^{204}Hg(^{9}Be,5nγ) 1997Po04

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. J. Martin	NDS 108,1583 (2007)	1-Jun-2007

E=62 MeV. Measured Eγ, Iγ, $\gamma\gamma$(t), $\gamma(\theta)$, γ(lin pol).

^{208}Po Levels

E(level)	J$^{\pi}$†	T$_{1/2}$	E(level)	J$^{\pi}$†	T$_{1/2}$	E(level)	J$^{\pi}$†	T$_{1/2}$
0	0^+		4917.7	16^+	<0.35 ns	6647.3	(20^-)	<14 ns
686.4	2^+		4919.3	15^+	<1.0 ns	6847.2	20^-	<0.7 ns
1346.4	4^+		4919.7	16^-	<0.7 ns	6897.8	(20^-)	<0.7 ns
1523.9	6^+	3.74 ns *21*	5102.1	16^+	<1.4 ns	6914.2	(20^+)	
1527.9	8^+	350‡ ns *20*	5116.5	17^+	<0.7 ns	6950.3	21^+	<14 ns
2240.4	9^+		5261.7	17^+	<1.4 ns	7475.1	(22^-)	<7 ns
2368.9	7^-	<1.4 ns	5326.4	(17^-)	<7 ns	7652.6	(22^-)	<14 ns
2554.2	10^+		5408.7	17^+	<0.35 ns	7704.8	22^+	<0.35 ns
2702.6	11^-	8.04 ns *14*	5464.7	(17,18)		7784.3	(21^+)	<0.35 ns
2799.3	9^-	<0.35 ns	5474.9	18^+	<0.35 ns	7931.9	(23^-)	<7 ns
3399.4	12^-	<1.0 ns	5861.0	18^+	<0.7 ns	8022.6	(23^-)	<7 ns
3524.1	11^-		5899.7	19^+	<0.35 ns	8106.1	(22^+)	<0.7 ns
3545.1	13^-	0.76 ns *14*	5920.9	(18^+)	<0.7 ns	8394.2	(24^-)	<0.7 ns
3900.2	13^-		5977.0	(18^+)	<0.35 ns	8730.4		
4056.9	14^-	<0.7 ns	6020.8	(17^+)	<0.35 ns	8834.9		<1.4 ns
4061.4	15^-	<0.35 ns	6051.3	(17)	<0.7 ns	8894.7	(23)	<0.7 ns
4176.9	13^-	<0.35 ns	6485.7	17^+	<0.7 ns	8991.5		
4306.7	14^-	<0.35 ns	6509.1	18^+	<0.7 ns	9032.2		
4451.9	(14^-)		6520.8	(19^+)	<14 ns	9160.2		
4659.9	15^-	<0.7 ns	6597.8	(19^-)	<14 ns	9643.3		
4804.3	(15^-)		6619.6	(19^-)	<14 ns			
4913.1	(14^+)		6640.6	19^+	<0.7 ns			

† Values given by authors based on γ multipolarities, $\gamma(\theta)$, and model-dependent arguments.
‡ From Adopted Levels.

^{204}Hg(^{9}Be,5nγ) 1997Po04 (continued)

