^{198}Pt(^{13}C,5nγ) 1990Ba31

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 201,346 (2025)	21-Jan-2025

1990Ba31: Beam: ^{13}C, E=78 MeV; Target: 95.8% enriched ^{198}Pt; Detectors: Compton-suppressed germanium spectrometer, hyper-pure germanium detectors, Ge(Li), and Si(Li) for detecting conversion electrons; Measured: Eγ, Iγ, γ(t), $\gamma\gamma$(t), $\gamma(\theta)$, Ice, excitation functions.

^{206}Po Levels

E(level)†	J$^{\pi}$‡	T$_{1/2}$	Comments
0.0	0$^+$	8.8 d *1*	T$_{1/2}$: From Adopted Levels.
700.60 *10*	2$^+$		
1177.60 *14*	4$^+$		
1434.10 *22*	4$^+$		
1573.09 *17*	6$^+$		
1585.6 *4*	8$^+$	232 ns *4*	T$_{1/2}$: Weighted average of four independent $\gamma\gamma(\Delta t)$ measurements using gates on transitions below and above the isomer (1990Ba31).
2200.2 *4*	8$^+$		
2262.0 *4*	9$^-$	1.05 μs *6*	T$_{1/2}$: Weighted average of four independent $\gamma\gamma$(t) measurements using gates on transitions below and above the isomer (1990Ba31).
2418.6 *4*	10$^+$		
2422.9 *4*	9$^+$		
2432.2 *4*			
2612.8 *4*	10$^+$		
2656.2 *4*	11$^-$	0.5 ns *1*	T$_{1/2}$: From 237.6γ(t) in 1990Ba31. The time dispersion was 0.2 ns/channel.
2780.8 *4*	11$^+$		
2901.7 *4*	12$^+$		
3067.9 *4*	11$^-$		
3210.2 *4*	12$^+$		
3462.8 *4*	13$^-$		
3485.6 *4*	13$^-$		
3548.9 *4*	14$^-$		
3558.0 *5*	12$^{(-)}$		
3567.1 *5*	15$^-$		
3704.2 *4*			
3951.6 *4*	14		
4163.0 *5*	16$^-$		
4230.3 *5*			
4483.4 *4*	13		
4494.2 *6*	13		
4569.0 *4*	14$^+$		
4613.0 *4*	15$^+$		
4632.6 *5*	17$^-$		
4652.0 *5*	16$^+$		
4685.7 *5*	17$^+$		
4711.6 *5*	16$^+$		
4744.0 *5*	17$^-$		
4831.9 *5*	18$^+$		
5168.7 *5*	17$^+$		
5212.6 *5*	19$^+$		
5334.4 *5*	18$^+$		
5377.4 *5*	18$^-$		
5486.3 *6*			
5513.9 *5*	19$^+$		
5874.4 *6*	20		
5935.1 *5*	19$^-$		

Continued on next page (footnotes at end of table)

^{198}Pt(^{13}C,5nγ) 1990Ba31 (continued)

^{206}Po Levels (continued)

E(level)†	Jπ‡	$T_{1/2}$	Comments
6009.7 *6*	20		
6019.6 *6*			
6050.6 *6*			
6118.3 *5*	20^-		
6288.2 *5*	21^-		
6343.5 *6*			
6477.7 *6*			
6521.8 *6*	21		
6699.3 *6*	21		
6756.0 *6*	22^-		
6872.7 *6*	21		
6958.2 *6*	22		
6982.5 *7*			
7121.1 *6*			
7137.1 *6*			
7158.4 *6*	23		
7196.6 *6*	23		
7267.5 *6*			
7281.7 *7*	22		
7412.4 *6*			
7473.5 *6*			
7502.2 *6*	24		
7593.6 *6*			
7823.0 *6*			
8043.9 *7*			
8201.0 *7*			
8218.2 *7*			
8258.9 *7*			
8264.9 *7*			
8348.6 *7*			
8381.6 *7*			
8430.8 *6*			
8627.4 *7*			
8643.2 *7*		1.0 ns *3*	$T_{1/2}$: From 212.4γ(t) in 1990Ba31. The time dispersion was 0.2 ns/channel.
8898.0 *8*			
8994.0 *7*			
9724.5 *8*			

† From a least-squares fit to Eγ.
‡ From 1990Ba31, based on deduced transition multipolarities.

γ(^{206}Po)

E_γ†	I_γ†	E_i(level)	J_i^π	E_f	J_f^π	Mult.#	α@	Comments
(12.5 *1*)		1585.6	8^+	1573.09	6^+			E_γ: From 627.1γ − 614.6γ γ-ray energy difference.
(18.2‡ *4*)		3567.1	15^-	3548.9	14^-			E_γ: From 1064.1γ − 1045.9γ γ-ray energy difference.
33.7 *3*	0.10 *2*	4685.7	17^+	4652.0	16^+	M1	51.0 *15*	α(L)=38.9 *12*; α(M)=9.19 *28* α(N)=2.37 *7*; α(O)=0.495 *15*; α(P)=0.0639 *19* Mult.: α(exp)=50 *8*.
39.0 *3*	0.09 *2*	4652.0	16^+	4613.0	15^+	M1	33.1 *9*	α(L)=25.3 *7*; α(M)=5.97 *16* α(N)=1.54 *4*; α(O)=0.322 *9*; α(P)=0.0415 *11* Mult.: α(exp)=49 *7*.
x43.1 *3*								
44.0 *3*	0.08 *2*	4613.0	15^+	4569.0	14^+	M1	23.2 *6*	α(L)=17.7 *4*; α(M)=4.18 *10*

Continued on next page (footnotes at end of table)

^{198}Pt(^{13}C,5nγ) 1990Ba31 (continued)

$\gamma(^{206}Po)$ (continued)

