^{131}La ε decay 1979En06

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Yu. Khazov, I. Mitropolsky, A. Rodionov	NDS 107, 2715 (2006)	17-Jul-2006

Parent: ^{131}La: E=0.0; $J^\pi=3/2^+$; $T_{1/2}$=59 min *2*; Q(ε)=2915 *28*; %ε+%$β^+$ decay=100.0

1979En06: ^{131}La ε decay (59 min) [from (p,X) reaction with various targets, E=660 MeV]; measured γ, γγ coin, ce, deduced levels, J^π. Mass-separator, synchrocyclotron, Ge(Li), Si(Li) detectors.

1972Ha41: ^{131}La ε decay [from ^{133}Cs(α,6n) reaction, E=80 MeV]; measured Ece, Ice, deduced levels, γ-multipolarities, J^π. Chemical separation, permanent-magnet, semi-focusing spectrograph with 0.5 keV FWHM at 150 keV.

1960Cr01: ^{131}La ε decay [from ^{130}Ba(d,n) reaction, E=11.5 MeV]; measured $β^+$, ce, γ, γγ coin, $T_{1/2}$, deduced levels, $β^+$ branching (3 branches, only). Chemical separation, magnetic lens, scintillation spectrometers.

Others: 1983AbZX, 1980VyZZ, 1991Bo34.

^{131}Ba Levels

The decay scheme is that of 1979En06 and based on coincidence data and energy sums.

E(level)†	J^π	$T_{1/2}$	Comments
0.0	$1/2^+$	11.50 d *6*	$T_{1/2}$: from 1991Bo34.
108.077 *5*	$3/2^+$	0.35 ns *5*	$T_{1/2}$: from γce(t) (1979An06).
285.251 *5*	$3/2^+$		
316.585 *7*	$5/2^+$		
365.164 *5*	$1/2^+$		
525.850 *6*	$(3/2)^+$		
542.87 *8*	$7/2^+$		
561.720 *14*	$3/2^+,5/2^+$		
718.779 *10*	$3/2^+,5/2^+$		
719.494 *15*	$1/2^+,3/2^+,5/2^+$		
879.333 *17*	$1/2^+,3/2^+,5/2^+$		
949.94 *3*	$3/2^+,5/2^+$		
974.211 *15*	$3/2^+,5/2^+$		
1154.262 *24*	$1/2^+,3/2^+,5/2^+$		
1243.96 *7*	$1/2,3/2,5/2^{(+)}$		
1291.63 *5*	$1/2,3/2,5/2^{(+)}$		
1475.50 *12*	$1/2^+$		
1494.65 *4*	$1/2,3/2,5/2^{(+)}$		
1981.82 *13*	1/2,3/2,5/2		
2064.81 *11*	$1/2,3/2,5/2^{(+)}$		
2163.16 *8*	1/2,3/2,5/2		
2195.23 *10*	$1/2,3/2,5/2^{(+)}$		
2271.17 *9*	$1/2,3/2,5/2^{(+)}$		
2385.11 *9*	1/2,3/2,5/2		

† From least-squares fit to Eγ.

$ε,β^+$ radiations

E(decay)	E(level)	Iε‡	Log *ft*	I(ε+$β^+$)†‡	Comments
(5.3×10² *3*)	2385.11	0.184 *16*	6.35 *7*	0.184 *16*	εK=0.8378 *11*; εL=0.1264 *8*; εM+=0.0357 *3*
(6.4×10² *3*)	2271.17	0.101 *10*	6.79 *7*	0.101 *10*	εK=0.8410 *7*; εL=0.1241 *5*; εM+=0.03495 *17*
(7.2×10² *3*)	2195.23	0.089 *13*	6.95 *8*	0.089 *13*	εK=0.8425 *6*; εL=0.1229 *4*; εM+=0.03457 *13*
(7.5×10² *3*)	2163.16	0.098 *10*	6.94 *6*	0.098 *10*	εK=0.8430 *5*; εL=0.1225 *4*; εM+=0.03444 *12*

Continued on next page (footnotes at end of table)

^{131}La ε decay 1979En06 (continued)

ε,β+ radiations (continued)