$\gamma(^{208}Po)$

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[‡]	α[k]	$I_{(\gamma+ce)}$	Comments
4.02 *3*		1527.9	8^+	1523.9	6^+					E_γ: from At ε decay.
4.5[c]		4061.4	15^-	4056.9	14^-				177[c] *17*	
11.4[c]		6520.8	(19^+)	6509.1	18^+				≈58[c]	
21.0[c]		3545.1	13^-	3524.1	11^-				≈7.0[c]	
27.7[c]		6647.3	(20^-)	6619.6	(19^-)				[c]	
35.2[c]		6520.8	(19^+)	6485.7	17^+				≈34[c]	
77.0		6597.8	(19^-)	6520.8	(19^+)					
98.8 *1*	41	6619.6	(19^-)	6520.8	(19^+)	E1[a]				
103.1 *2*	10	6950.3	21^+	6847.2	20^-	E1[a]		0.424		
113.4 *2*	11	4917.7	16^+	4804.3	(15^-)	E1[a]				
145.7 *1*	132 *4*	3545.1	13^-	3399.4	12^-	M1[a]		3.96		
147.0[c]		5408.7	17^+	5261.7	17^+				5.8[c] *14*	
148.5 *1*	464 *4*	2702.6	11^-	2554.2	10^+	E1[a]		0.172		
159.6 *2*	21	5261.7	17^+	5102.1	16^+	M1[a]		3.06		
[x]168.7 *2*	6									
177.5 *1*	578 *6*	1523.9	6^+	1346.4	4^+	E2		0.736		
[x]184.4 *2*	≤37[i]									
184.4 *2*	≤37[i]	5102.1	16^+	4917.7	16^+	M1[a]				
[x]191.6 *2*	3									
198.8 *1*	117 *4*	5116.5	17^+	4917.7	16^+	M1[a]		1.65		
203.0 *2*	5	5464.7	(17,18)	5261.7	17^+					
206.6 *1*	58 *2*	6847.2	20^-	6640.6	19^+	E1[a]		0.0674		
[x]225.6 *2*	5 *2*					D				
227.1 *2*	8 *2*	7931.9	(23^-)	7704.8	22^+					
[x]235.6 *2*	2									
[x]240.1 *2*	14 *2*					D				
257.8 *1*	67 *3*	4917.7	16^+	4659.9	15^-	E1[a]		0.045		
259.5 *2*	4	4919.3	15^+	4659.9	15^-					
261.1 *2*	4	8991.5		8730.4						
265.5 *2*	6	9160.2		8894.7	(23)					
278.2 *1*	37 *3*	6897.8	(20^-)	6619.6	(19^-)	M1+E2[@]	+0.07 *5*	0.647		
279.4 *2*	2	7931.9	(23^-)	7652.6	(22^-)					
299.9 *1*	44 *4*	6897.8	(20^-)	6597.8	(19^-)	D[&]				
313.8 *1*	238 *4*	2554.2	10^+	2240.4	9^+	M1+E2	−0.09 *1*	0.465 *1*		δ: from Adopted Gammas.
321.8 *2*	28 *2*	8106.1	(22^+)	7784.3	(21^+)	M1[@]		0.436		
[x]325.3 *2*	15 *2*					M1(+E2)	−0.02 *4*			
326.4 *2*	5	6847.2	20^-	6520.8	(19^+)					
[x]341.0 *2*	4									
342.5 *2*	12	5261.7	17^+	4919.3	15^+					
352.5 *2*	≤3[d]	4804.3	(15^-)	4451.9	(14^-)					
353.2 *2*	≤3[d]	4659.9	15^-	4306.7	14^-					

$^{208}_{84}Po_{124}$-2

^{204}Hg(^{9}Be,5nγ) 1997Po04 (continued)