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult.#	α@	Comments
								α(N)=1.077 *27*; α(O)=0.225 *6*; α(P)=0.0291 *7* Mult.: α(exp)=37 *6*.
61.8 *1*	45 *2*	2262.0	9^-	2200.2	8^+	E1	0.355 *5*	α(L)=0.270 *4*; α(M)=0.0648 *10* α(N)=0.01630 *24*; α(O)=0.00316 *5*; α(P)=0.000328 *5* Mult.: α(exp)=0.066 *26*.
63.3 *3*	0.7 *5*	3548.9	14^-	3485.6	13^-	[M1]	7.98 *16*	α(L)=6.09 *12*; α(M)=1.438 *28* α(N)=0.370 *7*; α(O)=0.0775 *15*; α(P)=0.01001 *20*
85.6 *3*	2 *1*	6958.2	22	6872.7	21			
85.8 *3*	0.8 *4*	4569.0	14^+	4483.4	13			
86.0 *1*	16.0 *5*	3548.9	14^-	3462.8	13^-	M1	3.27 *5*	α(L)=2.49 *4*; α(M)=0.588 *8* α(N)=0.1515 *22*; α(O)=0.0317 *5*; α(P)=0.00409 *6* Mult.: α(exp)=3.0 *3*.
115.5 *3*	0.5 *1*	6050.6		5935.1	19^-			
116.8 *3*	0.2 *1*	8381.6		8264.9				
x119.5 *3*								
120.8 *3*	0.6 *1*	2901.7	12^+	2780.8	11^+	M1	6.48 *10*	α(K)=5.25 *8*; α(L)=0.933 *15*; α(M)=0.2203 *35* α(N)=0.0567 *9*; α(O)=0.01187 *19*; α(P)=0.001533 *24* Mult.: α(exp)=6.0 *11*.
x136.8 *3*	0.9 *1*							
138.9 *3*	1.0 *1*	1573.09	6^+	1434.10	4^+	E2	1.850 *30*	α(K)=0.340 *5*; α(L)=1.119 *19*; α(M)=0.298 *5* α(N)=0.0764 *13*; α(O)=0.01459 *25*; α(P)=0.001330 *23* Mult.: α(exp)=2.4 *6*.
146.2 *2*	5.2 *2*	4831.9	18^+	4685.7	17^+	M1	3.76 *5*	α(K)=3.05 *4*; α(L)=0.540 *8*; α(M)=0.1275 *19* α(N)=0.0328 *5*; α(O)=0.00687 *10*; α(P)=0.000887 *13* Mult.: α(exp)=3.5 *3*.
163.4 *3*	1.0 *2*	8381.6		8218.2		D		Mult.: A_2=−0.13 *7*, A_4=−0.03 *11*.
165.6 *3*	2.2 *2*	5334.4	18^+	5168.7	17^+	M1(+E2)	1.8 *9*	α(K)=1.2 *9*; α(L)=0.45 *7*; α(M)=0.113 *23* α(N)=0.029 *6*; α(O)=0.0057 *9*; α(P)=0.000620 *10* Mult.: α(exp)=2.0 *5*.
167.9 *3*	3.2 *3*	2780.8	11^+	2612.8	10^+	M1	2.54 *4*	α(K)=2.064 *31*; α(L)=0.364 *5*; α(M)=0.0860 *13* α(N)=0.02214 *33*; α(O)=0.00463 *7*; α(P)=0.000599 *9* Mult.: α(exp)=2.6 *5*.
169.8 *2*	5.1 *5*	6288.2	21^-	6118.3	20^-	M1	2.463 *35*	α(K)=2.000 *29*; α(L)=0.353 *5*; α(M)=0.0833 *12* α(N)=0.02144 *31*; α(O)=0.00449 *6*; α(P)=0.000580 *8* Mult.: α(exp)=2.9 *5*.
170.2 *3*	0.8 *2*	2432.2		2262.0	9^-			
179.5 *3*	1.9 *2*	5513.9	19^+	5334.4	18^+	M1	2.106 *31*	α(K)=1.710 *25*; α(L)=0.302 *4*; α(M)=0.0712 *11* α(N)=0.01832 *27*; α(O)=0.00383 *6*; α(P)=0.000495 *7* Mult.: α(exp)=2.8 *4*.
180.5 *3*	0.7 *2*	8381.6		8201.0				
183.2 *2*	8.0 *5*	6118.3	20^-	5935.1	19^-	M1	1.988 *28*	α(K)=1.615 *23*; α(L)=0.285 *4*; α(M)=0.0672 *10* α(N)=0.01729 *25*; α(O)=0.00362 *5*; α(P)=0.000468 *7* Mult.: α(exp)=2.4 *3*.
189.8 *3*	2.3 *3*	2612.8	10^+	2422.9	9^+	M1	1.800 *26*	α(K)=1.462 *21*; α(L)=0.258 *4*; α(M)=0.0608 *9* α(N)=0.01565 *23*; α(O)=0.00327 *5*; α(P)=0.000423 *6* Mult.: α(exp)=2.9 *10*.
x195.0 *3*	0.6 *1*							

Continued on next page (footnotes at end of table)

^{198}Pt(^{13}C,5nγ) 1990Ba31 (continued)

$\gamma(^{206}Po)$ (continued)

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult. #	α @	Comments
x196.7 3	1.9 2							
200.3 3	2.5 2	7158.4	23	6958.2	22	D		Mult.: A_2=−0.34 4, A_4=−0.08 8.
x203.3 3	1.1 2							
212.4 3	4.5 2	8643.2		8430.8		D		Mult.: A_2=−0.10 4, A_4=−0.04 6.
x215.0 3	1.6 2							
224.1 3	1.3 2	2656.2	11^-	2432.2				
237.6 1	18.6 4	2656.2	11^-	2418.6	10^+	E1	0.0541 8	α(K)=0.0439 6; α(L)=0.00782 11; α(M)=0.001844 26 α(N)=0.000470 7; α(O)=9.56×10^{-5} 13; α(P)=1.137×10^{-5} 16 Mult.: α(exp)=0.21 11, α(L)exp<0.028, α(M)exp<0.014.
245.8 3	2.2 2	8627.4		8381.6		D		Mult.: A_2=−0.35 5, A_4=0.01 7.
252.5 3	1.5 2	3462.8	13^-	3210.2	12^+	E1	0.0469 7	α(K)=0.0381 5; α(L)=0.00673 10; α(M)=0.001585 23 α(N)=0.000404 6; α(O)=8.23×10^{-5} 12; α(P)=9.84×10^{-6} 14 Mult.: α(exp)<0.3. A_2=−0.53 6, A_4=−0.35 9.
256.4 3	1.7 2	1434.10	4^+	1177.60	4^+	D		Mult.: A_2=−0.17 5, A_4=−0.04 7.
x267.7 3	1.4 2							
270.6 3	2.2 2	8898.0		8627.4		D		Mult.: A_2=−0.40 4, A_4=−0.11 7.
292.9 3	1.5 3	6343.5		6050.6				
x300.6 3	1.0 5							
317.6 3	2.3 1	5486.3		5168.7	17^+			
x326.5 3	1.2 1							
336.5 3	2.0 2	7473.5		7137.1		D		Mult.: A_2=−0.28 5, A_4=−0.06 8.
343.8 3	2.5 3	7502.2	24	7158.4	23	D		Mult.: A_2=−0.36 5, A_4=0.12 8.
x344.2 3	1.3 5					(M1)	0.347 5	α(K)=0.283 4; α(L)=0.0493 7; α(M)=0.01161 16 α(N)=0.00299 4; α(O)=0.000625 9; α(P)=8.08×10^{-5} 11 Mult.: α(K)exp=0.65 8.
350.8 2	7.1 3	8994.0		8643.2		D		Mult.: A_2=−0.21 5, A_4=0.15 11.
362.1 3	2.6 3	2780.8	11^+	2418.6	10^+	M1	0.303 4	α(K)=0.2465 35; α(L)=0.0429 6; α(M)=0.01011 14 α(N)=0.00260 4; α(O)=0.000544 8; α(P)=7.04×10^{-5} 10 Mult.: α(K)exp=0.28 6.
380.6 1	12.9 5	5212.6	19^+	4831.9	18^+	M1	0.265 4	α(K)=0.2155 30; α(L)=0.0375 5; α(M)=0.00882 12 α(N)=0.002271 32; α(O)=0.000475 7; α(P)=6.15×10^{-5} 9 Mult.: α(K)exp=0.27 1, α(L)exp=0.040 5.
x384.0 3	0.8 2							
395.0 1	48 2	3462.8	13^-	3067.9	11^-	E2	0.0581 8	α(K)=0.0364 5; α(L)=0.01621 23; α(M)=0.00414 6 α(N)=0.001063 15; α(O)=0.0002098 29; α(P)=2.203×10^{-5} 31 Mult.: α(K)exp=0.0413 14, α(L)exp=0.0165 11.
395.5 1	94 2	1573.09	6^+	1177.60	4^+	E2	0.0579 8	α(K)=0.0363 5; α(L)=0.01614 23; α(M)=0.00412 6 α(N)=0.001058 15; α(O)=0.0002089 29; α(P)=2.193×10^{-5} 31 Mult.: α(K)exp=0.0381 14, α(L)exp=0.0165 10, and α(M)exp=0.0076 4.
396.9 3	0.3 2	7593.6		7196.6	23			
402.4 3	1.3 5	7158.4	23	6756.0	22^-			
x416.3 3	1.4 2							
421.8 3	1.9 3	7121.1		6699.3	21	D		Mult.: A_2=−0.35 6, A_4=0.07 9.

