655 *10*; α(O)=0.0001240 *18*; α(P)=9.55×10^{-6} *14*
		567.0 *4*		1635.3	5^-				
2208.6	$1,2^+$	238.3[&d]		1970.38	$2^+,3,4^+$				

$^{198}_{80}Hg_{118}$-4

^{196}Pt(α,2nγ) 1974Ya03,1984Go06,2009Be18 (continued)

$\gamma(^{198}Hg)$ (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[†]	E_f	J_f^π	Mult.[#]	δ[#c]	α[b]	Comments
2208.6	1,2$^+$	350.6[&d]		1858.75	2$^+$				E_γ: Other: 351.3 *8* (1974Ya03).
		376.8[&d]		1832.1	2$^+$				
		596.5 *4*		1612.18	2$^+$				
		789.6 *4*		1419.03	3$^+$				
		1121.1[&d]		1087.44	2$^+$				
		1796.8 *8*		411.66	2$^+$				
		2209.2[&d]		0.0	0$^+$				
2219.14	0$^+$ to 4$^+$	1131.7 *2*	100	1087.44	2$^+$				
2267.1	2$^+$	1219.0 *4*		1048.15	4$^+$				
		1855.4 *8*		411.66	2$^+$				
		2267.0[&d]		0.0	0$^+$				
2276.8	1$^+$ to 5$^+$	857.8 *2*	100	1419.03	3$^+$				
2286.7	1,2$^+$	1875.0 *8*	100	411.66	2$^+$				
		2287.5[&d]		0.0	0$^+$				
2295.40	2$^+$ to 6$^+$	325.0[&d]		1970.38	2$^+$,3,4$^+$				
		436.9 *8*		1858.75	2$^+$				
		448.6 *4*		1846.83	3$^+$				
		461.0 *2*		1834.53	4$^+$				
		876.4 *4*		1419.03	3$^+$				
		1207.8 *2*		1087.44	2$^+$				
		1884.5[&d]		411.66	2$^+$				
2319.7	1,2$^+$	1232.3 *4*		1087.44	2$^+$				
		1908.5[&d]		411.66	2$^+$				
		2319.5 *8*		0.0	0$^+$				
2331.12	4$^+$	911.6 *4*		1419.03	3$^+$				
		1243.8 *2*		1087.44	2$^+$				
2337.0	8$^+$	521.5 *2*	100	1815.50	6$^+$	E2		0.0243	α(K)=0.01779 *25*; α(L)=0.00498 *7*; α(M)=0.001219 *18* α(N)=0.000304 *5*; α(O)=5.44×10^{-5} *8*; α(P)=2.36×10^{-6} *4*
2360.3	3$^+$	514.0 *8*		1846.83	3$^+$				
		525.9[&d]		1834.53	4$^+$				
		940.7 *8*		1419.03	3$^+$				
		1273.5 *8*		1087.44	2$^+$				
		1312.0 *4*		1048.15	4$^+$	M1(+E2)	−0.09[@] *3*	0.00765	α(K)=0.00631 *9*; α(L)=0.001008 *15*; α(M)=0.000233 *4* α(N)=5.85×10^{-5} *9*; α(O)=1.109×10^{-5} *16*; α(P)=8.66×10^{-7} *13*; α(IPF)=2.97×10^{-5} *5*
		1949.1[&d]		411.66	2$^+$	(M1+E2)	−0.19[@] *4*	0.00317	α(K)=0.00232 *4*; α(L)=0.000366 *6*; α(M)=8.46×10^{-5} *13* α(N)=2.12×10^{-5} *4*; α(O)=4.02×10^{-6} *6*; α(P)=3.16×10^{-7} *5*; α(IPF)=0.000378 *6*
2515.2	4$^-$ to 8$^-$	390.2 *4*		2124.7	6$^-$,7$^-$				
		456.7 *4*		2058.4	6$^-$				E_γ: Listed as 456.74 in Table I of 2009Be18, possible a misprint.

