Adopted Levels, Gammas

History

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

Q(β^-)=−2305 *15*; S(n)=7193 *16*; S(p)=3149 *12*; Q(α)=3977 *11* 2012Wa38
Note: Current evaluation has used the following Q record −2330 30 *7200* 30 *3170* 30 *3960* 30 2003Au03.

^{204}Bi Levels

Cross Reference (XREF) Flags

A ^{204}Bi IT decay (1.07 ms)
B ^{204}Po ε decay
C ^{208}At α decay
D ^{205}Tl(α,5nγ),^{203}Tl(α,3nγ)

E(level)†	J$^\pi$‡	T$_{1/2}$	XREF	Comments
0	6$^+$	11.22 h *10*	ABCD	%ε+%β^+=100 μ=+4.322 *15*; Q=−0.49 *15* J$^\pi$: atomic beam. T$_{1/2}$: From 1960St21. Others: 11.6 h *2* (1956We14), 11.0 h *5* (1958Fr53), and 11.2 h *3* (1966KaZY). μ: From 1996Ca02,2000Bi23 using laser resonance fluorescence spectroscopy technique. Others: 4.48 *22* (1988Wo12) and +4.28 2 (1959Li50). Q: From 1996Ca02 and 2000Bi23 using laser resonance fluorescence spectroscopy technique. Others: −0.68 *20* (2001Bi23) and −0.43 *4* (1959Li50). Configuration=$((\pi\ h_{9/2})^{+1}(\nu\ f_{5/2})^{-1})$.
5.55 *5*	5$^{+\#}$		BC	J$^\pi$: 5.55γ M1 to 6$^+$. Configuration=$((\pi\ h_{9/2})^{+1}(\nu\ f_{5/2})^{-1})$.
15.08 *7*	4$^{+\#}$		BC	J$^\pi$: 9.52γ M1 to 5$^+$. Configuration=$((\pi\ h_{9/2})^{+1}(\nu\ f_{5/2})^{-1})$.
53.40 *20*	7$^+$		A CD	J$^\pi$: 53.4γ M1 to 6$^+$; nonobservation of γ's to 4$^+$ and 5$^+$ favors 7$^+$. Configuration=$((\pi\ h_{9/2})^{+1}(\nu\ f_{5/2})^{-1})$.
78.25 *7*	3$^{+\#}$		B	J$^\pi$: 63.185γ M1 to 4$^+$.
200.84 *8*	(4)$^+$		B	J$^\pi$: 122.582γ M1 to 3$^+$; 3$^+$ and 2$^+$ excluded by shell model.
215.27 *8*	2$^{+\#}$		B	J$^\pi$: 137.023γ M1 to 3$^+$.
332.08 *7*	3$^+$		B	J$^\pi$: 253.836γ M1 to 3$^+$, 317.016γ M1 to 4$^+$, 762.52γ E1 from 2$^-$.
805.5 *3*	10$^-$	13.0 ms *1*	A D	%IT=100 μ=2.36 *23*; Q=0.063 *12* J$^\pi$: 752.1γ E3 to 7$^+$. T$_{1/2}$: From ^{204}Bi IT decay (1974Ra25). Other: a value of 13 ms is confirmed in ^{205}Tl(α,5nγ),^{203}Tl(α,3nγ) (1981Lo09). Q: From 1990Ha30, 1991Sc14 using the LEMS technique. The value of 0.0630 *12*, quoted in Table II in 1991Sc14, seems to be a typo. μ: From g=0.236 *23* (1980Kl06) using the in-beam TDPAD technique. The values was corrected for Knight and diamagnetic shifts. Configuration=$((\pi\ h_{9/2})(\nu\ i_{13/2})^{-1})$.
816.0 *3*	8$^+$		D	J$^\pi$: 762.6γ M1+E2 to 7$^+$.
876.3 *3*	(9$^-$)		D	J$^\pi$: 822.9γ (M2) to 7$^+$. Non-observation of γ to 10$^-$ level at 805.5 keV may argue for lower J.
895.72 *8*	1$^{+\#}$		B	J$^\pi$: 680.39γ M1 to 2$^+$; direct feeding in ^{204}Po ε decay (J^π=0$^+$).
941.5 *3*	9$^+$		D	J$^\pi$: 888.1γ (E2) to 7$^+$. Non-observation of γ to 10$^-$ level at 805.5 keV may argue for lower J.
983.19 *8*	(2$^-$,3$^-$)		B	J$^\pi$: 905.15γ (E1+M2) to 3$^+$; 768.1γ to 2$^+$.
1018.46 *8*	(3)$^+$		B	J$^\pi$: 1003.31γ M1 to 4$^+$; 459.90γ from 1478.37-keV level, which is directly

