^{223}Fr β^- decay 1993Ab01,1967Ma19,1982AlZL

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	E. Browne	NDS 93, 846 (2001)	1-May-2001

Parent: ^{223}Fr: E=0.0; J$^\pi$=3/2$^{(-)}$; T$_{1/2}$=22.00 min *7*; Q(β^-)=1149.1 *9*; %β^- decay=100.0

^{223}Ra Levels

E(level)[†]	J$^\pi$[‡]	E(level)[†]	J$^\pi$[‡]	E(level)[†]	J$^\pi$[‡]
0.0[#]	3/2$^+$	342.51[b] *4*	3/2$^+$	842.25 *5*	3/2$^+$,5/2
29.859[#] *17*	(5/2)$^+$	350.53[c] *10*	1/2$^-$	846.41 *4*	5/2
50.093[@] *12*	3/2$^-$	369.351[a] *18*	(5/2)$^-$	867.33 *7*	3/2,5/2$^+$
61.447[#] *24*	(7/2)$^+$	376.10[c] *15*	(7/2)$^-$	905.9 *4*	
79.652[@] *11*	(5/2)$^-$	593.58 *12*		926.56 *7*	3/2,5/2
123.737[@] *23*	(7/2$^-$)	782.54 *17*	1/2,3/2	940.79 *13*	3/2$^-$,5/2
234.779[&] *19*	(5/2)$^+$	787.14 *5*	5/2	943.27 *9*	3/2,5/2
280.19[&] *4*	(7/2$^+$)	803.77 *3*	3/2,5/2	957.73 *11*	3/2$^-$,5/2$^+$
286.07[b] *4*	1/2$^+$	805.38 *10*	1/2,3/2,5/2	1019.3 *4*	
329.83[c] *3*	3/2$^-$	823.22 *7*	1/2,3/2,5/2$^+$	1024.60 *23*	
334.30[b] *4*	5/2$^+$	825.94 *4*	(3/2$^+$)	1028.94 *25*	

[†] Deduced by evaluator from a least-squares fit to γ-ray energies.
[‡] Although octupole deformations are small in this region, nuclear states are no longer fully characterized by single Nilsson orbitals. This terminology, however, is used throughout this evaluation to label states rather than to accurately describe their nature.
[#] Band(A): 3/2(631) parity doublet rotational band.
[@] Band(B): 3/2(761) parity doublet rotational band.
[&] Band(C): 5/2(633) parity doublet rotational band.
[a] Band(D): 5/2(752) parity doublet rotational band.
[b] Band(E): 1/2(640) parity doublet rotational band.
[c] Band(F): 1/2(770) parity doublet rotational band.

β^- radiations

E(decay)	E(level)	Iβ^-[†]	Log *ft*	Comments
(120.2 *9*)	1028.94	0.0013 *4*	7.26 *14*	av Eβ=31.5 *3*
(124.5 *9*)	1024.60	0.0005 *1*	7.72 *9*	av Eβ=32.7 *3*
(129.8 *10*)	1019.3	0.0005 *2*	7.78 *18*	av Eβ=34.1 *3*
(191.4 *9*)	957.73	0.020 *5*	6.70 *11*	av Eβ=51.4 *3*
(205.8 *9*)	943.27	0.009 *2*	7.15 *10*	av Eβ=55.6 *3*
(208.3 *9*)	940.79	0.006 *1*	7.34 *8*	av Eβ=56.3 *3*
(222.5 *9*)	926.56	0.11 *3*	6.17 *12*	av Eβ=60.5 *3*
(243.2 *10*)	905.9	0.0012 *4*	8.25 *15*	av Eβ=66.5 *3*
(281.8 *9*)	867.33	0.026 *7*	7.12 *12*	av Eβ=78.0 *3*
(302.7 *9*)	846.41	0.10 *2*	6.63 *9*	av Eβ=84.4 *3*
(306.8 *9*)	842.25	0.036 *8*	7.09 *10*	av Eβ=85.6 *3*
(323.2 *9*)	825.94	0.6 *1*	5.94 *8*	av Eβ=90.6 *3*
(325.9 *9*)	823.22	0.016 *4*	7.53 *11*	av Eβ=91.5 *3*
(343.7 *9*)	805.38	0.005 *1*	8.11 *9*	av Eβ=97.0 *3*
(345.3 *9*)	803.77	0.14 *3*	6.67 *10*	av Eβ=97.5 *3*
(362.0 *9*)	787.14	0.023 *5*	7.52 *10*	av Eβ=102.7 *3*

Continued on next page (footnotes at end of table)

^{223}Fr β^- decay 1993Ab01,1967Ma19,1982AlZL (continued)

β^- radiations (continued)

E(decay)	E(level)	I$\beta^{-\dagger}$	Log *ft*	Comments
(366.6 *9*)	782.54	0.0012 *3*	8.82 *11*	av Eβ=104.1 *3*
(555.5 *9*)	593.58	0.015 *4*	8.31 *12*	av Eβ=165.6 *3*
(773.0 *9*)	376.10	0.005 *1*	9.28 *9*	av Eβ=241.2 *4*
(779.7 *9*)	369.351	1.7 *1*	6.76 *3*	av Eβ=243.7 *4*
(806.6 *9*)	342.51	0.05 *1*	8.34 *9*	av Eβ=253.3 *4*
(814.8 *9*)	334.30	0.05 *1*	8.36 *9*	av Eβ=256.3 *4*
(819.3 *9*)	329.83	0.05 *1*	8.36 *9*	av Eβ=257.9 *4*
(863.0 *9*)	286.07	0.05 *2*	8.44 *18*	av Eβ=273.8 *4*
(914.3 *9*)	234.779	10.1 *2*	6.223 *9*	av Eβ=292.5 *4*
(1025.4 *9*)	123.737	0.26 *7*	7.99 *12*	av Eβ=333.8 *4*
(1069.4 *9*)	79.652	15 *2*	6.29 *6*	av Eβ=350.4 *4*
(1099.0 *9*)	50.093	70 *7*	5.66 *5*	av Eβ=361.7 *4*
(1119.2‡ *9*)	29.859	≤1	≥7.5	av Eβ=369.4 *4*
(1149.1‡ *9*)	0.0	≤1	≥7.6	av Eβ=380.7 *4*

† Absolute intensity per 100 decays.