Continued on next page (footnotes at end of table)

^{198}Pt(^{13}C,5nγ) 1990Ba31 (continued)

$\gamma(^{206}Po)$ (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[@]	Comments
[x]422.6 *3*	1.0 *3*							
429.3 *3*	3.8 *4*	3210.2	12^+	2780.8	11^+	M1	0.1914 *27*	α(K)=0.1560 *22*; α(L)=0.0270 *4*; α(M)=0.00636 *9* α(N)=0.001638 *23*; α(O)=0.000343 *5*; α(P)=4.43×10^{-5} *6* Mult.: α(K)exp=0.175 *13*, α(L)exp=0.072 *11*.
440.6 *3*	3.5 *5*	7196.6	23	6756.0	22^-	D		Mult.: A_2=−0.41 *8*, A_4=0.32 *19*.
457.0 *2*	8.5 *5*	5168.7	17^+	4711.6	16^+	M1	0.1619 *23*	α(K)=0.1320 *19*; α(L)=0.02283 *32*; α(M)=0.00537 *8* α(N)=0.001383 *19*; α(O)=0.000290 *4*; α(P)=3.75×10^{-5} *5* Mult.: α(K)exp=0.176 *9*.
[x]457.2 *3*	1.7 *7*							
466.0 *2*	4.7 *5*	3951.6	14	3485.6	13^-	D		Mult.: A_2=−0.26 *3*, A_4=−0.10 *5*.
467.7 *2*	7 *1*	6756.0	22^-	6288.2	21^-	M1	0.1522 *21*	α(K)=0.1241 *17*; α(L)=0.02145 *30*; α(M)=0.00505 *7* α(N)=0.001299 *18*; α(O)=0.000272 *4*; α(P)=3.52×10^{-5} *5* Mult.: α(K)exp=0.16 *4*, and α(L)exp=0.041 *7*.
468.0 *3*	2.7 *5*	6477.7		6009.7	20			
469.6 *2*	6.3 *6*	4632.6	17^-	4163.0	16^-	M1	0.1506 *21*	α(K)=0.1228 *17*; α(L)=0.02122 *30*; α(M)=0.00499 *7* α(N)=0.001285 *18*; α(O)=0.000269 *4*; α(P)=3.48×10^{-5} *5* Mult.: α(K)exp=0.19 *4*, α(L)exp=0.049 *9*.
477.0 *1*	98.4 *4*	1177.60	4^+	700.60	2^+	E2	0.0360 *5*	α(K)=0.02442 *34*; α(L)=0.00868 *12*; α(M)=0.002188 *31* α(N)=0.000562 *8*; α(O)=0.0001119 *16*; α(P)=1.217×10^{-5} *17* Mult.: α(K)exp=0.032 *2*, α(L)exp=0.0101 *6*, and α(M)exp=0.0027 *2*.
481.3 *3*	1.1 *2*	4711.6	16^+	4230.3				
495.8 *2*	5.4 *3*	6009.7	20	5513.9	19^+	D		Mult.: A_2=−0.42 *3*, A_4=0.07 *4*.
504.9 *3*	1.4 *3*	6982.5		6477.7		D		Mult.: A_2=−0.59 *9*, A_4=0.31 *14*.
[x]510.5 *3*	1.7 *2*							
522.5 *3*	0.9 *2*	4685.7	17^+	4163.0	16^-			
526.2 *3*	1.1 *2*	4230.3		3704.2		D		Mult.: A_2=0.00 *3*, A_4=0.02 *5*.
541.7 *3*	0.5 *1*	8043.9		7502.2	24			
[x]544.5 *3*	3 *1*							
557.7 *1*	11.0 *5*	5935.1	19^-	5377.4	18^-	M1	0.0954 *13*	α(K)=0.0779 *11*; α(L)=0.01339 *19*; α(M)=0.00315 *4* α(N)=0.000811 *11*; α(O)=0.0001697 *24*; α(P)=2.196×10^{-5} *31* Mult.: α(K)exp=0.083 *5*, α(L)exp<0.039.
[x]558.1 *3*								
561.1 *3*	1.1 *3*	3462.8	13^-	2901.7	12^+	E1	0.00812 *11*	α(K)=0.00669 *9*; α(L)=0.001088 *15*; α(M)=0.000254 *4* α(N)=6.50×10^{-5} *9*; α(O)=1.343×10^{-5} *19*; α(P)=1.678×10^{-6} *24* Mult.: A_2=−0.36 *11*, A_4=−0.26 *20*.
568.2 *3*	2 *1*	7267.5		6699.3	21			
581.0 *3*	2.6 *5*	6699.3	21	6118.3	20^-	D		Mult.: A_2=−0.19 *1*, A_4=−0.02 *2*.
581.1 *3*	2.7 *5*	4744.0	17^-	4163.0	16^-	M1	0.0856 *12*	α(K)=0.0699 *10*; α(L)=0.01200 *17*; α(M)=0.00282 *4* α(N)=0.000726 *10*; α(O)=0.0001521 *21*;

Continued on next page (footnotes at end of table)

^{198}Pt(^{13}C,5nγ) 1990Ba31 (continued)

