^{139}La(^{13}C,4nγ) 1995Jo04,1994Jo09

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 117, 1 (2014)	1-Oct-2013

1995Jo04,1994Jo09: E(^{13}C)=58-67 MeV; measured Eγ, Iγ, $\gamma\gamma$(t), $\gamma(\theta)$, DCO, linear polarization of gammas, Ice, γ excitation functions.

1980Ba67: ^{139}La(^{12}C,3nγ), E(^{12}C)=75 MeV. Observed an isomeric state with $T_{1/2}$=170 ns *20*, g=+0.680 *5* and the following gammas: 233.3, 312.7, 434.8, 583.1, 650.2, 730.6, and 937.0.

All data are from 1995Jo04, unless indicated otherwise.

^{148}Eu Levels

E(level)	J$^\pi$†	$T_{1/2}$	E(level)	J$^\pi$†	E(level)	J$^\pi$†
0.0	5^-		2545.8	14^-	4750.3	20^+
232.9	6^-		2599.0	13^+	5017.1	20^+
312.4	6^-		2877.7	14^+	5125.1	(21)
518.7	7^-		2898.0	16^+	5179.6?	21^+
708.7	7^+		2974.9	15^+	5207.2	21^-
720.7	9^+	152 ns *21*	3047.3	15^-	5215.6	22^+
728.7	8^+		3205.5	16^-	5301.9	21^-
811.4	8^+		3306?	(15)	5366.2	21^-
1172.9	9^+		3653.2	18^-	5389.6	22^-
1265.8	10^+		3712?	(16)	5519.0	22^-
1413.1	11^+		3819.5	(17)	5794.0	23^-
1478.3	10^+		3845.8	17^+	5943.3	23^-
1609.4	10^-		4008.3	19^-	6073.1	23^-
1669.9	11^-		4066.5	(18)	6100.4	24^-
1841.1	12^-		4086.9	20^-	6306.1	24^+
1955?	(10)		4200.7	18^+	6330.7?	
1991.8	12^+		4283.9	(18)	6384.8	24^+
2140.6	13^+		4335.6	21^-	6435.6	25^-
2203?	(11)		4393.7	(18)	6703.4	26^-
2351.1	13^-		4424.8	18^+		
2539.9	14^+		4651.0	19^+		

† From Adopted Levels, supported by $\gamma(\theta)$, DCO, linear polarization, Ice, and γ excitation function data from this data set. Some of these assignments, especially for the higher levels, may be tentative.

γ(^{148}Eu)

Eγ	Iγ†	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.‡	δ	α@	Comments
60.5	0.5	1669.9	11^-	1609.4	10^-	M1		7.87	α(K)=6.65 *10*; α(L)=0.961 *14*; α(M)=0.208 *3* α(N)=0.0475 *7*; α(O)=0.00753 *11*; α(P)=0.000740 *11* α(L)exp=1.2 *4*.
79.0	0.5	4086.9	20^-	4008.3	19^-	M1+E2	1.1# +6−4	4.8 *5*	α(K)=2.55 *22*; α(L)=1.8 *6*; α(M)=0.41 *13* α(N)=0.09 *3*; α(O)=0.013 *4*; α(P)=0.00024 *5* α(L)exp=1.8 *5*.
79.4	0.8	312.4	6^-	232.9	6^-				
90.7	1.1	811.4	8^+	720.7	9^+	M1		2.44	α(K)=2.07 *3*; α(L)=0.296 *5*; α(M)=0.0640 *9* α(N)=0.01464 *21*; α(O)=0.00232 *4*; α(P)=0.000229 *4* α(L)exp=0.23 *6*.
129.2	0.7	6435.6	25^-	6306.1	24^+				

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^{139}La(^{13}C,4nγ) 1995Jo04,1994Jo09 (continued)