E(decay)	E(level)	Iβ+ ‡	Iε‡	Log *ft*	I(ε+β+)†‡	Comments
(8.5×10^2 *3*)	2064.81		0.16 *4*	6.84 *12*	0.16 *4*	εK=0.8444 *4*; εL=0.1215 *3*; εM+=0.03409 *9*
(9.3×10^2 *3*)	1981.82		0.091 *13*	7.17 *7*	0.091 *13*	εK=0.8454 *3*; εL=0.12077 *23*; εM+=0.03386 *8*
(1.42×10^3 *3*)	1494.65	0.0011 *4*	0.46 *3*	6.85 *4*	0.46 *3*	av Eβ=189 *13*; εK=0.8465 *6*; εL=0.11806 *18*; εM+=0.03299 *6*
(1.44×10^3 *3*)	1475.50	0.00039 *13*	0.13 *2*	7.41 *7*	0.13 *2*	av Eβ=197 *13*; εK=0.8461 *7*; εL=0.11793 *19*; εM+=0.03295 *6*
(1.62×10^3 *3*)	1291.63	0.0048 *10*	0.39 *3*	7.04 *4*	0.38 *3*	av Eβ=278 *13*; εK=0.8390 *19*; εL=0.1163 *4*; εM+=0.03248 *10*
(1.67×10^3 *3*)	1243.96	0.0026 *5*	0.16 *1*	7.45 *4*	0.16 *1*	av Eβ=298 *13*; εK=0.8357 *22*; εL=0.1158 *4*; εM+=0.03231 *11*
(1.76×10^3 *3*)	1154.262	0.0062 *9*	0.23 *1*	7.33 *3*	0.24 *1*	av Eβ=338 *13*; εK=0.828 *3*; εL=0.1144 *5*; εM+=0.03193 *14*
(1.94×10^3 *3*)	974.211	0.090 *10*	1.56 *6*	6.59 *3*	1.64 *6*	av Eβ=417 *13*; εK=0.804 *5*; εL=0.1107 *7*; εM+=0.03089 *20*
(1.97×10^3 *3*)	949.94	0.026 *3*	0.40 *2*	7.19 *3*	0.43 *2*	av Eβ=427 *13*; εK=0.800 *5*; εL=0.1101 *8*; εM+=0.03072 *21*
(2.04×10^3 *3*)	879.333	0.203 *20*	2.51 *10*	6.43 *3*	2.79 *11*	av Eβ=458 *13*; εK=0.787 *6*; εL=0.1082 *9*; εM+=0.03017 *24*
(2.20×10^3 *3*)	719.494	0.29 *3*	2.16 *13*	6.56 *4*	2.45 *15*	av Eβ=529 *13*; εK=0.751 *8*; εL=0.1030 *11*; εM+=0.0287 *3*
(2.20×10^3 *3*)	718.779	0.020 *5*	0.15 *4*	7.72 *11*	0.17 *4*	av Eβ=529 *13*; εK=0.750 *8*; εL=0.1030 *11*; εM+=0.0287 *3*
(2.35×10^3 *3*)	561.720	1.21 *8*	5.94 *20*	6.18 *3*	7.14 *23*	av Eβ=599 *13*; εK=0.707 *9*; εL=0.0969 *12*; εM+=0.0270 *4*
(2.37×10^3 *3*)	542.87	0.007 *7*	0.03 *3*	8.4 *5*	0.04 *4*	av Eβ=607 *13*; εK=0.702 *9*; εL=0.0961 *12*; εM+=0.0268 *4*
(2.39×10^3 *3*)	525.850	5.4 *3*	24.6 *8*	5.58 *3*	30.0 *9*	av Eβ=615 *13*; εK=0.697 *9*; εL=0.0954 *12*; εM+=0.0266 *4*
(2.55×10^3 *3*)	365.164	5.1 *3*	15.9 *6*	5.82 *3*	21.1 *7*	av Eβ=686 *13*; εK=0.646 *10*; εL=0.0883 *13*; εM+=0.0246 *4*
(2.60×10^3 *3*)	316.585	0.54 *5*	1.54 *14*	6.85 *5*	2.08 *19*	av Eβ=708 *13*; εK=0.630 *10*; εL=0.0860 *13*; εM+=0.0240 *4*
(2.63×10^3 *3*)	285.251	1.9 *1*	5.1 *3*	6.34 *4*	7.0 *4*	av Eβ=722 *13*; εK=0.619 *10*; εL=0.0846 *14*; εM+=0.0236 *4*
(2.81×10^3 *3*)	108.077	3.8 *4*	7.2 *7*	6.25 *5*	11.2 *10*	av Eβ=802 *13*; εK=0.559 *10*; εL=0.0762 *14*; εM+=0.0212 *4*
2961 *45*	0.0	4.8 *9*	7.5 *15*	6.26 *9*	13.6 *24*	av Eβ=851 *13*; εK=0.522 *10*; εL=0.0712 *13*; εM+=0.0198 *4* E(decay): from Eβ+=1939 *45* (1960Cr01).

† Level populations (%) by ε+β+ decay were computed (by evaluators) using the total intensities of γ′s.
‡ Absolute intensity per 100 decays.

^{131}La ε decay 1979En06 (continued)

γ(^{131}Ba)

Iγ normalization: Σ(I(γ+ce) of γ′s to g.s.)=345 *4*; %ε+%β+(to g.s.)=13.6 *23*.
α(K)exp of 1979En06 is normalized to α(K)(108γ)=0.681 (by evaluators).

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	δ [‡]	α [a]	Comments
79.918 *7*	3.21 *6*	365.164	1/2$^+$	285.251	3/2$^+$	M1+E2	0.21 *2*	1.98 *4*	α(K)=1.635 *24*; α(L)=0.272 *12*; α(M)=0.0571 *25*; α(N+..)=0.0141 *6* α(N)=0.0122 *6*; α(O)=0.00180 *7*; α(P)=0.0001058 *15* α(exp): K:L1:L2:L3:M=62 *9*:10 *2*:1.9 *3*:1.2 *3*:2.6 *4* (1972Ha41).
94.9[#b]		974.211	3/2$^+$,5/2$^+$	879.333	1/2$^+$,3/2$^+$,5/2$^+$				
[x]98.197 *27*	0.146 *21*								
[x]107.22 *5*	1.70 *17*					M1,E2		1.2 *4*	α(K)=0.84 *15*; α(L)=0.25 *16*; α(M)=0.05 *4*; α(N+..)=0.013 *9* α(N)=0.011 *8*; α(O)=0.0016 *10*; α(P)=4.57×10^{-5} *7*
108.081 *5*	100.0 *18*	108.077	3/2$^+$	0.0	1/2$^+$	M1+E2	0.127 *14*	0.802	α(K)=0.681 *10*; α(L)=0.0957 *18*; α(M)=0.0198 *4*; α(N+..)=0.00496 *9* α(N)=0.00427 *8*; α(O)=0.000646 *12*; α(P)=4.46×10^{-5} *7* α(exp): K:L1:L2:L3:M=745 *80*:100 *10*:11 *2*:4.2 *8*:26 *3* (1972Ha41).
157.82 *8*	0.274 *18*	719.494	1/2$^+$,3/2$^+$,5/2$^+$	561.720	3/2$^+$,5/2$^+$				
159.90 *9*	0.31 *6*	879.333	1/2$^+$,3/2$^+$,5/2$^+$	719.494	1/2$^+$,3/2$^+$,5/2$^+$				
160.687 *7*	7.21 *20*	525.850	(3/2)$^+$	365.164	1/2$^+$	M1(+E2)	<0.4	0.268 *8*	α(K)exp=0.214 *20*; K/L=7.3 *8* α(K)=0.226 *5*; α(L)=0.033 *3*; α(M)=0.0068 *7*; α(N+..)=0.00169 *16* α(N)=0.00146 *14*; α(O)=0.000220 *18*; α(P)=1.461×10^{-5} *22*
176.04 *16*	0.11 *7*	718.779	3/2$^+$,5/2$^+$	542.87	7/2$^+$	M1,E2		0.23 *4*	α(K)=0.188 *15*; α(L)=0.037 *14*; α(M)=0.008 *3*; α(N+..)=0.0019 *7* α(N)=0.0017 *7*; α(O)=0.00024 *8*; α(P)=1.09×10^{-5} *6*
176.6[#b]		719.494	1/2$^+$,3/2$^+$,5/2$^+$	542.87	7/2$^+$				
177.186 *16*	0.61[@] *6*	285.251	3/2$^+$	108.077	3/2$^+$	M1,E2		0.23 *3*	α(K)=0.184 *14*; α(L)=0.036 *14*; α(M)=0.008 *3*; α(N+..)=0.0019 *7* α(N)=0.0016 *6*; α(O)=0.00023 *8*; α(P)=1.07×10^{-5} *6*
192.929 *8*	0.49 *9*	718.779	3/2$^+$,5/2$^+$	525.850	(3/2)$^+$				
193.5[#b]		719.494	1/2$^+$,3/2$^+$,5/2$^+$	525.850	(3/2)$^+$				
204.3[#b]		1154.262	1/2$^+$,3/2$^+$,5/2$^+$	949.94	3/2$^+$,5/2$^+$				

