Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	K. Auranen and E. A. Mccutchan	NDS 168, 117 (2020)	1-Aug-2020

Q(β^-)=−3317 *14*; S(n)=7447 *15*; S(p)=2050 *11*; Q(α)=6529.0 *16* 2017Wa10
S(2n)=16325 *18*; S(2p)=6122 *12*; Q(εp)=842 *9* (2017Wa10).
Hyperfine structure. Optical laser spectroscopy: 1990Ar25.
Hyperfine structure. Laser trap: 2002Sp04, 2002Sp02, 2000Gr20, 1999Gr15.
Isotope shift : 2014Co18.
Mass measurement : 2019An10.
α: Additional information 1.

^{212}Fr Levels

Cross Reference (XREF) Flags

A ^{216}Ac α decay (440 μs)
B ^{198}Pt(^{19}F,5nγ), ^{205}Tl(^{12}C,5nγ)

E(level)†	Jπ‡	$T_{1/2}$#	XREF	Comments
0.0	5^+	20.0 min *6*	AB	%ε+%β^+=57 *2*; %α=43 *2* (1950Hy27) Q=−0.10 *1* (1985Co24) μ=4.62 *9* (1985Co24); configuration=π ($h^{+5}_{9/2}$) Configuration=($\pi h^{+5}_{9/2}$)($\nu p^{-1}_{1/2}$) Jπ: J from atomic beam (1978Ek02), π from shell-model configuration and μ. $T_{1/2}$: weighted average of 19.3 min *5* (1950Hy27) and 20.6 min *3* (1981Va27). %α,%ε+%β^+: from 1950Hy27 based on (ε+β^+)/α=1.3 *1* determined from growth and decay of daughter nuclide (^{212}Rn) α activity. μ,Q: from atomic beam laser spectroscopy (1985Co24,2016St14).
82.47 *5*	(4^+)		A	Jπ: analogy with ^{214}Fr(α) to ^{210}At and ^{212}At(α) to ^{208}Bi.
500.71 *7*			A	
536.34 *8*			A	
542.10 *10*	7^+	<0.4 ns	AB	Configuration=($\pi h^{+5}_{9/2}$)($\nu f^{-1}_{5/2}$) Jπ: E2 542γ to 5^+ g.s.
574.88 *11*			A	
606.22 *7*			A	
610.60 *20*			A	
777.29 *9*			A	
853.72 *7*	(4^+,5^+,6^+)		A	Jπ: (M1) 854γ to 5^+ g.s.
937.26 *10*	(4^+,5^+,6^+)		A	Jπ: (M1) 937γ to 5^+ g.s.
1008.7 *4*			A	
1129.9 *4*			A	
1209.5 *5*			A	
1239.9 *4*			A	
1287.1 *8*			A	
1356.0 *20*			A	
1375.22 *22*			A	
1389.30 *22*	9^+	<2 ns	B	Configuration=($\pi h^{+5}_{9/2}$)($\nu p^{-1}_{1/2}$) Jπ: E2 847γ to 7^+ level.
1551.30 *24*	11^+	31.9 μs *7*	B	μ=9.89 *4* (1977Be56) Configuration=($\pi h^{+5}_{9/2}$)($\nu p^{-1}_{1/2}$); g=0.899 *4* (1977Be56) Jπ: E2 162γ to 9^+ level. μ: from Stroboscopic Observation of Perturbed Angular Distribution (1977Be56).
1879.7 *3*	12^+	<2 ns	B	Configuration=($\pi(h^{+4}_{9/2}(\pi f^{1}_{7/2})$)($\nu p^{-1}_{1/2}$) Jπ: M1 328$\gamma$ to 11^+ level.
2337.6 *4*	(13^+)	<2 ns	B	Jπ: (M1+E2) 458γ to 12^+ level.

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Adopted Levels, Gammas (continued)

^{212}Fr Levels (continued)