$\gamma(^{206}Po)$ (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[@]	Comments
								α(P)=1.969×10^{-5} *28* Mult.: α(K)exp=0.071 *6*, α(L)exp=0.011 *3*.
595.8 *1*	17.1 *5*	4163.0	16$^-$	3567.1	15$^-$	M1	0.0801 *11*	α(K)=0.0654 *9*; α(L)=0.01123 *16*; α(M)=0.00264 *4* α(N)=0.000680 *10*; α(O)=0.0001423 *20*; α(P)=1.842×10^{-5} *26* Mult.: α(K)exp=0.07 *4*, α(L)exp=0.025 *13*.
600.8 *2*	4 *1*	5935.1	19$^-$	5334.4	18$^+$	E1	0.00708 *10*	α(K)=0.00585 *8*; α(L)=0.000944 *13*; α(M)=0.0002203 *31* α(N)=5.64×10^{-5} *8*; α(O)=1.166×10^{-5} *16*; α(P)=1.462×10^{-6} *20* Mult.: A_2=−0.21 *4*, A_4=−0.15 *6*.
607.8 *3*	0.6 *1*	8430.8		7823.0				
614.6 *1*	45 *1*	2200.2	8$^+$	1585.6	8$^+$	M1	0.0738 *10*	α(K)=0.0603 *8*; α(L)=0.01034 *14*; α(M)=0.002432 *34* α(N)=0.000626 *9*; α(O)=0.0001310 *18*; α(P)=1.696×10^{-5} *24* Mult.: α(K)exp=0.058 *2*, α(L)exp=0.0105 *4*, and α(M)exp=0.0021 *1*.
617.3 *3*	2.4 *5*	4569.0	14$^+$	3951.6	14	(D)		Mult.: A_2=0.13 *8*, A_4=0.05 *13*.
622.9 *3*	1.7 *7*	5334.4	18$^+$	4711.6	16$^+$			
626.4 *3*	1.4 *4*	7823.0		7196.6	23			
627.1 *1*	1.5 *4*	2200.2	8$^+$	1573.09	6$^+$	[E2]	0.01913 *27*	α(K)=0.01405 *20*; α(L)=0.00383 *5*; α(M)=0.000948 *13* α(N)=0.0002434 *34*; α(O)=4.91×10^{-5} *7*; α(P)=5.61×10^{-6} *8* Mult.: A_2=−0.24 *12*, A_4=−0.26 *17*, but these values are inconsistent with the E2 assignment that follows from the level scheme.
633.3 *3*	1.8 *2*	5377.4	18$^-$	4744.0	17$^-$	M1+E2	0.043 *25*	α(K)=0.035 *21*; α(L)=0.0066 *29*; α(M)=0.0016 *7* α(N)=4.1×10^{-4} *17*; α(O)=8; α(P)=1.1×10^{-5} *5* Mult.: A_2=−0.04 *7*, A_4=0.20 *12*.
647.4 *3*	1.8 *2*	6521.8	21	5874.4	20	D		Mult.: A_2=−0.52 *6*, A_4=0.33 *9*.
661.3 *3*	2.5 *5*	4613.0	15$^+$	3951.6	14	D		Mult.: A_2=−0.34 *2*, A_4=0.05 *3*.
661.8 *3*	3.5 *5*	5874.4	20	5212.6	19$^+$	D		Mult.: A_2=−0.34 *2*, A_4=0.05 *3*.
670.0 *3*	4 *1*	6958.2	22	6288.2	21$^-$	D		Mult.: A_2=−0.29 *10*, A_4=−0.15 *10*.
676.4 *2*	7.9 *5*	2262.0	9$^-$	1585.6	8$^+$	(E1)	0.00561 *8*	α(K)=0.00464 *7*; α(L)=0.000743 *10*; α(M)=0.0001730 *24* α(N)=4.43×10^{-5} *6*; α(O)=9.18×10^{-6} *13*; α(P)=1.156×10^{-6} *16* Mult.: α(K)exp=0.015 *1*, α(L)exp=0.0018 *5* requires E2. The K line may contain contribution from an impurity. Level scheme requires E1.
679.7 *3*	0.6 *1*	6699.3	21	6019.6				
682.0 *3*	4 *1*	5513.9	19$^+$	4831.9	18$^+$	M1+E2	0.036 *20*	α(K)=0.029 *17*; α(L)=0.0054 *24*; α(M)=0.0013 *5* α(N)=3.3×10^{-4} *14*; α(O)=6.9×10^{-5} *30*; α(P)=9 Mult.: A_2=−0.56 *4*, A_4=0.07 *6*.
700.6 *1*	100	700.60	2$^+$	0.0	0$^+$	E2	0.01507 *21*	α(K)=0.01133 *16*; α(L)=0.00283 *4*; α(M)=0.000695 *10* α(N)=0.0001785 *25*; α(O)=3.62×10^{-5} *5*; α(P)=4.21×10^{-6} *6* Mult.: α(K)exp=0.0122 *5*, α(L)exp=0.0027 *1*, and α(M)exp=0.0008 *1*.

Continued on next page (footnotes at end of table)

^{198}Pt(^{13}C,5nγ) 1990Ba31 (continued)