$^{198}_{80}Hg_{118}$-5

$\gamma(^{198}Hg)$ (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[†]	E_f	J_f^π	Comments
2515.2	4$^-$ to 8$^-$	606.0 *10*		1909.2	6$^-$	
		832.9 *4*		1682.8	7$^-$	
2535.04	3$^-$	1447.6 *2*	100	1087.44	2$^+$	
2655.8	1$^-$ to 5$^-$	727.3 *2*	100	1928.47	3$^-$	

† Branching from 2009Be18.
‡ From 2009Be18, except as noted.
# From $\gamma\gamma(\theta)$ data of 2009Be18, except as noted.
@ From Adopted Gammas.
& γ not observed or confirmed by 2009Be18, values from Adopted Gammas.
a From 1974Ya03, relative intensities normalized to Iγ(411.8γ)=100.
b Additional information 1.
c If No value given it was assumed δ=1.00 for E2/M1, δ=1.00 for E3/M2 and δ=0.10 for the other multipolarities.
d Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

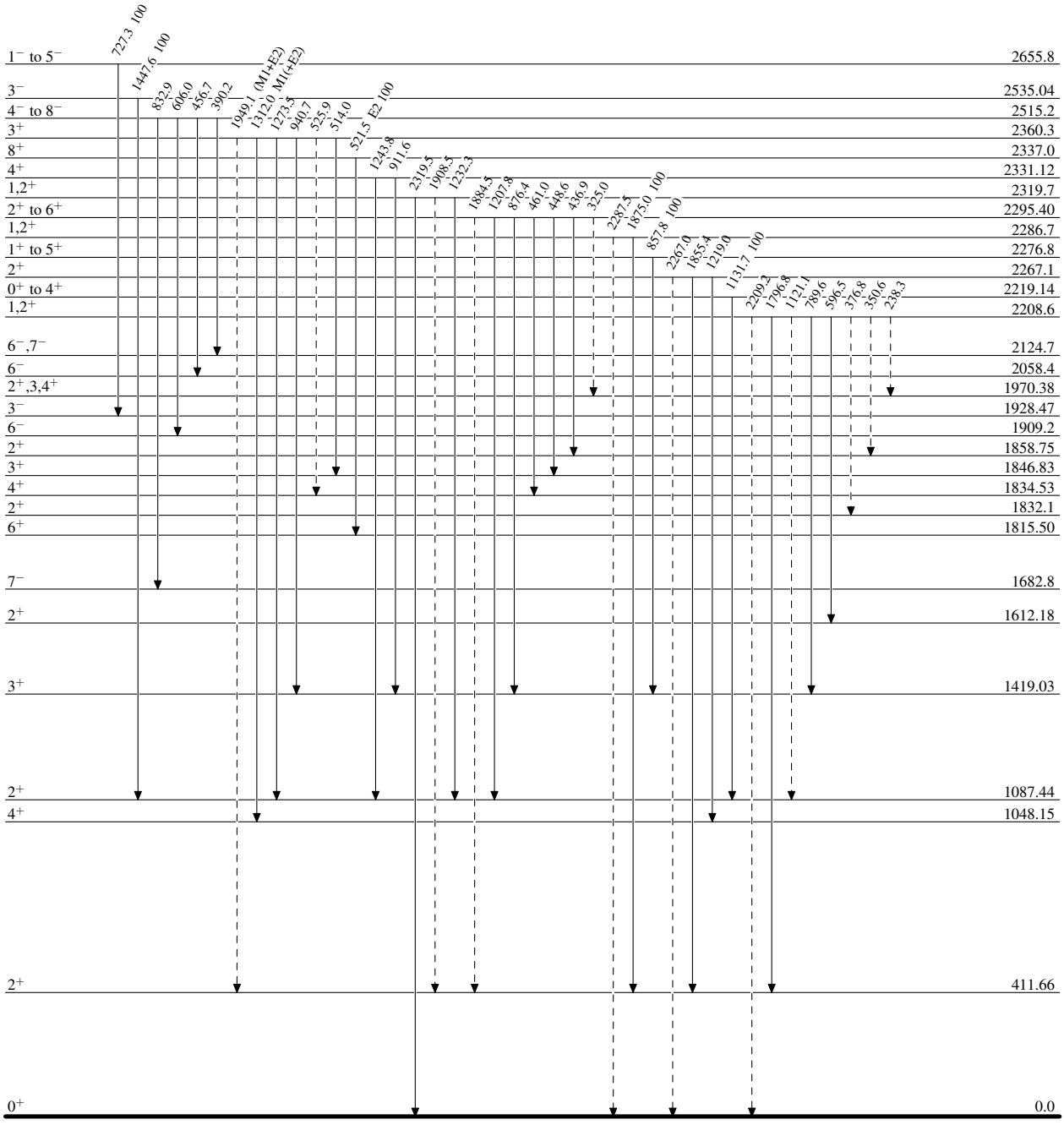
^{196}Pt(α,2nγ) 1974Ya03,1984Go06,2009Be18