E(level)†	Jπ‡	$T_{1/2}$#	XREF	Comments
2492.1 *3*	15^-	603 ns *28*	B	Q=(−)0.84 (1990By03); μ=15.64 *12* (1989By01) Configuration=$(\pi h^{+4}_{9/2})(\pi i_{13/2}{=}1)(\nu p^{-1}_{1/2})$ Jπ: E3 612γ to 12^+ level. μ: from Time Dependent Perturbed Angular Distribution (1989By01). Q: from Time Dependent Perturbed Angular Distribution (1990By03,2016St14). Other value: −0.80 *12*, Level Mixing Spectroscopy (1991Ha02). Other: 1990Ha30.
2495.7 *4*	(14^-)	<2 ns	B	Jπ: 468γ from 16^-, D 158γ to (13^+).
2612.4 *4*	(14^+)	<1.4 ns	B	Configuration=$(\pi h^{+4}_{9/2})(\pi f^{1}_{7/2})(\nu f^{-1}_{5/2})$ Jπ: (Q) 733γ to 12^+ level; D γ to (13^+) level.
2951.6 *4*	(16^+)	<2 ns	B	Configuration=$(\pi h^{+4}_{9/2})(\pi f^{1}_{7/2})(\nu p^{-1}_{1/2})$ Jπ: (E1) 459.5γ to 15^- level.
2964.0 *3*	16^-	<1.4 ns	B	Configuration=$(\pi h^{+4}_{9/2})(\pi i^{1}_{13/2})(\nu f^{-1}_{5/2})$ Jπ: M1 472γ to 15^- level.
3240.9 *3*	17^-	<1.4 ns	B	Configuration=$(\pi(h^{+4}_{9/2})(\pi i^{1}_{13/2})(\nu(f^{-1}_{5/2}) + (\pi(h^{+4}_{9/2})(\pi i^{1}_{13/2})(\nu(p^{-1}_{1/2})$. Jπ: M1 277γ to 16^- level; E2 749γ to 15^- level.
3256.2? *5*		<1.4 ns	B	
3583.5 *4*	19^-	<1.4 ns	B	Configuration=$(\pi h^{+4}_{9/2})(\pi i^{1}_{13/2})(\nu(p^{-1}_{1/2})$ Jπ: E2 343γ to 17^- level.
3750.8 *5*		<1.4 ns	B	
4025.5 *4*	20^-	<2 ns	B	Configuration=$(\pi h^{+4}_{9/2})(\pi i^{1}_{13/2})(\nu(f^{-1}_{5/2})$ Jπ: M1 442γ to 19^- level.
4081.8? *6*		<1.4 ns	B	
4137.2 *4*	20^-	<2 ns	B	Configuration=$(\pi h^{+3}_{9/2})(\pi i^{1}_{13/2})(\pi f^{1}_{7/2})(\nu(p^{-1}_{1/2})$ Jπ: M1 554γ to 19^- level.
4447.1 *6*		<1.4 ns	B	
4499.1 *5*		<2 ns	B	
4546.9 *4*	21^-	<2 ns	B	Configuration=$(\pi h^{+4}_{9/2})(\pi i^{1}_{13/2})(\nu(f^{-1}_{5/2})$ + $(\pi(h^{+3}_{9/2})(\pi i^{1}_{13/2})(\pi f^{1}_{7/2})(\nu(p^{-1}_{1/2})$. Jπ: M1 γ's to 20^- levels.
4632.1 *6*			B	
4634.1 *6*			B	
4765.0? *5*			B	
4834.2 *4*	22^+	4.23 ns *35*	B	μ=22 *4* (1986By01) Configuration=$(\pi h^{+3}_{9/2})(\pi i^{+2}_{13/2})(\nu(p^{-1}_{1/2})$ Jπ: E1 287γ to 21^- level. μ: from Time Dependent Perturbed Angular Distributions (1986By01).
4907.7 *6*			B	
5056.0 *5*	(23^+)	<2.4 ns	B	Jπ: (M1) 222γ to 22^+ level.
5161.1 *6*			B	
5266.2 *5*	(24^+)	<2 ns	B	Jπ: M1+E2 210γ to (23^+) level.
5803.1 *6*	(25^+)	<2 ns	B	Jπ: M1+E2 537γ to (24^+) level.
5854.5 *6*	(27^-)	312 ns *21*	B	Q=(−)1.7 (1990By03); μ=21.9 *3* (1986By01) Configuration=$(\pi h^{+3}_{9/2})(\pi i^{+2}_{13/2})(\nu p_{1/2\ 2})(\nu g_{9/2\ 1})$ Jπ: E3 588γ to (24^+) level. μ: from Time Dependent Perturbed Angular Distributions (1986By01). Q: from Time Dependent Perturbed Angular Distributions (1990By03,2016St4). Other value: −1.5 *3*, Level Mixing Spectroscopy (1991Ha02). Other: 1990Ha30.
6055.5 *6*	(28)		B	Jπ: D 201γ to (27^-) level.
6344.7 *6*	(28^-)	<1.4 ns	B	Jπ: M1 490γ to (27^-) level.
6671.0 *8*			B	
6976.8 *6*	(29)	<1.4 ns	B	Jπ: (M1+E2) 921.5γ to (28) level.
7053.9 *8*			B	
7253.7 *9*			B	
7660.6 *7*	(29^+)	<2 ns	B	Jπ: E1 1316γ to (28^-) level.
8255.6 *7*			B	
8406.9 *11*			B	

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Adopted Levels, Gammas (continued)

^{212}Fr Levels (continued)

E(level)†	$T_{1/2}$#	XREF	Comments
8533.2 *11*	23.6 μs *21*	B	J^{π}: 1990By02 suggest $J^{\pi}=34^{+}$ for this level. E(level): search for fission from this high-spin isomeric level was performed in 1997Wa36.