γ(^{148}Eu) (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[@]	Comments
147.3	5.1	1413.1	11^+	1265.8	10^+	M1	0.615	α(K)=0.521 *8*; α(L)=0.0741 *11*; α(M)=0.01600 *23* α(N)=0.00366 *6*; α(O)=0.000581 *9*; α(P)=5.75×10^{-5} *8* DCO=2.2 *4*; α(K)exp=0.36 *7*; α(L)exp=0.05 *2*.
148.7	0.2	2140.6	13^+	1991.8	12^+			
152.8	0.3	5519.0	22^-	5366.2	21^-	M1+E2	0.547 *12*	α(K)=0.41 *7*; α(L)=0.11 *5*; α(M)=0.024 *10* α(N)=0.0055 *22*; α(O)=0.0008 *3*; α(P)=4.0×10^{-5} *12* α(K)exp=0.25 *9*. δ: not given by authors.
157.1	0.6	6100.4	24^-	5943.3	23^-			
158.2	11.9	3205.5	16^-	3047.3	15^-	M1+E2	0.490 *15*	α(K)=0.37 *6*; α(L)=0.09 *4*; α(M)=0.021 *9* α(N)=0.0048 *18*; α(O)=0.00070 *23*; α(P)=3.6×10^{-5} *11* DCO=2.3 *3*; α(K)exp=0.31 *4*; α(L)exp=0.03 *1*. δ: not given by authors.
171.2	15.8	1841.1	12^-	1669.9	11^-	M1	0.404	α(K)=0.342 *5*; α(L)=0.0486 *7*; α(M)=0.01049 *15* α(N)=0.00240 *4*; α(O)=0.000381 *6*; α(P)=3.78×10^{-5} *6* DCO=1.8 *2*; α(K)exp=0.33 *3*; α(L)exp=0.033 *8*.
189.9	1.0	708.7	7^+	518.7	7^-			
191.6	7.3	1669.9	11^-	1478.3	10^+	E1	0.0491	α(K)=0.0417 *6*; α(L)=0.00586 *9*; α(M)=0.001258 *18* α(N)=0.000285 *4*; α(O)=4.39×10^{-5} *7*; α(P)=3.78×10^{-6} *6* DCO=2.0 *3*; lin pol=0.21 *9*; α(K)exp=0.045 *3*.
194.8	11.8	2545.8	14^-	2351.1	13^-	M1	0.283	α(K)=0.240 *4*; α(L)=0.0339 *5*; α(M)=0.00732 *11* α(N)=0.001676 *24*; α(O)=0.000266 *4*; α(P)=2.64×10^{-5} *4* DCO=2.0 *3*; lin pol=−0.4 *3*; α(K)exp=0.176 *5*; α(L)exp=0.023 *2*.
202.0	1.2	720.7	9^+	518.7	7^-	M2	1.413	α(K)=1.131 *16*; α(L)=0.220 *3*; α(M)=0.0493 *7* α(N)=0.01131 *16*; α(O)=0.001766 *25*; α(P)=0.0001596 *23* α(K)exp=0.8 *3*.
206.3	1.5	518.7	7^-	312.4	6^-	M1	0.242	α(K)=0.205 *3*; α(L)=0.0289 *4*; α(M)=0.00624 *9* α(N)=0.001430 *20*; α(O)=0.000227 *4*; α(P)=2.25×10^{-5} *4* α(K)exp=0.35 *9*.
210.5	1.3	2351.1	13^-	2140.6	13^+	E1	0.0383	α(K)=0.0325 *5*; α(L)=0.00454 *7*; α(M)=0.000976 *14* α(N)=0.000221 *3*; α(O)=3.41×10^{-5} *5*; α(P)=2.98×10^{-6} *5* DCO=1.0 *2*; α(K)exp=0.02 *1*; B(E1)/B(E2)=0.5×10^{-4} *2* (1994Jo09).
217.1	2.4	5519.0	22^-	5301.9	21^-	M1	0.210	α(K)=0.1781 *25*; α(L)=0.0251 *4*; α(M)=0.00543 *8* α(N)=0.001243 *18*; α(O)=0.000197 *3*; α(P)=1.96×10^{-5} *3* DCO=1.8 *3*; lin pol=−0.3 *3*; α(K)exp=0.15 *4*.
220.7	0.5	4066.5	(18)	3845.8	17^+			
226.6	2.0	4651.0	19^+	4424.8	18^+	M1	0.187	α(K)=0.1585 *23*; α(L)=0.0223 *4*; α(M)=0.00482 *7* α(N)=0.001105 *16*; α(O)=0.0001754 *25*; α(P)=1.744×10^{-5} *25* DCO=2.4 *7*; lin pol=−0.8 *2*; α(K)exp=0.09 *5*.
230.5	6.8	3205.5	16^-	2974.9	15^+	E1	0.0301	α(K)=0.0256 *4*; α(L)=0.00356 *5*; α(M)=0.000765 *11* α(N)=0.0001736 *25*; α(O)=2.69×10^{-5} *4*; α(P)=2.37×10^{-6} *4* DCO=1.9 *4*; lin pol=0.0 *2*; α(K)exp=0.05 *2*; B(E1)/B(E2)=1.2×10^{-4} *2* (1994Jo09).
232.9	52.4	232.9	6^-	0.0	5^-	M1	0.1736	α(K)=0.1472 *21*; α(L)=0.0207 *3*; α(M)=0.00447 *7* α(N)=0.001025 *15*; α(O)=0.0001627 *23*; α(P)=1.618×10^{-5} *23* DCO=2.0 *1*; lin pol=−0.19 *5*; α(K)exp=0.15.
248.0	0.3	2203?	(11)	1955?	(10)			
248.7	5.5	4335.6	21^-	4086.9	20^-	M1	0.1453	α(K)=0.1232 *18*; α(L)=0.01733 *25*; α(M)=0.00374 *6* α(N)=0.000856 *12*; α(O)=0.0001360 *19*; α(P)=1.354×10^{-5} *19* DCO=2.1 *3*; lin pol=−0.5 *4*; α(K)exp=0.12 *2*.

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^{139}La(^{13}C,4nγ) 1995Jo04,1994Jo09 (continued)