Legend

Level Scheme

Intensities: Relative photon branching from each level

– – – – – – ► γ Decay (Uncertain)



$^{198}_{80}Hg_{118}$

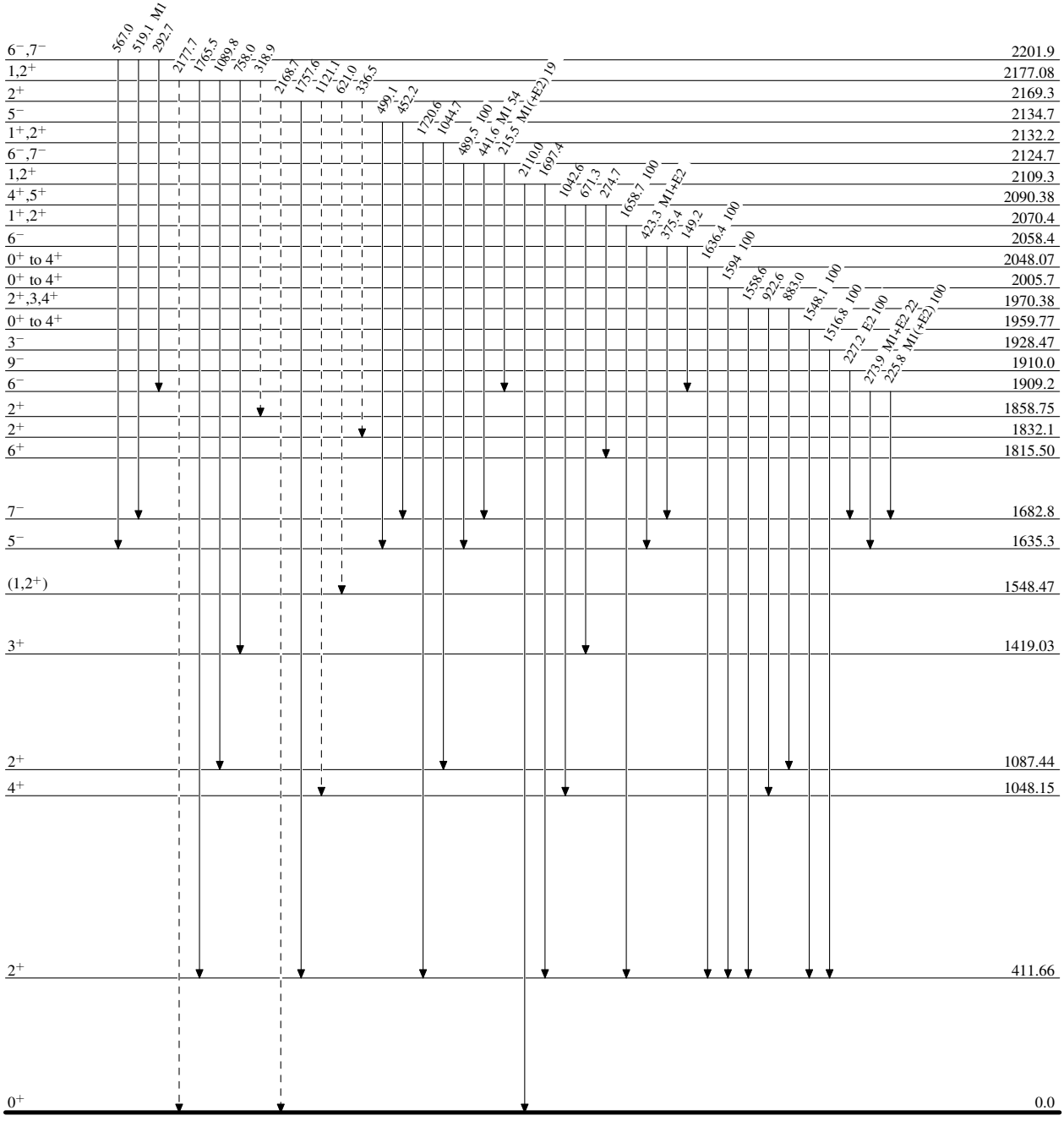
^{196}Pt(α,2nγ) 1974Ya03,1984Go06,2009Be18

