^{208}At ε decay

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

Parent: ^{208}At: E=0; $J^\pi=6^+$; $T_{1/2}$=1.63 h *3*; Q(ε)=4978 *26*; %ε+%β^+ decay=99.45 *6*

^{208}Po Levels

The decay scheme is that of 1983Dz01 based on extensive coincidence data using the Eγ and Iγ data of 1981Va26. The 1263 level was added by the evaluator on the basis of the agreement In energy and branching of the 576 and 1263 γ's with those reported In (p,2nγ). The 1420 level is proposed by 1985Ra21 and also In (p,2nγ). Other: 1975LiYX.

E(level)[†]	J^π	$T_{1/2}$
0	0^+	
686.528 *20*	2^+	
1263.03 *11*	2^+	
1346.57 *3*	4^+	
1420.20? *6*	3^+	
1524.17 *3*	6^+	4.0[‡] ns *5*
1528.22 *4*	8^+	380[‡] ns
1583.21 *4*	4^+	
1995.48[#] *16*	$2^-,3^-$	
2041.24 *4*	6^+	
2149.24?[#] *10*	$3^+,4^+,5^+$	
2160.09 *5*	8^+	
2280.62?[#] *15*	$3^+,4^+,5^+$	
2293.60 *5*	6^+	
2335.35 *4*	7^+	
2369.22 *4*	7^-	
2414.55 *6*	$7^+,8^+$	
2507.29 *5*	$6^+,7^+$	
2526.39 *12*	5^+	
2555.89 *4*	7^+	
2574.63 *4*	$6^-,7^-$	
2884.24 *5*	5^-	
2926.67 *5*	5^-	
3112.94 *15*	7^-	
3144.74 *10*	$6^+,7^+,8^+$	
3201.62 *6*	$6^+,7^+,8^+$	
3535.29 *7*	$5^+,6^+$	
3553.44 *8*	5^-	
3564.54 *4*	6^-	
3682.53 *6*	6^-	
3808.03 *7*	$6^-,7^-$	
4019.18 *9*	$(5,6,7)^-$	
4166.68 *7*	7^-	
4251.40 *13*	$(5,6,7)^-$	
4509.37 *11*	$(5^+,6,7^+)$	

[†] From a least-squares fit to the Eγ of 1981Va26.
[‡] From (K x ray)(177γ)(t) (1968Tr06).
[#] Suggested In the text of 1985Ra21 As a possible level. The transitions involved are all unplaced by 1981Va26.

ε,β^+ radiations

E(decay)	E(level)	Iβ^+ [‡]	Iε[‡]	Log *ft*	I($\varepsilon+\beta^+$)[†‡]	Comments
(8.1×10^2 *3*)	4166.68		≈6	≈6.3	≈6	εK= 0.772 *3*; εL= 0.1703 *19*; εM+= 0.0580 *8*
(1.30×10^3 *3*)	3682.53		≈4	≈6.9	≈4	εK=0.787; εL=0.159; εM+=0.053
(1.41×10^3 *3*)	3564.54		≈20	≈6.3	≈20	εK= 0.7894; εL= 0.1577 *5*; εM+= 0.05286 *20*
(1.42×10^3 *3*)	3553.44		≈4	≈7.0	≈4	εK= 0.7895; εL= 0.1575 *5*; εM+= 0.05281 *20*
(1.44×10^3 *3*)	3535.29		≈3	≈7.1	≈3	εK= 0.7898; εL= 0.1573 *5*; εM+= 0.05273 *20*
(2.40×10^3 *3*)	2574.63	≈0.063	≈2.9	≈7.6	≈3	av Eβ= 614 *19*; εK= 0.7811 *17*; εL= 0.1484 *5*; εM+= 0.04935 *18*
(2.42×10^3 *3*)	2555.89	≈0.4	≈16.6	≈6.9	≈17	av Eβ= 622 *19*; εK= 0.7804 *18*; εL= 0.1481 *5*; εM+= 0.04927 *18*
(2.64×10^3 *3*)	2335.35	≈0.18	≈4.8	≈7.5	≈5	av Eβ= 719 *19*; εK= 0.7702 *24*; εL= 0.1454 *6*; εM+= 0.04831 *21*
(2.68×10^3 *3*)	2293.60	≈0.13	≈2.9	≈7.7	≈3	av Eβ= 737 *19*; εK= 0.7679 *25*; εL= 0.1448 *7*; εM+= 0.04811 *21*

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^{208}At ε decay (continued)

ϵ,β^+ radiations (continued)

E(decay)	E(level)	Iβ^+ ‡	Iε‡	Log *ft*	I($\varepsilon+\beta^+$)†‡	Comments
(3.39×10^3 *3*)	1583.21	≈0.45	≈3.5	≈7.9	≈4	av Eβ= 1049 *19*; εK= 0.711 *5*; εL= 0.1323 *10*; εM+= 0.0439 *3* log *ft* not consistent with second-forbidden nature of the $\varepsilon+\beta^+$ transition.
(3.45×10^3 *3*)	1524.17	≈1.7	≈11.3	≈7.3	≈13	av Eβ= 1076 *19*; εK= 0.705 *5*; εL= 0.1311 *10*; εM+= 0.0434 *4*

† From I(γ+ce) imbalance At each level. The intensity of the unplaced transitions is 18%; for this reason, only $\varepsilon+\beta^+$ branchings >3% are given, and log *ft* values are given As approximate.

‡ For absolute intensity per 100 decays, multiply by 0.9760 *6*.

^{208}At ε decay (continued)

$\gamma(^{208}Po)$

Iγ normalization: from Σ (I(γ+ce) to g.s.)=100. The intensity of the unplaced transitions is 18%; however, it is unlikely that any of these transitions feed the ground state directly, since the ε parent has J=6.