† From a least-squares fit to Eγ data. For γ rays given without uncertainty, 1 keV uncertainty has been assumed for the calculation.
‡ For excited levels, based on measured multipolarities of transitions. For states populated in ^{198}Pt(^{19}F,5nγ),^{205}Tl(^{12}C,5nγ) there is an assumption of increasing spin with increasing excitation energy.
# All values for excited levels are from ^{198}Pt(^{19}F,5nγ), ^{205}Tl(^{12}C,5nγ).

Adopted Levels, Gammas (continued)

$\gamma(^{212}Fr)$

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α	Comments
82.47	(4^+)	82.6[@] *1*	100[@]	0.0	5^+			
500.71		418.3[@] *1*	100[@] *6*	82.47	(4^+)			
		500.7[@] *1*	53[@] *4*	0.0	5^+			
536.34		453.9[@] *1*	9[@] *1*	82.47	(4^+)			
		536.3[@] *1*	100[@] *6*	0.0	5^+			
542.10	7^+	542.2 *1*	100	0.0	5^+	E2	0.0305	α(K)=0.0208 *3*; α(L)=0.00725 *11*; α(M)=0.00184 *3*; α(N)=0.000483 *7*; α(O)=0.0001040 *15* α(P)=1.515×10^{-5} *22*; α(Q)=4.69×10^{-7} *7* B(E2)(W.u.)>0.39
574.88		492.4[@&] *1*	100[@] *4*	82.47	(4^+)			
		575.0[@&] *4*	1.3[@] *4*	0.0	5^+			
606.22		105.8[@] *2*	11[@] *3*	500.71				
		523.7[@] *1*	100[@] *7*	82.47	(4^+)			
		606.2[@] *1*	60[@] *7*	0.0	5^+			
610.60		610.6[@] *2*	100[@]	0.0	5^+			
777.29		276.6[@] *2*	1.3[@] *6*	500.71				
		694.8[@] *1*	100[@] *5*	82.47	(4^+)			
		777.3[@] *2*	14[@] *2*	0.0	5^+			
853.72	$(4^+,5^+,6^+)$	352.9[@] *2*	1.2[@] *5*	500.71				
		771.3[@] *1*	77[@] *4*	82.47	(4^+)			
		853.7[@] *1*	100[@] *4*	0.0	5^+	(M1)	0.0397	α(K)exp=0.06 *6* α(K)=0.0322 *5*; α(L)=0.00569 *8*; α(M)=0.001348 *19*; α(N)=0.000353 *5*; α(O)=7.90×10^{-5} *11* α(P)=1.269×10^{-5} *18*; α(Q)=7.13×10^{-7} *10* Mult.: from α(K) in ^{216}Ac α decay (440 μs).
937.26	$(4^+,5^+,6^+)$	855.8[@] *7*	≤5[@]	82.47	(4^+)			
		937.2[@] *1*	100[@] *2*	0.0	5^+	(M1)	0.0311	α(K)exp=0.027 *17* α(K)=0.0253 *4*; α(L)=0.00445 *7*; α(M)=0.001054 *15*; α(N)=0.000276 *4*; α(O)=6.18×10^{-5} *9* α(P)=9.93×10^{-6} *14*; α(Q)=5.58×10^{-7} *8* Mult.: from α(K) in ^{216}Ac α decay (440 μs).
1008.7		1008.7[@] *4*	100[@]	0.0	5^+			
1129.9		1047.5[@] *9*	85[@] *50*	82.47	(4^+)			
		1129.9[@] *5*	100[@] *40*	0.0	5^+			
1209.5		1209.5[@] *5*	100[@]	0.0	5^+			
1239.9		1239.9[@] *4*	100[@]	0.0	5^+			

$^{212}_{87}Fr_{125}$-4

Adopted Levels, Gammas (continued)

