

$^{204}\text{Hg}(^9\text{Be}, ^9\text{Be}'\gamma)$ 1994Po21

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

Additional information 1.

1994Po21: HgO target enriched to 93% ^{204}Hg on mylar film, average non-uniform thickness 5 mg/cm²; 62-MeV ^9Be beam, 642-ns pulsing; prompt time peak FWHM \approx 10 ns at 300 keV to 5 ns at 1400 keV; measurements using CAESAR array of six Compton-suppressed HPGe detectors for $E\gamma$, $\gamma\gamma(t)$, and $\gamma(\theta)$, polarimeter comprising three unsuppressed HPGe detectors (one scatterer and two analyzers) for γ polarization, and one movable unsuppressed HPGe detector for $\gamma(\theta)$. Experiment details given in 1994Po20. Comparison with empirical shell model calculations.

 ^{204}Hg Levels

E(level) [†]	$J^{\pi\ddagger}$	$T_{1/2}$	Comments
0	0 ⁺		Additional information 2.
436.50 20	2 ⁺		Additional information 3.
1128.2 3	4 ⁺		Additional information 4.
1828.8 6	2 ⁺		J^{π} : Note that the level is assigned (2 ⁻) in Adopted Levels. Additional information 5.
1841.2 6	2 ⁺		Additional information 6.
1851.4 5	(3 ⁺)		Additional information 7.
1948.2 6	(2 ⁺)		Additional information 8.
1989.3 6	(2 ⁺)		Additional information 9.
2117.4 6	2 ⁺		Additional information 10.
2190.6 4	6 ⁺		Additional information 11.
2235.8 6	(5 ⁺)		Additional information 12.
2262.6 4	5 ⁻		Proposed configuration: $\pi[(s_{1/2})^{-1}(h_{11/2})^{-1}]\nu[(p_{1/2})^{-2}]_{0+}$. Additional information 13.
2299.4 5	(7 ⁻)	6.9 ns 3	E(level): Degeneracy with (2 ⁺) level not explicitly noted in 1994Po21. Additional information 14. $T_{1/2}$: from 1062.4 $\gamma(t)$. Proposed configuration: $\pi[(d_{3/2})^{-1}(h_{11/2})^{-1}]\nu[(p_{1/2})^{-2}]_{0+}$.
2299.7 6	(2 ⁺ ,3)		E(level): Degenerate level not explicitly identified in 1994Po21. J^{π} : From Adopted Levels.
2514.5 6	(4 ⁺)		Additional information 15.
2657.3 6			Additional information 16.
2675.6 6	3 ⁻		Additional information 17.
2722.9 7	(9 ⁻)		Additional information 18.
2760.4 6	(6 ⁻)		Additional information 19.
2908.6 6			Additional information 20.
2913.9 6			Additional information 21.
3032.8 6			Additional information 22.
3173.6 6			Additional information 23.
3688.1 9			Additional information 24.

[†] From a least-squares fit to $E\gamma$.

[‡] From 1994Po21, based on $\gamma(\theta)$, unless otherwise specified.

$^{204}\text{Hg}(^9\text{Be}, ^9\text{Be}'\gamma)$ **1994Po21 (continued)** $\gamma(^{204}\text{Hg})$

Additional information 25.