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{204}Bi Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$	XREF	Comments
				populated in ^{204}Po ε decay ($J^\pi=0^+$), argues against $J^\pi=5^+$.
1094.57 *8*	2^-	3.96 ns *8*	B	J^π: 1016.29γ E1 to 3^+; 539.5γ M1 from 1^-. $T_{1/2}$: 270γ-1016γ(t) in 1970BrZP. The lifetime assignment to this level is tentative. It is possible that the lifetime is associated with the 1099-keV level.
1099.28 *8*	$1^-,2^-$		B	J^π: 203.561γ E1 to 1^+, 883.960γ E1 to 2^+.
1255.32 *8*	1^+[#]		B	J^π: 1177.7γ (E2) to 3^+; 1040.01γ M1 to 2^+.
1369.35 *8*	1^-		B	J^π: 270.068γ M1 to $1^-,2^-$; direct feeding in ^{204}Po ε decay ($J^\pi=0^+$).
1404.25 *8*	1^-		B	J^π: 309.80γ M1 to 2^-; direct feeding in ^{204}Po ε decay ($J^\pi=0^+$).
1413.6 *4*	11^-		A D	J^π: 608.1γ M1 to 10^-. Configuration=$((\pi\ h_{9/2})^{+1}(\nu\ i_{13/2})^{-1})$.
1454.6 *11*	12^-		A D	J^π: 41γ M1 to 11^-; yrast cascade.
1478.37 *8*	$(1,2)^+$		B	J^π: 582.70γ M1 to 1^+; direct feeding in ^{204}Po ε decay ($J^\pi=0^+$) favors $0^+,1^+$, but 459.90γ (M1) to $(3)^+$ favors $J^\pi=2^+$.
1526.11 *8*	2^-		B	J^π: 426.82γ M1 to $1^-,2^-$, 1194.35γ to 3^+, 108.055γ M1 from 1^-.
1546.42? *8*	$(1)^-$		B	J^π: 451.846γ M1 to 2^-; direct feeding in ^{204}Po ε decay ($J^\pi=0^+$).
1634.18 *8*	1^-		B	J^π: 229.94γ M1 to $(1)^-$; 534.92γ M1 to $1^-,2^-$; 1419.0γ to 2^+; direct feeding in ^{204}Po ε decay ($J^\pi=0^+$) favor 1^-.
1639.7 *4*	12		D	J^π: 226.1γ D to 11^-.
1774.7 *5*			D	
1789.4 *5*			D	
1821.6 *11*	13^-		A D	J^π: 367.0γ M1 to 12^-.
1915.3 *11*	14^-		A D	J^π: 93.7γ M1+E2 to 13^-.
1968.2 *11*			D	
2223.4 *11*	$(13)^-$		D	J^π: 401.8γ M1(+E2) to 13^-; relative population of this level would suggest 13^-.
2483.4 *11*	14^-		D	J^π: 661.8γ M1+E2 to 13^-.
2651.7 *11*	15^-		A D	J^π: 736.4γ M1+E2 to 14^-.
2684.5 *12*	(15^-)		D	J^π: 201.1γ (M1) to 14^-.
2705.3 *11*	$(14)^-$		D	J^π: 21γ M1 to (15^-), 883.7γ M1+E2 to 13^-.
2819.9	$(12,13,14)^-$		D	J^π: 998.3γ M1+E2 to 13^-.
2833.4 *11*	17^+	1.07 ms *3*	A D	%IT=100 J^π: 181.8γ M2 to 15^-, 918.1γ E3 to 14^-. $T_{1/2}$: From 1974Ra25 in ^{204}Bi IT decay (1.07 ms). Other: a value of 1 ms is confirmed in ^{205}Tl(α,5nγ),^{203}Tl(α,3nγ) (1981Lo09). Configuration=$((\pi\ h_{9/2})(\nu\ f_{5/2})^{-1}(\nu\ i_{13/2})^{-2})$.
2835.2 *12*	$(15)^-$		D	J^π: 351.8γ M1 to 14^-.
3387.5 *12*	$(18)^+$		D	J^π: 554.1γ M1+E2 to 17^+. Configuration=$((\pi\ h_{9/2})(\nu\ f_{5/2})^{-1}(\nu\ i_{13/2})^{-2})$.
3516.0 *12*	16^-		D	J^π: 810.7γ E2 to 14^-.
3809.0 *12*	$(19)^+$		D	J^π: 421.5γ M1+E2 to $(18)^+$. Configuration=$((\pi\ h_{9/2})(\nu\ f_{5/2})^{-1}(\nu\ i_{13/2})^{-2})$.

[†] From a least-squares fit to Eγ.

[‡] From deduced transition multipolarities, unless otherwise specified.

[#] The 895.72- and 1255.32-keV levels are directly populated by ^{204}Po ε decay ($J^\pi=0^+$) with log *ft* values indicating J=0,1 assignments. Both levels decay by a sequence of five M1 transitions to the 6^+ g.s. (680.39γ or 1040.01γ to the 215.27-keV level, 137.023γ to the 78.25-keV level, 63.185γ to the 15.08-keV level, 9.52γ to the 5.55-keV level, and 5.55γ to g.s.), fixing the initial J^π to 1^+, with each successive M1 decay changing J by 1. These assignments are consistent with shell model predictions for the $\pi h^{+1}_{9/2}\nu f^{-1}_{5/2}$ multiplet.