$^{131}_{56}Ba_{75}$-3

^{131}La ε decay 1979En06 (continued)

γ(^{131}Ba) (continued)

E_γ[†]	I_γ[†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡]	α[a]	Comments
208.509 *8*	12.1[@] *3*	316.585	5/2$^+$	108.077	3/2$^+$	M1,E2		0.139 *11*	α(K)exp=0.107 *7* α(K)=0.113 *4*; α(L)=0.020 *6*; α(M)=0.0043 *13*; α(N+..)=0.0010 *3* α(N)=0.0009 *3*; α(O)=0.00013 *4*; α(P)=6.7×10^{-6} *5*
209.269 *27*	1.28 *13*	525.850	(3/2)$^+$	316.585	5/2$^+$	M1,E2		0.137 *11*	α(K)exp=0.110 *8* α(K)=0.112 *4*; α(L)=0.020 *6*; α(M)=0.0042 *13*; α(N+..)=0.0010 *3* α(N)=0.0009 *3*; α(O)=0.00013 *4*; α(P)=6.6×10^{-6} *5*
226.3[#b]		542.87	7/2$^+$	316.585	5/2$^+$				
230.4[#b]		949.94	3/2$^+$,5/2$^+$	719.494	1/2$^+$,3/2$^+$,5/2$^+$				
231.8[#b]		1475.50	1/2$^+$	1243.96	1/2,3/2,5/2$^{(+)}$				
240.593 *7*	5.50 *14*	525.850	(3/2)$^+$	285.251	3/2$^+$	M1(+E2)	<0.2	0.0870	α(K)exp=0.073 *6*; K/L=8.7 *12* α(K)=0.0745 *11*; α(L)=0.00992 *17*; α(M)=0.00205 *4*; α(N+..)=0.000514 *9* α(N)=0.000441 *8*; α(O)=6.74×10^{-5} *11*; α(P)=4.87×10^{-6} *7*
245.10 *3*	1.25 *20*	561.720	3/2$^+$,5/2$^+$	316.585	5/2$^+$	M1,E2		0.085 *3*	α(K)exp=0.069 *8* α(K)=0.0702 *13*; α(L)=0.0117 *24*; α(M)=0.0024 *6*; α(N+..)=0.00060 *12* α(N)=0.00052 *11*; α(O)=7.6×10^{-5} *13*; α(P)=4.2×10^{-6} *5*
254.7[#b]		974.211	3/2$^+$,5/2$^+$	719.494	1/2$^+$,3/2$^+$,5/2$^+$				
257.087 *9*	13.71 *27*	365.164	1/2$^+$	108.077	3/2$^+$	M1,E2		0.0736 *13*	α(K)exp=0.057 *6* α(K)=0.0611 *17*; α(L)=0.0100 *18*; α(M)=0.0021 *4*; α(N+..)=0.00051 *9* α(N)=0.00044 *8*; α(O)=6.5×10^{-5} *10*; α(P)=3.7×10^{-6} *4*
276.4 *3*	0.12 *6*	561.720	3/2$^+$,5/2$^+$	285.251	3/2$^+$				
285.246 *7*	49.6[@] *11*	285.251	3/2$^+$	0.0	1/2$^+$	M1,E2		0.0542 *14*	α(K)exp=0.042 *4* α(K)=0.0453 *24*; α(L)=0.0071 *9*; α(M)=0.00149 *21*; α(N+..)=0.00037 *5* α(N)=0.00032 *4*; α(O)=4.7×10^{-5} *5*; α(P)=2.8×10^{-6} *4*
316.575 *14*	3.49[@] *15*	316.585	5/2$^+$	0.0	1/2$^+$	E2		0.0381	α(K)=0.0312 *5*; α(L)=0.00552 *8*; α(M)=0.001163 *17*; α(N+..)=0.000284 *4* α(N)=0.000247 *4*; α(O)=3.56×10^{-5} *5*; α(P)=1.781×10^{-6} *25* α(L)exp=0.0059 *22* (calculated by evaluators from 1980VyZZ).