E_γ [†]	I_γ [†@]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [‡]	δ [‡]	α [&]	$I_{(\gamma+ce)}$ [@]	Comments
4.02 *3*		1528.22	8^+	1524.17	6^+	E2			≈34	ce(N+)/(γ+ce)=1.0 E_γ: from 1982Dr02, 1982Dr10 based on observation of M- and N-subshell ce lines. 1979RaZN obtained Eγ=4.0 *2* based on analysis of energy sums for six γ cascades. Mult.: from subshell data of 1982Dr02, 1982Dr10. $I_{(\gamma+ce)}$: from intensity balance At the 1528 level.
^{x}123.3 *4*	0.064 *19*									
163.5 *4*	0.085 *25*	1583.21	4^+	1420.20?	3^+	[M1,E2]		1.9 *9*		
172.7 *7*	0.12 *3*	2507.29	$6^+,7^+$	2335.35	7^+					
177.595 *17*	49.8 *21*	1524.17	6^+	1346.57	4^+	E2		0.736		α(K)=0.2178; α(L)=0.383; α(M)=0.1010; α(N+..)=0.0342 Mult.: α(K)exp=0.205 *13* (1981Va26), 0.24 *5* (1985Ra21). K/L12=0.87 *7* (1981Va26).
^{x}187.50 *25*	≈0.1									
205.40 *3*	6.5 *3*	2574.63	$6^-,7^-$	2369.22	7^-	M1(+E2)	≤0.26	1.47 *4*		α(K)=1.20 *5*; α(L)=0.2155 *5*; α(M)=0.05087 *15*; α(N+..)=0.01717 *5* Mult.: α(K)exp=1.14 *8* (1981Va26), 1.20 *10* (1985Ra21). K/L12=6.0 *5* (1981Va26).
213.65 *15*	0.37 *6*	2507.29	$6^+,7^+$	2293.60	6^+	M1+E2	0.6 *3*	1.09 *18*		Mult.: α(K)exp=0.84 *17* (1983DzZW).
236.66 *10*	0.56 *5*	1583.21	4^+	1346.57	4^+	M1(+E2)	≤0.39	0.96 *5*		α(K)=0.64 *13* Mult.: α(K)exp=0.64 *12* (1981Va26).
252.35 *12*	0.81 *6*	2293.60	6^+	2041.24	6^+	[M1,E2]		0.5 *3*		
254.5 *5*	0.30 *10*	2414.55	$7^+,8^+$	2160.09	8^+					
262.60 *12*	0.39 *10*	2555.89	7^+	2293.60	6^+	M1(+E2)	≤0.94	0.62 *14*		Mult.: α(K)exp=0.59 *22* (1983DzZW).
294.07 *5*	1.09 *6*	2335.35	7^+	2041.24	6^+	M1		0.558		Mult.: α(K)exp=0.46 *7* (1981Va26), 0.54 *3* (1985Ra21).
^{x}310.0 *10*	≈0.25									
327.8 *5*	0.30 *4*	2369.22	7^-	2041.24	6^+					
333.67 *3*	2.15 *12*	3535.29	$5^+,6^+$	3201.62	$6^+,7^+,8^+$	M1(+E2)	≤0.45	0.370 *25*		α(K)=0.31 *3*; α(L)=0.055 *3* Mult.: α(K)exp=0.302 *25* (1981Va26).
373.20 *15*	0.46 *6*	2414.55	$7^+,8^+$	2041.24	6^+					
390.3 *4*	0.39 *5*	3535.29	$5^+,6^+$	3144.74	$6^+,7^+,8^+$	M1(+E2)	≤0.65	0.23 *3*		Mult.: α(K)exp=0.23 *7* (1983DzZW).
395.74 *5*	1.26 *9*	2555.89	7^+	2160.09	8^+	M1+E2	0.43 *15*	0.218 *17*		α(K)=0.17 *4*; α(L)=0.032 *4* Mult.: α(K)exp=0.171 *23* (1981Va26), 0.18 *2* (1985Ra21).
400.7 *4*	0.31 *12*	2926.67	5^-	2526.39	5^+					
451.40 *20*	0.62 *6*	3564.54	6^-	3112.94	7^-	M1(+E2)	≤0.61	0.157 *18*		Mult.: α(K)exp=0.14 *3* (1983DzZW).

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^{208}At ε decay (continued)

γ(^{208}Po) (continued)