‡ Existence of this branch is questionable.

γ(^{223}Ra)

Iγ normalization: from experimental %Iγ(50γ)=40 *10* (1954Hy26) and %Iγ(204γ)=0.92 *18* (1981Va28).

1993Ab01: ^{223}Fr source was continuously separated from its ^{223}Ra daughter during the measurement of the γ-ray spectrum. Measured Eγ, Iγ, $\gamma\gamma$ coin. Detectors: high-purity germanium.

1967Ma19: chemically separated ^{223}Fr source. Detector:Ge(Li).

1964Yt01: detector: scintillator.

Unplaced γ rays are from 1993Ab01, unless otherwise specified.

Experimental Ra K x ray intensities: 53 *3* (Kα_2 x ray), 88 *3* (Kα_1 x ray) (1982AlZL). These values compare with 55 *2* (Kα_2 x ray), 90 *4* (Kα_1 x ray), 42 *2* (Kβ x ray), deduced by evaluator (using the RADLST program) from the γ-ray intensities and K-conversion coefficients presented here, and using a K-fluorescence yield of 0.97.

E_γ †	I_γ †@	E_i(level)	J^π_i	E_f	J^π_f	Mult.‡	δ	α&	Comments
x15 *3*									E_γ: from 1964Yt01. Others: 1954Hy26, 1960Wa16. Energy of Ra L_β x ray is 15.2 keV.
20.27# *5*	53# *5*	50.093	3/2⁻	29.859	(5/2)⁺	[E1]		7.76	α(L)=5.77; α(M)=1.50 I_γ: Iγ=32 *5* from Iγ(20γ)/Iγ(50γ)=0.028 *3* in ^{227}Th α decay and Iγ(50γ)=1.13×10^3 *13*.
x24.14# *3*	9.5# *7*								
x27.27# *3*	2.3# *4*								
29.60 *3*	≈0.8	79.652	(5/2)⁻	50.093	3/2⁻				E_γ: not observed. From ^{227}Th α decay. I_γ: from Iγ(29γ)/Iγ(79γ)≈0.0026 in ^{227}Th α decay, and Iγ(79γ)=294 *41* in ^{223}Fr β^- decay.
29.78# *4*	1.8# *4*	29.859	(5/2)⁺	0.0	3/2⁺	M1+E2	0.41 *10*	5.4×10^2 *15*	α(L)=4.3×10^2 *14*; α(M)=1.1×10^2 *4* I_γ: from Iγ(29γ, 79 level)≈0.8, and Iγ(29γ)=2.6 *4* (1993Ab01). δ: from ^{227}Th α decay.
31.69# *5*	0.05#	61.447	(7/2)⁺	29.859	(5/2)⁺	M1+E2	0.28 *6*	2.7×10^2 *8*	α(L)=2.0×10^2 *6*; α(M)=52 *15*
43.5# *2*	0.08#	329.83	3/2⁻	286.07	1/2⁺	E1		1.03	α(L)=0.779; α(M)=0.191
44.0# *1*	0.05#	123.737	(7/2⁻)	79.652	(5/2)⁻	M1+E2	0.52 *4*	134 *12*	α(L)=99 *9*; α(M)=26.0 *24*
49.80 *5*	93 *8*	79.652	(5/2)⁻	29.859	(5/2)⁺	E1		0.719	α(L)=0.543; α(M)=0.133
50.094 *15*	1.13×10^3 *13*	50.093	3/2⁻	0.0	3/2⁺	E1		0.709	α(L)=0.534; α(M)=0.130; α(N+..)=0.0439 E_γ: other values: 51 *4* (1960Wa16), 49.8 *3* (1954Hy26), 48.8 *16* (1950Le13).
61.43 *5*	0.13	61.447	(7/2)⁺	0.0	3/2⁺	E2		98	α(L)=72.0; α(M)=19.5; α(N+..)=6.99 I_γ: from 1993Ab01.
62.31# *6*	0.6# *2*	123.737	(7/2⁻)	61.447	(7/2)⁺	E1		0.395	α(L)=0.298; α(M)=0.0724; α(N+..)=0.0244
73.5# *1*	0.05# *3*	123.737	(7/2⁻)	50.093	3/2⁻	E2		41.7	α(L)=30.5; α(M)=8.26; α(N+..)=2.97
79.651 *13*	2.9×10^2 *4*	79.652	(5/2)⁻	0.0	3/2⁺	E1		0.205	α(L)=0.155; α(M)=0.0374; α(N+..)=0.0127
89.08# *10*	2.0# *1*	369.351	(5/2)⁻	280.19	(7/2⁺)				

γ(^{223}Ra) (continued)