Adopted Levels, Gammas (continued)

γ(^{204}Bi)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡#]	E_f	J_f^π	Mult.[@]	α[†]	Comments
5.55	5^+	5.55 *5*	100	0	6^+	M1	2.33×10^3 *8*	α(M)=1.77×10^3 *6*; α(N+..)=560 *18* α(N)=456 *14*; α(O)=93 *3*; α(P)=11.1 *4* Mult.: From 1990Br19. N2/N1=0.13 *3*; N3/N1=0.006 *5*; N1/M1=0.21 *7*; δ<0.002%.
15.08	4^+	9.52 *5*	100	5.55	5^+	M1	468 *10*	α(M)=356 *8*; α(N+..)=112.0 *24* α(N)=91.2 *20*; α(O)=18.6 *4*; α(P)=2.21 *5* Mult.: From 1990Br19. M2/M1=1.7; M3/M1=0.03 *2*; N1/M1=0.23 *3*; δ<0.03%. Note that no evidence was found in 1990Br19 for the expected 15.1-keV transition to the 6^+ g.s.
53.40	7^+	53.4[#] *2*	100	0	6^+	M1[a]	11.92 *22*	α(L)=9.10 *17*; α(M)=2.14 *4*; α(N+..)=0.674 *12* α(N)=0.548 *10*; α(O)=0.1120 *20*; α(P)=0.01333 *24*
78.25	3^+	63.185 *7*	100	15.08	4^+	M1	7.28	α(L)=5.56 *8*; α(M)=1.309 *19*; α(N+..)=0.411 *6* α(N)=0.335 *5*; α(O)=0.0684 *10*; α(P)=0.00814 *12*
200.84	$(4)^+$	122.582 *8*	100	78.25	3^+	M1	5.70	α(K)=4.63 *7*; α(L)=0.813 *12*; α(M)=0.191 *3*; α(N+..)=0.0601 *9* α(N)=0.0489 *7*; α(O)=0.01000 *14*; α(P)=0.001190 *17*
215.27	2^+	137.023 *3*	100	78.25	3^+	M1	4.15	α(K)=3.37 *5*; α(L)=0.591 *9*; α(M)=0.1390 *20*; α(N+..)=0.0437 *7* α(N)=0.0356 *5*; α(O)=0.00727 *11*; α(P)=0.000865 *13*
332.08	3^+	131.224 *14*	21.0 *5*	200.84	$(4)^+$	M1	4.69	α(K)=3.82 *6*; α(L)=0.669 *10*; α(M)=0.1573 *22*; α(N+..)=0.0495 *7* α(N)=0.0402 *6*; α(O)=0.00822 *12*; α(P)=0.000979 *14*
		253.836 *22*	13.9 *8*	78.25	3^+	(M1)	0.735	α(K)=0.599 *9*; α(L)=0.1038 *15*; α(M)=0.0244 *4*; α(N+..)=0.00766 *11* α(N)=0.00624 *9*; α(O)=0.001275 *18*; α(P)=0.0001518 *22*
		317.016 *9*	100 *9*	15.08	4^+	M1	0.399	α(K)=0.326 *5*; α(L)=0.0562 *8*; α(M)=0.01319 *19*; α(N+..)=0.00415 *6* α(N)=0.00337 *5*; α(O)=0.000690 *10*; α(P)=8.21×10^{-5} *12*
805.5	10^-	752.1[#] *2*	100	53.40	7^+	E3[&]	0.0326	α(K)=0.0217 *3*; α(L)=0.00811 *12*; α(M)=0.00205 *3*; α(N+..)=0.000639 *9* α(N)=0.000526 *8*; α(O)=0.0001028 *15*; α(P)=1.030×10^{-5} *15* B(E3)(W.u.)=0.0002689 *22*
816.0	8^+	762.6[#] *2*	100	53.40	7^+	M1+E2[a]	0.025 *14*	α(K)=0.020 *12*; α(L)=0.0037 *17*; α(M)=0.0009 *4*; α(N+..)=0.00028 *12* α(N)=0.00023 *10*; α(O)=4.6×10^{-5} *20*; α(P)=5.E−6 *3*
876.3	(9^-)	822.9[#] *2*	100	53.40	7^+	(M2)[a]	0.0797	α(K)=0.0635 *9*; α(L)=0.01232 *18*; α(M)=0.00294 *5*; α(N+..)=0.000928 *13* α(N)=0.000755 *11*; α(O)=0.0001540 *22*; α(P)=1.81×10^{-5} *3*
895.72	1^+	680.39 *4*	100	215.27	2^+	M1	0.0521	α(K)=0.0427 *6*; α(L)=0.00721 *10*; α(M)=0.001689 *24*; α(N+..)=0.000531 *8* α(N)=0.000432 *6*; α(O)=8.83×10^{-5} *13*; α(P)=1.055×10^{-5} *15*
		817.6[b]		78.25	3^+			
941.5	9^+	888.1[#] *2*	100	53.40	7^+	(E2)[a]	0.00884 *13*	α(K)=0.00692 *10*; α(L)=0.001455 *21*; α(M)=0.000350 *5*; α(N+..)=0.0001091 α(N)=8.93×10^{-5} *13*; α(O)=1.784×10^{-5} *25*; α(P)=1.96×10^{-6} *3*
983.19	$(2^-,3^-)$	768.1 *3*	30 *6*	215.27	2^+			