$^{131}_{56}Ba_{75}$-4

^{131}La ε decay 1979En06 (continued)

γ(^{131}Ba) (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡]	α[a]	Comments
317.50 *6*	1.10 *10*	1291.63	1/2,3/2,5/2$^{(+)}$	974.211	3/2$^+$,5/2$^+$				
336.4[#b]		879.333	1/2$^+$,3/2$^+$,5/2$^+$	542.87	7/2$^+$				
[x]352.07 *15*	0.50 *23*					M1,E2		0.0297 *24*	α(K)=0.0250 *25*; α(L)=0.00370 *14*; α(M)=0.00077 *4*; α(N+..)=0.000191 *7* α(N)=0.000165 *7*; α(O)=2.46×10^{-5} *4*; α(P)=1.55×10^{-6} *25*
353.479 *24*	3.76 *26*	879.333	1/2$^+$,3/2$^+$,5/2$^+$	525.850	(3/2)$^+$	M1,E2		0.0294 *24*	α(K)exp=0.026 *3* α(K)=0.0248 *25*; α(L)=0.00366 *13*; α(M)=0.00076 *4*; α(N+..)=0.000189 *6* α(N)=0.000163 *6*; α(O)=2.43×10^{-5} *4*; α(P)=1.53×10^{-6} *24*
[x]354.32 *19*	0.61 *15*								
365.162 *8*	67.7 *13*	365.164	1/2$^+$	0.0	1/2$^+$	M1		0.0291	α(K)exp=0.025 *3*; K/L=8.0 *4* α(K)=0.0250 *4*; α(L)=0.00325 *5*; α(M)=0.000670 *10*; α(N+..)=0.0001683 *24* α(N)=0.0001445 *21*; α(O)=2.22×10^{-5} *4*; α(P)=1.630×10^{-6} *23*
402.90 *4*	3.5 *5*	719.494	1/2$^+$,3/2$^+$,5/2$^+$	316.585	5/2$^+$	M1,E2		0.0205 *23*	α(K)exp=0.016 *3* α(K)=0.0173 *22*; α(L)=0.00249 *6*; α(M)=0.000516 *8*; α(N+..)=0.000128 *3* α(N)=0.0001105 *22*; α(O)=1.66×10^{-5} *7*; α(P)=1.08×10^{-6} *19*
413.30[b] *23*	0.94 *18*	974.211	3/2$^+$,5/2$^+$	561.720	3/2$^+$,5/2$^+$	M1,E2		0.0191 *22*	α(K)exp=0.013 *4* α(K)=0.0162 *21*; α(L)=0.00231 *7*; α(M)=0.000479 *10*; α(N+..)=0.000119 *4* α(N)=0.000103 *3*; α(O)=1.54×10^{-5} *8*; α(P)=1.01×10^{-6} *18* E_γ: the level energy difference is equal to 412.463 *18*.
[x]416.21 *21*	2.2 *7*					M1,E2		0.0187 *22*	α(K)=0.0159 *21*; α(L)=0.00226 *7*; α(M)=0.000469 *11*; α(N+..)=0.000117 *4* α(N)=0.000101 *3*; α(O)=1.51×10^{-5} *8*; α(P)=9.9×10^{-7} *18*
417.783 *15*	71.8[@] *16*	525.850	(3/2)$^+$	108.077	3/2$^+$	M1,E2		0.0185 *22*	α(K)=0.0157 *21*; α(L)=0.00224 *7*; α(M)=0.000464 *11*; α(N+..)=0.000115 *4* α(N)=0.000100 *3*; α(O)=1.49×10^{-5} *8*; α(P)=9.8×10^{-7} *18*
431.3[#b]		974.211	3/2$^+$,5/2$^+$	542.87	7/2$^+$				
434.33 *10*	2.61 *10*	719.494	1/2$^+$,3/2$^+$,5/2$^+$	285.251	3/2$^+$	M1(+E2)	≤0.64	0.0181 *7*	α(K)=0.0155 *6*; α(L)=0.00206 *4*; α(M)=0.000424 *7*; α(N+..)=0.0001064 *20* α(N)=9.14×10^{-5} *17*; α(O)=1.40×10^{-5} *3*;

$^{131}_{56}Ba_{75}$-5

^{131}La ε decay 1979En06 (continued)