$\gamma(^{208}Po)$ (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[‡]	α[k]	Comments
358.4 *1*	82 *4*	5474.9	18^+	5116.5	17^+	M1(+E2)[@]	−0.03 *3*	0.326	
[x]364.5 *2*	6								
390.2 *2*	8 *2*	4451.9	(14^-)	4061.4	15^-	M1+E2[@]		0.16 *10*	Mult.: ΔJ=0.
[x]391.6 *2*	4								
395.0 *2*	4	4451.9	(14^-)	4056.9	14^-				
406.9 *2*	5	5326.4	(17^-)	4919.7	16^-				
424.8 *1*	54 *4*	5899.7	19^+	5474.9	18^+	M1(+E2)	−0.09 *9*	0.206	
[x]430.2 *2*	≤10[b]								
430.4 *2*	≤10[b]	2799.3	9^-	2368.9	7^-	E2		0.0469	E_γ,Mult.: Eγ=430.9 *1* In (p,2nγ).
[x]455.7 *2*	≤14[j]								
[x]456.1 *2*	≤14[j]								
457.0 *2*	≤11[g]	7931.9	(23^-)	7475.1	(22^-)				
[x]457.5 *2*	≤11[g]								
457.7 *2*	≤11[g]	6509.1	18^+	6051.3	(17)				
462.3 *2*	20 *2*	8394.2	(24^-)	7931.9	(23^-)	D[&]			
[x]480.5 *2*	9 *2*					D			
483.1 *2*	3 *1*	9643.3		9160.2		D[&]			
488.3 *2*	≤33[e]	6509.1	18^+	6020.8	(17^+)	*e*			
489.0 *2*	≤33[e]	5408.7	17^+	4919.7	16^-	*e*			
491.0 *1*	35 *4*	5408.7	17^+	4917.7	16^+	(M1+E2)[@]		0.09 *5*	
500.8 *2*	19	3900.2	13^-	3399.4	12^-	M1		0.133	
502.1 *2*	≈2	5977.0	(18^+)	5474.9	18^+				
511.8 *1*	267 *9*	4056.9	14^-	3545.1	13^-	M1+E2	≤0.81	0.107 *19*	Mult.: mult=M1+E2 from γ(lin pol). δ: from Adopted Gammas.
512.2 *1*	42	5920.9	(18^+)	5408.7	17^+				
516.3 *1*	234 *10*	4061.4	15^-	3545.1	13^-	E2		0.0300	
[x]524	9								
[x]529.5 *2*	7 *2*								
[x]530.9 *2*	10								
545.1 *2*	8	5464.7	(17,18)	4919.7	16^-				
547.5 *2*	14	8022.6	(23^-)	7475.1	(22^-)				
[x]559.4 *2*	10 *2*								
[x]568.3 *2*	11								
577.3 *1*	36	7475.1	(22^-)	6897.8	(20^-)				
[x]582	9 *2*								
[x]588	5								
599.9 *1*	38 *4*	6520.8	(19^+)	5920.9	(18^+)	D[&]			
603.0 *1*	103 *4*	4659.9	15^-	4056.9	14^-	M1(+E2)[@]	−0.03 *4*	0.0817	
612.6 *2*	23 *2*	4919.3	15^+	4306.7	14^-				
621.1 *2*	16	6520.8	(19^+)	5899.7	19^+				
631.8 *1*	30 *2*	4176.9	13^-	3545.1	13^-	M1+E2	−0.62 *15*	0.057 *5*	Mult.: ΔJ=0 from γ(θ). Mult from γ(lin pol).

$^{208}_{84}Po_{124}$-3

^{204}Hg(^{9}Be,5nγ) 1997Po04 (continued)

$\gamma(^{208}Po)$ (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[‡]	α[k]	Comments
									δ: the alternate solution of 2.4 *6* is ruled out by α(K)exp In other datasets.
638.0 *2*	7 *2*	9032.2		8394.2	(24^-)				
648.1 *2*	3	6509.1	18^+	5861.0	18^+				
659.8 *2*	20 *4*	6520.8	(19^+)	5861.0	18^+	E2[a]		0.0173	
660.0 *1*	965 *4*	1346.4	4^+	686.4	2^+	E2		0.0173	
[x]669.0 *2*	23 *2*					D			
[x]676.2 *2*	3								
686.4 *1*	1000	686.4	2^+	0	0^+	E2		0.0159	
696.8 *1*	571 *7*	3399.4	12^-	2702.6	11^-	M1+E2	−0.21 *5*	0.0542 *8*	
702.3 *2*	5	7652.6	(22^-)	6950.3	21^+				
707.8 *2*	2	8730.4		8022.6	(23^-)				
712.5 *1*	349 *5*	2240.4	9^+	1527.9	8^+	M1+E2	−0.29 *18*	0.049 *3*	
724.8 *2*	9 *2*	3524.1	11^-	2799.3	9^-	Q[&]			
[x]734.1 *2*	3								
736.2 *2*	7 *2*	4913.1	(14^+)	4176.9	13^-	D[&]			
740.9 *1*	37 *4*	6640.6	19^+	5899.7	19^+	M1+E2[@]		0.031 *17*	Mult.,δ: $\Delta J=0$. $\delta=-0.81$ *6* or +1.7 *2*.
[x]742.7 *2*	9								
744.5 *2*	29 *3*	5861.0	18^+	5116.5	17^+	M1+E2[@]		0.030 *17*	
747.4 *2*	7 *2*	4804.3	(15^-)	4056.9	14^-	D[&]			
754.5 *2*	27 *3*	7704.8	22^+	6950.3	21^+	M1[@]		0.0455	
759.1 *2*	19 *2*	6020.8	(17^+)	5261.7	17^+	M1[@]		0.0448	
761.6 *2*	29 *3*	4306.7	14^-	3545.1	13^-	M1[@]		0.0444	
[x]767.4 *2*	3								
788.6 *2*	10	8894.7	(23)	8106.1	(22^+)	D[&]			
789.6 *2*	12	6051.3	(17)	5261.7	17^+				
804.4 *2*	12	5920.9	(18^+)	5116.5	17^+				
842.5 *1*	39 *4*	3545.1	13^-	2702.6	11^-	E2		0.0104	Mult.: from $\gamma(\theta)$ and γ(lin pol).
845.0 *2*	10	2368.9	7^-	1523.9	6^+	E1		0.00371	
856.3 *1*	313 *3*	4917.7	16^+	4061.4	15^-	E1		0.0036	
858.3 *1*	34 *4*	4919.7	16^-	4061.4	15^-	M1(+E2)	−0.1 *1*	0.032	
886.5 *1*	38 *3*	7784.3	(21^+)	6897.8	(20^-)	E1[@]		0.0034	
903.0 *2*	≤5[f]	8834.9		7931.9	(23^-)				
904.3 *2*	≤5[f]	6020.8	(17^+)	5116.5	17^+				
[x]921.3 *2*	13 *2*								
[x]1002.0 *4*	25 *2*					(M1)			
1014.5 *4*	12	6914.2	(20^+)	5899.7	19^+				
1026.3 *2*	216 *4*	2554.2	10^+	1527.9	8^+	E2		0.0071	
[x]1042	3								
1045	≤14[h]	6509.1	18^+	5464.7	(17,18)				