E_γ[†]	I_γ[†@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ	α[&]	Comments
93.88[#] 5	2.2[#] 3	123.737	(7/2$^-$)	29.859	(5/2)$^+$	E1		0.132	α(L)=0.100; α(M)=0.0241; α(N+..)=0.00826
111.05[#] 3	0.18[#] 4	234.779	(5/2)$^+$	123.737	(7/2$^-$)				
134.59 5	17.7 6	369.351	(5/2)$^-$	234.779	(5/2)$^+$	[E1]		0.237	α(K)=0.186; α(L)=0.0388; α(M)=0.0093; α(N+..)=0.00321
[x]150.6[#] 4	0.10[#] 3								
155.5[#] 5	0.1[#]	234.779	(5/2)$^+$	79.652	(5/2)$^-$				
173.38 4	3.9 4	234.779	(5/2)$^+$	61.447	(7/2)$^+$	M1,E2		2.2 13	α(K)=1.5 13; α(L)=0.55 4; α(M)=0.141 18; α(N+..)=0.050 7
184.68 4	8.27 5	234.779	(5/2)$^+$	50.093	3/2$^-$	E1		0.110	α(K)=0.088; α(L)=0.0172; α(M)=0.00410; α(N+..)=0.00142
200.7[#] 2	0.10[#] 3	280.19	(7/2$^+$)	79.652	(5/2)$^-$				
204.90 4	32.6 11	234.779	(5/2)$^+$	29.859	(5/2)$^+$	M1+E2	−0.12 7	2.13 4	α(K)=1.71 4; α(L)=0.320 1; α(M)=0.0766; α(N+..)=0.0271
205.6[#] 2	0.22[#]	329.83	3/2$^-$	123.737	(7/2$^-$)	E2		0.540	α(K)=0.156; α(L)=0.281; α(M)=0.0759; α(N+..)=0.0272
210.60[#] 5	0.36[#] 2	334.30	5/2$^+$	123.737	(7/2$^-$)	E1		0.0805	α(K)=0.0642; α(L)=0.0123; α(M)=0.00294; α(N+..)=0.00102
218.80[#] 5	0.32[#] 2	280.19	(7/2$^+$)	61.447	(7/2)$^+$	M1		1.79	α(K)=1.44; α(L)=0.267; α(M)=0.0637; α(N+..)=0.0225
[x]222.9[#] 3	0.08[#] 2								
234.75 4	100 2	234.779	(5/2)$^+$	0.0	3/2$^+$	M1(+E2)	−0.07 2	1.47	α(K)=1.18; α(L)=0.219; α(M)=0.0522; α(N+..)=0.0184
236.05[#] 5	1.0[#] 2	286.07	1/2$^+$	50.093	3/2$^-$	E1		0.0615	α(K)=0.0492; α(L)=0.0093; α(M)=0.00222; α(N+..)=0.00077
245.60 5	0.96 20	369.351	(5/2)$^-$	123.737	(7/2$^-$)				
250.24[b] 5	0.58[b]	280.19	(7/2$^+$)	29.859	(5/2)$^+$	M1		1.23	α(K)=0.99; α(L)=0.183; α(M)=0.0437; α(N+..)=0.0154
250.24[b] 5	0.11[b]	329.83	3/2$^-$	79.652	(5/2)$^-$	M1+E2	−2.1 4	0.45 7	α(K)=0.27 7; α(L)=0.136 5; α(M)=0.0353 8; α(N+..)=0.0126 3
254.6[#] 2	0.21[#] 2	334.30	5/2$^+$	79.652	(5/2)$^-$	E1		0.0516	α(K)=0.0413; α(L)=0.00772; α(M)=0.00184; α(N+..)=0.00064
256.17 5	1.00 20	286.07	1/2$^+$	29.859	(5/2)$^+$	E2		0.254	α(K)=0.099; α(L)=0.114; α(M)=0.0304; α(N+..)=0.0109
262.9[#] 2	0.13[#] 3	342.51	3/2$^+$	79.652	(5/2)$^-$	E1		0.0479	α(K)=0.0384; α(L)=0.00715; α(M)=0.00170; α(N+..)=0.00059
[x]269.6[#] 3	0.03[#] 1								
272.8[#] 2	0.15[#] 2	334.30	5/2$^+$	61.447	(7/2)$^+$	M1+E2			
280.7[a#] 5	0.02[a#]	280.19	(7/2$^+$)	0.0	3/2$^+$				
280.7[a#] 5	0.02[a#]	342.51	3/2$^+$	61.447	(7/2)$^+$				
286.00 20	0.35 18	286.07	1/2$^+$	0.0	3/2$^+$	M1+E2			
[x]289.68[b#] 5	6.7[b#]								I_γ: $I\gamma$(289 doublet)=7.65 (20), weighted average from 1993Ab01, 1967Ma19, and 1982AlZL.
289.68[b#] 5	1.0[b#]	369.351	(5/2)$^-$	79.652	(5/2)$^-$				
[x]293.2[#] 2	0.14[#] 3								
296.5[#] 2	0.05[#] 1	376.10	(7/2)$^-$	79.652	(5/2)$^-$	M1+E2	−0.13 2	0.762 4	α(K)=0.612 3; α(L)=0.114; α(M)=0.0271 1; α(N+..)=0.0095
299.95 5	0.69 11	329.83	3/2$^-$	29.859	(5/2)$^+$	E1		0.0354	α(K)=0.0285; α(L)=0.00522; α(M)=0.00124; α(N+..)=0.00043

γ(^{223}Ra) (continued)