γ(^{131}Ba) (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	α [a]	Comments
								α(P)=1.00×10^{-6} *5* α(K)exp=0.0232 *25* (recalculated by evaluators)$ α(K)exp=0.058 *15* in 1979En06 apparently, is a misprint.
434.83 *8*	0.30 *9*	542.87	7/2$^+$	108.077	3/2$^+$	E2	0.01461	α(K)=0.01220 *17*; α(L)=0.00192 *3*; α(M)=0.000400 *6*; α(N+..)=9.86×10^{-5} *14* α(N)=8.53×10^{-5} *12*; α(O)=1.256×10^{-5} *18*; α(P)=7.24×10^{-7} *11*
[x]448.92 *29*	0.424 *15*							
453.659 *15*	23.5 *5*	561.720	3/2$^+$,5/2$^+$	108.077	3/2$^+$	M1,E2	0.0149 *20*	α(K)exp=0.0159 *9* α(K)=0.0126 *19*; α(L)=0.00177 *10*; α(M)=0.000367 *18*; α(N+..)=9.1×10^{-5} *6* α(N)=7.9×10^{-5} *5*; α(O)=1.19×10^{-5} *9*; α(P)=7.9×10^{-7} *15*
[x]483.87 *18*	0.26 *3*							
524.4[#b]		1243.96	1/2,3/2,5/2$^{(+)}$	719.494	1/2$^+$,3/2$^+$,5/2$^+$			
525.851 *16*	34.9[@] *7*	525.850	(3/2)$^+$	0.0	1/2$^+$	M1,E2	0.0101 *16*	α(K)=0.0086 *14*; α(L)=0.00118 *11*; α(M)=0.000244 *21*; α(N+..)=6.1×10^{-5} *6* α(N)=5.2×10^{-5} *5*; α(O)=7.9×10^{-6} *9*; α(P)=5.4×10^{-7} *11*
544.7[#b]		1494.65	1/2,3/2,5/2$^{(+)}$	949.94	3/2$^+$,5/2$^+$			
561.785[b] *16*	4.40 *10*	561.720	3/2$^+$,5/2$^+$	0.0	1/2$^+$	M1,E2	0.0085 *14*	α(K)exp=0.0078 *20* α(K)=0.0073 *13*; α(L)=0.00099 *11*; α(M)=0.000204 *20*; α(N+..)=5.1×10^{-5} *6* α(N)=4.4×10^{-5} *5*; α(O)=6.6×10^{-6} *8*; α(P)=4.6×10^{-7} *9* E_γ: the level energy difference is equal to 561.748 *11*.
[x]567.1 *3*	0.106 *29*					M1,E2	0.0083 *14*	α(K)=0.0071 *12*; α(L)=0.00096 *10*; α(M)=0.000199 *20*; α(N+..)=5.0×10^{-5} *6* α(N)=4.3×10^{-5} *5*; α(O)=6.5×10^{-6} *8*; α(P)=4.5×10^{-7} *9*
570.3[#b]		2064.81	1/2,3/2,5/2$^{(+)}$	1494.65	1/2,3/2,5/2$^{(+)}$			
584.81 *5*	0.263 *28*	949.94	3/2$^+$,5/2$^+$	365.164	1/2$^+$	M1,E2	0.0077 *13*	α(K)=0.0066 *12*; α(L)=0.00089 *10*; α(M)=0.000183 *20*; α(N+..)=4.6×10^{-5} *6* α(N)=3.9×10^{-5} *5*; α(O)=6.0×10^{-6} *8*; α(P)=4.2×10^{-7} *9*
594.080 *22*	5.75 *15*	879.333	1/2$^+$,3/2$^+$,5/2$^+$	285.251	3/2$^+$	M1,E2	0.0074 *12*	α(K)=0.0063 *11*; α(L)=0.00085 *10*; α(M)=0.000176 *19*; α(N+..)=4.4×10^{-5} *5* α(N)=3.8×10^{-5} *5*; α(O)=5.7×10^{-6} *8*; α(P)=4.0×10^{-7} *8*
611.407 *18*	3.11 *9*	719.494	1/2$^+$,3/2$^+$,5/2$^+$	108.077	3/2$^+$	M1,E2	0.0069 *12*	α(K)=0.0059 *11*; α(L)=0.00079 *10*; α(M)=0.000163 *19*; α(N+..)=4.1×10^{-5} *5* α(N)=3.5×10^{-5} *4*; α(O)=5.3×10^{-6} *7*; α(P)=3.7×10^{-7} *8*
628.402 *24*	0.655 *20*	1154.262	1/2$^+$,3/2$^+$,5/2$^+$	525.850	(3/2)$^+$	M1	0.00765	α(K)exp=0.0071 *8* α=0.00765; α(K)=0.00654 *20*; α(L)=0.00083 *3*
[x]647.03 *9*	0.183 *20*							

$^{131}_{56}Ba_{75}$-6

γ(^{131}Ba) (continued)