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

– – – – – – ► γ Decay (Uncertain)



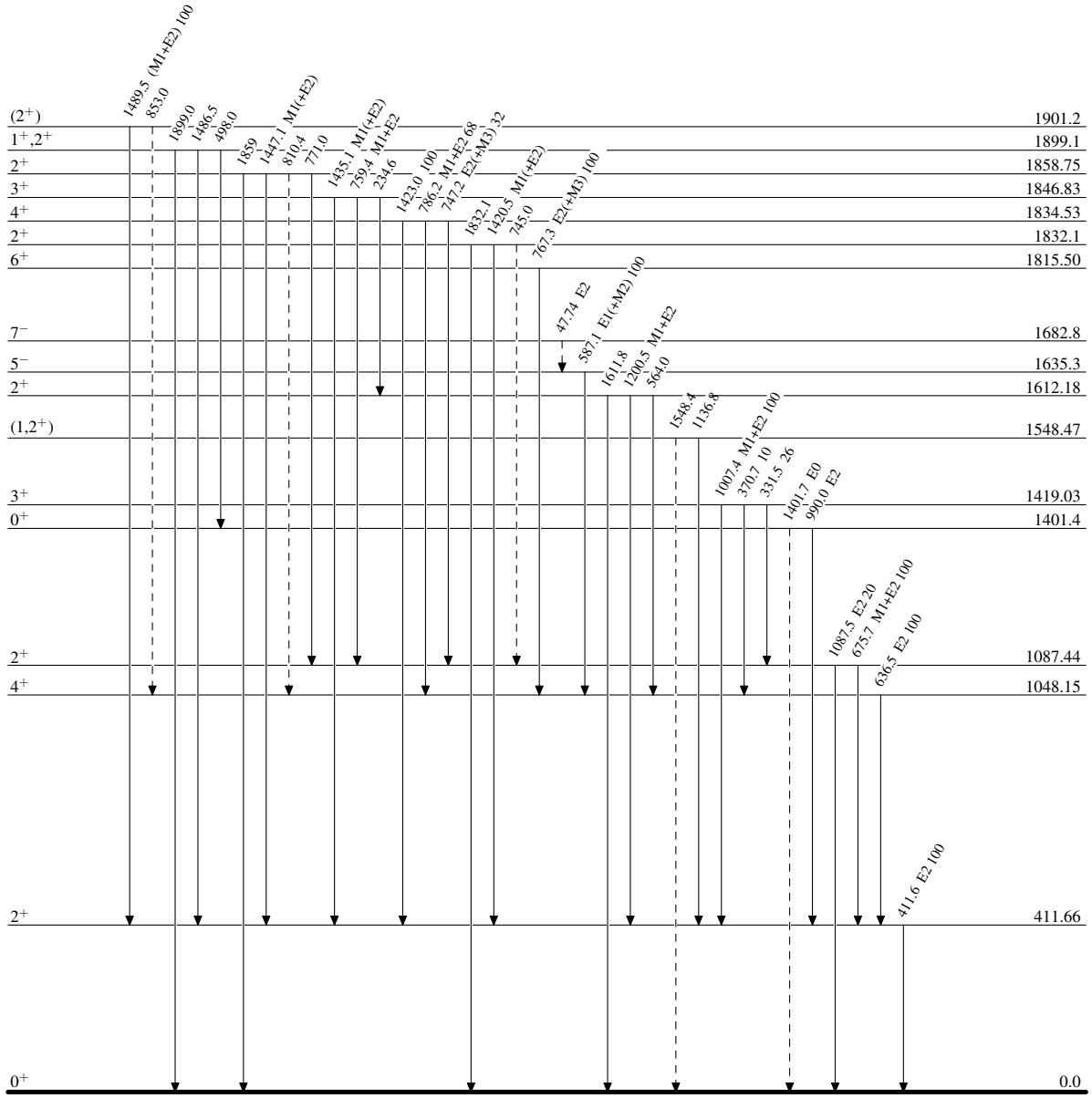
$^{198}_{80}Hg_{118}$

^{196}Pt(α,2nγ) 1974Ya03,1984Go06,2009Be18 Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{198}_{80}Hg_{118}$