E_γ^\dagger	I_γ^\ddagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.#	Comments
(36.7)		2299.4	(7 ⁻)	2262.6	5 ⁻		E_γ : Not seen in 1994Po21, but required by observed 423.5 γ -1134.4 γ coin.
108.8 5	6.9	2299.4	(7 ⁻)	2190.6	6 ⁺		E_γ : Placement from degenerate 7 ⁻ level based on adopted gammas. Additional information 38.
423.5 5	2.1	2722.9	(9 ⁻)	2299.4	(7 ⁻)		Coincidence with 108.8 γ proves this γ feeds the degenerate 7 ⁻ level. Mult.: $A_2=0.3$ 5. Additional information 43.
436.5 2	100	436.50	2 ⁺	0	0 ⁺	E2	Mult.: $A_2=0.04$ 2; small A_2 value may be due to deorientation of the state. Additional information 27.
461.0 5	0.9	2760.4	(6 ⁻)	2299.4	(7 ⁻)		Coincidence with 108.8 γ proves this γ feeds the degenerate 7 ⁻ level. Additional information 44.
497.7 5	1.7	2760.4	(6 ⁻)	2262.6	5 ⁻		Additional information 46.
651.3 5	0.4	2913.9		2262.6	5 ⁻		
691.7 2	54.2	1128.2	4 ⁺	436.50	2 ⁺	E2	Mult.: $A_2=0.58$ 14. Additional information 28.
723.0 5	3.0	1851.4	(3 ⁺)	1128.2	4 ⁺		Mult.: $A_2=0.2$ 3; 1994Po21 assign mult. Q based on $\gamma(\theta)$, but uncertainty is large enough to allow $\Delta J=0$ or 1 D as well. Additional information 47.
770.2 5	0.9	3032.8		2262.6	5 ⁻		
^x 815.6 5	0.7						
911.0 5	0.9	3173.6		2262.6	5 ⁻		Mult.: $A_2=-0.1$ 5. Additional information 48.
965.2 5	0.6	3688.1		2722.9	(9 ⁻)		Additional information 49.
1062.4 2	10.2	2190.6	6 ⁺	1128.2	4 ⁺	[E2]	Mult.: $A_2=0.03$ 7; A_2 is surprisingly small, but this γ is associated with the 6 ⁺ to 4 ⁺ decay (see adopted level scheme) and is thus assigned as E2 here. Additional information 35.
1107.6 5	2.0	2235.8	(5 ⁺)	1128.2	4 ⁺	D	Mult.: $A_2=-0.16$ 16. Additional information 36.
1134.4 2	11.3	2262.6	5 ⁻	1128.2	4 ⁺	D	Mult.: $A_2=-0.14$ 8; 1994Po21 assign E1, but M1 is also possible. Additional information 37.
1171.5 5	1.2	2299.7	(2 ⁺ ,3)	1128.2	4 ⁺		E_γ : Placement from degenerate (2 ⁺) level based on adopted gammas. Additional information 39.
1386.3 5	0.8	2514.5	(4 ⁺)	1128.2	4 ⁺		Additional information 40.
1392.3 5	2.3	1828.8	2 ⁺	436.50	2 ⁺	D	Mult.: $A_2=-0.48$ 7. Additional information 29.
1404.7 5	0.4	1841.2	2 ⁺	436.50	2 ⁺		Additional information 30.
1415.0 5	1.1	1851.4	(3 ⁺)	436.50	2 ⁺		Additional information 31.
1511.7 5	1.2	1948.2	(2 ⁺)	436.50	2 ⁺		Additional information 32.
^x 1525.2 5	0.3						Additional information 26.
1529.1 5	0.3	2657.3		1128.2	4 ⁺		Additional information 41.
1547.4 5	2.0	2675.6	3 ⁻	1128.2	4 ⁺		Additional information 42.
1552.8 5	1.4	1989.3	(2 ⁺)	436.50	2 ⁺		Additional information 33.
1680.9 5	0.4	2117.4	2 ⁺	436.50	2 ⁺		Additional information 34.
1780.4 5	1.7	2908.6		1128.2	4 ⁺		Additional information 45.

[†] From 1994Po21. No uncertainties were given by the authors; evaluators assign 0.2 keV for strong ($I_\gamma > 10$) transitions, 0.5 keV

$^{204}\text{Hg}(^9\text{Be}, ^9\text{Be}'\gamma)$ **1994Po21** (continued)

$\gamma(^{204}\text{Hg})$ (continued)

otherwise. Upper-level discriminator prevented detection of γ 's with energies above ≈ 1.8 MeV.

‡ From [1994Po21](#).

From $\gamma(\theta)$ in [1994Po21](#), except where noted. No A_4 term is given as it was always too small, due to attenuation of the alignment, to provide useful information.

^x γ ray not placed in level scheme.