$^{208}_{84}Po_{124}$-4

^{204}Hg(^{9}Be,5nγ) 1997Po04 (continued)

$\gamma(^{208}Po)$ (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[k]	Comments
1045.9 *4*	≤14[h]	6520.8	(19$^+$)	5474.9	18$^+$			E_γ: from authors′ table 2. The value 1045.3 In table 1 is probably a misprint.
[x]1052.6 *4*	4 *2*					D		
[x]1070.1 *4*	5 *2*							
1077.0 *4*	17 *2*	6485.7	17$^+$	5408.7	17$^+$			Mult.: see comment on 1224γ. Mult.: ΔJ=0.
[x]1100	2							
1137.0 *4*	21 *2*	7784.3	(21$^+$)	6647.3	(20$^-$)	E1[@]		
[x]1158.8 *4*	6 *2*					E1		
1165.8 *4*	5 *2*	6640.6	19$^+$	5474.9	18$^+$	D[&]		
1174.8 *2*	216 *4*	2702.6	11$^-$	1527.9	8$^+$	E3	0.0119	
1224.1 *4*	10 *2*	6485.7	17$^+$	5261.7	17$^+$			Mult.: the authors give mult=(E1), from linear polarization; however, this assignment is mutually inconsistent with mult(1077γ)=(M1+E2) since these transitions feed levels with π=+ and π=(+).
[x]1280.6 *4*	4							
[x]1293.5 *4*	4 *2*							
1372.6 *4*	6 *2*	4917.7	16$^+$	3545.1	13$^-$	E3	0.0085	
1392.8 *5*	5	6509.1	18$^+$	5116.5	17$^+$	D[&]		
1566.7 *4*	3	6485.7	17$^+$	4919.7	16$^-$			
1568.3 *4*	4	6485.7	17$^+$	4917.7	16$^+$			

[†] Relative photon intensities from authors′ table 1. The authors also give branching ratios In table 2. These are based on data In table 1, but are corrected and revised based on coincidence data. The data from table 2 are given In Adopted Gammas.
[‡] From γ(lin pol) except where noted otherwise.
[#] From Adopted Gammas, except where noted otherwise.
[@] From $\gamma(\theta)$ and γ(lin pol).
[&] From $\gamma(\theta)$.
[a] From α deduced from intensity balance In coincidence spectrum.
[b] Iγ(430.2γ+430.4γ)=10.
[c] Not observed directly. Existence is required by coin data. E is deduced from the level energies, and I(γ+ce) from coin data.
[d] Iγ(352.5γ+353.2γ)=3.
[e] Iγ(488.3γ+489.0γ)=33 *3*. Mult=(E1+M1) for the doublet.
[f] Iγ(903.0γ+904.3γ)=5.
[g] Iγ(457.0γ+457.5γ+457.7γ)=11.
[h] Iγ(1045γ+1045.9γ)=14 *2*.
[i] Authors show two 184.4γ′s In table 1, with combined intensity of 37, and mult=M1. Only a single placement is shown, namely from the 5102 level, from the authors′ level scheme and coincidence data, most of the intensity belongs with this placement.
[j] Iγ(455.7γ+456.1γ)=14.