E_γ †	I_γ †&	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	α[a]	Comments
657.630 *23*	1.022 *27*	974.211	3/2$^+$,5/2$^+$	316.585	5/2$^+$	M1,E2	0.0058 *10*	α(K)exp=0.0066 *14* α(K)=0.0049 *9*; α(L)=0.00066 *9*; α(M)=0.000135 *17*; α(N+..)=3.4×10^{-5} *5* α(N)=2.9×10^{-5} *4*; α(O)=4.4×10^{-6} *6*; α(P)=3.1×10^{-7} *7*
x661.08 *4*	0.752 *29*							
664.63 *5*	0.595 *23*	949.94	3/2$^+$,5/2$^+$	285.251	3/2$^+$			
x694.62 *14*	0.116 *29*							
700.38 *15*	0.108 *22*	2195.23	1/2,3/2,5/2$^{(+)}$	1494.65	1/2,3/2,5/2$^{(+)}$			
718.5 *3*	0.060 *23*	718.779	3/2$^+$,5/2$^+$	0.0	1/2$^+$			
719.53 *4*	0.690 *24*	719.494	1/2$^+$,3/2$^+$,5/2$^+$	0.0	1/2$^+$	M1,E2	0.0046 *8*	α(K)exp=0.0045 *14* α(K)=0.0040 *7*; α(L)=0.00052 *7*; α(M)=0.000108 *15*; α(N+..)=2.7×10^{-5} *4* α(N)=2.3×10^{-5} *4*; α(O)=3.5×10^{-6} *6*; α(P)=2.5×10^{-7} *5*
729.19[b] *27*	0.032 *19*	1291.63	1/2,3/2,5/2$^{(+)}$	561.720	3/2$^+$,5/2$^+$			E_γ: the level energy difference is equal to 729.86 *5*.
x768.93 *9*	0.243 *21*							
771.19 *23*	0.18 *5*	879.333	1/2$^+$,3/2$^+$,5/2$^+$	108.077	3/2$^+$			
837.86 *11*	0.172 *30*	1154.262	1/2$^+$,3/2$^+$,5/2$^+$	316.585	5/2$^+$			
841.86 *4*	0.94 *3*	949.94	3/2$^+$,5/2$^+$	108.077	3/2$^+$	M1,E2	0.0032 *6*	α(K)exp=0.0025 *6* α(K)=0.0027 *5*; α(L)=0.00036 *5*; α(M)=7.3×10^{-5} *11*; α(N+..)=1.8×10^{-5} *3* α(N)=1.58×10^{-5} *23*; α(O)=2.4×10^{-6} *4*; α(P)=1.7×10^{-7} *4*
866.138 *26*	4.19 *11*	974.211	3/2$^+$,5/2$^+$	108.077	3/2$^+$	M1,E2	0.0030 *5*	α(K)exp=0.0029 *16* α(K)=0.0026 *5*; α(L)=0.00033 *5*; α(M)=6.8×10^{-5} *10*; α(N+..)=1.72×10^{-5} *25* α(N)=1.47×10^{-5} *22*; α(O)=2.3×10^{-6} *4*; α(P)=1.6×10^{-7} *3*
879.20[b] *4*	0.704 *25*	879.333	1/2$^+$,3/2$^+$,5/2$^+$	0.0	1/2$^+$			E_γ: the level energy difference is equal to 879.315 *16*.
927.40 *13*	0.129 *16*	1243.96	1/2,3/2,5/2$^{(+)}$	316.585	5/2$^+$			
933.03 *8*	0.175 *28*	1494.65	1/2,3/2,5/2$^{(+)}$	561.720	3/2$^+$,5/2$^+$			
x944.13 *14*	0.083 *15*							
958.89 *14*	0.101 *22*	1243.96	1/2,3/2,5/2$^{(+)}$	285.251	3/2$^+$			
969.72[b] *30*	0.129 *21*	1494.65	1/2,3/2,5/2$^{(+)}$	525.850	(3/2)$^+$			E_γ: the level energy difference is equal to 968.81 *4*.
974.204 *26*	2.56 *6*	974.211	3/2$^+$,5/2$^+$	0.0	1/2$^+$	M1,E2	0.0023 *4*	α(K)exp=0.0025 *3* α(K)=0.0020 *4*; α(L)=0.00025 *4*; α(M)=5.2×10^{-5} *8*; α(N+..)=1.30×10^{-5} *19* α(N)=1.12×10^{-5} *16*; α(O)=1.7×10^{-6} *3*; α(P)=1.24×10^{-7} *23*
x1105.93 *14*	0.103 *16*							
x1129.3 *4*	0.065 *16*							
1135.85 *12*	0.320 *17*	1243.96	1/2,3/2,5/2$^{(+)}$	108.077	3/2$^+$			
1154.23 *20*	0.128 *20*	1154.262	1/2$^+$,3/2$^+$,5/2$^+$	0.0	1/2$^+$			
1158.0[b] *5*	0.052 *15*	1475.50	1/2$^+$	316.585	5/2$^+$			E_γ: the level energy difference is equal to 1159.09 *10*.

$^{131}_{56}Ba_{75}$-7

γ(^{131}Ba) (continued)

E_γ †	I_γ †&	E_i(level)	J_i^π	E_f	J_f^π	Comments
1178.03 *4*	1.17 *6*	1494.65	1/2,3/2,5/2,5/2$^{(+)}$	316.585	5/2$^+$	
1209.45 *15*	0.111 *26*	1494.65	1/2,3/2,5/2,5/2$^{(+)}$	285.251	3/2$^+$	
1212.85 *22*	0.09 *3*	2163.16	1/2,3/2,5/2,5/2	949.94	3/2$^+$,5/2$^+$	
x1227.74 *10*	0.095 *13*					
1243.72 *16*	0.083 *18*	1243.96	1/2,3/2,5/2,5/2$^{(+)}$	0.0	1/2$^+$	
1291.54 *6*	0.408 *21*	1291.63	1/2,3/2,5/2,5/2$^{(+)}$	0.0	1/2$^+$	
1296.81 *17*	0.098 *14*	2271.17	1/2,3/2,5/2,5/2$^{(+)}$	974.211	3/2$^+$,5/2$^+$	
1315.80 *17*	0.033 *13*	2195.23	1/2,3/2,5/2,5/2$^{(+)}$	879.333	1/2$^+$,3/2$^+$,5/2$^+$	
x1351.48 *13*	0.175 *21*					
x1355.99 *17*	0.119 *20*					
1367.47 *12*	0.26 *4*	1475.50	1/2$^+$	108.077	3/2$^+$	
1386.05 *28*	0.21 *4*	1494.65	1/2,3/2,5/2,5/2$^{(+)}$	108.077	3/2$^+$	
x1389.64 *27*	0.25 *4*					
1420.7 *5*	0.08 *4*	1981.82	1/2,3/2,5/2,5/2	561.720	3/2$^+$,5/2$^+$	
1443.66 *11*	0.201 *14*	2163.16	1/2,3/2,5/2,5/2	719.494	1/2$^+$,3/2$^+$,5/2$^+$	
x1455.05 *25*	0.088 *22*					
1475.98 *15*	0.18 *5*	1475.50	1/2$^+$	0.0	1/2$^+$	E_γ: 1476.22 *13* in 1980VyZZ.
1494.65 *8*	0.267 *26*	1494.65	1/2,3/2,5/2,5/2$^{(+)}$	0.0	1/2$^+$	
x1500.11 *6*	0.50 *4*					
x1560.41 *18*	0.101 *19*					
x1564.22 *18*	0.097 *18*					
x1570.19 *20*	0.079 *17*					
x1582.24 *20*	0.158 *17*					
x1591.05 *22*	0.086 *16*					
1601.53 *17*	0.031 *8*	2163.16	1/2,3/2,5/2,5/2	561.720	3/2$^+$,5/2$^+$	
x1664.60 *25*	0.076 *16*					
1696.56 *22*	0.141 *18*	1981.82	1/2,3/2,5/2,5/2	285.251	3/2$^+$	
1699.60 *15*	0.35 *15*	2064.81	1/2,3/2,5/2,5/2$^{(+)}$	365.164	1/2$^+$	
x1717.6 *5*	0.15 *3*					
x1754.39 *14*	0.154 *28*					
x1771.21 *27*	0.062 *20*					
1779.40 *26*	0.060 *17*	2064.81	1/2,3/2,5/2,5/2$^{(+)}$	285.251	3/2$^+$	
x1793.24 *10*	0.173 *26*					
1823.41 *10*	0.57 *5*	2385.11	1/2,3/2,5/2,5/2	561.720	3/2$^+$,5/2$^+$	
x1844.94 *21*	0.110 *28*					
x1849.80 *21*	0.105 *26*					
1859.08 *21*	0.072 *27*	2385.11	1/2,3/2,5/2,5/2	525.850	(3/2)$^+$	
1873.65 *17*	0.142 *21*	1981.82	1/2,3/2,5/2,5/2	108.077	3/2$^+$	
1906.40 *24*	0.092 *26*	2271.17	1/2,3/2,5/2,5/2$^{(+)}$	365.164	1/2$^+$	
x1947.22 *12*	0.167 *34*					
1954.48 *15*	0.148 *19*	2271.17	1/2,3/2,5/2,5/2$^{(+)}$	316.585	5/2$^+$	
1957.16[b] *13*	0.183 *21*	2064.81	1/2,3/2,5/2,5/2$^{(+)}$	108.077	3/2$^+$	E_γ: the level energy difference is equal to 1956.91 *9*.