γ(^{148}Eu) (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ	α[@]	Comments
256.8	39.0	1669.9	11^-	1413.1	11^+	E1		0.0228	α(K)=0.0194 *3*; α(L)=0.00268 *4*; α(M)=0.000575 *8* α(N)=0.0001305 *19*; α(O)=2.02×10^{-5} *3*; α(P)=1.81×10^{-6} *3* DCO=1.0 *1*; lin pol=−0.91 *4*; α(K)exp=0.030 *5*.
257.3	2.0	4651.0	19^+	4393.7	(18)				
267.8	4.0	6703.4	26^-	6435.6	25^-	M1		0.1191	α(K)=0.1010 *15*; α(L)=0.01418 *20*; α(M)=0.00306 *5* α(N)=0.000700 *10*; α(O)=0.0001113 *16*; α(P)=1.109×10^{-5} *16* DCO=1.8 *3*; lin pol=−0.5 *3*; α(K)exp=0.093 *9*.
275.0	3.8	5794.0	23^-	5519.0	22^-	M1		0.1109	α(K)=0.0941 *14*; α(L)=0.01319 *19*; α(M)=0.00285 *4* α(N)=0.000652 *10*; α(O)=0.0001036 *15*; α(P)=1.032×10^{-5} *15* DCO=1.7 *3*; lin pol=−0.5 *2*; α(K)exp=0.06 *2*.
278.7	7.3	2877.7	14^+	2599.0	13^+	M1+E2	1.3[#] *10*	0.086 *19*	α(K)=0.069 *19*; α(L)=0.0132 *5*; α(M)=0.00294 *18* α(N)=0.00066 *4*; α(O)=0.0001000 *14*; α(P)=7.E−6 *3* DCO=1.5 *1*; α(K)exp=0.07 *2*.
285.8	7.2	518.7	7^-	232.9	6^-	M1		0.1001	α(K)=0.0849 *12*; α(L)=0.01189 *17*; α(M)=0.00257 *4* α(N)=0.000588 *9*; α(O)=9.33×10^{-5} *13*; α(P)=9.31×10^{-6} *13* DCO=2.1 *5*; α(K)exp=0.10 *3*.
292.5	1.6	811.4	8^+	518.7	7^-				DCO=1.4 *2*.
299.5	2.6	2140.6	13^+	1841.1	12^-	E1		0.01538	α(K)=0.01310 *19*; α(L)=0.00180 *3*; α(M)=0.000385 *6* α(N)=8.76×10^{-5} *13*; α(O)=1.364×10^{-5} *19*; α(P)=1.242×10^{-6} *18* DCO=1.8 *3*; lin pol=0.5 *2*; α(K)exp=0.01 *1*.
305.4	4.4	1478.3	10^+	1172.9	9^+	M1		0.0839	α(K)=0.0712 *10*; α(L)=0.00995 *14*; α(M)=0.00215 *3* α(N)=0.000492 *7*; α(O)=7.81×10^{-5} *11*; α(P)=7.80×10^{-6} *11* DCO=1.8 *4*; lin pol=−0.3 *1*; α(K)exp=0.15 *10*.
306.4	1.4	6100.4	24^-	5794.0	23^-	M1+E2	≈1.7[#]	≈0.0619	α(K)≈0.0495; α(L)≈0.00967; α(M)≈0.00215 α(N)≈0.000486; α(O)≈7.28×10^{-5}; α(P)≈4.92×10^{-6} DCO=1.8 *3*; α(K)exp=0.05 *4*.
312.4	21.9	312.4	6^-	0.0	5^-	M1		0.0790	α(K)=0.0671 *10*; α(L)=0.00937 *14*; α(M)=0.00202 *3* α(N)=0.000463 *7*; α(O)=7.35×10^{-5} *11*; α(P)=7.34×10^{-6} *11* DCO=1.7 *1*; lin pol=−0.3 *1*; α(K)exp=0.084 *9*.
335.2	1.4	6435.6	25^-	6100.4	24^-	M1+E2	1.5[#] *9*	0.049 *11*	α(K)=0.040 *10*; α(L)=0.0072 *4*; α(M)=0.00160 *6* α(N)=0.000362 *15*; α(O)=5.5×10^{-5} *4*; α(P)=4.0×10^{-6} *13* DCO=2.9 *6*; lin pol=−0.7 *10*; α(K)exp=0.04 *1*.
343.5	3.0	1609.4	10^-	1265.8	10^+	E1		0.01093	α(K)=0.00932 *13*; α(L)=0.001269 *18*; α(M)=0.000272 *4*

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^{139}La(^{13}C,4nγ) 1995Jo04,1994Jo09 (continued)

γ(^{148}Eu) (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ	α[@]	Comments
									α(N)=6.20×10^{-5} *9*; α(O)=9.67×10^{-6} *14*; α(P)=8.93×10^{-7} *13*
355.1	23.2	4008.3	19$^-$	3653.2	18$^-$	M1		0.0564	DCO=1.5 *7*; α(K)exp=0.01 *1*. α(K)=0.0479 *7*; α(L)=0.00666 *10*; α(M)=0.001436 *21* α(N)=0.000329 *5*; α(O)=5.23×10^{-5} *8*; α(P)=5.23×10^{-6} *8*
358.1	18.0	2898.0	16$^+$	2539.9	14$^+$	E2		0.0341	DCO=1.9 *2*; lin pol=−0.4 *1*; α(K)exp=0.045 *5*. α(K)=0.0270 *4*; α(L)=0.00557 *8*; α(M)=0.001242 *18* α(N)=0.000280 *4*; α(O)=4.16×10^{-5} *6*; α(P)=2.58×10^{-6} *4*
361.7	6.2	1172.9	9$^+$	811.4	8$^+$	M1+E2	≈0.7[#]	≈0.0469	DCO=1.0 *2*; lin pol=0.5 *1*; α(K)exp=0.026 *4*. α(K)≈0.0393; α(L)≈0.00603; α(M)≈0.001312 α(N)≈0.000299; α(O)≈4.67×10^{-5}; α(P)≈4.17×10^{-6}
362.2	1.3	6435.6	25$^-$	6073.1	23$^-$				DCO=1.1 *2*; lin pol=0.2 *5*; α(K)exp=0.04 *2*. DCO=1.2 *3*.
366.1	1.8	5017.1	20$^+$	4651.0	19$^+$	M1+E2	0.8[#] *+10−6*	0.044 *8*	α(K)=0.037 *7*; α(L)=0.0058 *4*; α(M)=0.00126 *7* α(N)=0.000286 *17*; α(O)=4.5×10^{-5} *4*; α(P)=3.9×10^{-6} *9*
396.4	18.4	708.7	7$^+$	312.4	6$^-$	E1		0.00773	DCO=1.8 *3*; α(K)exp=0.037 *7*. α(K)=0.00660 *10*; α(L)=0.000892 *13*; α(M)=0.000191 *3* α(N)=4.36×10^{-5} *6*; α(O)=6.82×10^{-6} *10*; α(P)=6.38×10^{-7} *9*
399.7	14.4	2539.9	14$^+$	2140.6	13$^+$	M1		0.0414	DCO=1.8 *1*; lin pol=0.12 *8*; α(K)exp=0.026 *2*. α(K)=0.0352 *5*; α(L)=0.00488 *7*; α(M)=0.001051 *15* α(N)=0.000241 *4*; α(O)=3.83×10^{-5} *6*; α(P)=3.84×10^{-6} *6*
404.1	4.9	1669.9	11$^-$	1265.8	10$^+$	E1		0.00738	DCO=1.8 *1*; lin pol=−0.29 *6*; α(K)exp=0.032 *5*. α(K)=0.00630 *9*; α(L)=0.000851 *12*; α(M)=0.000183 *3* α(N)=4.16×10^{-5} *6*; α(O)=6.51×10^{-6} *10*; α(P)=6.11×10^{-7} *9*
405.1	10.8	2545.8	14$^-$	2140.6	13$^+$	E1		0.00734	DCO=1.7 *2*; lin pol=0.0 *3*; α(K)exp=0.008 *5*. α(K)=0.00626 *9*; α(L)=0.000846 *12*; α(M)=0.000181 *3* α(N)=4.13×10^{-5} *6*; α(O)=6.47×10^{-6} *9*; α(P)=6.07×10^{-7} *9*
405.9	1.2	3712?	(16)	3306?	(15)				DCO=1.8 *1*; lin pol=0.33 *6*; α(K)exp=0.005 *3*; B(E1)/B(E2)=0.67×10^{-4} *5* (1994Jo09). DCO=1.8 *5*.
414.7	5.7	4750.3	20$^+$	4335.6	21$^-$	E1		0.00694	α(K)=0.00593 *9*; α(L)=0.000800 *12*; α(M)=0.0001715 *24* α(N)=3.91×10^{-5} *6*; α(O)=6.12×10^{-6} *9*; α(P)=5.75×10^{-7} *8*