$^{204}_{83}Bi_{121}$-3

Adopted Levels, Gammas (continued)

γ(^{204}Bi) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡#]	E_f	J_f^π	Mult.[@]	α[†]	Comments
983.19	(2⁻,3⁻)	905.15 *7*	100 *6*	78.25	3⁺	(E1+M2)	0.03 *3*	α(K)=0.026 *24*; α(L)=0.005 *5*; α(M)=0.0012 *11*; α(N+..)=0.0004 *4* α(N)=0.0003 *3*; α(O)=6.E−5 *6*; α(P)=7.E−6 *7*
1018.46	(3)⁺	817.61 *5*	100 *4*	200.84	(4)⁺	(E2+M1)	0.021 *11*	α(K)=0.017 *10*; α(L)=0.0031 *14*; α(M)=0.0007 *3*; α(N+..)=0.00023 *10* α(N)=0.00019 *8*; α(O)=3.8×10^{-5} *17*; α(P)=4.4×10^{-6} *21*
		1003.31 *8*	73 *5*	15.08	4⁺	M1	0.0191	α(K)=0.01564 *22*; α(L)=0.00261 *4*; α(M)=0.000611 *9*; α(N+..)=0.000192 *3* α(N)=0.0001562 *22*; α(O)=3.20×10^{-5} *5*; α(P)=3.82×10^{-6} *6*
1094.57	2⁻	762.52 *3*	47.8 *14*	332.08	3⁺	E1	0.00430 *6*	α(K)=0.00357 *5*; α(L)=0.000559 *8*; α(M)=0.0001297 *19*; α(N+..)=4.05×10^{-5} *6* α(N)=3.30×10^{-5} *5*; α(O)=6.69×10^{-6} *10*; α(P)=7.78×10^{-7} *11* B(E1)(W.u.)=3.60×10^{-8} *15*
		1016.29 *3*	100 *2*	78.25	3⁺	E1	0.00253 *4*	α(K)=0.00211 *3*; α(L)=0.000324 *5*; α(M)=7.50×10^{-5} *11*; α(N+..)=2.34×10^{-5} *4* α(N)=1.91×10^{-5} *3*; α(O)=3.88×10^{-6} *6*; α(P)=4.57×10^{-7} *7* B(E1)(W.u.)=3.18×10^{-8} *11*
1099.28	1⁻,2⁻	(4.7)		1094.57	2⁻			
		116.057 *10*	2.36 *7*	983.19	(2⁻,3⁻)	(M1+E2)	5.1 *16*	α(K)=2.9 *25*; α(L)=1.6 *7*; α(M)=0.42 *20*; α(N+..)=0.13 *6* α(N)=0.11 *5*; α(O)=0.020 *9*; α(P)=0.0018 *5*
		203.561 *10*	9.4 *3*	895.72	1⁺	E1	0.0766	α(K)=0.0621 *9*; α(L)=0.01112 *16*; α(M)=0.00262 *4*; α(N+..)=0.000807 *12* α(N)=0.000662 *10*; α(O)=0.0001307 *19*; α(P)=1.403×10^{-5} *20*
		883.960 *25*	100 *2*	215.27	2⁺	E1	0.00326 *5*	α(K)=0.00271 *4*; α(L)=0.000421 *6*; α(M)=9.75×10^{-5} *14*; α(N+..)=3.04×10^{-5} *5* α(N)=2.48×10^{-5} *4*; α(O)=5.04×10^{-6} *7*; α(P)=5.89×10^{-7} *9*
1255.32	1⁺	1040.01 *4*	100 *3*	215.27	2⁺	M1	0.01738	α(K)=0.01427 *20*; α(L)=0.00238 *4*; α(M)=0.000556 *8*; α(N+..)=0.0001748 *25* α(N)=0.0001423 *20*; α(O)=2.91×10^{-5} *4*; α(P)=3.48×10^{-6} *5*
		1177.7 *5*	1.2 *6*	78.25	3⁺	(E2)	0.00512 *8*	α(K)=0.00411 *6*; α(L)=0.000765 *11*; α(M)=0.000182 *3*; α(N+..)=5.90×10^{-5} *9* α(N)=4.63×10^{-5} *7*; α(O)=9.34×10^{-6} *14*; α(P)=1.060×10^{-6} *15*; α(IPF)=2.21×10^{-6} *5*
1369.35	1⁻	270.068 *11*	100	1099.28	1⁻,2⁻	M1	0.619	α(K)=0.505 *7*; α(L)=0.0874 *13*; α(M)=0.0205 *3*; α(N+..)=0.00645 *9* α(N)=0.00525 *8*; α(O)=0.001073 *15*; α(P)=0.0001278 *18*
1404.25	1⁻	304.964 *12*	100 *4*	1099.28	1⁻,2⁻	M1	0.444	α(K)=0.362 *5*; α(L)=0.0625 *9*; α(M)=0.01468 *21*; α(N+..)=0.00461 *7* α(N)=0.00375 *6*; α(O)=0.000767 *11*; α(P)=9.14×10^{-5} *13*
		309.80 *14*	16.9 *15*	1094.57	2⁻	M1	0.425	α(K)=0.347 *5*; α(L)=0.0598 *9*; α(M)=0.01406 *20*; α(N+..)=0.00442 *7* α(N)=0.00360 *5*; α(O)=0.000735 *11*; α(P)=8.75×10^{-5} *13*
1413.6	11⁻	608.1[#] *2*	100	805.5	10⁻	M1[&a]	0.0699	α(K)=0.0573 *8*; α(L)=0.00970 *14*; α(M)=0.00227 *4*; α(N+..)=0.000715 *10* α(N)=0.000581 *9*; α(O)=0.0001189 *17*; α(P)=1.419×10^{-5} *20*