E$_γ$†	I$_γ$†@	E$_i$(level)	J^π_i	E$_f$	J^π_f	Mult.‡	δ‡	α&	Comments
485.10 *25*	0.52 *3*	2526.39	5$^+$	2041.24	6$^+$	M1		0.144	Mult.: α(K)exp=0.131 *15* (1981Va26).
517.055 *20*	6.2 *6*	2041.24	6$^+$	1524.17	6$^+$	M1(+E2)	0.37 *5*	0.111 *3*	Mult.: α(K)exp=0.100 *12* (1981Va26), 0.095 *5* (1985Ra21). δ: from γγ(θ) (1985AkZZ), δ is consistent with the value from α(K)exp for J(2041)=5, 6, or 7. δ is negative for J=5 or 6, and positive for J=7.
^{x}524.5 *10*	≈0.24								
538.0 *3*	0.39 *4*	3112.94	7$^-$	2574.63	6$^-$,7$^-$	M1+E2	1.0 *3*	0.068 *13*	Mult.: α(K)exp=0.056 *9* (1981Va26).
566.24 *9*	0.57 *6*	2149.24?	3$^+$,4$^+$,5$^+$	1583.21	4$^+$	M1+E2	0.7 *2*	0.073 *9*	Mult.: α(K)exp=0.059 *8* (1981Va26).
574.5 *10*	0.16 *3*	1995.48	2$^-$,3$^-$	1420.20?	3$^+$				
576.50 *20*	0.55 *6*	1263.03	2$^+$	686.528	2$^+$	M1(+E2)	≤0.48	0.085 *7*	Mult.: α(K)exp=0.051 *9* (1981Va26).
605.0 *10*	0.13 *3*	3112.94	7$^-$	2507.29	6$^+$,7$^+$				
^{x}621.5 *10*	0.18 *4*								
626.63 *9*	0.45 *3*	3553.44	5$^-$	2926.67	5$^-$	M1(+E2)	≤0.35	0.071 *3*	Mult.: α(K)exp=0.067 *12* (1981Va26).
631.83 *4*	3.30 *14*	2160.09	8$^+$	1528.22	8$^+$	M1(+E2)	0.42 *11*	0.064 *4*	α(K)=0.057 *5* Mult.: α(K)exp=0.056 *4* (1981Va26).
637.46 *9*	0.53 *4*	3144.74	6$^+$,7$^+$,8$^+$	2507.29	6$^+$,7$^+$	M1+E2	1.3 *+17−6*	0.038 *14*	Mult.: α(K)exp=0.030 *12* (1981Va26).
660.040 *17*	91 *4*	1346.57	4$^+$	686.528	2$^+$	E2		0.0173	α(K)=0.0128; α(L)=0.0034 Mult.: α(K)exp=0.0130 *9* (1981Va26), 0.0126 *2* (1985Ra21).
669.45 *12*	0.95 *25*	3553.44	5$^-$	2884.24	5$^-$	M1(+E2)	≤0.93	0.052 *10*	α(K)=0.043 *8*; α(L)=0.0076 *11* Mult.: α(K)exp=0.046 *13* (1981Va26).
686.527 *20*	100	686.528	2$^+$	0	0$^+$	E2		0.0159	α(K)=0.0119; α(L)=0.0030 Mult.: from α(K)exp, K/L (1968Tr06).
694.33# *4*	3.84 *23*	3201.62	6$^+$,7$^+$,8$^+$	2507.29	6$^+$,7$^+$	M1+E2	1.32 *21*	0.030 *4*	α(K)=0.026 *4* Mult.: α(K)exp=0.026 *3* (1981Va26), 0.020 *5* (1985Ra21).
697.94 *12*	1.41 *8*	4251.40	(5,6,7)$^-$	3553.44	5$^-$	E2		0.0154	Mult.: α(K)exp=0.0099 *21* (1981Va26).
^{x}704.5 *6*	0.19 *7*								
710.5 *6*	0.39 *5*	2293.60	6$^+$	1583.21	4$^+$				
^{x}712.4 *6*	0.27 *4*								
716.7 *10*	0.133 *21*	4251.40	(5,6,7)$^-$	3535.29	5$^+$,6$^+$				
729.5 *5*	0.19 *4*	3144.74	6$^+$,7$^+$,8$^+$	2414.55	7$^+$,8$^+$				
733.68 *5*	1.43 *7*	1420.20?	3$^+$	686.528	2$^+$	M1+E2	0.71 *17*	0.037 *4*	Mult.: α(K)exp=0.027 *5* (1981Va26).
^{x}747.7 *3*	0.43 *5*								
755.89 *4*	1.54 *9*	3682.53	6$^-$	2926.67	5$^-$	M1(+E2)	≤0.65	0.040 *5*	Mult.: α(K)exp=0.034 *5* (1981Va26).
765.5 *10*	0.13 *5*	2293.60	6$^+$	1528.22	8$^+$				
769.34 *5*	2.13 *12*	2293.60	6$^+$	1524.17	6$^+$	M1(+E2)	≤0.6	0.039 *4*	α(K)=0.033 *5* Mult.: α(K)exp=0.033 *4* (1981Va26).
798.68 *25*	0.60 *6*	3682.53	6$^-$	2884.24	5$^-$	M1(+E2)	≤0.6	0.036 *4*	Mult.: α(K)exp=0.030 *4* (1981Va26).
802.4 *5*	0.67 *4*	2149.24?	3$^+$,4$^+$,5$^+$	1346.57	4$^+$	M1(+E2)	≤0.3	0.038 *1*	Mult.: α(K)exp=0.037 *7* (1981Va26).
807.137 *25*	6.00 *25*	2335.35	7$^+$	1528.22	8$^+$	M1(+E2)	≤0.27	0.037 *1*	α(K)=0.0303 *23* Mult.: α(K)exp=0.030 *2* (1981Va26), 0.032 *2* (1985Ra21).

γ(^{208}Po) (continued)