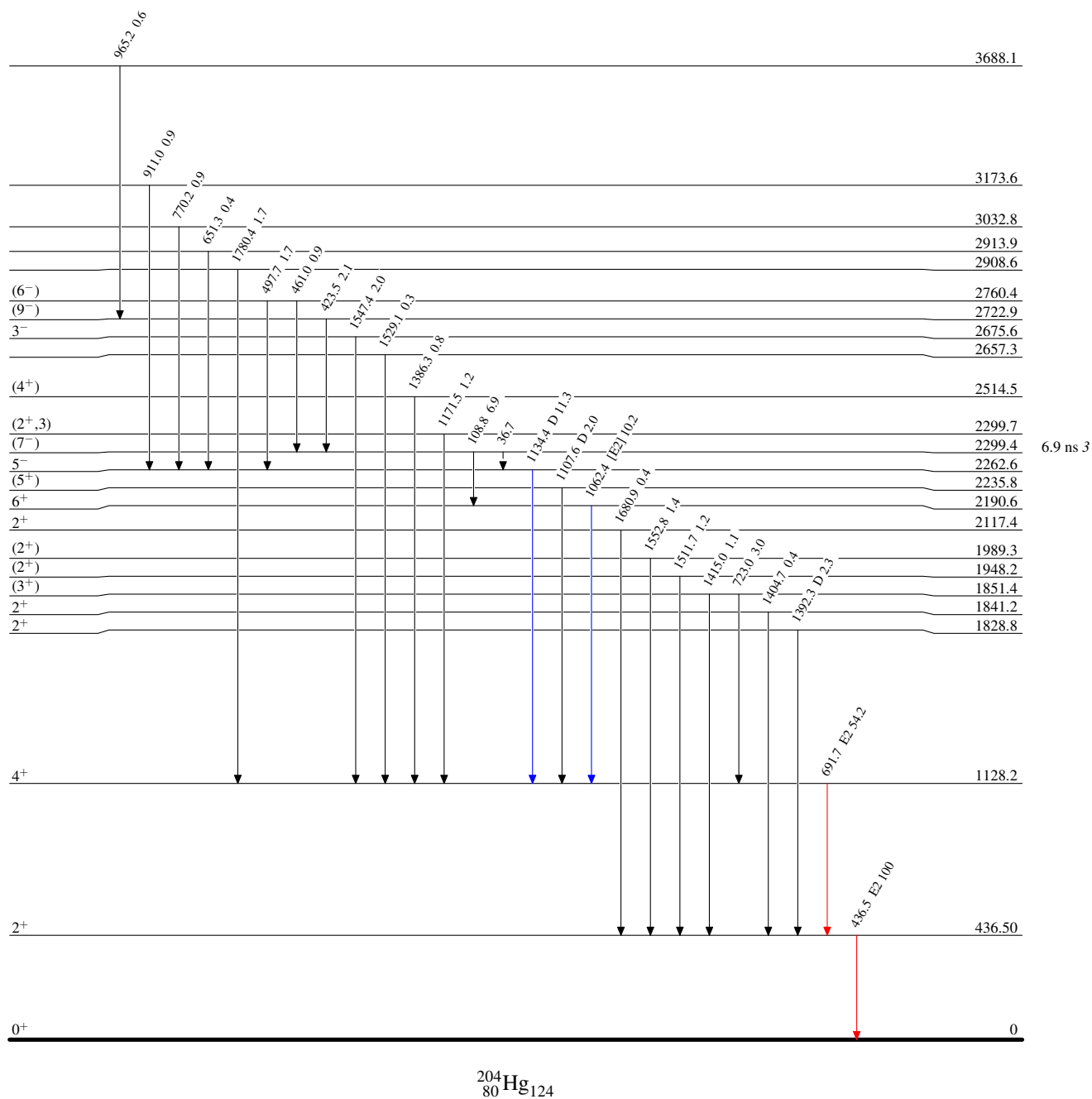
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Legend

Level Scheme

Intensities: Type not specified

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

 $^{204}_{80}\text{Hg}_{124}$