$^{204}_{83}Bi_{121}$-4

Adopted Levels, Gammas (continued)

γ(^{204}Bi) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡#]	E_f	J_f^π	Mult.[@]	α[†]	Comments
1454.6	12$^-$	41[#] *1*	100	1413.6	11$^-$	M1	25.9 *20*	α(L)=19.8 *16*; α(M)=4.7 *4*; α(N+..)=1.47 *12* α(N)=1.19 *10*; α(O)=0.244 *19*; α(P)=0.0290 *23* Mult.: From intensity balances consideration in ^{205}Tl(α,5nγ),^{203}Tl(α,3nγ).
1478.37	(1,2)$^+$	459.90 *5*	100 *5*	1018.46	(3)$^+$	(M1)	0.1464	α(K)=0.1197 *17*; α(L)=0.0204 *3*; α(M)=0.00480 *7*; α(N+..)=0.001507 *22* α(N)=0.001227 *18*; α(O)=0.000251 *4*; α(P)=2.99×10^{-5} *5*
		582.70 *6*	67 *3*	895.72	1$^+$	M1	0.0782	α(K)=0.0640 *9*; α(L)=0.01087 *16*; α(M)=0.00255 *4*; α(N+..)=0.000800 *12* α(N)=0.000651 *10*; α(O)=0.0001332 *19*; α(P)=1.589×10^{-5} *23*
1526.11	2$^-$	426.82 *3*	100 *7*	1099.28	1$^-$,2$^-$	M1	0.179	α(K)=0.1460 *21*; α(L)=0.0250 *4*; α(M)=0.00587 *9*; α(N+..)=0.00184 *3* α(N)=0.001500 *21*; α(O)=0.000307 *5*; α(P)=3.66×10^{-5} *6*
		1194.35 *14*	7.0 *10*	332.08	3$^+$			
1546.42?	(1)$^-$	451.846 *22*	100	1094.57	2$^-$	M1	0.1535	α(K)=0.1254 *18*; α(L)=0.0214 *3*; α(M)=0.00503 *7*; α(N+..)=0.001581 *23* α(N)=0.001287 *18*; α(O)=0.000263 *4*; α(P)=3.14×10^{-5} *5*
1634.18	1$^-$	108.055 *8*	2.66 *9*	1526.11	2$^-$	M1	8.17	α(K)=6.64 *10*; α(L)=1.169 *17*; α(M)=0.275 *4*; α(N+..)=0.0865 *13* α(N)=0.0704 *10*; α(O)=0.01438 *21*; α(P)=0.001711 *24*
		229.94 *3*	6.0 *4*	1404.25	1$^-$	M1	0.966	α(K)=0.787 *11*; α(L)=0.1367 *20*; α(M)=0.0321 *5*; α(N+..)=0.01010 *15* α(N)=0.00822 *12*; α(O)=0.001679 *24*; α(P)=0.000200 *3*
		534.92 *6*	100 *5*	1099.28	1$^-$,2$^-$	M1	0.0980	α(K)=0.0802 *12*; α(L)=0.01364 *20*; α(M)=0.00320 *5*; α(N+..)=0.001005 *14* α(N)=0.000818 *12*; α(O)=0.0001673 *24*; α(P)=1.99×10^{-5} *3*
		539.5 *4*	10.2 *7*	1094.57	2$^-$	M1	0.0959	α(K)=0.0784 *11*; α(L)=0.01334 *19*; α(M)=0.00313 *5*; α(N+..)=0.000983 *14* α(N)=0.000800 *12*; α(O)=0.0001635 *24*; α(P)=1.95×10^{-5} *3*
		1419.0 *4*	≈0.68	215.27	2$^+$			
1639.7	12	226.1[#] *2*	100	1413.6	11$^-$	D[a]		
1774.7		135.0[#] *2*	100	1639.7	12			
1789.4		149.7[#] *2*	100	1639.7	12			
1821.6	13$^-$	367.0[#] *2*	100	1454.6	12$^-$	M1[&a]	0.268	α(K)=0.219 *3*; α(L)=0.0376 *6*; α(M)=0.00884 *13*; α(N+..)=0.00278 *4* α(N)=0.00226 *4*; α(O)=0.000462 *7*; α(P)=5.50×10^{-5} *8*
1915.3	14$^-$	93.7[#] *2*	100	1821.6	13$^-$	M1+E2[&]	10.6 *17*	α(K)=5 *5*; α(L)=4.1 *23*; α(M)=1.1 *7*; α(N+..)=0.32 *20* α(N)=0.27 *17*; α(O)=0.05 *3*; α(P)=0.0043 *18*
1968.2		146.6[#] *2*	100	1821.6	13$^-$			
2223.4	(13)$^-$	401.8[#] *2*	100	1821.6	13$^-$	M1(+E2)[a]	0.13 *8*	α(K)=0.10 *7*; α(L)=0.022 *8*; α(M)=0.0053 *17*; α(N+..)=0.0016 *6* α(N)=0.0013 *5*; α(O)=0.00027 *10*; α(P)=3.0×10^{-5} *14*
2483.4	14$^-$	661.8[#] *2*	100	1821.6	13$^-$	M1+E2[a]	0.036 *20*	α(K)=0.029 *17*; α(L)=0.0054 *24*; α(M)=0.0013 *6*; α(N+..)=0.00040 *17* α(N)=0.00033 *14*; α(O)=7.E−5 *3*; α(P)=8.E−6 *4*
2651.7	15$^-$	736.4[#] *2*	100	1915.3	14$^-$	M1+E2[&a]	0.028 *15*	α(K)=0.022 *13*; α(L)=0.0041 *18*; α(M)=0.0010 *4*; α(N+..)=0.00030 *13* α(N)=0.00025 *11*; α(O)=5.0×10^{-5} *22*; α(P)=6.E−6 *3*