E_γ [†]	I_γ [†@]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [‡]	δ [‡]	α [&]	Comments
811.18 *9*	1.24 *15*	2335.35	7+	1524.17	6+	M1+E2	0.90 *24*	0.026 *4*	α(K)=0.022 *7* Mult.: α(K)exp=0.023 *6* (1981Va26), 0.021 *3* (1985Ra21).
832.8 *5*	0.147 *17*	3201.62	6+,7+,8+	2369.22	7−				
841.2 *3*	0.87 *5*	2369.22	7−	1528.22	8+	E1			Mult.: α(K)exp≤0.0049 (1983DzZW).
845.044 *20*	20.2 *9*	2369.22	7−	1524.17	6+	E1			Mult.: α(K)exp=0.0029 *3* (1981Va26), 0.0033 *2* (1985Ra21). δ: δ=+0.020 *+14−37* from γγ(θ) (1985AkZZ).
x852.9 *5*	0.32 *5*								E_γ: an 852.5γ In (p,2nγ) is assigned As deexciting a level At 1539.
x863.7 *5*	0.40 *3*								
886.32 *5*	2.50 *14*	2414.55	7+,8+	1528.22	8+	M1+E2	0.6 *3*	0.025 *4*	α(K)=0.018 *4* Mult.: α(K)exp=0.022 *4* (1981Va26), 0.022 *1* (1985Ra21).
896.66 *4*	5.50 *23*	1583.21	4+	686.528	2+	E2		0.0092	Mult.: α(K)exp=0.0074 *8* (1981Va26), 0.008 *1* (1985Ra21).
x921.1 *4*	0.27 *7*								
923.96 *20*	0.44 *3*	3808.03	6−,7−	2884.24	5−				
934.05 *15*	0.98 *5*	2280.62?	3+,4+,5+	1346.57	4+	M1+E2	0.6 *4*	0.022 *4*	Mult.: α(K)exp=0.017 *3* (1983DzZW).
947.10 *5*	1.76 *8*	2293.60	6+	1346.57	4+	E2		0.00826	Mult.: α(K)exp=0.0051 *8* (1981Va26).
x958.82 *20*	0.51 *4*					M1(+E2)	≤0.6	0.0223 *22*	Mult.: α(K)exp=0.020 *3* (1981Va26)$.
x963.9 *10*	0.198 *20*								
983.12 *4*	4.68 *22*	2507.29	6+,7+	1524.17	6+	M1+E2	0.35 *15*	0.0212 *12*	Mult.: α(K)exp=0.0160 *17* (1981Va26), 0.019 *2* (1985Ra21). δ: from γγ(θ) (1985AkZZ). δ=−0.25 *4* for J=5, +0.41 *9* for J=6, and +0.24 *5* for J=7. δ<0.8 from α(K)exp.
989.94 *3*	11.0 *8*	3564.54	6−	2574.63	6−,7−	M1(+E2)	≤0.38	0.0216 *10*	Mult.: α(K)exp=0.0183 *18* (1981Va26), 0.018 *2* (1985Ra21).
1002.5 *7*	0.37 *4*	2526.39	5+	1524.17	6+	M1(+E2)	≥1.3	0.010 *3*	Mult.: α(K)exp=0.0081 *23* (1981Va26).
1008.60 *4*	2.30 *24*	3564.54	6−	2555.89	7+	E1			Mult.: α(K)exp=0.0025 *6* (1981Va26), <0.003 (1985Ra21).
x1017.0 *5*	0.41 *4*					M1+E2	1.5 *5*	0.011 *2*	Mult.: α(K)exp=0.010 *2* (1981Va26).
1027.662 *24*	17.2 *7*	2555.89	7+	1528.22	8+	M1+E2	0.42 *+20−25*	0.0185 *17*	α(K)=0.0143 *22* Mult.: α(K)exp=0.0151 *14* (1981Va26), 0.015 *5* (1985Ra21).
1038.3 *3*	0.67 *5*	3564.54	6−	2526.39	5+	(E1+M2)	0.27 *7*	0.0055 *14*	Mult.: α(K)exp=0.0045 *11* (1981Va26) allows mult=M1+E2 or E1+M2. The placement In the decay scheme requires Δπ=yes.
1049.2 *5*	0.066 *7*	4251.40	(5,6,7)−	3201.62	6+,7+,8+				
1057.0 *5*	0.115 *15*	3564.54	6−	2507.29	6+,7+				
x1061.7 *5*	0.20 *6*								
x1064.5 *5*	0.15 *5*								
1071.8 *5*	0.30 *4*	3112.94	7−	2041.24	6+				

^{208}At ε decay (continued)

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

E_γ †	I_γ †@	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	δ‡	α&	Comments
^{x}1082.6 *5*	0.078 *12*								
^{x}1088.06 *15*	0.088 *10*								
^{x}1094.60 *11*	0.24 *3*					M1(+E2)	≤0.4		Mult.: α(K)exp=0.017 *4* (1981Va26).
^{x}1104.5 *10*	0.20 *5*								
1107.73 *7*	0.57 *3*	3682.53	6^-	2574.63	$6^-,7^-$	M1+E2	1.2 *5*	0.0111 *23*	Mult.: 0.0091 *18* (1981Va26).
1126.80 *25*	0.16 *3*	3682.53	6^-	2555.89	7^+	(E1)			Mult.: α(K)exp≤0.006 (1983DzZW) allows mult=E1 or E2. The placement In the scheme requires $\Delta\pi$=yes.
^{x}1133.4 *3*	0.222 *13*					M1+E2	1.1 *6*	0.010 *4*	Mult.: α(K)exp=0.0090 *23* (1981Va26).
^{x}1137.5 *7*	0.23 *4*								
^{x}1139.1 *7*	0.25 *4*					E1,E2			Mult.: α(K)exp≤0.0048 (1983DzZW). Placed by 1981Va26 from the 3553 level; however, this placement would require mult=M2, inconsistent with the measured α(K)exp.
^{x}1145.70 *15*	0.32 *3*					E2(+M1)	≥0.6		Mult.: α(K)exp=0.0056 *14* (1981Va26).
1160.32 *10*	0.24 *4*	3201.62	$6^+,7^+,8^+$	2041.24	6^+	E2(+M1)	≥3.5	0.0059 *4*	Mult.: α(K)exp=0.0046 *15* (1983DzZW).
^{x}1164.29 *11*	0.50 *4*								
1180.00 *15*	1.10 *15*	2526.39	5^+	1346.57	4^+	M1(+E2)	≤0.7	0.0129 *15*	Mult.: α(K)exp=0.0118 *24* (1981Va26).
1184.5 *5*	0.10 *5*	3553.44	5^-	2369.22	7^-				
1195.31 *5*	1.51 *7*	3564.54	6^-	2369.22	7^-	M1+E2	0.96 *22*	0.025 *5*	Mult.: α(K)exp=0.0081 *13* (1981Va26), 0.0080 *10* (1985Ra21).
1229.18 *3*	3.20 *24*	3564.54	6^-	2335.35	7^+	E1			Mult.: α(K)exp=0.00141 *24* (1981Va26), 0.001 *1* (1985Ra21).
1234.0 *6*	0.31 *6*	3808.03	$6^-,7^-$	2574.63	$6^-,7^-$				
^{x}1237.3 *6*	0.18 *5*								
^{x}1256.0 *7*	0.067 *20*								
1259.3 *7*	0.09 *3*	3553.44	5^-	2293.60	6^+				
1263.03 *13*	0.35 *4*	1263.03	2^+	0	0^+	(E2)			Mult.: α(K)exp≈0.0043 (1983DzZW).
1270.5 *5*	0.10 *3*	3564.54	6^-	2293.60	6^+				
^{x}1280.1 *3*	0.43 *7*								
1282.4 *3*	0.55 *5*	4166.68	7^-	2884.24	5^-				
^{x}1286.60 *14*	0.29 *4*								
^{x}1292.8 *3*	0.12 *3*								
1300.5 *3*	0.14 *3*	3808.03	$6^-,7^-$	2507.29	$6^+,7^+$				
^{x}1304.53 *25*	0.15 *3*					M1(+E2)	≤1.1		Mult.: α(K)exp=0.0087 *27* (1983DzZW).
1308.95 *16*	0.25 *3*	1995.48	$2^-,3^-$	686.528	2^+	E1(+M2)	≤0.3		Mult.: α(K)exp=α(K)exp=0.0021 *7* (1983DzZW).
^{x}1314.6 *3*	0.127 *25*								
1324.6 *5*	0.082 *20*	4251.40	$(5,6,7)^-$	2926.67	5^-				
1343.44 *5*	2.13 *9*	2926.67	5^-	1583.21	4^+	E1			Mult.: α(K)exp=0.00136 *25* (1981Va26).
^{x}1348.4 *3*	0.250 *25*					E2(+M1)	≥2.7		Mult.: α(K)exp=0.0030 *10* (1983DzZW).
1360.12 *7*	0.95 *8*	2884.24	5^-	1524.17	6^+	E1			Mult.: α(K)exp=0.0018 *3* (1981Va26), ≤0.0010 (1985Ra21).
1402.8 *4*	0.120 *12*	2926.67	5^-	1524.17	6^+				
1438.80 *6*	1.19 *6*	3808.03	$6^-,7^-$	2369.22	7^-	M1+E2	0.8 *5*	0.0069 *14*	Mult.: α(K)exp=0.0056 *11* (1981Va26).
^{x}1456.5 *8*	0.140 *17*								