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^{139}La(^{13}C,4nγ) 1995Jo04,1994Jo09 (continued)

γ(^{148}Eu) (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[@]	Comments
428.0	20.8	1841.1	12^-	1413.1	11^+	E1	0.00645	α(K)=0.00551 *8*; α(L)=0.000742 *11*; α(M)=0.0001590 *23* α(N)=3.62×10^{-5} *5*; α(O)=5.68×10^{-6} *8*; α(P)=5.35×10^{-7} *8* DCO=1.8 *2*; lin pol=0.27 *8*; α(K)exp=0.007 *2*.
429.0	4.3	3306?	(15)	2877.7	14^+			DCO=1.5 *1*.
429.1	4.7	2974.9	15^+	2545.8	14^-			DCO=1.4 *8*.
433.7	22.4	4086.9	20^-	3653.2	18^-	E2	0.0197	α(K)=0.01589 *23*; α(L)=0.00297 *5*; α(M)=0.000657 *10* α(N)=0.0001486 *21*; α(O)=2.24×10^{-5} *4*; α(P)=1.560×10^{-6} *22* DCO=1.0 *1*; lin pol=0.49 *9*; α(K)exp=0.015 *2*.
436.4	0.7	1609.4	10^-	1172.9	9^+	E1	0.00616	α(K)=0.00526 *8*; α(L)=0.000708 *10*; α(M)=0.0001518 *22* α(N)=3.46×10^{-5} *5*; α(O)=5.42×10^{-6} *8*; α(P)=5.12×10^{-7} *8* α(K)exp=0.007 *4*.
447.7	56.3	3653.2	18^-	3205.5	16^-	E2	0.0180	α(K)=0.01460 *21*; α(L)=0.00268 *4*; α(M)=0.000594 *9* α(N)=0.0001343 *19*; α(O)=2.03×10^{-5} *3*; α(P)=1.438×10^{-6} *21* DCO=1.0 *1*; lin pol=0.67 *5*; α(K)exp=0.0146.
452.2	1.5	1172.9	9^+	720.7	9^+	M1+E2	0.024 *7*	α(K)=0.020 *6*; α(L)=0.0031 *5*; α(M)=0.00067 *10* α(N)=0.000152 *23*; α(O)=2.4×10^{-5} *4*; α(P)=2.1×10^{-6} *7* α(K)exp=0.01 *1*. δ: not given by authors.
458.6	3.9	2599.0	13^+	2140.6	13^+	E2	0.01688	α(K)=0.01370 *20*; α(L)=0.00249 *4*; α(M)=0.000550 *8* α(N)=0.0001246 *18*; α(O)=1.88×10^{-5} *3*; α(P)=1.353×10^{-6} *19* DCO=1.1 *1*; α(K)exp=0.013 *5*.
464.4	1.3	4283.9	(18)	3819.5	(17)			
465.3	2.8	5215.6	22^+	4750.3	20^+	E2	0.01623	α(K)=0.01318 *19*; α(L)=0.00238 *4*; α(M)=0.000526 *8* α(N)=0.0001191 *17*; α(O)=1.80×10^{-5} *3*; α(P)=1.304×10^{-6} *19* DCO=0.9 *2*; lin pol=0.7 *6*; α(K)exp=0.01 *1*.
475.8	40.8	708.7	7^+	232.9	6^-	E1	0.00505	α(K)=0.00431 *6*; α(L)=0.000578 *8*; α(M)=0.0001238 *18* α(N)=2.82×10^{-5} *4*; α(O)=4.43×10^{-6} *7*; α(P)=4.22×10^{-7} *6* DCO=1.7 *2*; lin pol=0.2 *2*; α(K)exp=0.0029 *3*.
536.8	0.4	6330.7?		5794.0	23^-			
537.1	4.4	1265.8	10^+	728.7	8^+	E2	0.01110	α(K)=0.00912 *13*; α(L)=0.001550 *22*; α(M)=0.000341 *5* α(N)=7.73×10^{-5} *11*; α(O)=1.180×10^{-5} *17*; α(P)=9.14×10^{-7} *13* DCO=1.3 *4*; lin pol=0.3 *3*.
545.1	13.5	1265.8	10^+	720.7	9^+	M1+E2	0.015 *4*	α(K)=0.012 *4*; α(L)=0.0018 *4*; α(M)=0.00040 *8* α(N)=9.1×10^{-5} *17*; α(O)=1.4×10^{-5} *3*; α(P)=1.3×10^{-6} *5* DCO=1.4 *2*; lin pol=−0.39 *8*. δ: not given by authors.
548.7	8.4	2539.9	14^+	1991.8	12^+	E2	0.01050	α(K)=0.00864 *12*; α(L)=0.001458 *21*; α(M)=0.000320 *5* α(N)=7.26×10^{-5} *11*; α(O)=1.110×10^{-5} *16*; α(P)=8.67×10^{-7} *13* DCO=0.9 *3*; lin pol=0.5 *2*.
549.0	0.8	4750.3	20^+	4200.7	18^+			
553.7	1.4	5943.3	23^-	5389.6	22^-			DCO=1.3 *4*.
574.3	0.4	4393.7	(18)	3819.5	(17)			
578.4	6.0	1991.8	12^+	1413.1	11^+	M1+E2	0.013 *4*	α(K)=0.011 *3*; α(L)=0.0016 *4*; α(M)=0.00034 *7* α(N)=7.8×10^{-5} *16*; α(O)=1.2×10^{-5} *3*; α(P)=1.1×10^{-6} *4* DCO=1.7 *5*; lin pol =−0.1 *1*. δ: not given by authors.
586.7	0.8	5794.0	23^-	5207.2	21^-			
659.6	45.1	3205.5	16^-	2545.8	14^-	E2	0.00665	α(K)=0.00553 *8*; α(L)=0.000876 *13*; α(M)=0.000191 *3* α(N)=4.35×10^{-5} *6*; α(O)=6.71×10^{-6} *10*; α(P)=5.62×10^{-7} *8* DCO=0.92 *8*; lin pol=0.6 *2*.