$^{208}_{84}Po_{124}$-5

^{204}Hg(^{9}Be,5nγ) 1997Po04 (continued)

$\gamma(^{208}Po)$ (continued)

[k] 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.

[x] γ ray not placed in level scheme.

$^{208}_{84}Po_{124}$-6

^{204}Hg(^{9}Be,5nγ) 1997Po04

Level Scheme

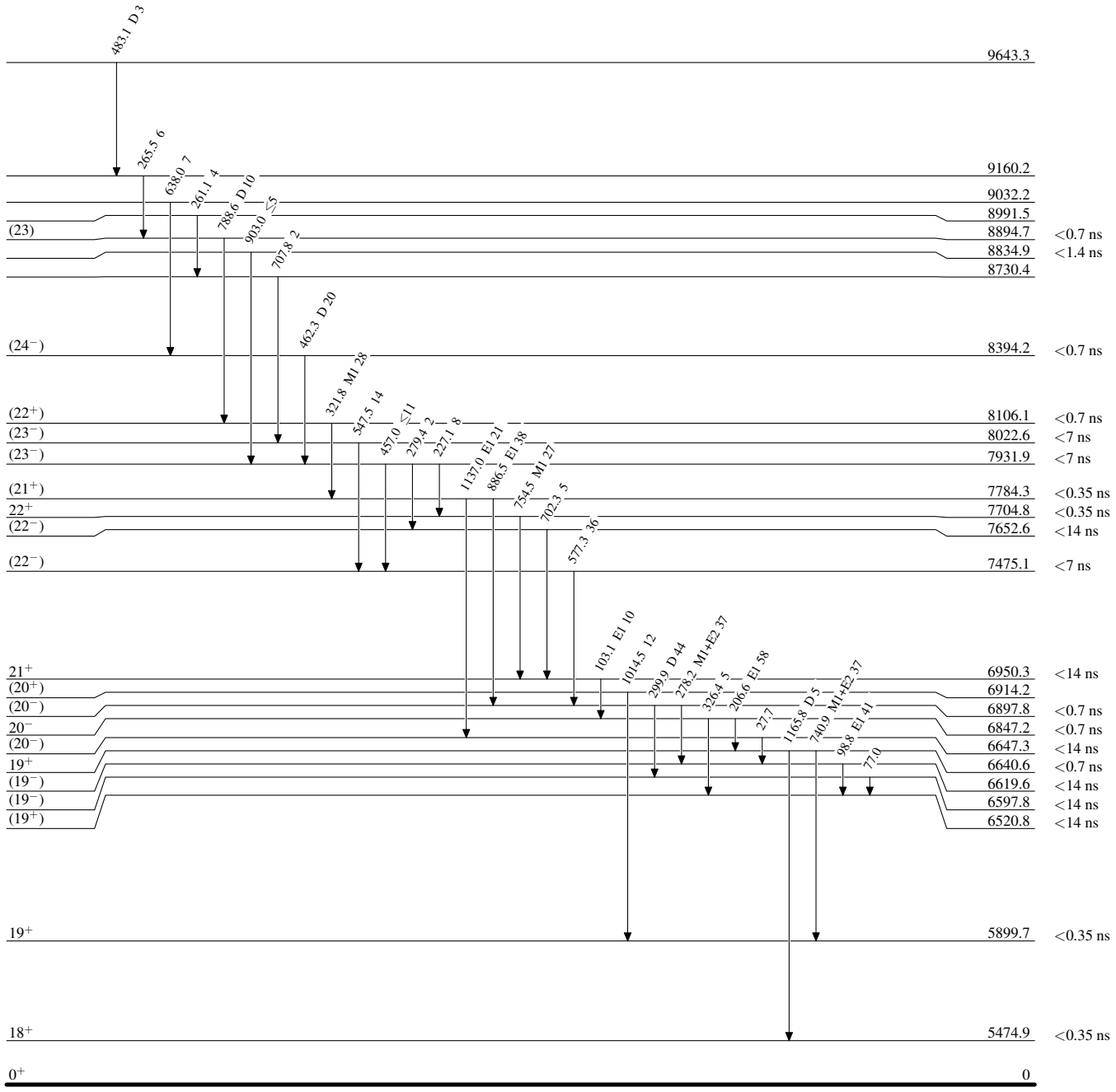
Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$