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^{208}At ε decay (continued)

γ(^{208}Po) (continued)

E_γ [†]	I_γ [†@]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [‡]	δ [‡]	Comments
^{x}1468.3 *7*	0.13 *3*							
1472.54 *19*	0.192 *22*	3808.03	$6^-,7^-$	2335.35	7^+	(E1)		Mult.: α(K)exp≤0.0029 (1983DzZW) allows mult=E1 or E2. The placement In the decay scheme requires $\Delta\pi$=yes.
^{x}1490.5 *4*	0.119 *12*							
^{x}≈1507	0.17 *5*							
1511.89 *8*	0.40 *3*	4019.18	$(5,6,7)^-$	2507.29	$6^+,7^+$	E1		Mult.: α(K)exp≤0.0013 (1983DzZW).
^{x}1516.8 *5*	0.082 *20*							
1523.37 *25*	0.189 *20*	3564.54	6^-	2041.24	6^+			
1537.71 *6*	1.77 *9*	2884.24	5^-	1346.57	4^+	E1		Mult.: α(K)exp=0.00102 *24* (1981Va26), ≤0.0010 (1985Ra21).
^{x}1569.3 *5*	0.121 *20*							
^{x}1578.2 *5*	0.30 *9*					E1,E2		Mult.: α(K)exp≤0.0024 (1983DzZW).
^{x}1581.1 *5*	0.69 *7*					E1		Mult.: α(K)exp≈0.0010 (1983DzZW).
1584.6 *6*	0.26 *8*	3112.94	7^-	1528.22	8^+	(E1)		Mult.: α(K)exp≤0.0033 (1983DzZW) allows mult=E2 or E1 but the placement In the decay scheme requires $\Delta\pi$=yes.
1588.6 *5*	0.25 *4*	3112.94	7^-	1524.17	6^+	(E1)		Mult.: α(K)exp≤0.0029 (1983DzZW) allows mult=E2 or E1 but the placement In the decay scheme requires $\Delta\pi$=yes.
^{x}1593.5 *6*	0.10 *3*							
^{x}1598.5 *8*	0.12 *4*							
^{x}1608.4 *5*	0.123 *14*							
^{x}1613.2 *5*	0.22 *5*							
1616.4 *5*	0.68 *8*	3144.74	$6^+,7^+,8^+$	1528.22	8^+	(E2)		Mult.: α(K)exp≈0.0012 (1983DzZW) allows E1 or E2. The placement In the decay scheme requires $\Delta\pi$=No.
1620.5 *5*	0.22 *3*	3144.74	$6^+,7^+,8^+$	1524.17	6^+	(E2+M1)		Mult.: α(K)exp≤0.0042 (1983DzZW) allows mult=E1 or E2(+E2). The placement In the decay scheme requires $\Delta\pi$=No.
^{x}1623.4 *6*	0.29 *3*							
^{x}1636.6 *8*	≈0.08							
1641.60 *25*	0.20 *3*	3682.53	6^-	2041.24	6^+	E1		Mult.: α(K)exp≤0.0024 (1983DzZW) allows mult=E1 or E2. The placement In the decay scheme requires $\Delta\pi$=yes.
^{x}1647.0 *4*	0.35 *4*					E1		Mult.: α(K)exp≤0.0013 (1983DzZW).
^{x}1692.76 *23*	0.283 *20*					E1		Mult.: α(K)exp≤0.0015 (1983DzZW).
1725.2 *6*	0.092 *15*	4019.18	$(5,6,7)^-$	2293.60	6^+			
1752.16 *20*	0.229 *20*	4166.68	7^-	2414.55	$7^+,8^+$	E1		Mult.: α(K)exp≤0.0018 (1983DzZW).
^{x}1773.68 *20*	0.35 *4*							
1797.42 *10*	0.80 *5*	4166.68	7^-	2369.22	7^-	M1(+E2)	<0.87	Mult.: α(K)exp=0.0038 *7* (1981Va26).
1831.8 *5*	0.114 *15*	4166.68	7^-	2335.35	7^+			
^{x}1847.30 *15*	0.13 *5*							
1872.88 *10*	0.54 *4*	4166.68	7^-	2293.60	6^+	E1		Mult.: α(K)exp=0.00085 *21* (1981Va26).
1916.5 *4*	0.135 *11*	4251.40	$(5,6,7)^-$	2335.35	7^+			
^{x}1923.4 *4*	0.130 *20*							
^{x}1929.5 *4*	0.264 *21*					M1+E2		Mult.: α(K)exp≈0.0026 (1983DzZW).
^{x}1944.2 *4*	0.18 *7*							
1951.0 *10*	0.11 *3*	3535.29	$5^+,6^+$	1583.21	4^+			
1971.0 *6*	0.096 *20*	3553.44	5^-	1583.21	4^+			
1983.8 *5*	0.110 *18*	4509.37	$(5^+,6,7^+)$	2526.39	5^+			