$\gamma(^{206}Po)$ (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[@]	Comments
722.4 *2*	5 *1*	5935.1	19^-	5212.6	19^+	E1	0.00495 *7*	α(K)=0.00410 *6*; α(L)=0.000652 *9*; α(M)=0.0001517 *21* α(N)=3.88×10^{-5} *5*; α(O)=8.06×10^{-6} *11*; α(P)=1.017×10^{-6} *14* Mult.: A_2=0.30 *1*, A_4=−0.04 *2*, consistent with ΔJ=0 transition.
730.5 *3*	1.2 *3*	9724.5		8994.0		D		Mult.: A_2=−0.09 *9*, A_4=0.03 *14*.
733.5 *3*	1.0 *1*	1434.10	4^+	700.60	2^+	[E2]	0.01369 *19*	α(K)=0.01037 *15*; α(L)=0.002510 *35*; α(M)=0.000614 *9* α(N)=0.0001577 *22*; α(O)=3.20×10^{-5} *4*; α(P)=3.75×10^{-6} *5* Mult.: A_2=0.03 *10*, A_4=−0.13 *17*. The A_2 value is inconsistent with the E2 assignment from the level scheme.
744.8 *2*	7.2 *5*	5377.4	18^-	4632.6	17^-	M1	0.0447 *6*	α(K)=0.0365 *5*; α(L)=0.00623 *9*; α(M)=0.001463 *21* α(N)=0.000376 *5*; α(O)=7.88×10^{-5} *11*; α(P)=1.021×10^{-5} *14* Mult.: α(K)exp=0.028 *2*, α(L)exp=0.0091 *6*.
754.5 *3*	2.2 *4*	6872.7	21	6118.3	20^-	D		Mult.: A_2=−0.49 *7*, A_4=0.01 *11*.
759.9 *3*	2.6 *3*	7281.7	22	6521.8	21	D		Mult.: A_2=−0.05 *6*, A_4=0.19 *7*.
793.6 *3*	2.0 *5*	7137.1		6343.5		D		Mult.: A_2=−0.32 *6*, A_4=0.11 *10*.
[x]793.8 *3*	1.0 *5*							
805.9 *1*	46 *5*	3067.9	11^-	2262.0	9^-	E2	0.01128 *16*	α(K)=0.00867 *12*; α(L)=0.001974 *28*; α(M)=0.000480 *7* α(N)=0.0001233 *17*; α(O)=2.514×10^{-5} *35*; α(P)=2.98×10^{-6} *4* Mult.: α(K)exp=0.0098 *5*, α(L)exp=0.0028 *2*.
806.6 *1*	11 *2*	3462.8	13^-	2656.2	11^-	(E2)	0.01126 *16*	α(K)=0.00866 *12*; α(L)=0.001970 *28*; α(M)=0.000479 *7* α(N)=0.0001230 *17*; α(O)=2.509×10^{-5} *35*; α(P)=2.98×10^{-6} *4* Mult.: A_2=0.21 *1*, A_4=−0.06 *1*, but contaminated with 805.9γ.
807.1 *3*	0.6 *3*	6019.6		5212.6	19^+			
829.3 *2*	7.0 *5*	3485.6	13^-	2656.2	11^-	E2	0.01065 *15*	α(K)=0.00822 *12*; α(L)=0.001839 *26*; α(M)=0.000446 *6* α(N)=0.0001146 *16*; α(O)=2.340×10^{-5} *33*; α(P)=2.79×10^{-6} *4* Mult.: α(K)exp<0.054, not M2. A_2=0.35 *10*, A_4=−0.02 *10*.
833.0 *1*	26 *2*	2418.6	10^+	1585.6	8^+	E2	0.01055 *15*	α(K)=0.00815 *11*; α(L)=0.001818 *25*; α(M)=0.000441 *6* α(N)=0.0001133 *16*; α(O)=2.314×10^{-5} *32*; α(P)=2.76×10^{-6} *4* Mult.: E2,(M1) from α(K)exp=0.0131 *9*, and α(L)exp=0.0037 *6*. Level scheme requires E2.
837.2 *2*	9 *2*	2422.9	9^+	1585.6	8^+	M1	0.0329 *5*	α(K)=0.0269 *4*; α(L)=0.00458 *6*; α(M)=0.001076 *15* α(N)=0.000277 *4*; α(O)=5.80×10^{-5} *8*; α(P)=7.51×10^{-6} *11* Mult.: α(K)exp=0.023 *2*.
837.2 *3*	0.3 *2*	8430.8		7593.6				
901.8 *3*	2 *1*	3558.0	$12^{(-)}$	2656.2	11^-	D		Mult.: A_2=−0.99 *12*, A_4=0.18 *16*.

Continued on next page (footnotes at end of table)

^{198}Pt(^{13}C,5nγ) 1990Ba31 (continued)

$\gamma(^{206}Po)$ (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[@]	Comments
919.2 *3*	1.4 *2*	8201.0		7281.7	22	D		Mult.: A_2=−0.54 *8*, A_4=0.16 *12*.
928.6 *3*	1.0 *3*	8430.8		7502.2	24			
936.2 *3*	2 *1*	4494.2	13	3558.0	$12^{(-)}$	D		Mult.: A_2=−0.43 *5*, A_4=0.01 *7*.
936.2 *3*	1.0 *2*	8348.6		7412.4		D		Mult.: A_2=−0.43 *5*, A_4=0.01 *7*.
957.3 *3*	0.7 *2*	8430.8		7473.5		D		Mult.: A_2=−0.54 *15*, A_4=−0.33 *20*.
977.2 *3*	0.9 *2*	8258.9		7281.7	22			
979.2 *3*	0.8 *1*	7267.5		6288.2	21^-			
983.2 *3*	0.7 *1*	8264.9		7281.7	22	D		Mult.: A_2=−0.77 *14*, A_4=−0.07 *24*.
1027.3 *2*	4.9 *4*	2612.8	10^+	1585.6	8^+	E2	0.00698 *10*	α(K)=0.00553 *8*; α(L)=0.001107 *16*; α(M)=0.000266 *4* α(N)=6.82×10^{-5} *10*; α(O)=1.403×10^{-5} *20*; α(P)=1.714×10^{-6} *24* Mult.: α(K)exp=0.004 *2*.
1045.9 *3*	0.9 *2*	4613.0	15^+	3567.1	15^-			
1047.9 *3*	3.0 *3*	3704.2		2656.2	11^-			
1064.1 *2*	6.1 *5*	4613.0	15^+	3548.9	14^-	E1	2.43×10^{-3} *3*	α(K)=0.002023 *28*; α(L)=0.000313 *4*; α(M)=7.26×10^{-5} *10* α(N)=1.860×10^{-5} *26*; α(O)=3.87×10^{-6} *5*; α(P)=4.95×10^{-7} *7* Mult.: α(K)exp=0.0025 *4*.
1065.8 *3*	3.2 *4*	4632.6	17^-	3567.1	15^-	E2	0.00651 *9*	α(K)=0.00517 *7*; α(L)=0.001019 *14*; α(M)=0.0002439 *34* α(N)=6.26×10^{-5} *9*; α(O)=1.290×10^{-5} *18*; α(P)=1.582×10^{-6} *22* Mult.: A_2=0.33 *7*, A_4=0.11 *12*.
1084.8 *3*	2.3 *3*	4652.0	16^+	3567.1	15^-			
1103.3 *3*	2.5 *3*	5935.1	19^-	4831.9	18^+	E1	2.28×10^{-3} *3*	α(K)=0.001898 *27*; α(L)=0.000293 *4*; α(M)=6.80×10^{-5} *10* α(N)=1.741×10^{-5} *24*; α(O)=3.63×10^{-6} *5*; α(P)=4.64×10^{-7} *7*; α(IPF)=7.65×10^{-7} *15* Mult.: α(K)exp<0.004, A_2=−0.21 *4*, A_4=0.02 *6*.
1124.2 *3*	1.4 *2*	7412.4		6288.2	21^-			I_γ: For 1124.2γ + 1125.3γ doublet.
[x]1125.3 *3*								I_γ: Iγ(1124.2γ + 1125.3γ)=1.4 *2*.
[x]1131.0 *3*								
1144.5 *2*	7.6 *5*	4711.6	16^+	3567.1	15^-	E1	2.14×10^{-3} *3*	α(K)=0.001780 *25*; α(L)=0.000274 *4*; α(M)=6.36×10^{-5} *9* α(N)=1.630×10^{-5} *23*; α(O)=3.40×10^{-6} *5*; α(P)=4.35×10^{-7} *6*; α(IPF)=3.53×10^{-6} *5* Mult.: α(K)exp=0.0015 *2*.
1191.2 *3*	0.8 *2*	5935.1	19^-	4744.0	17^-	E2	0.00527 *7*	α(K)=0.00422 *6*; α(L)=0.000797 *11*; α(M)=0.0001899 *27* α(N)=4.88×10^{-5} *7*; α(O)=1.007×10^{-5} *14*; α(P)=1.248×10^{-6} *17*; α(IPF)=3.02×10^{-6} *5* Mult.: α(K)exp=0.0032 *12*.
1214.3 *3*	0.6 *2*	5377.4	18^-	4163.0	16^-	(E2)	0.00508 *7*	α(K)=0.00407 *6*; α(L)=0.000765 *11*; α(M)=0.0001820 *25* α(N)=4.67×10^{-5} *7*; α(O)=9.65×10^{-6} *14*; α(P)=1.198×10^{-6} *17*; α(IPF)=4.90×10^{-6} *7* Mult.: A_2=0.11 *17*, A_4=0.13 *26*.