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Adopted Levels, Gammas (continued)

γ(^{204}Bi) (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡#]	E_f	J_f^π	Mult.[@]	α[†]	Comments
2684.5	(15$^-$)	201.1[#] *2*	100	2483.4	14$^-$	(M1)[a]	1.404	α(K)=1.144 *17*; α(L)=0.199 *3*; α(M)=0.0468 *7*; α(N+..)=0.01471 *21* α(N)=0.01197 *17*; α(O)=0.00245 *4*; α(P)=0.000291 *5*
2705.3	(14)$^-$	21[#] *1*		2684.5	(15$^-$)	M1	1.9×10^2 *3*	α(L)=143 *22*; α(M)=34 *6*; α(N+..)=10.6 *17* α(N)=8.6 *14*; α(O)=1.8 *3*; α(P)=0.21 *4* Mult.: From intensity balances consideration in ^{205}Tl(α,5nγ),^{203}Tl(α,3nγ).
		883.7[#] *2*	100	1821.6	13$^-$	M1+E2[a]	0.018 *9*	α(K)=0.014 *8*; α(L)=0.0026 *11*; α(M)=0.00060 *25*; α(N+..)=0.00019 *8* α(N)=0.00015 *7*; α(O)=3.1×10^{-5} *14*; α(P)=3.6×10^{-6} *17*
2819.9	(12,13,14)$^-$	998.3[#] *2*	100	1821.6	13$^-$	M1+E2[a]	0.013 *7*	α(K)=0.011 *6*; α(L)=0.0019 *8*; α(M)=0.00044 *18*; α(N+..)=0.00014 *6* α(N)=0.00011 *5*; α(O)=2.3×10^{-5} *10*; α(P)=2.7×10^{-6} *12*
2833.4	17$^+$	181.8[#] *2*	≈56	2651.7	15$^-$	M2[&a]	9.52	α(K)=6.75 *10*; α(L)=2.07 *3*; α(M)=0.524 *8*; α(N+..)=0.1663 *25* α(N)=0.1358 *20*; α(O)=0.0274 *4*; α(P)=0.00310 *5*
		918.1[#] *2*	100	1915.3	14$^-$	E3[a]	0.0199	α(K)=0.01428 *20*; α(L)=0.00427 *6*; α(M)=0.001064 *15*; α(N+..)=0.000332 *5* α(N)=0.000272 *4*; α(O)=5.37×10^{-5} *8*; α(P)=5.60×10^{-6} *8* B(E3)(W.u.)=0.00012 *6*
2835.2	(15)$^-$	351.8[#] *2*	100	2483.4	14$^-$	M1[a]	0.301	α(K)=0.245 *4*; α(L)=0.0422 *6*; α(M)=0.00992 *14*; α(N+..)=0.00312 *5* α(N)=0.00254 *4*; α(O)=0.000519 *8*; α(P)=6.18×10^{-5} *9*
3387.5	(18)$^+$	554.1[#] *2*	100	2833.4	17$^+$	M1+E2[a]	0.06 *4*	α(K)=0.05 *3*; α(L)=0.009 *4*; α(M)=0.0021 *9*; α(N+..)=0.0007 *3* α(N)=0.00053 *22*; α(O)=0.00011 *5*; α(P)=1.2×10^{-5} *6*
3516.0	16$^-$	810.7[#] *2*	100	2705.3	(14)$^-$	E2[a]	0.01062	α(K)=0.00822 *12*; α(L)=0.00182 *3*; α(M)=0.000440 *7*; α(N+..)=0.0001369 *20* α(N)=0.0001122 *16*; α(O)=2.23×10^{-5} *4*; α(P)=2.42×10^{-6} *4*
3809.0	(19)$^+$	421.5[#] *2*	100	3387.5	(18)$^+$	M1+E2[a]	0.12 *7*	α(K)=0.09 *6*; α(L)=0.019 *7*; α(M)=0.0046 *15*; α(N+..)=0.0014 *5* α(N)=0.0012 *4*; α(O)=0.00023 *9*; α(P)=2.6×10^{-5} *12*