γ(^{208}Po) (continued)

E_γ [†]	I_γ [†@]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	Comments
2011.5 *5*	0.11 *3*	3535.29	$5^+,6^+$	1524.17	6^+		
^{x}2026.0 *7*	0.35 *10*					E1,E2,M1	Mult.: α(K)exp≤0.0040 (1983DzZW). Placed by 1981Va26 from the 3553 level; however, this placement would require mult=E3, inconsistent with the measured α(K)exp.
2029.33 *10*	1.59 *9*	3553.44	5^-	1524.17	6^+	E1	Mult.: α(K)exp=0.0017 *6* (1981Va26), <0.0010 (1985Ra21).
^{x}2038.2 *3*	0.189 *19*						
^{x}2085.85 *10*	0.58 *6*					E1	Mult.: α(K)exp≤0.0012 (1983DzZW).
2091.3 *10*	≈0.1	4251.40	$(5,6,7)^-$	2160.09	8^+		
2094.75 *10*	0.44 *3*	4509.37	$(5^+,6,7^+)$	2414.55	$7^+,8^+$	E1,E2	Mult.: α(K)exp≤0.0016 (1983DzZW).
^{x}2101.5 *4*	0.14 *3*						
2125.65 *12*	0.90 *6*	4166.68	7^-	2041.24	6^+	E1	Mult.: α(K)exp≈0.00078 (1981Va26).
^{x}2129.0 *5*	0.33 *4*						
^{x}2132.5 *5*	0.18 *5*						
2158.5 *5*	0.194 *19*	3682.53	6^-	1524.17	6^+		
^{x}2167.85 *20*	0.40 *3*					E2,M1	Mult.: α(K)exp≈0.0018 (1983DzZW).
2174.4 *5*	0.090 *25*	4509.37	$(5^+,6,7^+)$	2335.35	7^+		
2207.10 *20*	0.50 *3*	3553.44	5^-	1346.57	4^+	E1	Mult.: α(K)exp<0.0010 (1985Ra21).
2216.4 *5*	0.15 *6*	4509.37	$(5^+,6,7^+)$	2293.60	6^+		
^{x}2222.0 *7*	0.10 *3*						
2284.0 *5*	0.132 *16*	3808.03	$6^-,7^-$	1524.17	6^+		
2336.30 *25*	0.48 *5*	3682.53	6^-	1346.57	4^+		
^{x}2370.0 *5*	0.38 *3*						
2467.7 *5*	0.219 *20*	4509.37	$(5^+,6,7^+)$	2041.24	6^+		
^{x}2475.5 *5*	0.050 *20*						
2494.8 *5*	0.79 *8*	4019.18	$(5,6,7)^-$	1524.17	6^+		
^{x}2523.5 *5*	0.14 *3*						
^{x}2556.1 *5*	0.123 *15*						
^{x}2619.2 *5*	0.170 *20*						
2638.6 *3*	2.13 *15*	4166.68	7^-	1528.22	8^+		
2643.3 *5*	0.54 *5*	4166.68	7^-	1524.17	6^+		
^{x}2662.7 *5*	0.076 *15*						
2668.2 *5*	0.058 *14*	4251.40	$(5,6,7)^-$	1583.21	4^+		
^{x}2732.5 *5*	0.131 *13*						
^{x}2901.5 *5*	0.050 *10*						
^{x}2998.6 *7*	0.045 *9*						
^{x}≈3016	≈0.018						
^{x}≈3164	≈0.038						
^{x}≈3223	≈0.034						

[†] From 1981Va26. Others: 1985Ra21, 1975LiYX, 1968Tr06.
[‡] From Adopted Gammas. α(K)exp and ce data from 1981Va26, 1983DzZW and 1985Ra21 are given here. The α(K)exp data are normalized so that

^{208}At ε decay (continued)

γ(^{208}Po) (continued)

α(K)exp(686γ)=0.0119 (E2 theory).

Placed from the 2041 level by 1985Ra21 and from the 3201 level by 1981Va26. The placement of 1985Ra21 is based on observation of the 2401 level In (p,2nγ) with agreement of Iγ(517γ)/Iγ(694γ) In the two works, and on γγ. The 3201 level is not populated In (p,2nγ). Note, however, that the energy agreement is poor for placement from the 2041 level. The 517γ gives E(level)=2041.23 *4*, and the 694γ gives E(level)=2040.90 *5*. Also, mult(694γ)=M1+E2 to the 1347 level with $J^\pi=4^+$ is inconsistent with feeding of the 2041 level via an M1 from the 2335, 7^+ level. The evaluator assigns the 694γ entirely to the 3201 level.

@ For absolute intensity per 100 decays, multiply by 0.9760 *9*.

& 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.