Continued on next page (footnotes at end of table)

^{198}Pt(^{13}C,5nγ) 1990Ba31 (continued)

$\gamma(^{206}Po)$ (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[@]	Comments
1235.7 *3*	0.7 *2*	8218.2		6982.5		D		Mult.: A_2=−0.11 *13*, A_4=0.00 *22*.
1273.1 *3*	1.6 *2*	4483.4	13	3210.2	12^+	D		Mult.: A_2=−0.59 *6*, A_4=−0.12 *10*.
1285.6 *3*	1.1 *3*	3704.2		2418.6	10^+			
[x]1293.2 *3*	1.2 *2*							
1302.7 *3*	0.8 *2*	5935.1	19^-	4632.6	17^-	[E2]	0.00447 *6*	α(K)=0.00359 *5*; α(L)=0.000658 *9*; α(M)=0.0001562 *22* α(N)=4.01×10^{-5} *6*; α(O)=8.30×10^{-6} *12*; α(P)=1.036×10^{-6} *15*; α(IPF)=1.556×10^{-5} *22* Mult.: A_2=−0.09 *10*, A_4=−0.11 *15*. Note, that these values are inconsistent with the multipolarity derived from the level scheme.
[x]1311.5 *3*	1.1 *2*							
1358.9 *3*	1.9 *2*	4569.0	14^+	3210.2	12^+	E2	0.00414 *6*	α(K)=0.00332 *5*; α(L)=0.000602 *8*; α(M)=0.0001426 *20* α(N)=3.66×10^{-5} *5*; α(O)=7.59×10^{-6} *11*; α(P)=9.50×10^{-7} *13*; α(IPF)=2.57×10^{-5} *4* Mult.: A_2=0.17 *5*, A_4=0.03 *8*.
1581.8 *3*	1.0 *1*	4483.4	13	2901.7	12^+			
1667.2 *3*	1.3 *1*	4569.0	14^+	2901.7	12^+	E2	0.00294 *4*	α(K)=0.002304 *32*; α(L)=0.000397 *6*; α(M)=9.33×10^{-5} *13* α(N)=2.397×10^{-5} *34*; α(O)=4.98×10^{-6} *7*; α(P)=6.32×10^{-7} *9*; α(IPF)=0.0001205 *17* Mult.: A_2=0.28 *7*, A_4=0.02 *11*.
1702.9 *3*	1.0 *1*	4483.4	13	2780.8	11^+	(Q)		Mult.: A_2=0.18 *9*, A_4=−0.14 *14*.

[†] From 1990Ba31. Uncertainties in Eγ have been assigned by evaluator based on 0.1 keV for strong lines to 0.3 keV for weak lines, as suggested by 1990Ba31.

[‡] Unobserved transition inferred from $\gamma\gamma$ coin data. Eγ is from level energy difference.

[#] From $\gamma(\theta)$ and ce data. Total conversion coefficients (α) are from 1990Ba31 using intensity balances.

[@] Additional information 1.

[x] γ ray not placed in level scheme.