[†] Additional information 1.
[‡] From ^{204}Po ε decay, unless otherwise specified.
[#] From ^{205}Tl(α,5nγ),^{203}Tl(α,3nγ).
[@] From measured conversion coefficients and sub-shell ratios in ^{204}Po ε decay (1979Va21,1990Br19), unless otherwise specified.
[&] From measured conversion electron sub-shell ratios in ^{204}Bi IT decay (1.07 ms).
[a] From γ(θ) and α(K)exp in ^{205}Tl(α,5nγ),^{203}Tl(α,3nγ).
[b] Placement of transition in the level scheme is uncertain.

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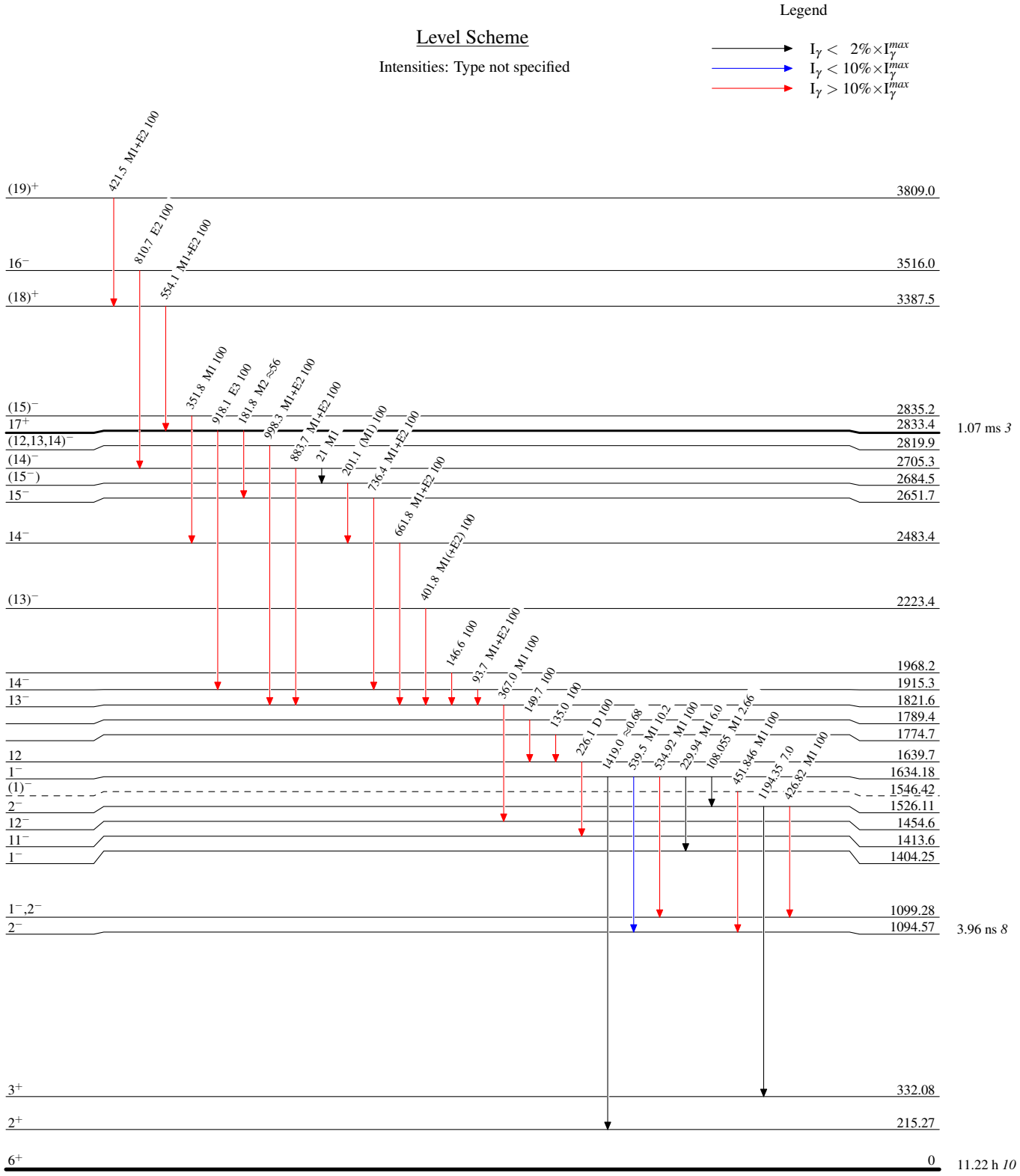
Adopted Levels, Gammas