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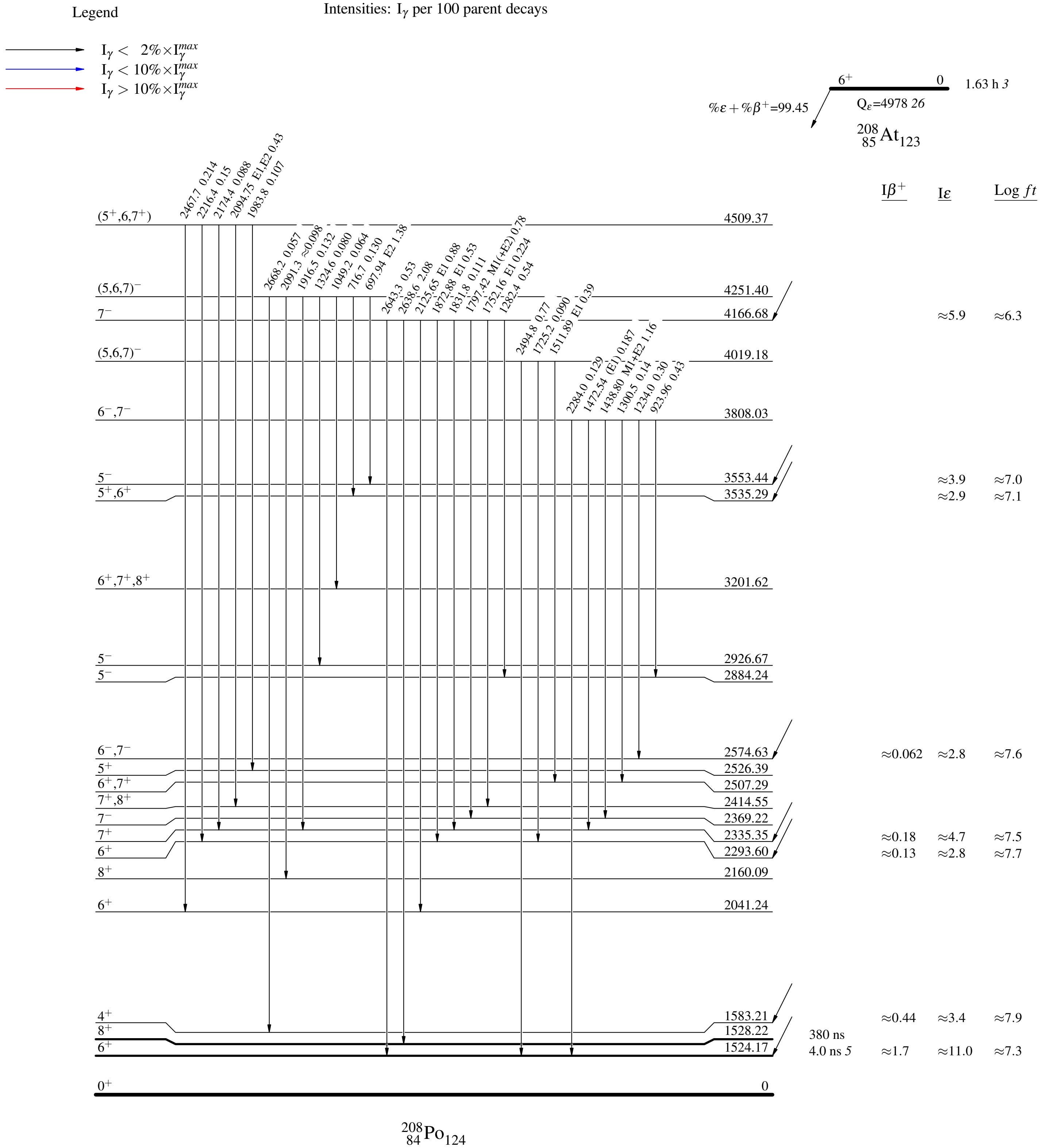
^{208}At ε decay