E_γ[†]	I_γ[†@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ	α[&]	Comments
304.40 5	0.50 18	334.30	5/2$^+$	29.859	(5/2)$^+$	M1+E2(+E0)	0.26 4		
307.78[b#] 14	<0.05[b#]	369.351	(5/2)$^-$	61.447	(7/2)$^+$				
307.78[b#] 14	0.45[b#] 5	593.58		286.07	1/2$^+$				I_γ: Iγ(308 doublet)=0.81 27, weighted average from 1967Ma19 and 1982AlZL.
312.65 5	0.56 10	342.51	3/2$^+$	29.859	(5/2)$^+$	M1+E2	0.16 3	0.654 6	α(K)=0.525 5; α(L)=0.098 1; α(M)=0.0233 1; α(N+..)=0.00820 4
314.6[#] 2	0.08[#] 2	376.10	(7/2)$^-$	61.447	(7/2)$^+$	E1		0.0318	α(K)=0.0256; α(L)=0.00467; α(M)=0.00111; α(N+..)=0.00039
319.260 22	16.3 5	369.351	(5/2)$^-$	50.093	3/2$^-$	M1+E2	0.18 3	0.615 6	α(K)=0.493 5; α(L)=0.092 1; α(M)=0.0219 1; α(N+..)=0.00772 4
329.80 5	0.90 5	329.83	3/2$^-$	0.0	3/2$^+$	(E1)		0.0286	α(K)=0.0231; α(L)=0.00418; α(M)=0.00099; α(N+..)=0.00035
334.30 6	0.38 9	334.30	5/2$^+$	0.0	3/2$^+$	M1+E2	−0.61 4	0.436 12	α(K)=0.342 11; α(L)=0.0708 11; α(M)=0.0172 2; α(N+..)=0.00606 8
339.50 5	2.24 20	369.351	(5/2)$^-$	29.859	(5/2)$^+$				
342.50 7	0.67 24	342.51	3/2$^+$	0.0	3/2$^+$	M1+E2	1.29 2	0.261 3	α(K)=0.191 3; α(L)=0.0520 3; α(M)=0.0130 1; α(N+..)=0.00461 2
350.5[#] 2	0.10[#] 5	350.53	1/2$^-$	0.0	3/2$^+$	E1		0.0250	α(K)=0.0202; α(L)=0.00363; α(M)=0.00086; α(N+..)=0.00030
369.38 6	3.30 20	369.351	(5/2)$^-$	0.0	3/2$^+$				
[x]382.3[#] 2	0.03[#] 1								
434.4[#] 1	0.08[#] 2	803.77	3/2,5/2	369.351	(5/2)$^-$				
439.6[#] 3	0.011[#] 3	782.54	1/2,3/2	342.51	3/2$^+$				
444.5[#] 3	0.04[#] 1	787.14	5/2	342.51	3/2$^+$				
452.9[a#] 2	0.03[a#]	782.54	1/2,3/2	329.83	3/2$^-$				
452.9[a#] 2	0.03[a#]	787.14	5/2	334.30	5/2$^+$				
457.5[#] 2	0.03[#]	787.14	5/2	329.83	3/2$^-$				
469.3[a#] 2	0.04[a#]	593.58		123.737	(7/2$^-$)				
469.3[a#] 2	0.04[a#]	803.77	3/2,5/2	334.30	5/2$^+$				
475.4[a#] 1	0.10[a#]	805.38	1/2,3/2,5/2	329.83	3/2$^-$				
475.4[a#] 1	0.11[a#]	825.94	(3/2$^+$)	350.53	1/2$^-$				
480.9[#] 3	0.05[#] 1	823.22	1/2,3/2,5/2$^+$	342.51	3/2$^+$				
493.4[#] 2	0.09[#] 2	823.22	1/2,3/2,5/2$^+$	329.83	3/2$^-$				
506.9[#] 2	0.08[#] 2	787.14	5/2	280.19	(7/2$^+$)				
516.7[#] 2	0.12[#] 2	846.41	5/2	329.83	3/2$^-$				
524.8[#] 2	0.16[#] 3	867.33	3/2,5/2$^+$	342.51	3/2$^+$				
533.1[#] 3	0.07[#] 6	867.33	3/2,5/2$^+$	334.30	5/2$^+$				
537.2[##] 2	0.12[##]	823.22	1/2,3/2,5/2$^+$	286.07	1/2$^+$				

$^{223}_{88}$Ra$_{135}$-5

$\gamma(^{223}$Ra) (continued)

E_γ[†]	I_γ[†@]	E_i(level)	J^π_i	E_f	J^π_f
537.2[##] 2	0.07[##]	867.33	$3/2,5/2^+$	329.83	$3/2^-$
539.8[#] 2	0.22[#] 5	825.94	$(3/2^+)$	286.07	$1/2^+$
545.4[#] 4	0.011[#] 3	825.94	$(3/2^+)$	280.19	$(7/2^+)$
552.3[#] 2	0.10[#] 2	787.14	5/2	234.779	$(5/2)^+$
556.3[#] 3	0.04[#] 1	842.25	$3/2^+,5/2$	286.07	$1/2^+$
568.94 11	1.83 20	803.77	3/2,5/2	234.779	$(5/2)^+$
576.1[#] 4	0.04[#] 1	905.9		329.83	$3/2^-$
581.3[#] 4	0.05[#] 1	867.33	$3/2,5/2^+$	286.07	$1/2^+$
592.3[#] 4	0.12[#] 3	926.56	3/2,5/2	334.30	$5/2^+$
596.9[#] 4	0.03[#] 1	926.56	3/2,5/2	329.83	$3/2^-$
600.7[#] 4	0.020[#] 5	943.27	3/2,5/2	342.51	$3/2^+$
607.6[#] 3	0.08[#] 2	842.25	$3/2^+,5/2$	234.779	$(5/2)^+$
613.6[#] 4	0.04[#] 1	943.27	3/2,5/2	329.83	$3/2^-$
632.7[#] 3	0.08[#] 2	867.33	$3/2,5/2^+$	234.779	$(5/2)^+$
663.7[#] 3	0.04[#] 1	787.14	5/2	123.737	$(7/2^-)$
671.9[#] 4	0.020[#] 5	957.73	$3/2^-,5/2^+$	286.07	$1/2^+$
^{x}682.3[#] 3	0.03[#] 1				
^{x}694.6[#] 3	0.03[#] 1				
708.3[#] 3	0.05[#] 1	787.14	5/2	79.652	$(5/2)^-$
723.1 4	1.45 20	846.41	5/2	123.737	$(7/2^-)$
724.15[#] 5	0.52[#] 8	803.77	3/2,5/2	79.652	$(5/2)^-$
737.4[#] 3	0.033[#] 8	787.14	5/2	50.093	$3/2^-$
742.4[#] 3	0.04[#] 1	803.77	3/2,5/2	61.447	$(7/2)^+$
746.30 5	0.73 8	825.94	$(3/2^+)$	79.652	$(5/2)^-$
753.65[#] 5	0.35[#] 5	803.77	3/2,5/2	50.093	$3/2^-$
757.20 5	0.34 6	787.14	5/2	29.859	$(5/2)^+$
762.6[#] 2	0.09[#] 2	842.25	$3/2^+,5/2$	79.652	$(5/2)^-$
765.8 9	0.81 8	846.41	5/2	79.652	$(5/2)^-$
775.83 5	15.4 15	825.94	$(3/2^+)$	50.093	$3/2^-$
780.8[#] 1	0.11[#] 3	842.25	$3/2^+,5/2$	61.447	$(7/2)^+$
784.93 5	0.51 19	846.41	5/2	61.447	$(7/2)^+$
787.6[b#] 2	<0.01[b#]	787.14	5/2	0.0	$3/2^+$
787.6[b#] 2	0.10[b#] 2	867.33	$3/2,5/2^+$	79.652	$(5/2)^-$
792.2 3	0.020 5	842.25	$3/2^+,5/2$	50.093	$3/2^-$
796.22 5	0.35 5	846.41	5/2	50.093	$3/2^-$
803.77 5	1.97 25	803.77	3/2,5/2	0.0	$3/2^+$
806.0[#] 2	0.05[#] 1	805.38	1/2,3/2,5/2	0.0	$3/2^+$
812.40[#] 6	0.69[#] 8	842.25	$3/2^+,5/2$	29.859	$(5/2)^+$
816.5[#] 2	0.05[#] 1	940.79	$3/2^-,5/2$	123.737	$(7/2^-)$
823.20 7	0.26 3	823.22	$1/2,3/2,5/2^+$	0.0	$3/2^+$
825.95 7	1.8 4	825.94	$(3/2^+)$	0.0	$3/2^+$
833.9[#] 2	0.05[#] 1	957.73	$3/2^-,5/2^+$	123.737	$(7/2^-)$
836.2 14	0.28 8	867.33	$3/2,5/2^+$	29.859	$(5/2)^+$
842.19 10	0.18 2	842.25	$3/2^+,5/2$	0.0	$3/2^+$
846.86[b#] 10	<0.2[b#]	846.41	5/2	0.0	$3/2^+$
846.86[b] 10	1.71[b] 23	926.56	3/2,5/2	79.652	$(5/2)^-$
863.60 10	0.120 20	943.27	3/2,5/2	79.652	$(5/2)^-$
867.4[#] 1	0.06[#] 1	867.33	$3/2,5/2^+$	0.0	$3/2^+$
876.50 10	1.36 20	926.56	3/2,5/2	50.093	$3/2^-$
878.1[#] 2	0.12[#] 2	957.73	$3/2^-,5/2^+$	79.652	$(5/2)^-$
893.10 20	0.093 20	943.27	3/2,5/2	50.093	$3/2^-$
896.71 20	0.51 5	926.56	3/2,5/2	29.859	$(5/2)^+$
907.61 20	0.47 7	957.73	$3/2^-,5/2^+$	50.093	$3/2^-$
911.3[#] 2	0.03[#] 1	940.79	$3/2^-,5/2$	29.859	$(5/2)^+$
913.6[#] 3	0.015[#] 5	943.27	3/2,5/2	29.859	$(5/2)^+$
926.5[#] 3	0.06[#] 1	926.56	3/2,5/2	0.0	$3/2^+$
941.2[#] 3	0.11[#] 2	940.79	$3/2^-,5/2$	0.0	$3/2^+$
949.3[#] 4	0.012[#] 3	1028.94		79.652	$(5/2)^-$
958.0[#] 7	0.013[#] 3	957.73	$3/2^-,5/2^+$	0.0	$3/2^+$
969.2[#] 4	0.012[#] 3	1019.3		50.093	$3/2^-$
975.2[#] 5	0.006[#] 2	1024.60		50.093	$3/2^-$
978.7[#] 4	0.025[#] 5	1028.94		50.093	$3/2^-$
989.4[#] 5	0.005[#] 1	1019.3		29.859	$(5/2)^+$
994.3[#] 3	0.004[#] 1	1024.60		29.859	$(5/2)^+$
999.3[#] 5	0.007[#] 2	1028.94		29.859	$(5/2)^+$
1025.1[#] 5	0.005[#] 1	1024.60		0.0	$3/2^+$