Continued on next page (footnotes at end of table)

^{139}La(^{13}C,4nγ) 1995Jo04,1994Jo09 (continued)

γ(^{148}Eu) (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[@]	Comments
666.9	2.3	1478.3	10^+	811.4	8^+	E2	0.00648	α(K)=0.00539 *8*; α(L)=0.000851 *12*; α(M)=0.000186 *3* α(N)=4.22×10^{-5} *6*; α(O)=6.52×10^{-6} *10*; α(P)=5.48×10^{-7} *8* DCO=1.0 *2*.
681.2	35.6	2351.1	13^-	1669.9	11^-	E2	0.00616	α(K)=0.00513 *8*; α(L)=0.000804 *12*; α(M)=0.0001754 *25* α(N)=3.99×10^{-5} *6*; α(O)=6.17×10^{-6} *9*; α(P)=5.22×10^{-7} *8* DCO=0.96 *7*; lin pol=0.34 *7*.
683.5	2.8	6073.1	23^-	5389.6	22^-			DCO=1.9 *4*.
692.4	100	1413.1	11^+	720.7	9^+	E2	0.00593	α(K)=0.00494 *7*; α(L)=0.000771 *11*; α(M)=0.0001680 *24* α(N)=3.82×10^{-5} *6*; α(O)=5.91×10^{-6} *9*; α(P)=5.03×10^{-7} *7* DCO=0.99 *9*; lin pol=0.5 *1*.
696.2	22.2	3047.3	15^-	2351.1	13^-	E2	0.00585	α(K)=0.00488 *7*; α(L)=0.000760 *11*; α(M)=0.0001656 *24* α(N)=3.77×10^{-5} *6*; α(O)=5.83×10^{-6} *9*; α(P)=4.97×10^{-7} *7* DCO=0.99 *9*; lin pol=0.4 *7*.
704.7	31.5	2545.8	14^-	1841.1	12^-	E2	0.00569	α(K)=0.00475 *7*; α(L)=0.000736 *11*; α(M)=0.0001604 *23* α(N)=3.65×10^{-5} *6*; α(O)=5.65×10^{-6} *8*; α(P)=4.84×10^{-7} *7* DCO=0.90 *8*; lin pol=0.5 *1*.
710.0	1.3	6100.4	24^-	5389.6	22^-			
726.0	10.7	1991.8	12^+	1265.8	10^+	E2	0.00530	α(K)=0.00443 *7*; α(L)=0.000682 *10*; α(M)=0.0001485 *21* α(N)=3.38×10^{-5} *5*; α(O)=5.24×10^{-6} *8*; α(P)=4.52×10^{-7} *7* DCO=0.86 *7*.
727.5	34.8	2140.6	13^+	1413.1	11^+	E2	0.00528	α(K)=0.00441 *7*; α(L)=0.000678 *10*; α(M)=0.0001477 *21* α(N)=3.36×10^{-5} *5*; α(O)=5.21×10^{-6} *8*; α(P)=4.50×10^{-7} *7* DCO=0.9 *3*; lin pol=0.7 *2*.
742.0	1.2	4750.3	20^+	4008.3	19^-			
749.7	9.4	1478.3	10^+	728.7	8^+	E2	0.00492	α(K)=0.00412 *6*; α(L)=0.000629 *9*; α(M)=0.0001367 *20* α(N)=3.11×10^{-5} *5*; α(O)=4.83×10^{-6} *7*; α(P)=4.21×10^{-7} *6* DCO=0.8 *2*.
757.5	5.3	1478.3	10^+	720.7	9^+	E2	0.00481	α(K)=0.00403 *6*; α(L)=0.000612 *9*; α(M)=0.0001332 *19* α(N)=3.03×10^{-5} *5*; α(O)=4.71×10^{-6} *7*; α(P)=4.12×10^{-7} *6*
783.0	1.0	1955?	(10)	1172.9	9^+			
834.3	6.0	2974.9	15^+	2140.6	13^+	E2	0.00387	α(K)=0.00325 *5*; α(L)=0.000483 *7*; α(M)=0.0001047 *15* α(N)=2.39×10^{-5} *4*; α(O)=3.72×10^{-6} *6*; α(P)=3.33×10^{-7} *5* DCO=1.3 *2*; lin pol=0.3 *3*.
888.7	7.6	1609.4	10^-	720.7	9^+	E1	1.36×10^{-3}	α(K)=0.001163 *17*; α(L)=0.0001514 *22*;