$\gamma(^{212}Fr)$ (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult. ‡	α	Comments
1287.1		1287.1@ *8*	100@	0.0	5^+			
1356.0		1356@ *2*	100@	0.0	5^+			
1375.22		436.8@ *6*	17@ *6*	937.26	$(4^+,5^+,6^+)$			
		1293.1@ *4*	45@ *17*	82.47	(4^+)			
		1375.3@ *3*	100@ *20*	0.0	5^+			
1389.30	9^+	847.2 *2*	100	542.10	7^+	E2	0.01182	α(K)=0.00898 *13*; α(L)=0.00214 *3*; α(M)=0.000526 *8*; α(N)=0.0001378 *20*; α(O)=3.02×10^{-5} *5* α(P)=4.59×10^{-6} *7*; α(Q)=1.94×10^{-7} *3* B(E2)(W.u.)>0.0085
1551.30	11^+	162.0 *1*	100	1389.30	9^+	E2	1.214	α(K)=0.241 *4*; α(L)=0.717 *11*; α(M)=0.193 *3*; α(N)=0.0507 *8*; α(O)=0.01056 *15* α(P)=0.001385 *20*; α(Q)=7.62×10^{-6} *11* B(E2)(W.u.)=0.000956 *23*
1879.7	12^+	328.4 *2*	100	1551.30	11^+	M1	0.508	α(K)=0.410 *6*; α(L)=0.0742 *11*; α(M)=0.01765 *25*; α(N)=0.00463 *7*; α(O)=0.001035 *15* α(P)=0.0001660 *24*; α(Q)=9.27×10^{-6} *13* B(M1)(W.u.)>0.00021
2337.6	(13^+)	457.9 *2*	100	1879.7	12^+	(M1+E2)	0.126 *81*	α(K)=0.098 *69*; α(L)=0.0212 *89*; α(M)=0.0051 *20*; α(N)=0.00135 *52*; α(O)=3.0×10^{-4} *12* α(P)=4.6×10^{-5} *21*; α(Q)=2.2×10^{-6} *16*
2492.1	15^-	612.4 *1*	100	1879.7	12^+	E3	0.0711	α(K)=0.0396 *6*; α(L)=0.0233 *4*; α(M)=0.00615 *9*; α(N)=0.001620 *23*; α(O)=0.000347 *5* α(P)=4.98×10^{-5} *7*; α(Q)=1.218×10^{-6} *17* B(E3)(W.u.)=21.8 *11*
2495.7	(14^-)	158.0 *3*	100	2337.6	(13^+)	(E1)	0.1558	α(K)=0.1235 *19*; α(L)=0.0245 *4*; α(M)=0.00586 *9*; α(N)=0.001517 *23*; α(O)=0.000328 *5* α(P)=4.83×10^{-5} *8*; α(Q)=1.98×10^{-6} *3* B(E1)(W.u.)>2.1×10^{-5} Mult.: D from $\gamma(\theta)$ in ^{198}Pt(^{19}F,5nγ),^{205}Tl(^{12}C,5nγ), $\Delta\pi$=yes from level scheme.
2612.4	(14^+)	275.0 *3*	100 *2*	2337.6	(13^+)	D		
		732.6 *3*	98 *4*	1879.7	12^+	(Q)		
2951.6	(16^+)	339.3 *3*	100 *1*	2612.4	(14^+)	[E2]	0.1010	α(K)=0.0539 *8*; α(L)=0.0349 *5*; α(M)=0.00916 *14*; α(N)=0.00240 *4*; α(O)=0.000509 *8* α(P)=7.05×10^{-5} *11*; α(Q)=1.280×10^{-6} *19* B(E2)(W.u.)>0.45 Mult.: from J_i^π and J_f^π.
		459.5 *2*	73 *2*	2492.1	15^-	(E1)	0.01355	α(K)=0.01106 *16*; α(L)=0.00190 *3*; α(M)=0.000448 *7*; α(N)=0.0001167 *17*; α(O)=2.57×10^{-5} *4* α(P)=4.00×10^{-6} *6*; α(Q)=2.00×10^{-7} *3* B(E1)(W.u.)>3.9×10^{-7}

$^{212}_{87}Fr_{125}$-5

Adopted Levels, Gammas (continued)

$\gamma(^{212}Fr)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[#]	α	Comments
2964.0	16^-	468.0 *5*	6.8 *5*	2495.7	(14^-)	[E2]			B(E2)(W.u.)>0.012 ?
		471.9 *1*	100 *1*	2492.1	15^-	M1		0.190	α(K)=0.1541 *22*; α(L)=0.0276 *4*; α(M)=0.00656 *10*; α(N)=0.001720 *25*; α(O)=0.000385 *6* α(P)=6.17×10^{-5} *9*; α(Q)=3.45×10^{-6} *5* B(M1)(W.u.)>0.00012
3240.9	17^-	277.0 *1*	53.0 *8*	2964.0	16^-	M1		0.811	α(K)=0.654 *10*; α(L)=0.1188 *17*; α(M)=0.0283 *4*; α(N)=0.00741 *11*; α(O)=0.001657 *24* α(P)=0.000266 *4*; α(Q)=1.483×10^{-5} *21* B(M1)(W.u.)>0.00019
		289.3 *2*	11.0 *4*	2951.6	(16^+)	E1		0.0371	α(K)=0.0300 *5*; α(L)=0.00543 *8*; α(M)=0.001290 *19*; α(N)=0.000335 *5*; α(O)=7.34×10^{-5} *11* α(P)=1.119×10^{-5} *16*; α(Q)=5.19×10^{-7} *8* B(E1)(W.u.)>2.9×10^{-7} Mult.: D from $\gamma(\theta)$ in ^{198}Pt(^{19}F,5nγ),^{205}Tl(^{12}C,5nγ); $\Delta\pi$=yes from level scheme.
		748.8 *1*	100.0 *17*	2492.1	15^-	E2		0.01517	α(K)=0.01128 *16*; α(L)=0.00293 *4*; α(M)=0.000726 *11*; α(N)=0.000190 *3*; α(O)=4.15×10^{-5} *6* α(P)=6.24×10^{-6} *9*; α(Q)=2.46×10^{-7} *4* B(E2)(W.u.)>0.011
3256.2?		304.5 *3*	100	2951.6	(16^+)				
3583.5	19^-	342.6 *2*	100	3240.9	17^-	E2		0.0982	α(K)=0.0528 *8*; α(L)=0.0337 *5*; α(M)=0.00884 *13*; α(N)=0.00232 *4*; α(O)=0.000491 *7* α(P)=6.81×10^{-5} *10*; α(Q)=1.253×10^{-6} *18* B(E2)(W.u.)>1.0
3750.8		494.6 *2*	100	3256.2?		M1+E2	0.7 *5*	0.125 *38*	α(K)=0.099 *33*; α(L)=0.020 *5*; α(M)=0.0047 *10*; α(N)=0.0012 *3*; α(O)=0.00027 *6* α(P)=4.3×10^{-5} *10*; α(Q)=2.23×10^{-6} *72* B(M1)(W.u.)>4.6×10^{-5}; B(E2)(W.u.)>0.006
4025.5	20^-	442.0 *2*	100	3583.5	19^-	M1		0.227	α(K)=0.184 *3*; α(L)=0.0330 *5*; α(M)=0.00784 *11*; α(N)=0.00205 *3*; α(O)=0.000459 *7* α(P)=7.37×10^{-5} *11*; α(Q)=4.12×10^{-6} *6* B(M1)(W.u.)>0.00010
4081.8?		331.0 *3*	100	3750.8					
4137.2	20^-	111[&]		4025.5	20^-				
		553.7 *2*		3583.5	19^-	M1		0.1243	α(K)=0.1006 *15*; α(L)=0.0180 *3*; α(M)=0.00427 *6*; α(N)=0.001118 *16*; α(O)=0.000250 *4* α(P)=4.01×10^{-5} *6*; α(Q)=2.25×10^{-6} *4* B(M1)(W.u.)>5.8×10^{-5}
4447.1		365.3 *2*	100	4081.8?					
4499.1		361.9 *3*	100	4137.2	20^-				
4546.9	21^-	409.6 *1*	76 *1*	4137.2	20^-	M1		0.279	α(K)=0.225 *4*; α(L)=0.0405 *6*; α(M)=0.00964 *14*; α(N)=0.00253 *4*; α(O)=0.000565 *8*