$^{208}_{84}Po_{124}$

^{204}Hg(^{9}Be,5nγ) 1997Po04

Level Scheme (continued)

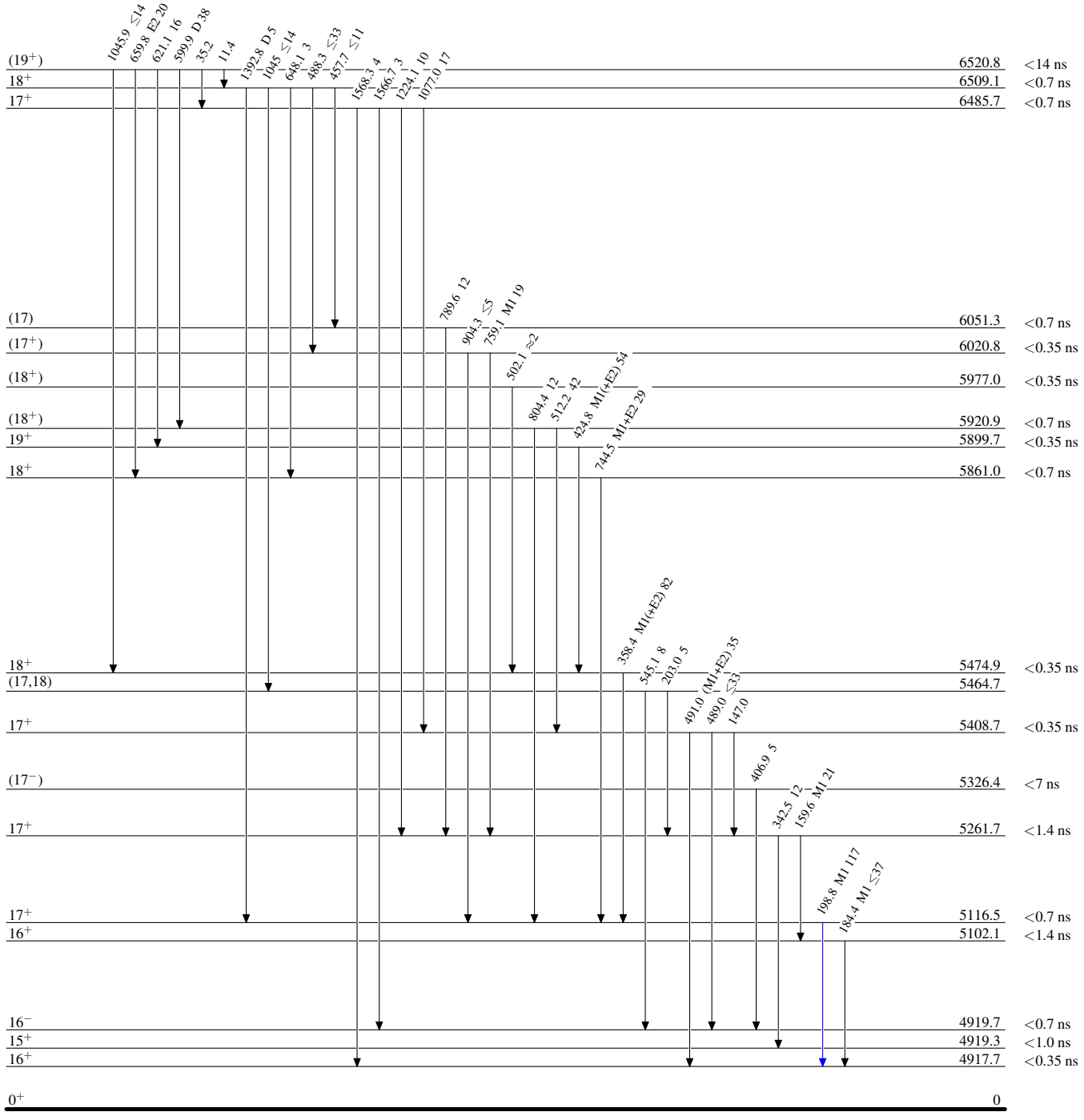
Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$