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^{139}La(^{13}C,4nγ) 1995Jo04,1994Jo09 (continued)

γ(^{148}Eu) (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[@]	Comments
								α(M)=3.23×10^{-5} *5* α(N)=7.39×10^{-6} *11*; α(O)=1.169×10^{-6} *17*; α(P)=1.161×10^{-7} *17* DCO=1.9 *3*; lin pol=0.3 *2*.
921.5	1.7	3819.5	(17)	2898.0	16$^+$			DCO=1.5 *4*.
947.8	1.3	3845.8	17$^+$	2898.0	16$^+$	M1+E2	0.0039 *10*	α(K)=0.0033 *9*; α(L)=0.00046 *10*; α(M)=9.8×10^{-5} *21* α(N)=2.2×10^{-5} *5*; α(O)=3.6×10^{-6} *8*; α(P)=3.5×10^{-7} *10* DCO=3.1 *9*; lin pol=0.1 *5*. δ: not given by authors.
1090.5	1.5	6306.1	24$^+$	5215.6	22$^+$			DCO=1.2 *2*.
1092.7	3.6	5179.6?	21$^+$	4086.9	20$^-$	E1	9.19×10^{-4}	α(K)=0.000789 *11*; α(L)=0.0001019 *15*; α(M)=2.18×10^{-5} *3* α(N)=4.97×10^{-6} *7*; α(O)=7.88×10^{-7} *11*; α(P)=7.91×10^{-8} *11* DCO=1.6 *3*; lin pol=0.5 *7*.
1117.0	0.5	5125.1	(21)	4008.3	19$^-$			
1169.2	4.2	6384.8	24$^+$	5215.6	22$^+$	E2	0.00190	α(K)=0.001611 *23*; α(L)=0.000224 *4*; α(M)=4.83×10^{-5} *7* α(N)=1.103×10^{-5} *16*; α(O)=1.737×10^{-6} *25*; α(P)=1.660×10^{-7} *24*; α(IPF)=2.85×10^{-6} *4* DCO=0.9 *2*; lin pol=1 *1*.
1185.9	1.0	2599.0	13$^+$	1413.1	11$^+$			DCO=1.1 *4*.
1198.9	1.0	5207.2	21$^-$	4008.3	19$^-$			DCO=1.3 *4*.
1279.3	1.5	5366.2	21$^-$	4086.9	20$^-$			DCO=1.0 *2*.
1293.6	4.0	5301.9	21$^-$	4008.3	19$^-$	E2	1.57×10^{-3}	α(K)=0.001320 *19*; α(L)=0.000181 *3*; α(M)=3.89×10^{-5} *6* α(N)=8.89×10^{-6} *13*; α(O)=1.404×10^{-6} *20*; α(P)=1.360×10^{-7} *19*; α(IPF)=1.91×10^{-5} *3* DCO=0.8 *2*; lin pol=1 *1*.
1302.7	2.4	4200.7	18$^+$	2898.0	16$^+$	E2	1.55×10^{-3}	α(K)=0.001302 *19*; α(L)=0.0001784 *25*; α(M)=3.84×10^{-5} *6* α(N)=8.76×10^{-6} *13*; α(O)=1.384×10^{-6} *20*; α(P)=1.342×10^{-7} *19*; α(IPF)=2.07×10^{-5} *3* DCO=0.9 *1*; lin pol=1 *1*.
1302.7	5.8	5389.6	22$^-$	4086.9	20$^-$	E2	1.55×10^{-3}	α(K)=0.001302 *19*; α(L)=0.0001784 *25*; α(M)=3.84×10^{-5} *6* α(N)=8.76×10^{-6} *13*; α(O)=1.384×10^{-6} *20*; α(P)=1.342×10^{-7} *19*; α(IPF)=2.07×10^{-5} *3* DCO=1.01 *7*; lin pol=1 *1*.
1432.1	1.8	5519.0	22$^-$	4086.9	20$^-$	(E2)	1.32×10^{-3}	α(K)=0.001084 *16*; α(L)=0.0001468 *21*; α(M)=3.15×10^{-5} *5* α(N)=7.21×10^{-6} *10*; α(O)=1.140×10^{-6} *16*; α(P)=1.118×10^{-7} *16*; α(IPF)=5.31×10^{-5} *8* DCO=0.8 *2*.
1495.7	0.5	4393.7	(18)	2898.0	16$^+$			
1526.8	0.8	4424.8	18$^+$	2898.0	16$^+$			

[†] Relative intensity; uncertainty for most intense transitions is 5%, and is as high as 25% for weak ones.
[‡] From $\gamma(\theta)$, DCO, linear polarization, and Ice data from this data set.

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^{139}La(^{13}C,4nγ) 1995Jo04,1994Jo09 (continued)

γ(^{148}Eu) (continued)

Estimated from the internal conversion coefficient data.
@ Additional information 1.