[†] Weighted average (LWM) from 1993Ab01, 1967Ma19, and 1982AlZL, unless otherwise specified. Other: 1964Yt01.

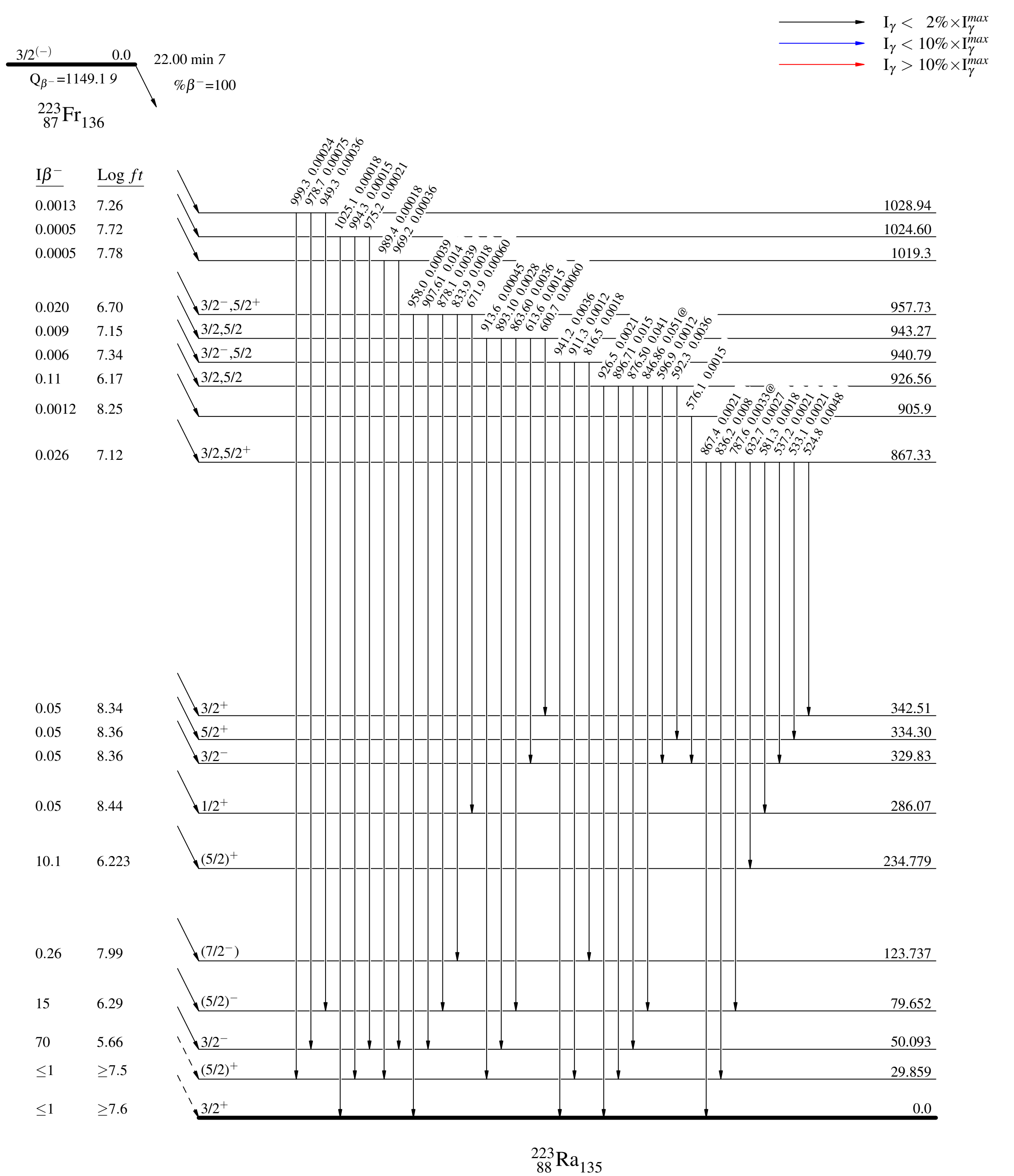
γ(^{223}Ra) (continued)