$^{212}_{87}Fr_{125}$-6

Adopted Levels, Gammas (continued)

γ(^{212}Fr) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[#]	α	Comments
									α(P)=9.07×10^{-5} *13*; α(Q)=5.07×10^{-6} *7* B(M1)(W.u.)>5.7×10^{-5}
4546.9	21$^-$	521.4 *2*	100 *2*	4025.5	20$^-$	M1		0.1458	α(K)=0.1181 *17*; α(L)=0.0211 *3*; α(M)=0.00502 *7*; α(N)=0.001315 *19*; α(O)=0.000294 *5* α(P)=4.72×10^{-5} *7*; α(Q)=2.64×10^{-6} *4* B(M1)(W.u.)>3.7×10^{-5}
4632.1		881.3[&] *3*	100	3750.8					
4634.1		883.3[&] *3*	100	3750.8					
4765.0?		217.8[&] *5*		4546.9	21$^-$				
		739.6 *3*		4025.5	20$^-$				
4834.2	22$^+$	287.3 *1*	100	4546.9	21$^-$	E1		0.0377	α(K)=0.0305 *5*; α(L)=0.00552 *8*; α(M)=0.001312 *19*; α(N)=0.000341 *5*; α(O)=7.46×10^{-5} *11* α(P)=1.138×10^{-5} *16*; α(Q)=5.27×10^{-7} *8* B(E1)(W.u.)=1.83×10^{-6} *16*
4907.7		273.6[&] *3*	100	4634.1					
5056.0	(23$^+$)	(148)		4907.7					
		221.9 *3*		4834.2	22$^+$	(M1)		1.500	α(K)=1.210 *18*; α(L)=0.220 *4*; α(M)=0.0525 *8*; α(N)=0.01377 *20*; α(O)=0.00308 *5* α(P)=0.000494 *8*; α(Q)=2.75×10^{-5} *4*
5161.1		529.0[&] *3*	100	4632.1					
5266.2	(24$^+$)	210.2 *1*	100	5056.0	(23$^+$)	M1+E2	1.3 *+6−4*	0.94 *24*	α(K)=0.62 *23*; α(L)=0.242 *6*; α(M)=0.0619 *9*; α(N)=0.01624 *24*; α(O)=0.00348 *6* α(P)=0.000500 *23*; α(Q)=1.44×10^{-5} *51* B(M1)(W.u.)>1.2×10^{-4}; B(E2)(W.u.)>1.9
5803.1	(25$^+$)	536.9 *2*	100	5266.2	(24$^+$)	M1+E2	1.1 *+19−6*	0.078 *37*	α(K)=0.061 *31*; α(L)=0.0129 *43*; α(M)=0.00314 *97*; α(N)=8.2×10^{-4} *26*; α(O)=1.82×10^{-4} *58* α(P)=2.83×10^{-5} *99*; α(Q)=1.37×10^{-6} *70* B(M1)(W.u.)>6.4×10^{-6}; B(E2)(W.u.)>0.015
5854.5	(27$^-$)	588.3 *2*	100	5266.2	(24$^+$)	E3		0.0798	α(K)=0.0431 *6*; α(L)=0.0272 *4*; α(M)=0.00718 *11*; α(N)=0.00189 *3*; α(O)=0.000405 *6* α(P)=5.78×10^{-5} *9*; α(Q)=1.353×10^{-6} *19* B(E3)(W.u.)=55 *4*
6055.5	(28)	201.2 *3*	100	5854.5	(27$^-$)	D			
6344.7	(28$^-$)	490.1 *2*	100	5854.5	(27$^-$)	M1		0.1721	α(K)=0.1392 *20*; α(L)=0.0249 *4*; α(M)=0.00593 *9*; α(N)=0.001553 *22*; α(O)=0.000347 *5* α(P)=5.57×10^{-5} *8*; α(Q)=3.12×10^{-6} *5* B(M1)(W.u.)>0.00011
6671.0		326	100	6344.7	(28$^-$)				
6976.8	(29)	304		6671.0					
		632.1 *3*	71 *5*	6344.7	(28$^-$)				
		921.5 *3*	100 *5*	6055.5	(28)	(M1+E2)	0.6 *6*	0.0266 *74*	α(K)=0.0215 *61*; α(L)=0.0039 *10*; α(M)=0.00092 *22*; α(N)=0.00024

$^{212}_{87}Fr_{125}$-7

Adopted Levels, Gammas (continued)

$\gamma(^{212}Fr)$ (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ [†]	E_f	J_f^π	Mult. [‡]	α	Comments
								6; α(O)=5.4×10^{-5} *13* α(P)=8.6×10^{-6} *22*; α(Q)=4.7×10^{-7} *14*
7053.9		77		6976.8	(29)			
		1199		5854.5	(27$^-$)			
7253.7		909	100	6344.7	(28$^-$)			
7660.6	(29$^+$)	407		7253.7				
		607		7053.9				
		684		6976.8	(29)			
		990.0 *5*	49 *2*	6671.0				
		1315.6 *5*	100 *2*	6344.7	(28$^-$)	E1	0.00196	α(K)=0.001576 *22*; α(L)=0.000248 *4*; α(M)=5.80×10^{-5} *9*; α(N)=1.513×10^{-5} *22*; α(O)=3.37×10^{-6} *5* α(P)=5.38×10^{-7} *8*; α(Q)=3.00×10^{-8} *5* B(E1)(W.u.)>2.8×10^{-8}
8255.6		595.0 *3*		7660.6	(29$^+$)			
		1201		7053.9				
8406.9		151	100	8255.6				
8533.2		126		8406.9				
		278		8255.6		(E3)	1.225	α(K)=0.213 *3*; α(L)=0.739 *11*; α(M)=0.205 *3*; α(N)=0.0543 *8*; α(O)=0.01140 *16* α(P)=0.001527 *22*; α(Q)=1.269×10^{-5} *18*

[†] From ^{198}Pt(^{19}F,5nγ),^{205}Tl(^{12}C,5nγ), except where noted.
[‡] From ce and $\gamma(\theta)$ measurements in ^{198}Pt(^{19}F,5nγ),^{205}Tl(^{12}C,5nγ), except where noted.
[#] Deduced from ce meaurements in ^{198}Pt(^{19}F,5nγ),^{205}Tl(^{12}C,5nγ).
[@] From ^{216}Ac (440 μs) decay.
[&] Placement of transition in the level scheme is uncertain.

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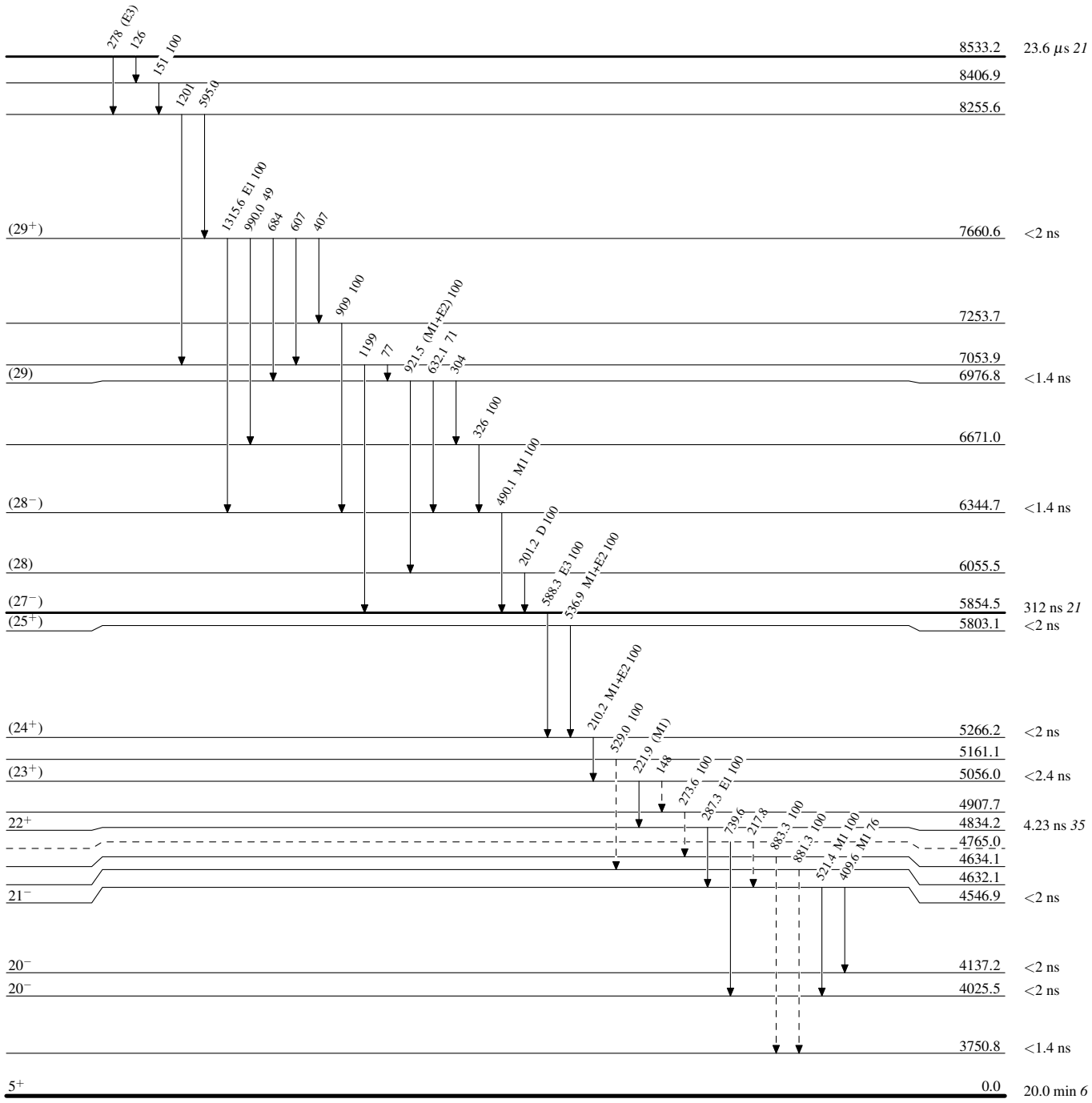
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{212}_{87}Fr_{125}$

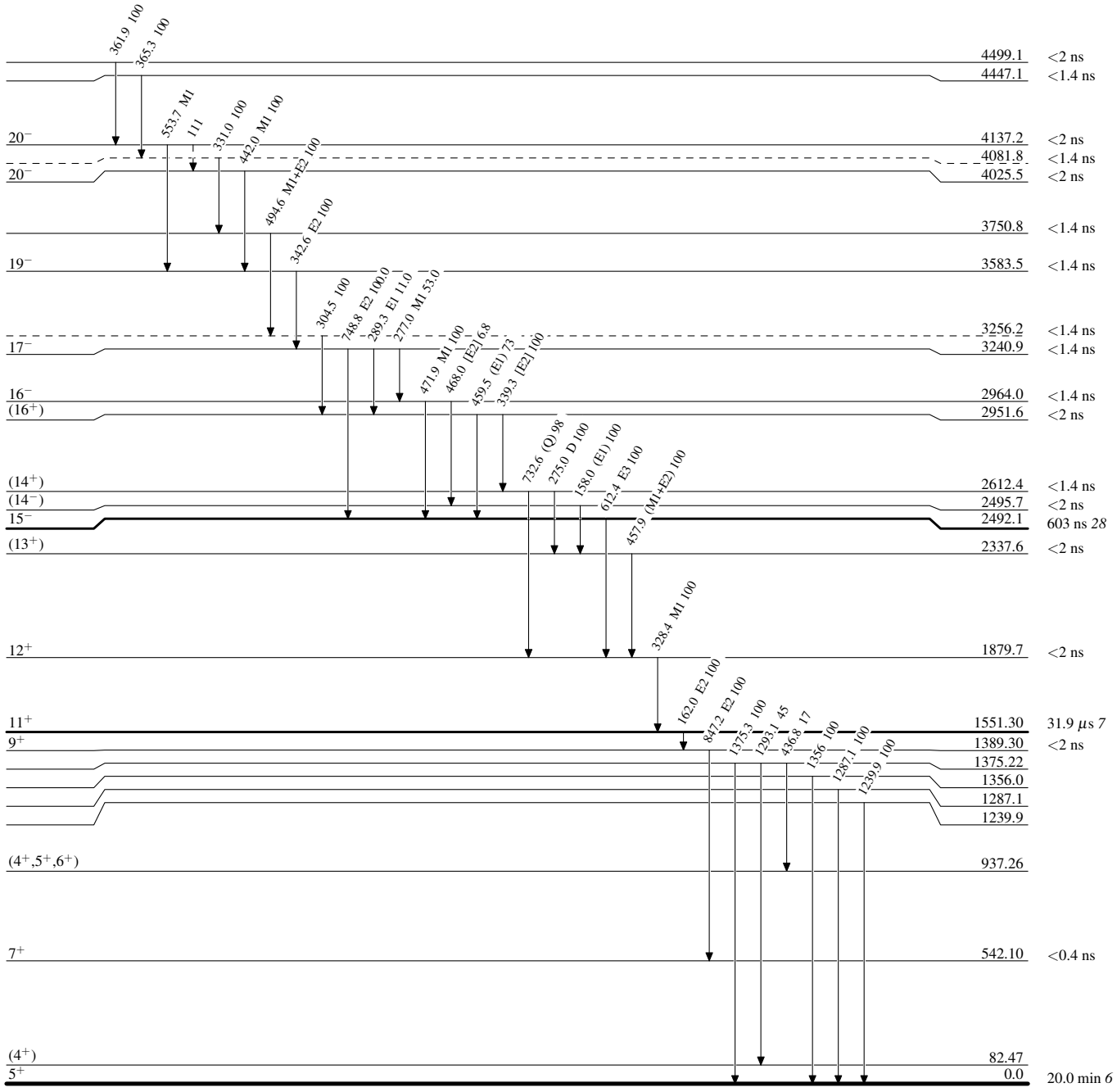
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{212}_{87}Fr_{125}$

Legend

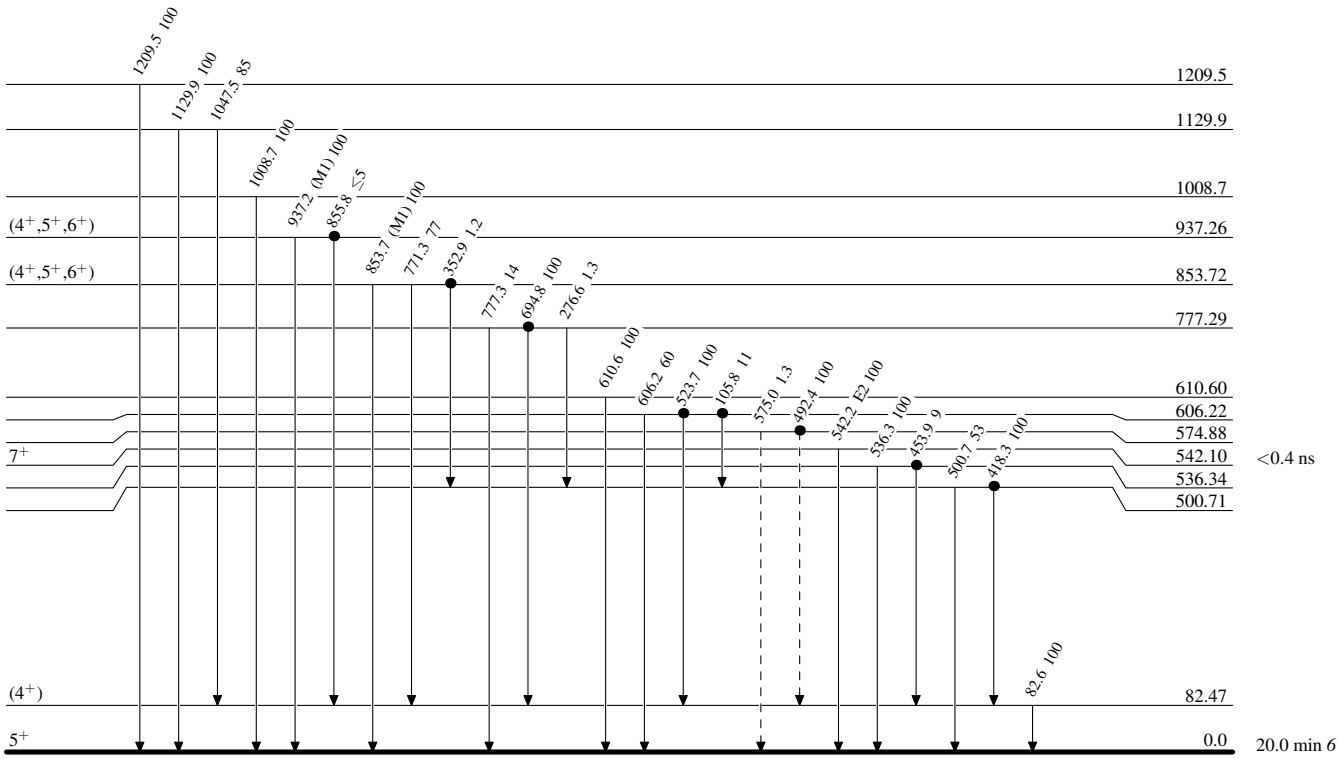
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

Coincidence



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