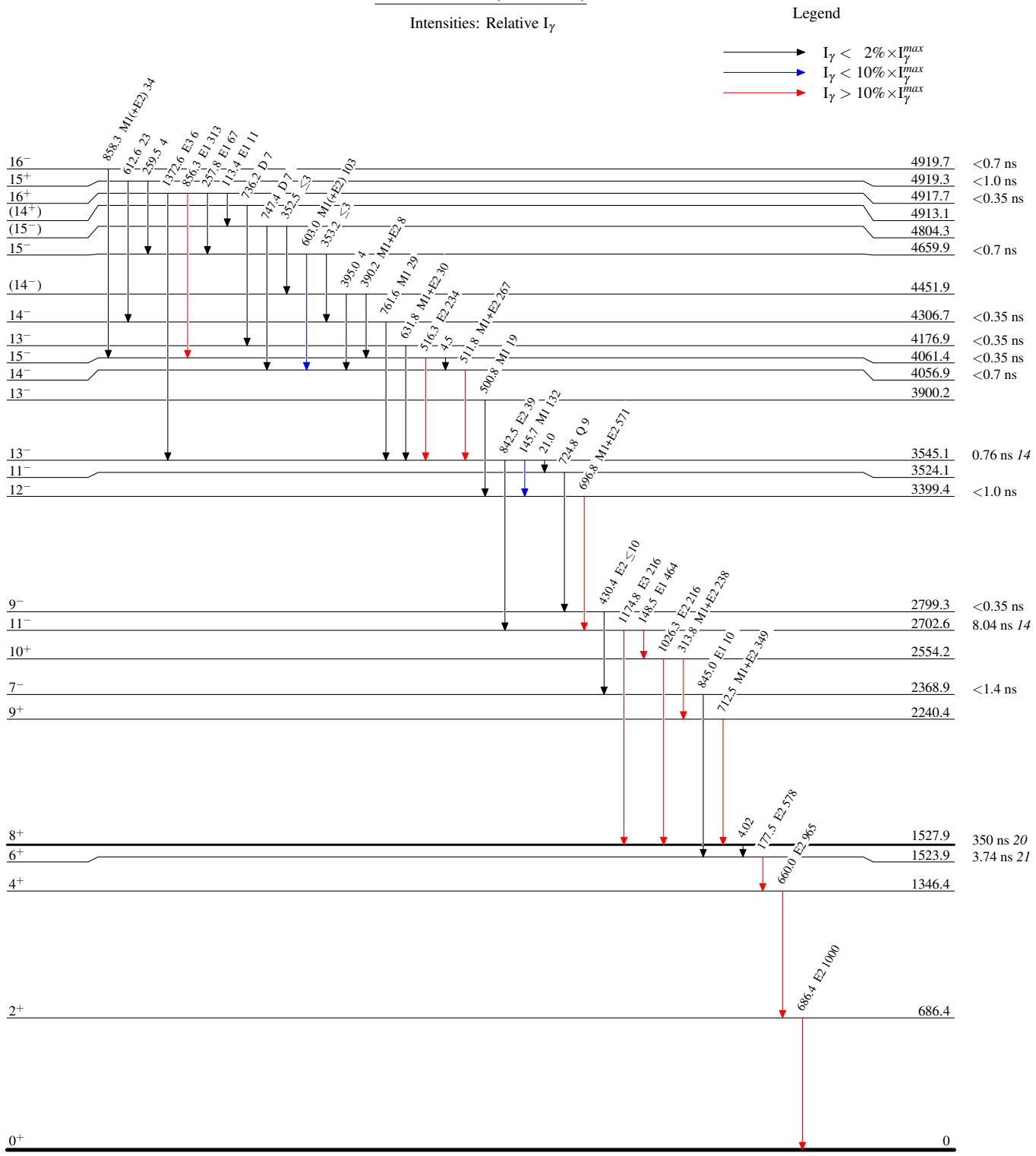


$^{208}_{84}Po_{124}$

^{204}Hg(^{9}Be,5nγ) 1997Po04

Level Scheme (continued)

Intensities: Relative I_γ



$^{208}_{84}Po_{124}$