‡ From adopted gammas.
# Observed by 1993Ab01 only.
@ For absolute intensity per 100 decays, multiply by 0.030 *6*.
& 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.
[a] Multiply placed with undivided intensity.
[b] Multiply placed with intensity suitably divided.
[x] γ ray not placed in level scheme.

^{223}Fr β^- decay 1993Ab01,1967Ma19,1982AlZL

Decay Scheme

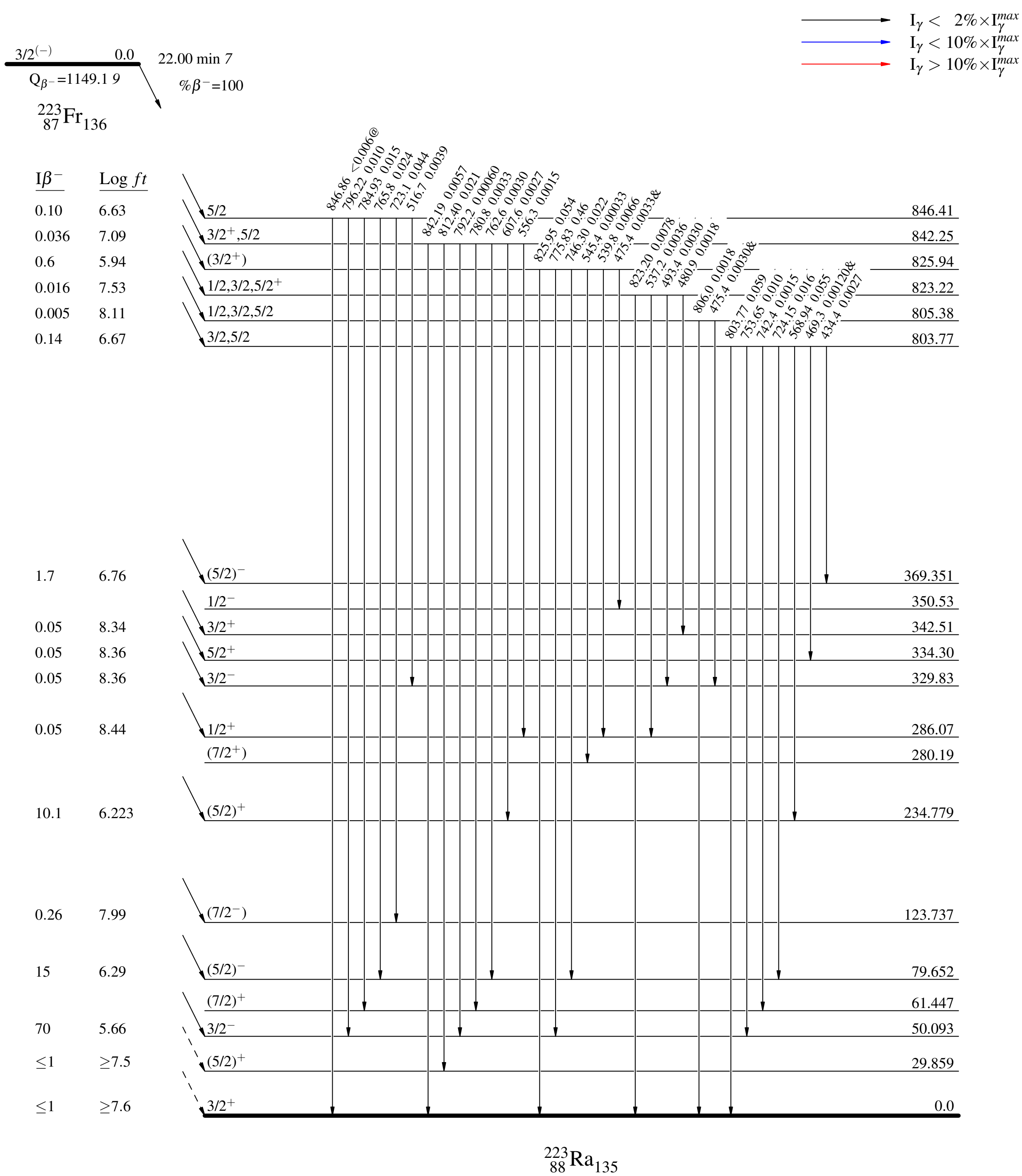
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
@ Multiply placed: intensity suitably divided



^{223}Fr β^- decay 1993Ab01,1967Ma19,1982AlZL

Decay Scheme (continued)

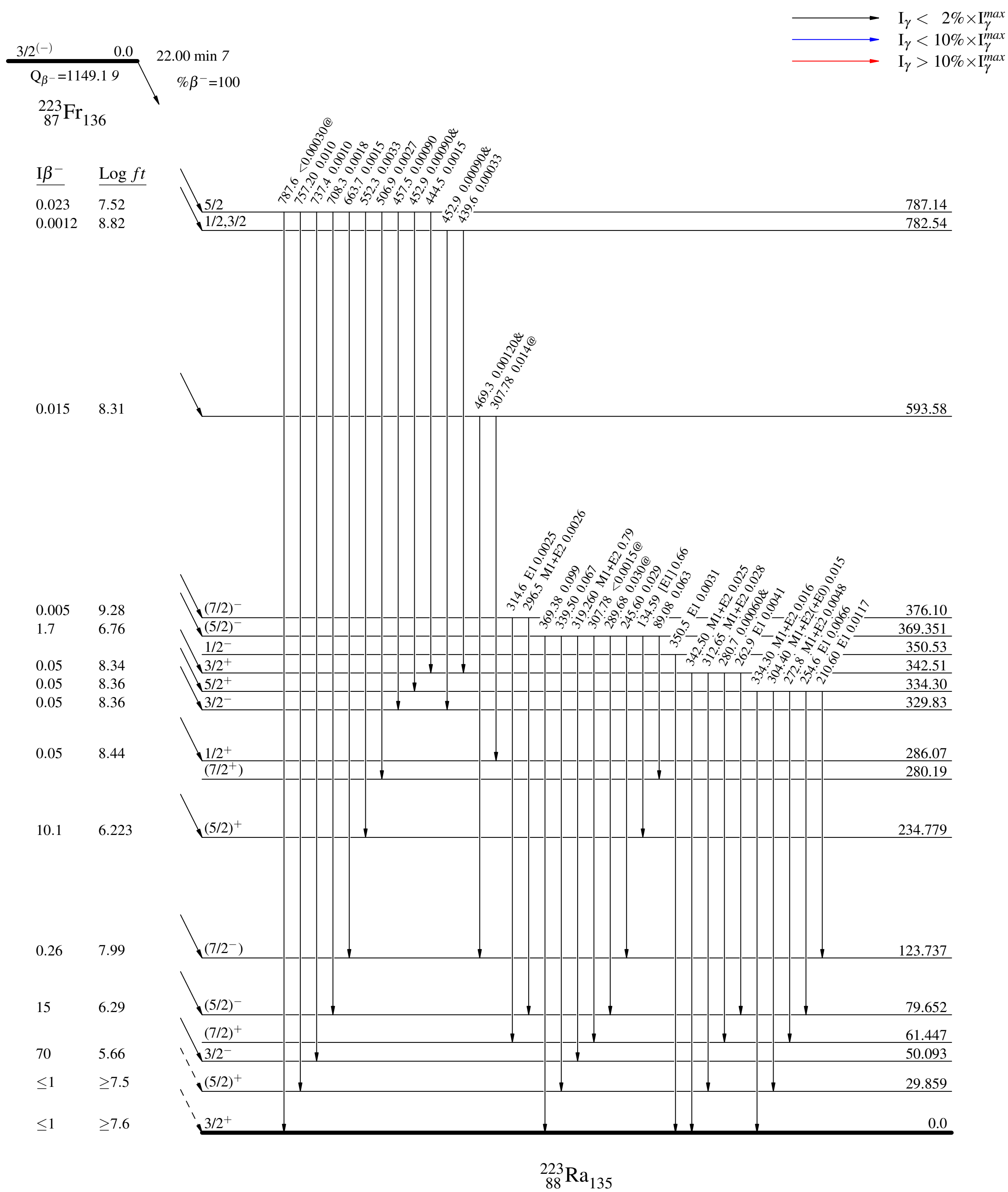
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided



^{223}Fr β^- decay 1993Ab01,1967Ma19,1982AlZL

Decay Scheme (continued)

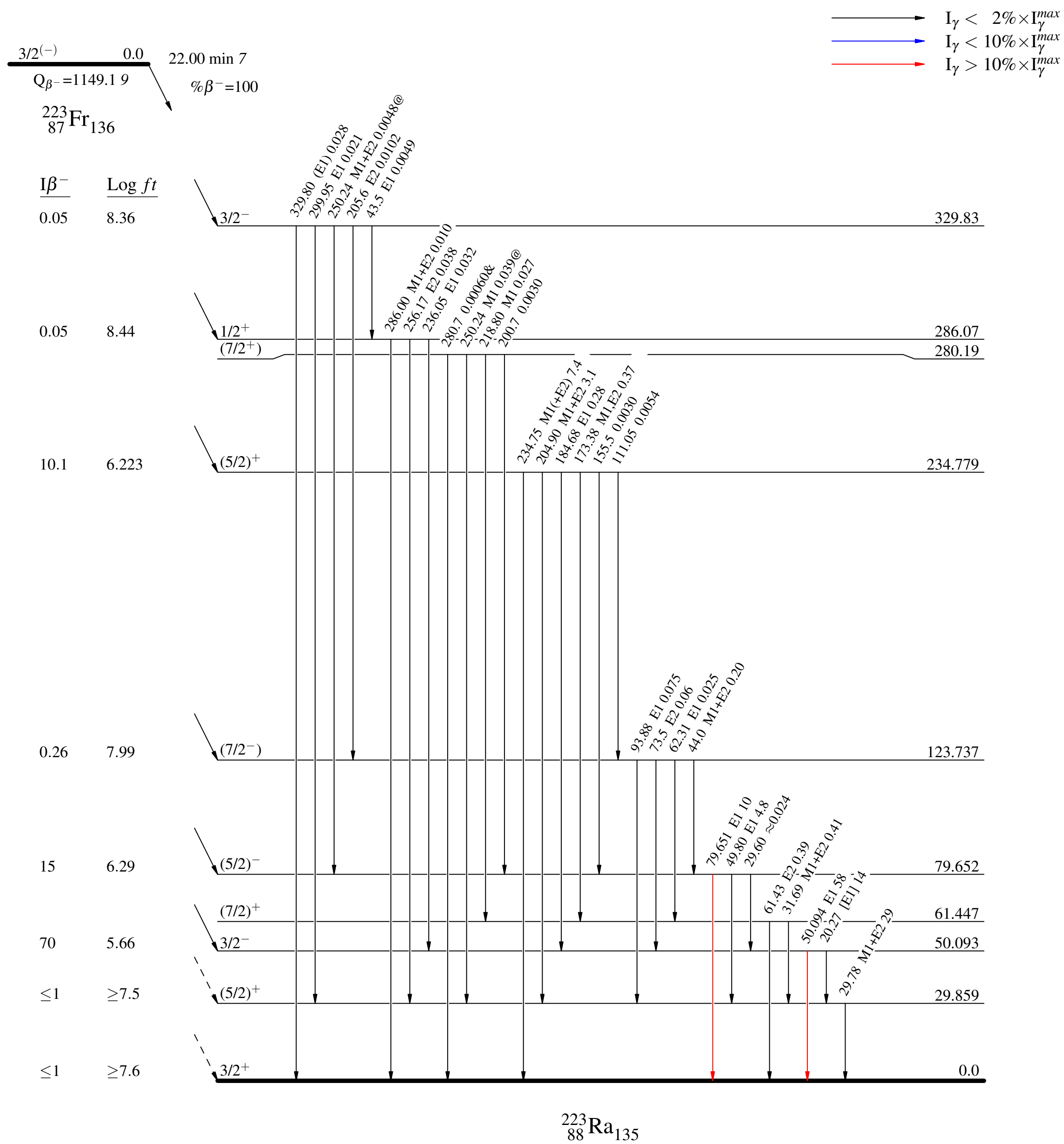
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