^{131}La ε decay 1979En06 (continued)

γ(^{131}Ba) (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Comments
2055.24 *22*	0.069 *14*	2163.16	1/2,3/2,5/2	108.077	$3/2^+$	
2064.94 *20*	0.035 *10*	2064.81	1/2,3/2,5/2$^{(+)}$	0.0	$1/2^+$	
2067.6[b] *4*	0.015 *5*	2385.11	1/2,3/2,5/2	316.585	$5/2^+$	E_γ: the level energy difference is equal to 2068.56 *9*.
2087.44 *20*	0.15 *4*	2195.23	1/2,3/2,5/2$^{(+)}$	108.077	$3/2^+$	
2100.30[b] *23*	0.080 *18*	2385.11	1/2,3/2,5/2	285.251	$3/2^+$	E_γ: the level energy difference is equal to 2099.90 *0*.
[x]2164.2 *5*	0.14 *8*					
[x]2172.3 *5*	0.14 *5*					
2195.58 *30*	0.065 *20*	2195.23	1/2,3/2,5/2$^{(+)}$	0.0	$1/2^+$	
[x]2206.9 *4*	0.097 *27*					
[x]2215.51 *15*	0.096 *21*					
[x]2238.60 *25*	0.063 *14*					
[x]2263.9 *4*	0.031 *9*					
2271.23 *20*	0.066 *12*	2271.17	1/2,3/2,5/2$^{(+)}$	0.0	$1/2^+$	

[†] From 1980VyZZ, 1979En06.
[‡] From ce data of 1972Ha41, 1979En06, and 1983AbZX.
[#] From 1983AbZX, Iγ not given.
[@] Iγ(177γ)/Iγ(285γ)=0.0122 *12*, Iγ(209γ)/Iγ(316γ)=0.288 *15*, and Iγ(526γ)/Iγ(418γ)=0.486 *15* are discrepant with 0.39 *6*, 0.62, and 0.0066 *10* from (^{13}C,4nγ), (^{12}C,3nγ).
[&] For absolute intensity per 100 decays, multiply by 0.250 *7*.
[a] 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.
[b] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

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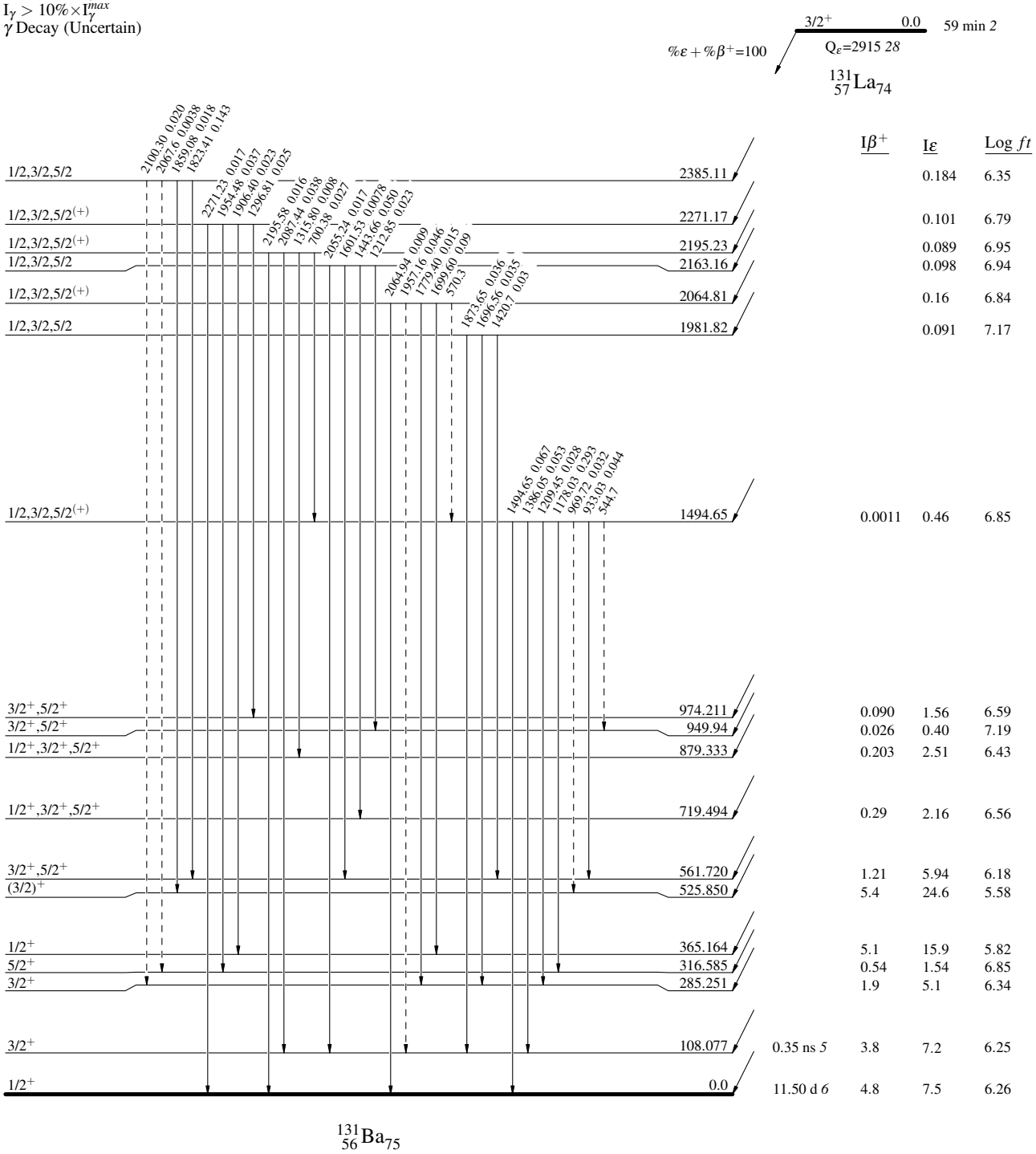
^{131}La ε decay 1979En06

Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

Legend

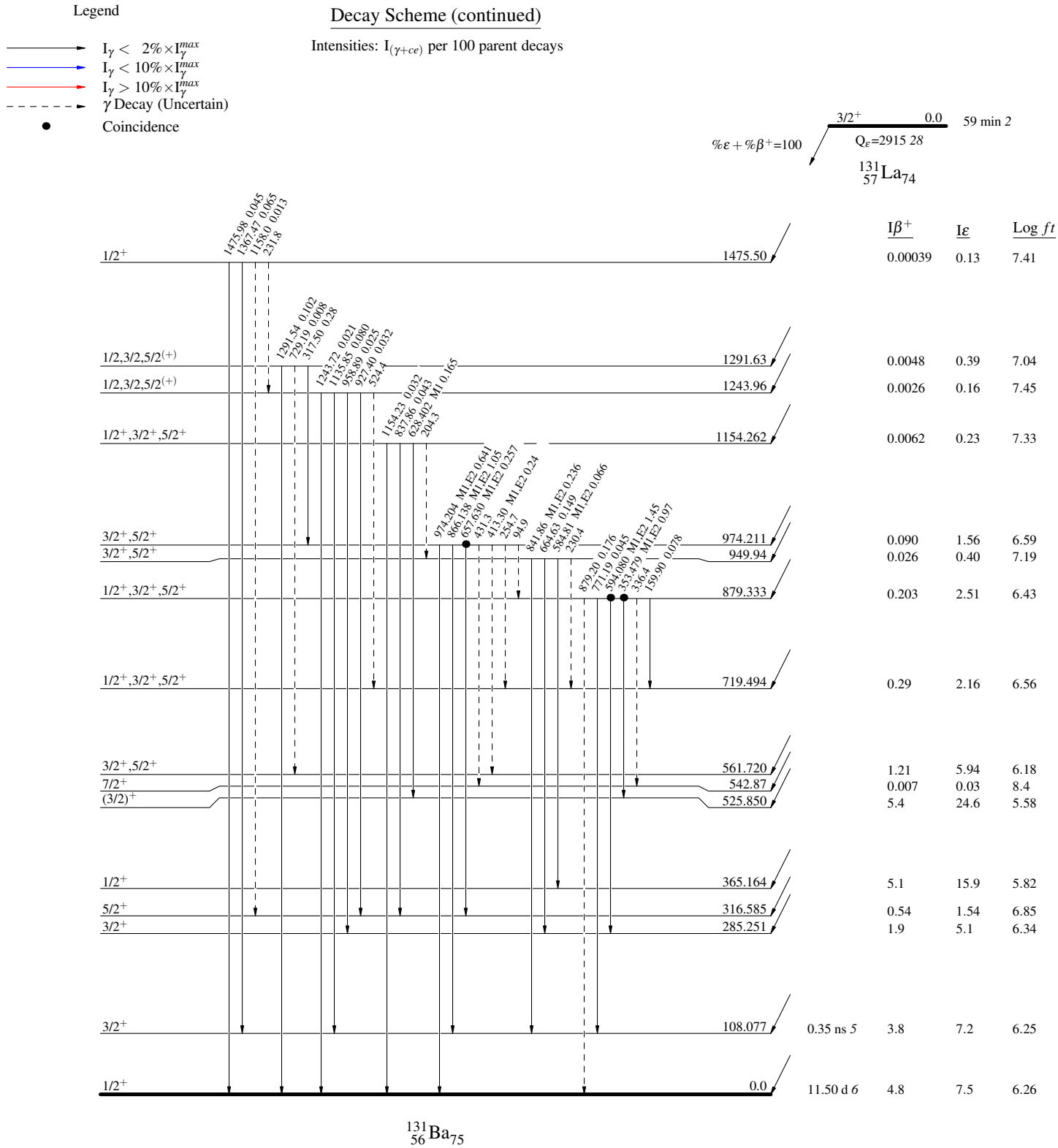
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)



^{131}La ε decay 1979En06

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays



^{131}La ε decay 1979En06

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays