Coulomb excitation **1985Ag01,1981Es03,1991Li03**

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. J. Chiara and F. G. Kondev	NDS 111,141 (2010)	1-Oct-2009

Additional information 1.

1985Ag01: HgS target enriched to 98.2% ^{204}Hg, 800 μg/cm^2 thick; E(^{208}Pb)=5 MeV/A;Ge(Li) and position-sensitive parallel plate avalanche detectors for γ-particle coin and I$\gamma(\theta)$. Deduced B(E2) values, normalized such that B(E2)(2^+ to 0^+)=0.0849 (an average of 1981Es03 and 1979Bo02). A 5% systematic error was included in the quoted uncertainties in B(E2).

1981Es03: Mixed HgS+$HgCl_2$ target enriched to 92.64% ^{204}Hg, 2 to 20 μg/cm^2 thick, between thin C layers; E(^{4}He)=13.5-16.5 MeV, E(^{12}C)=45-56 MeV, E(^{16}O)=63 and 65 MeV; annular Si detector for back-scattered particles. HgS target enriched to 98.2% ^{204}Hg, 200 μg/cm^2 thick, on thin C backing; E(p)=18 MeV; ΔE-E Si telescope for scattered protons. Winther-de Boer analysis, assumes that any unobserved low-lying states have negligible contributions. Q of 437-keV level measured by reorientation effect.

1991Li03: HgS target enriched to 92.64% ^{204}Hg, 6.7 μg/cm^2 thick, with 1 μg/cm^2 C flash; E(^{12}C)=54, 55 MeV; magnetic spectrometer, gas-filled proportional counter; B(E3) deduced from Winther-de Boer analysis.

1979Bo16,1979Bo02: Natural Hg target, 1.5 mm thick; E(^{4}He)=15 MeV, E(^{16}O)=56-64 MeV; twoGe(Li) detectors for γ's. Q of 437-keV level measured by reorientation effect.

1974Do01: HgS target enriched to 84% ^{204}Hg, 300 μg/cm^2 thick, on 1 mg/cm^2 Ni backing; E(^{16}O)=36 MeV; twoGe(Li) detectors and annular Si detector for γ's coincident with back-scattered particles. Deduced g-factors from I$\gamma(\theta)$ in vacuum and in He gas.

^{204}Hg Levels

E(level)[†]	J$^\pi$[‡#]	$T_{1/2}$	Comments
0	0^+		Additional information 2.
436.55 *3*	2^+	40.4 ps *4*	B(E2)↑=0.425 *4*, weighted average of 0.427 *6* (1979Bo16) and 0.423 *5* (1981Es03). Other: 0.37 *4* (1970Ka09). $T_{1/2}$: From B(E2)↑=0.425 *4*. Q: 0.40 *20* (1981Es03). The authors assume negligible contributions from low-lying unobserved states. Other: 0.39 *20* or 0.24 *20* (1979Bo16), depending on positive or negative interference of the E2 matrix elements. μ: 0.67 *9*. This value is deduced by the evaluators from μ(^{198}Hg)=0.75 *5* (average of 1995Br34 and 1990Ba40) and μ(^{204}Hg)/μ(^{198}Hg) = 0.89 *10*. Note that g(^{204}Hg)/g(^{198}Hg)=0.95 *11* in 1974Do01, but $\omega^2\tau_c$ is changed by evaluators from 4.6 ns^{-1} 8 (1974Do01) to 4.1 ns^{-1} 7, due to change in $T_{1/2}$(437-keV level) from 36 ps *2* to 40.4 ps *4*. Other: 0.55 *10* (1970Ka09). Additional information 3.
1128.45 *21*	4^+	2.91 ps *21*	B(E2)↑=0.218 *16* (1985Ag01) and 0.34 *11* (1981Es03). Values were deduced by the evaluators from B(E2)(4^+ to 2^+) = 0.121 *9* (1985Ag01) and 0.19 *6* (1981Es03). $T_{1/2}$: From B(E2)(4^+ to 2^+)=0.121 *9* (1985Ag01). Additional information 4.
1947.5 *5*			Additional information 5.
1987.9 *3*			
2191.0 *4*	6^+	0.30 ps *4*	B(E2)↑=0.201 *25*, deduced by the evaluators from B(E2)(6^+ to 4^+)=0.139 *17* (1985Ag01). $T_{1/2}$: From B(E2)(6^+ to 4^+) = 0.139 *17*. Additional information 6.
2515.1 *6*			
2674 *5*	3^-		E(level): Observed in 1991Li03 but cites energy from (α,α') of 1981Ba45. Level also seen in (p,p') of 1981Es03 (2682 *3*) and 1991Ho07 (2672 *4*). J$^\pi$: From 1991Li03. B(E3)↑=0.37 *4*, weighted average of 0.40 *6* and 0.35 *5* at E(^{12}C) = 54 and 55 MeV, respectively (1991Li03). The B(E3)↑ value corresponds to B(E3)(W.u.) = 22 *3*, which is comparable to the values for collective 3^- states in the even A≥198 Hg isotopes. Additional information 7.

[†] From a least-squares fit to Eγ, apart from 2674-keV level.

Continued on next page (footnotes at end of table)

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^{204}Hg Levels (continued)

‡ From 1985Ag01, except as noted.
# Additional information 8.

$\gamma(^{204}Hg)$

Additional information 9.

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	α#	Comments
436.55 *3*	100	436.55	2^+	0	0^+	E2	0.0378	E_γ: From 1979Bo16. Additional information 10.
691.9 *2*	19.9 *6*	1128.45	4^+	436.55	2^+	E2	0.01284	Additional information 11.
1062.5 *3*	1.36 *4*	2191.0	6^+	1128.45	4^+	E2	0.00536	Additional information 14.
1386.6@ *5*	0.24 *3*	2515.1		1128.45	4^+			E_γ: Placement based on adopted gammas (adopted $E\gamma$=1386.2). Additional information 15.
1510.9 *5*	0.21 *2*	1947.5		436.55	2^+			E_γ: Placement of γ by 1985Ag01 consistent with adopted gammas (adopted $E\gamma$=1511.10). Additional information 12.
1551.3@ *2*	0.11 *1*	1987.9		436.55	2^+			E_γ: Placement based on adopted gammas (adopted $E\gamma$=1552.8). Additional information 13.

† From 1985Ag01, except as noted.
‡ From 1981Es03, 1985Ag01.
# 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.

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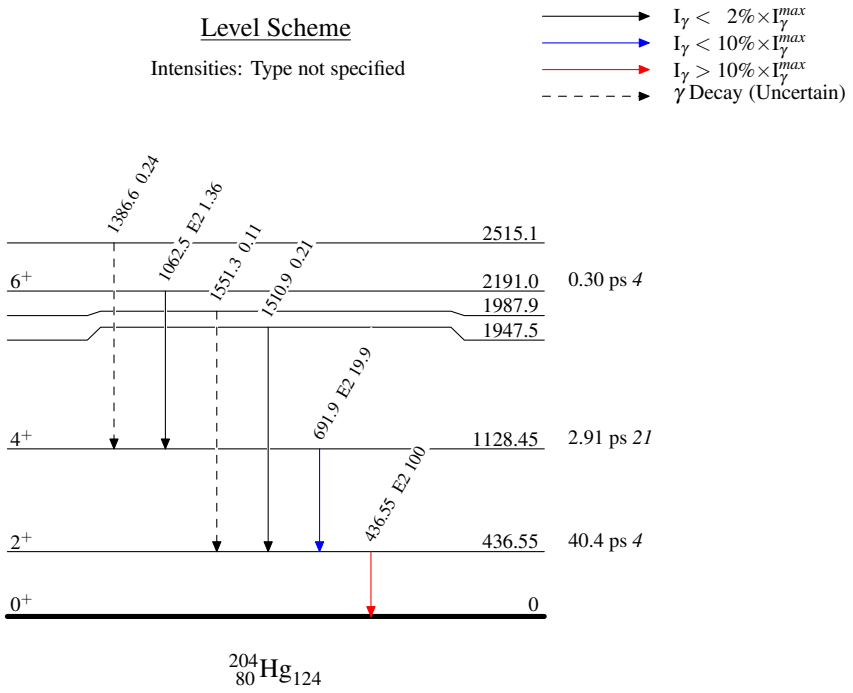
Legend

Level Scheme

Intensities: Type not specified



$^{204}_{80}Hg_{124}$