Level Scheme

Intensities: Type not specified



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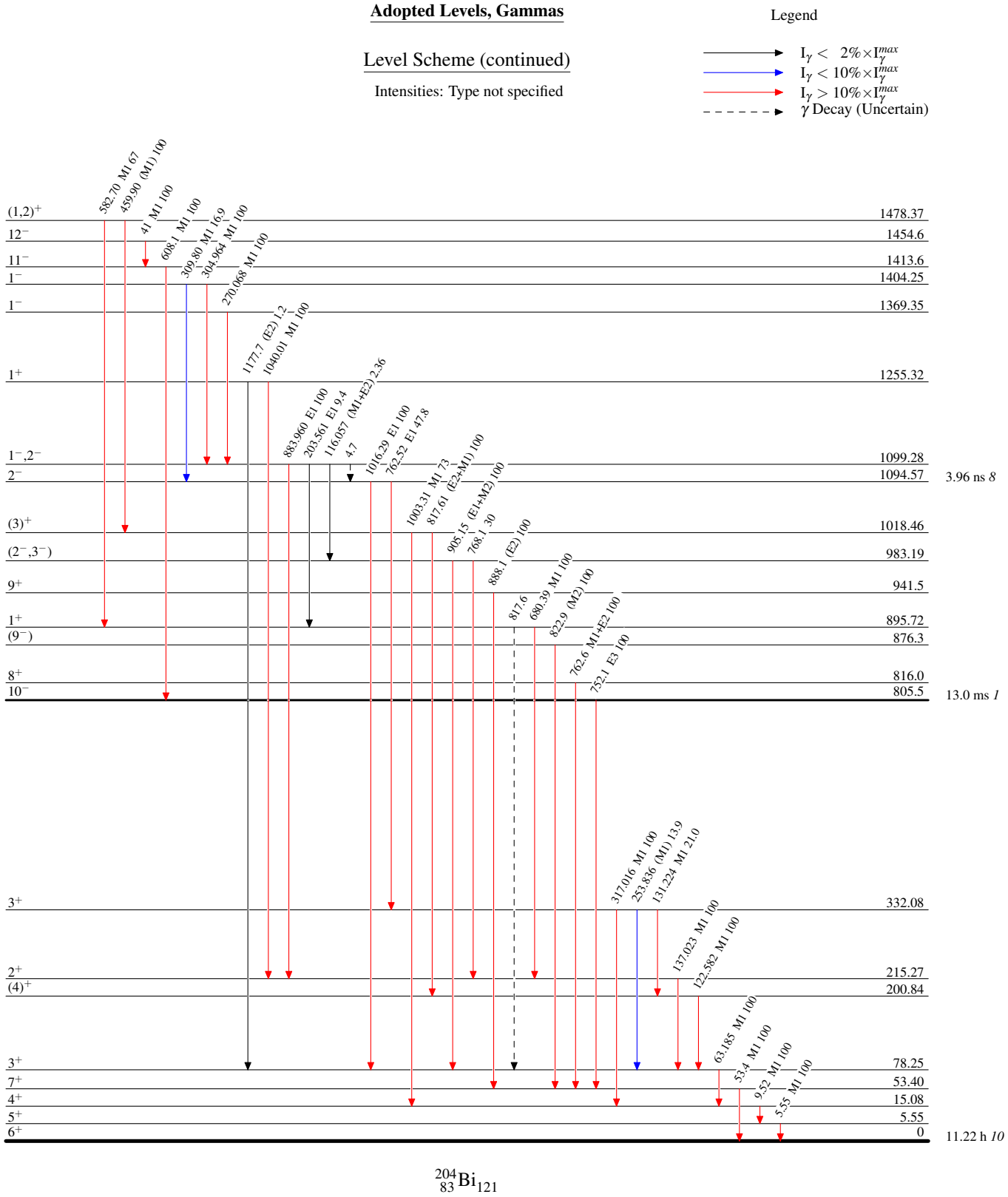
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Type not specified



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