Decay Scheme

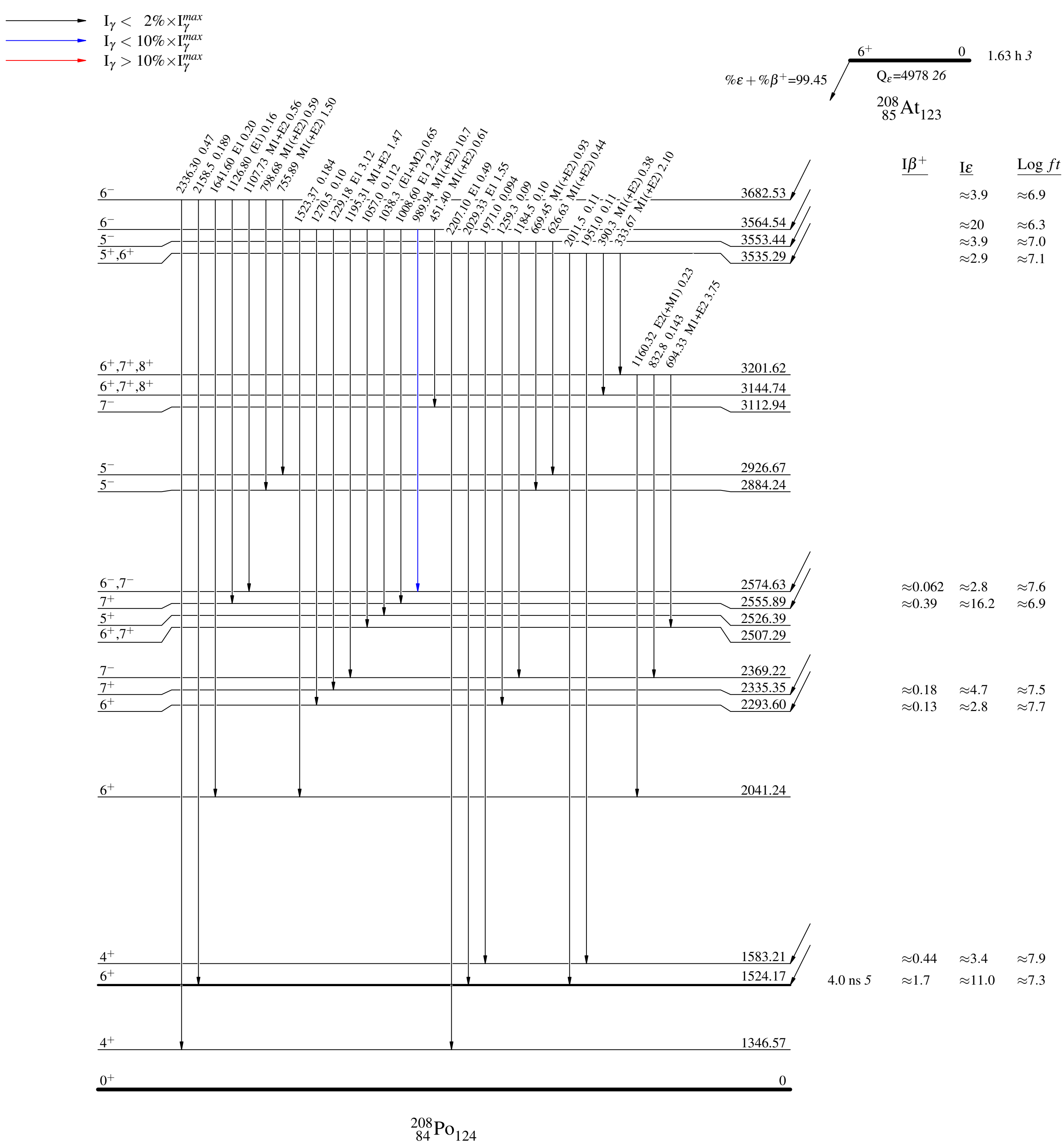
Intensities: I_γ per 100 parent decays



^{208}At ε decay

Decay Scheme (continued)

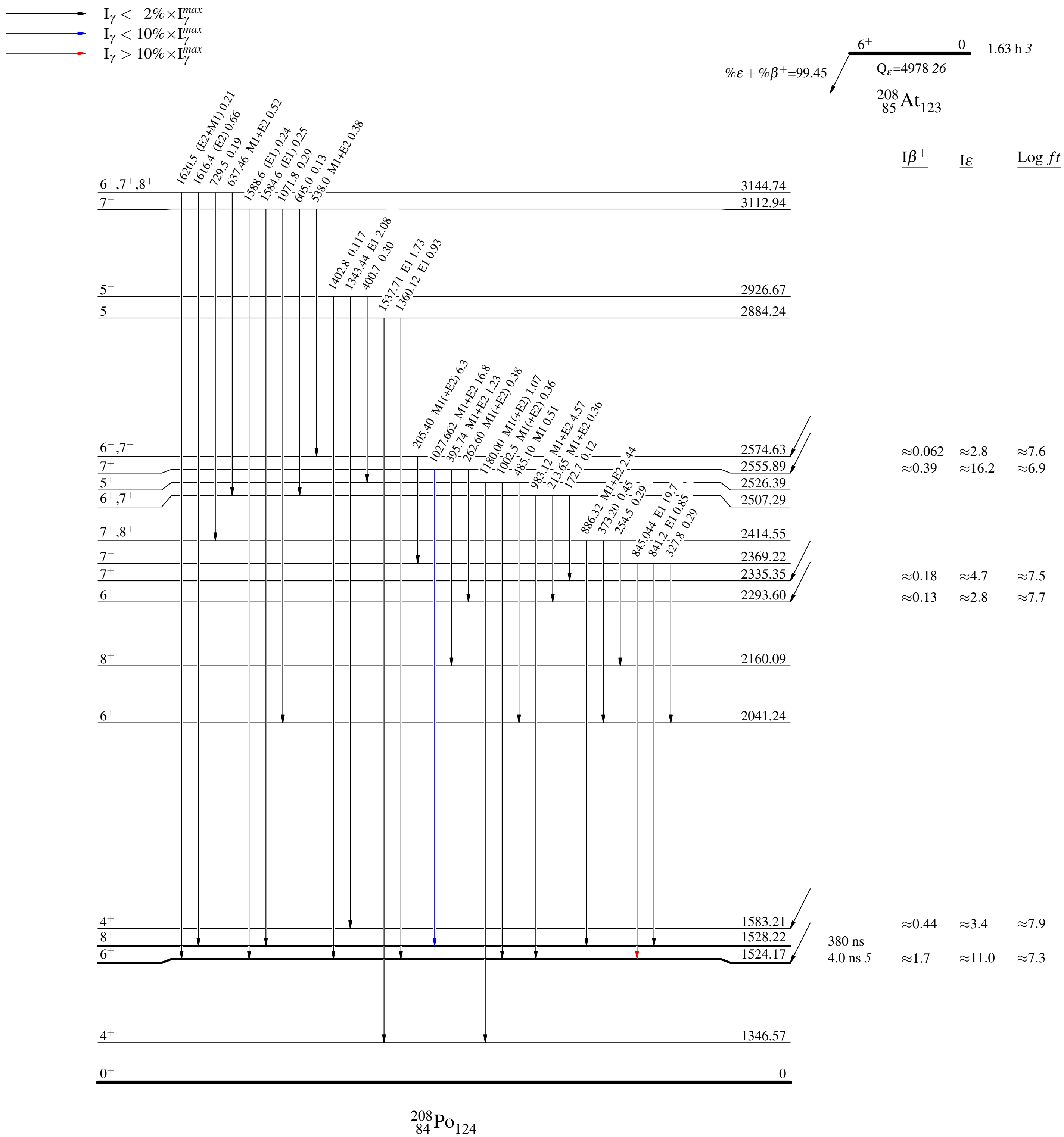
Intensities: I_γ per 100 parent decays



^{208}At ε decay

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays



^{208}At ε decay

Decay Scheme (continued)

Intensities: I_γ per 100 parent decays