$^{198}Pt(^{13}C,5n\gamma)$ 1990Ba31

Level Scheme

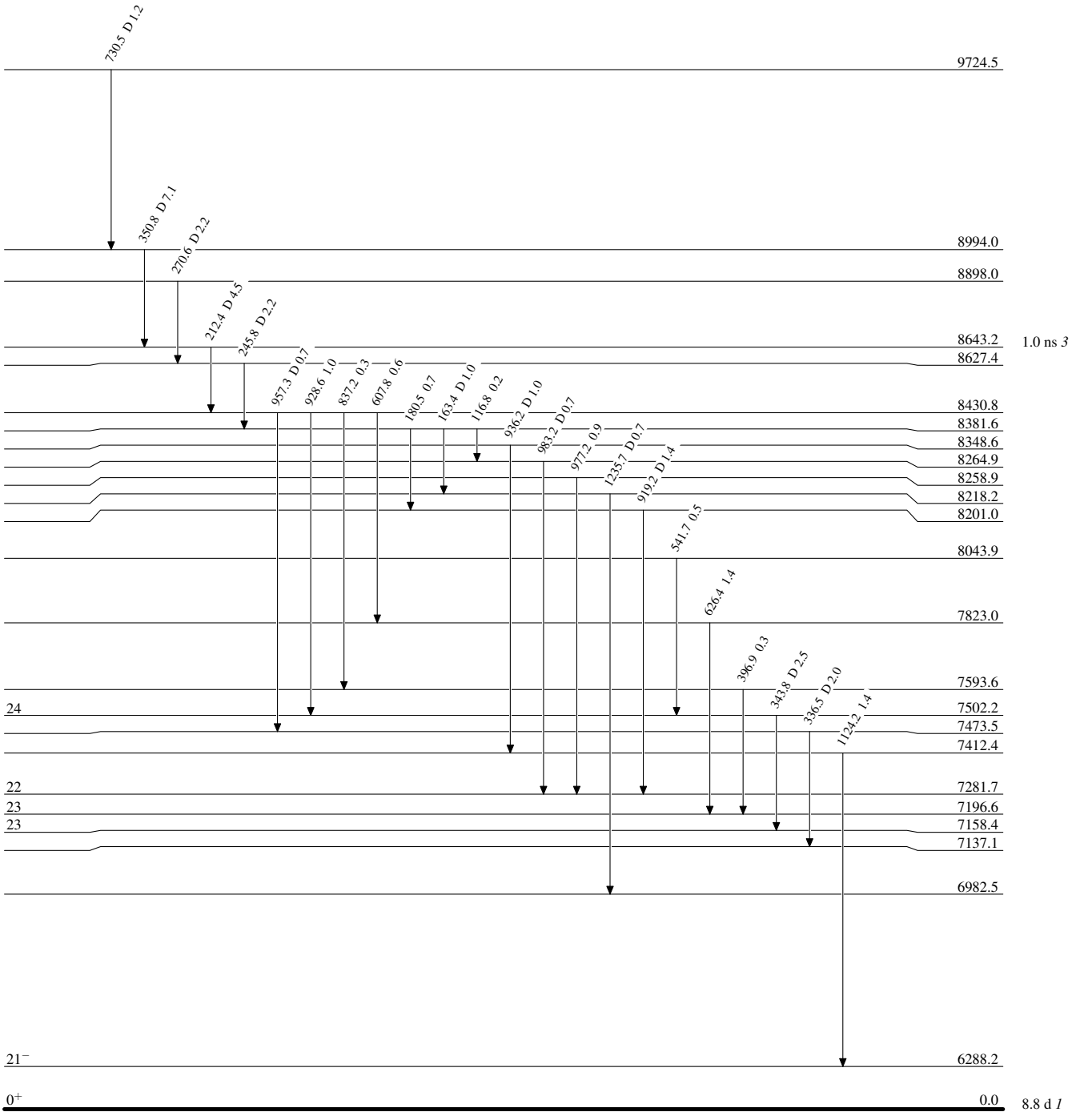
Intensities: Relative I_γ

Legend

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

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

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

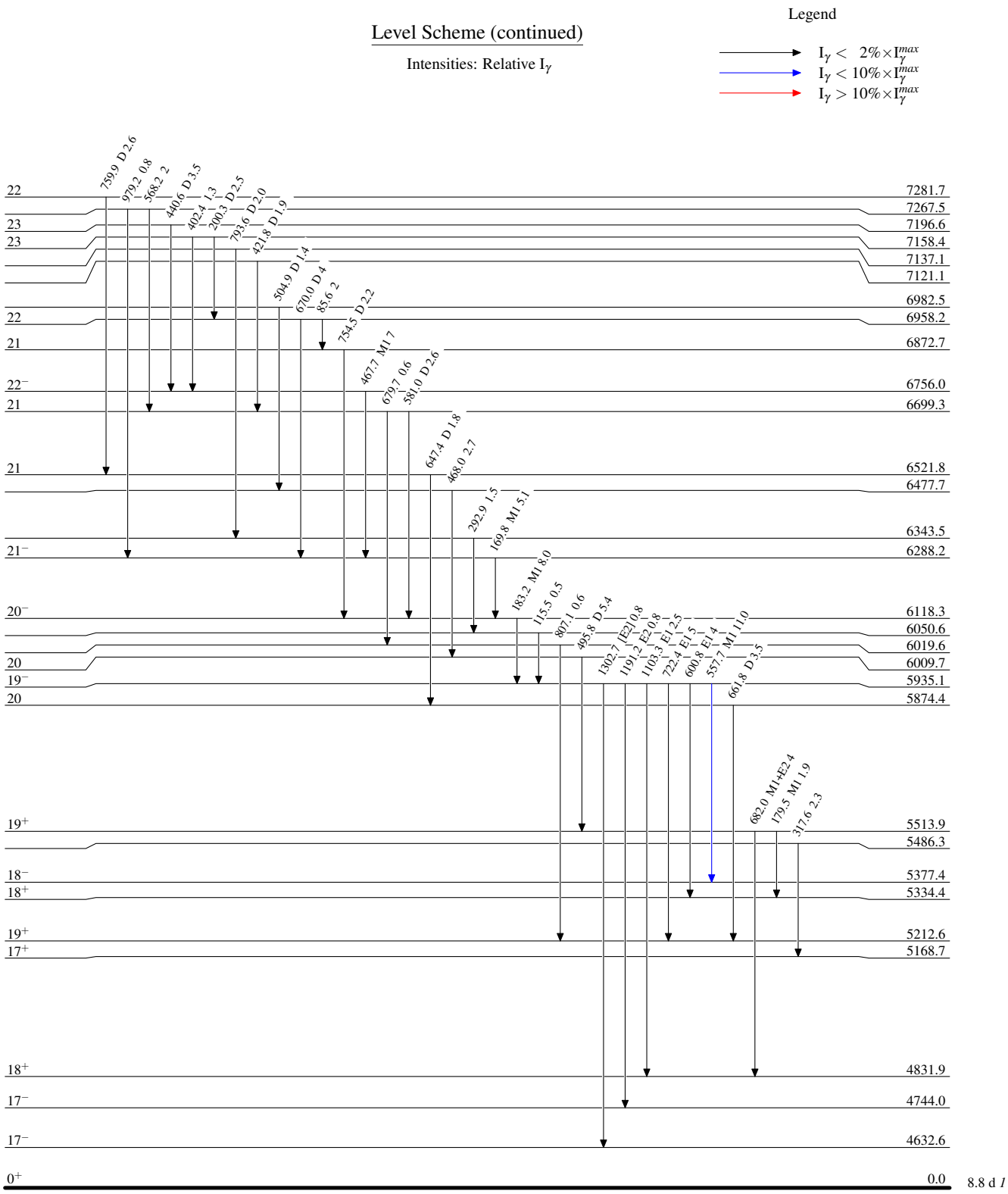


$^{206}_{84}Po_{122}$

^{198}Pt(^{13}C,5nγ) 1990Ba31

Level Scheme (continued)

Intensities: Relative I_γ



$^{206}_{84}Po_{122}$

^{198}Pt(^{13}C,5nγ) 1990Ba31

Level Scheme (continued)

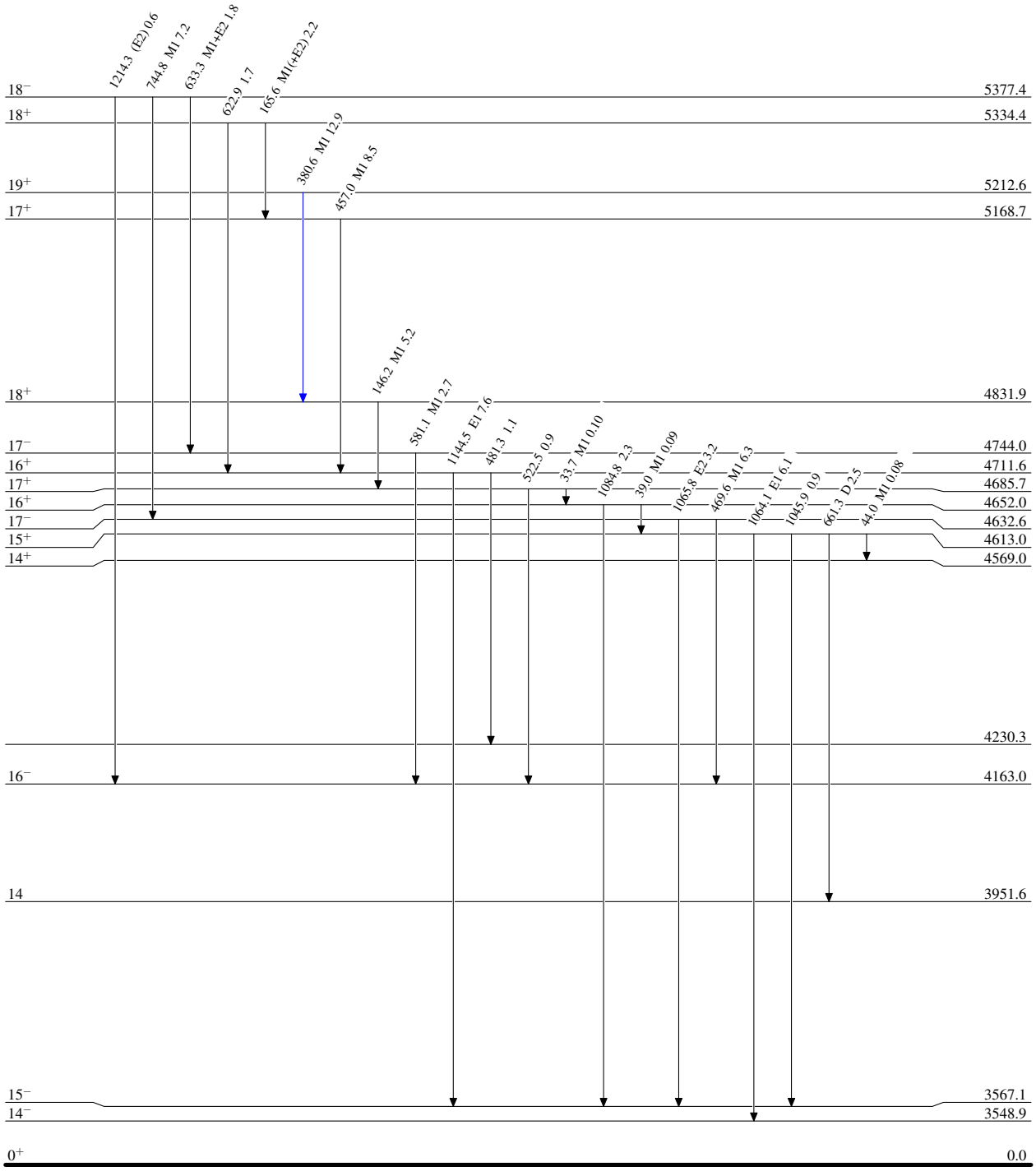
Intensities: Relative I_γ

Legend

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

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

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



$^{206}_{84}Po_{122}$

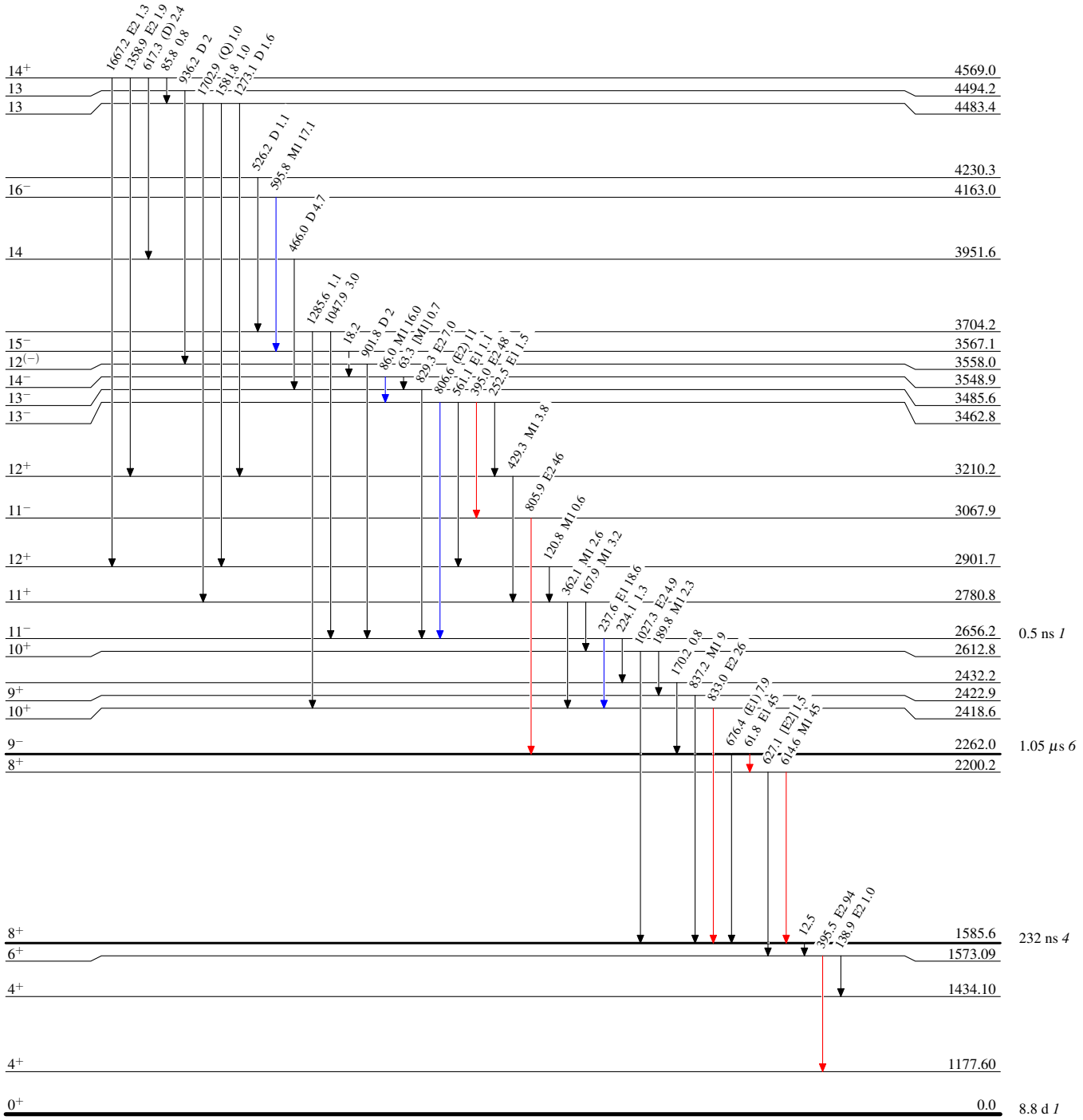
^{198}Pt(^{13}C,5nγ) **1990Ba31**

Level Scheme (continued)

Intensities: Relative I_γ

Legend

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

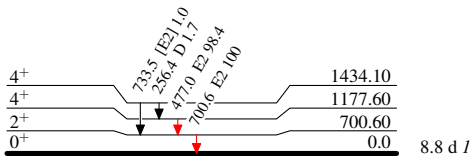


$^{206}_{84}Po_{122}$

^{198}Pt(^{13}C,5nγ) 1990Ba31

Level Scheme (continued)

Intensities: Relative I_γ



$^{206}_{84}Po_{122}$