$^{139}La(^{13}C,4n\gamma)$ 1995Jo04,1994Jo09

Level Scheme

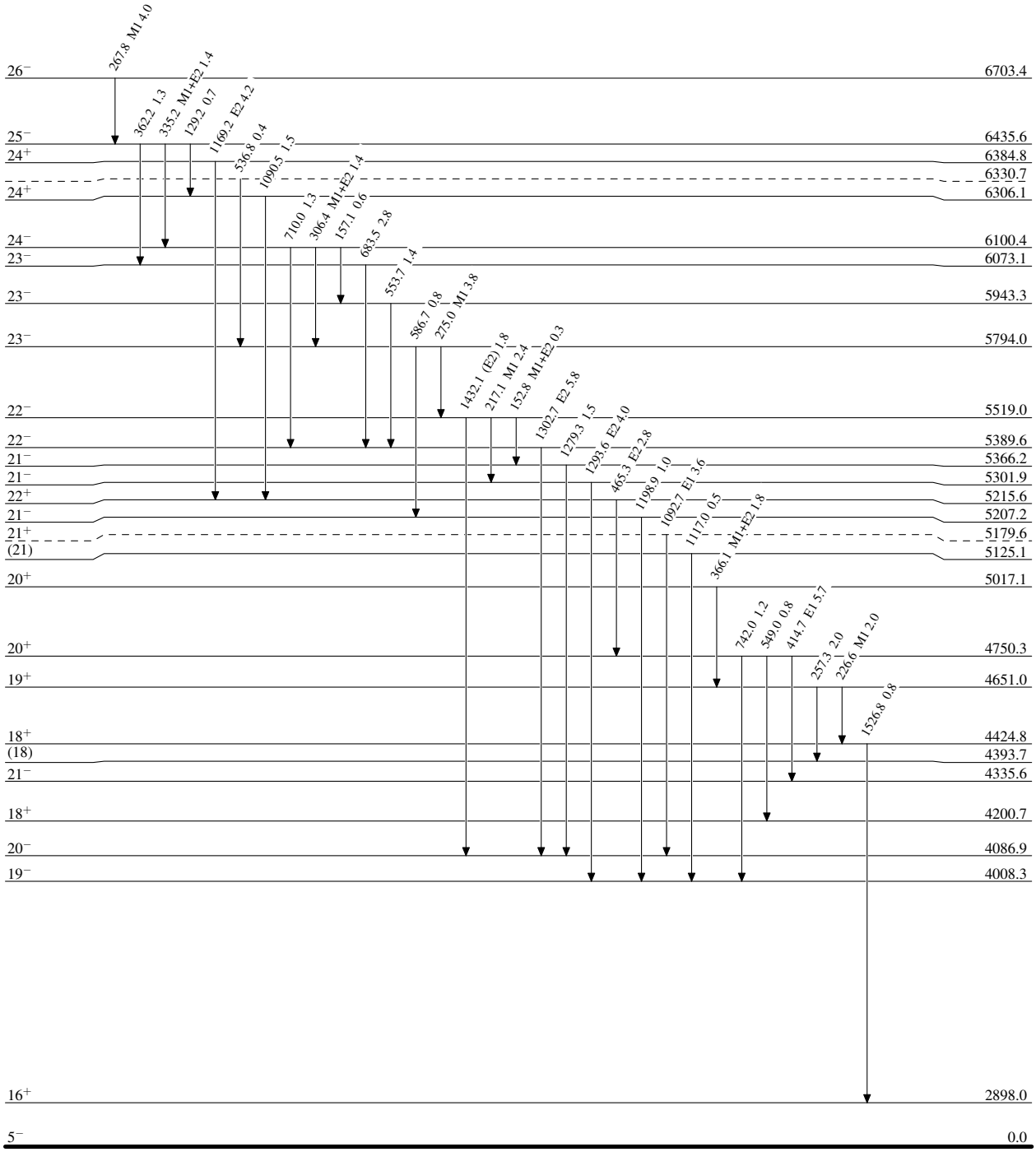
Intensities: Relative I_γ

Legend

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

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

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



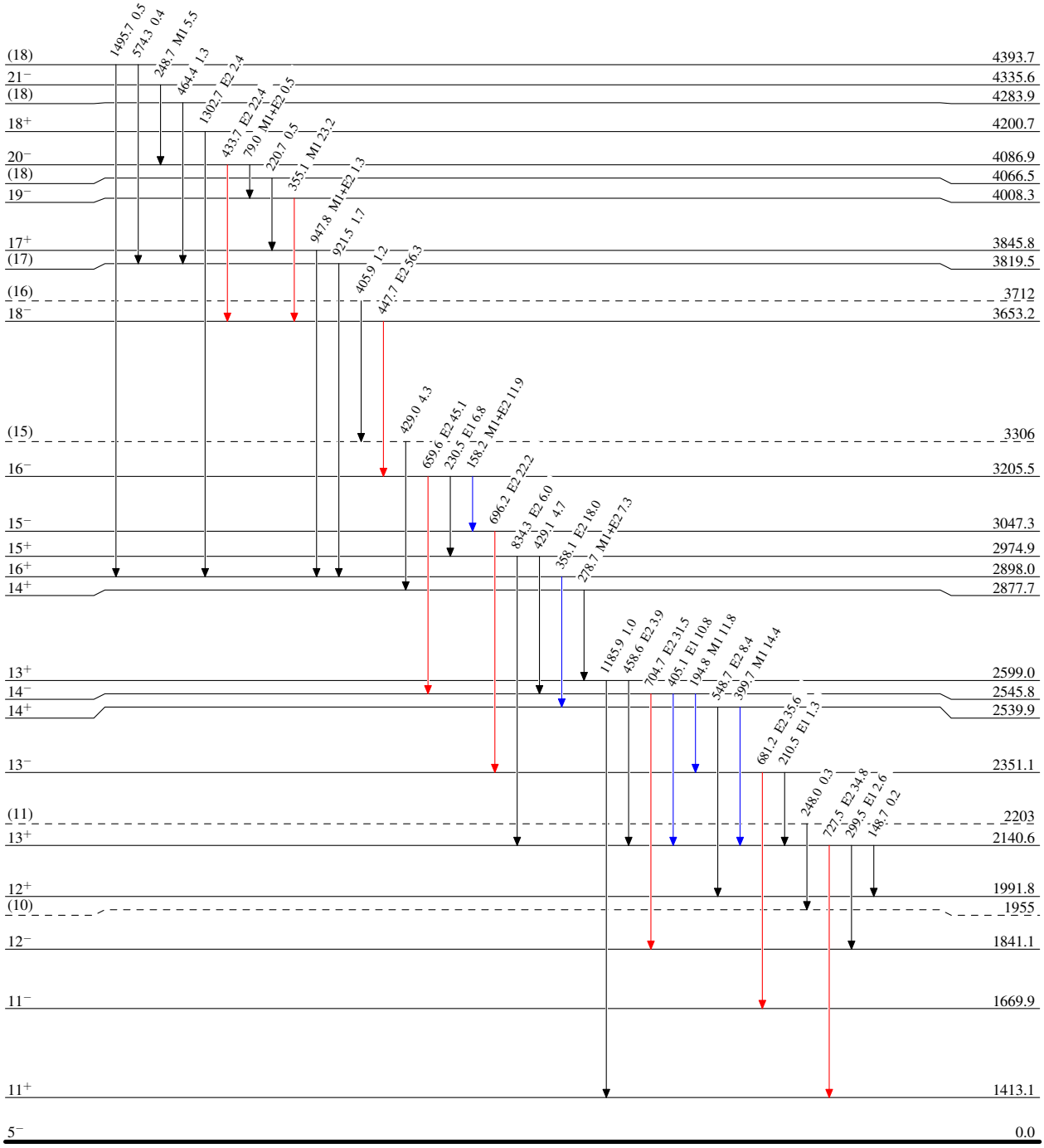
$^{148}_{63}Eu_{85}$

^{139}La(^{13}C,4nγ) 1995Jo04,1994Jo09

Level Scheme (continued)

Intensities: Relative I_γ

Legend
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$

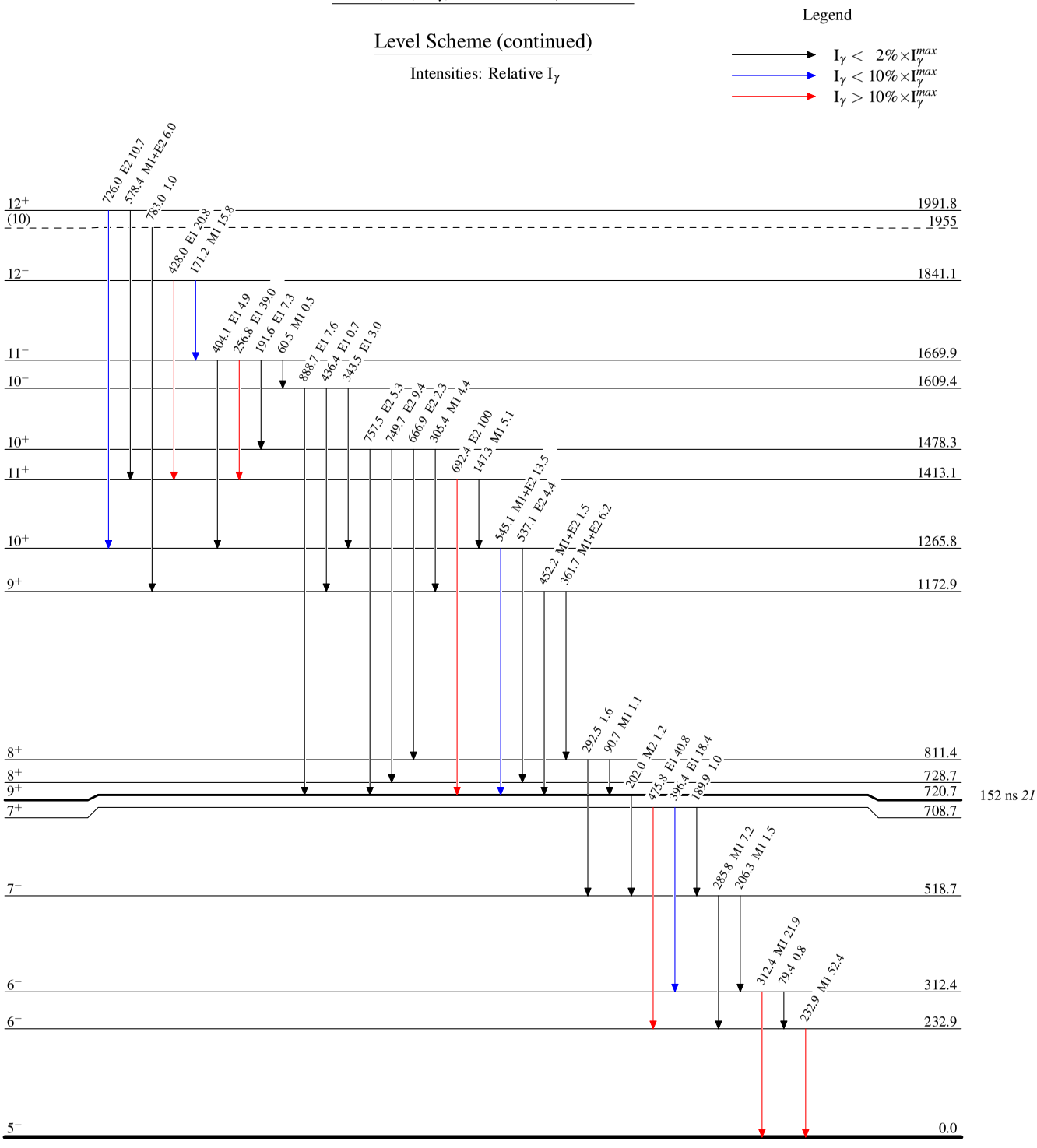


$^{148}_{63}Eu_{85}$

$^{139}La(^{13}C,4n\gamma)$ 1995Jo04,1994Jo09

Level Scheme (continued)

Intensities: Relative I_γ



$^{148}_{63}Eu_{85}$