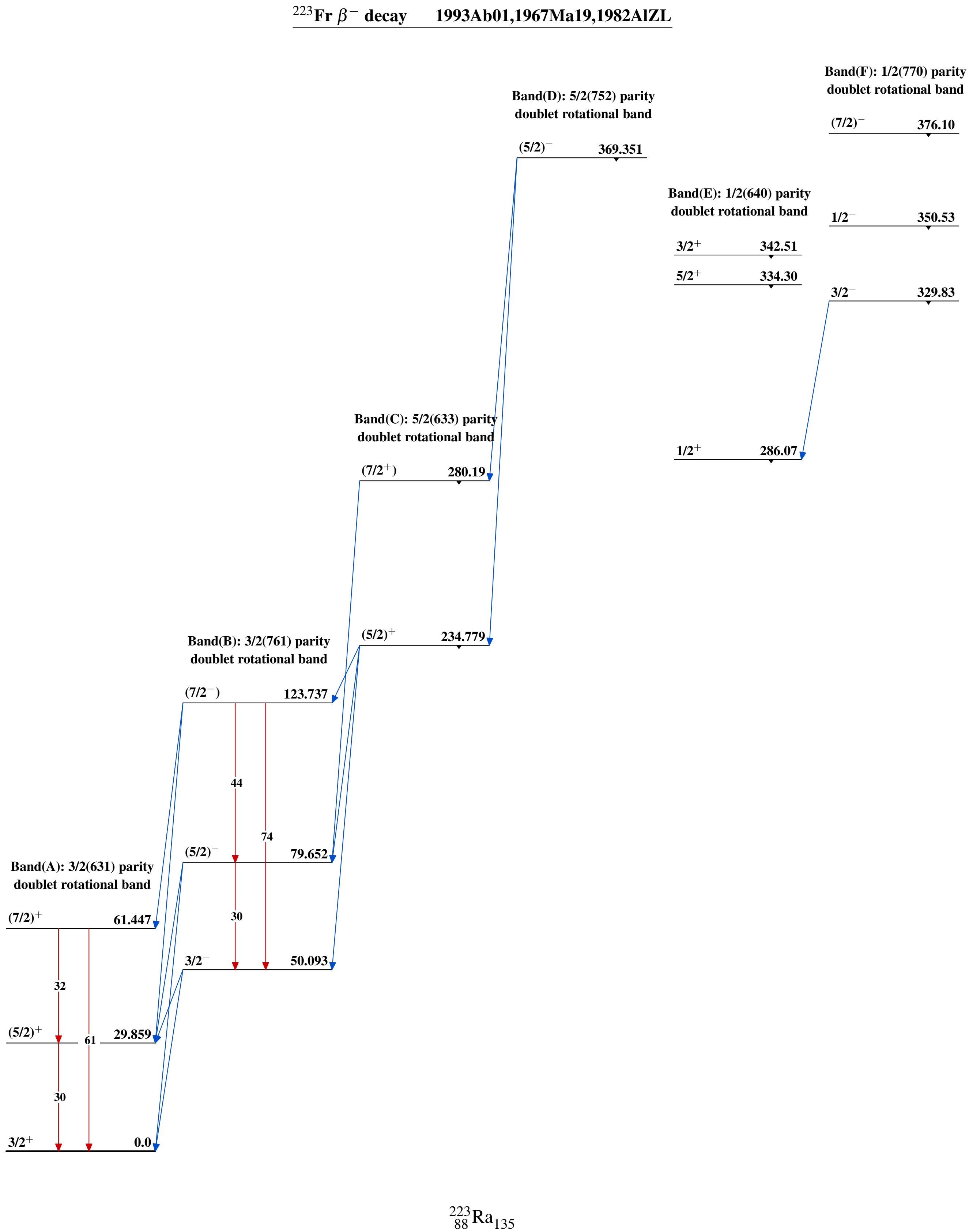


^{223}Fr β^- decay 1993Ab01,1967Ma19,1982AlZL

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided




^{223}Fr β^- decay 1993Ab01,1967Ma19,1982AlZL
Band(F): 1/2(770) parity doublet rotational band
Band(D): 5/2(752) parity doublet rotational band
(7/2)$^-$ 376.10
(5/2)$^-$ 369.351
Band(E): 1/2(640) parity doublet rotational band
1/2$^-$ 350.53
3/2$^+$ 342.51
5/2$^+$ 334.30
3/2$^-$ 329.83
Band(C): 5/2(633) parity doublet rotational band
1/2$^+$ 286.07
(7/2$^+$) 280.19
(5/2)$^+$ 234.779
Band(B): 3/2(761) parity doublet rotational band
(7/2$^-$) 123.737
44
74
(5/2)$^-$ 79.652
Band(A): 3/2(631) parity doublet rotational band
(7/2)$^+$ 61.447
30
3/2$^-$ 50.093
32
(5/2)$^+$ 29.859
61
30
3/2$^+$ 0.0
$^{223}_{88}$Ra$_{135}$