^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

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Full Evaluation	M. J. Martin	NDS 114, 1497 (2013)	31-Aug-2013

J^π(^{151}Eu)=5/2$^+$.
1979An19, 1974Iv02, 1970Ge05: measured: $\gamma\gamma$(t).
1978Vo05: measured: γ, ce, $\gamma\gamma$, $\gamma\gamma$(t). Complete results of these experiments are reported in 1978VoZP.
Other: 1970Mi11.

^{152}Eu Levels

The levels listed here are those proposed by 1978Vo05. Later interpretations of the data of 1978Vo05 by other researchers are considered tentative and are not included in this data set.

E(level)[†]	J^π[‡]	$T_{1/2}$	Comments
0.0	3$^-$		
45.5994 *4*	0$^-$	9.3116 h *13*	$T_{1/2}$: From Adopted Levels.
65.2966 *3*	1$^-$	0.94 μs *8*	$T_{1/2}$: From $\gamma\gamma$(t) (1978Vo05).
77.2588 *3*	3$^-$	38 ns *4*	$T_{1/2}$: From $\gamma\gamma$(t) (1978Vo05). Other: >30 ns (1979An19).
78.2335 *4*	1$^+$	165 ns *10*	$T_{1/2}$: From $\gamma\gamma$(t) (1978Vo05).
89.6130 *4*	4$^-$		
89.8488 *3*	4$^+$	384 ns *10*	$T_{1/2}$: From $\gamma\gamma$(t) (1978Vo05). Others: >30 ns (1979An19), 416 ns (1974Iv02), 381 ns *19* (1970Ge05).
108.1148 *4*	5$^+$	≤20 ns	$T_{1/2}$: From $\gamma\gamma$(t) (1978Vo05).
109.0892[@] *6*	(1)$^-$		
111.4472 *4*	2$^-$		
113.9696 *3*	3$^+$		
118.1660 *3*	2$^-$		
120.8384 *3*	2$^+$		
124.5343 *3*	4$^+$		
141.8253 *3*	4$^-$	2.5[#] ns *5*	$T_{1/2}$: From $\gamma\gamma$(t) (1979An19).
146.0853 *3*	3$^+$		
148.7364 *4*	(4)$^+$		
150.6869 *3*	4$^-$		
158.0548 *4*	1$^+$	1.8[#] ns *4*	$T_{1/2}$: From $\gamma\gamma$(t) (1979An19).
160.8808 *4*	3$^+$,4$^+$	2.3[#] ns *4*	$T_{1/2}$: From $\gamma\gamma$(t) (1979An19).
174.9373 *4*	2$^-$,3$^-$		
177.6867[@] *6*	(2,3)$^+$		
178.9312 *4*	3$^+$,4$^+$		
180.6323 *3*	5$^-$	2.1[#] ns *6*	$T_{1/2}$: From $\gamma\gamma$(t) (1979An19).
196.9136 *4*	3$^+$,4$^+$		
199.6645 *4*	4$^+$,5$^+$		
200.7496[@] *9*	5$^-$		
201.1319 *3*	3$^+$		
203.1119 *4*	1$^-$,2$^-$		
203.1822 *4*	4$^-$		
214.3604[@] *5*	2$^-$		
214.4269 *4*	4$^+$		
220.7952 *4*	3$^-$		
221.2097 *6*	3$^+$		
221.4537 *4*	2$^-$		
224.4999 *4*	3$^-$		

Continued on next page (footnotes at end of table)

^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05 (continued)

^{152}Eu Levels (continued)

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
227.7204 4	3+	287.1585 7	(4+)	341.2435 5	2−	412.7454 8	3+
237.3482 4	2−	294.4521 4	3−,4−	345.6383@ 8	(1+,2+)	434.7356 9	4
237.4890 4	4−	296.3270 4	3+	347.7464@ 5	3+,4	436.1636@ 6	2+,3+
246.6549 4	3−,4−	301.1897 5	3+,4+	350.2607 12	(3+,4−)&	440.5049@ 5	3,4−
248.5030 6	1−,2−	303.4563 8	2+,3+,4+	353.3447 5	3,4−	442.8569@ 15	2+,3−
249.3303@ 7	1+	307.4575@ 8	2+,3+	359.7983 6	2−	446.2217 13	3,4−
253.7604 5	3+	309.3742 5	3−	361.6731@ 11	2,3,4−	460.0671@ 14	2−
256.7235 4	3+,4+	320.9733 5	3(+)	366.4673 6	2−,3+	462.5552@ 8	4
258.7822 4	4+,5+	324.2956 5	2+	374.6084 8	(3−)	482.9446@ 11	
265.7205 5	3−	328.1484@ 9	2−	384.8623 8	3−,4−	483.3410@ 20	3+
267.6410 4	4−	332.7919 5	3+	387.4565@ 7	2+,3+	492.0884@ 10	3−,4−
272.3775@ 5	2+	334.3909 6	4−	388.8423@ 14		508.4795@ 15	2+,3+
283.7187 4	3+	338.3901 5	4(−)	393.3279@ 14	3−	510.6746@ 12	3
285.1288 5	3−,4−	339.2171@ 6	2	395.9255@ 17	3+,4+		
286.0330 5	2−	340.7195@ 5	(3−)	399.6746@ 6	2,3+		

† From 1978Vo05.
‡ From Adopted Levels.
# From $\gamma\gamma$(t) (1979An19).
@ The arguments for the existence of this level are plausible, but it cannot be excluded that the level is based on random combinations (1978Vo05).
& Possible 2+,3+; see comment on the 350.26 level at the head of the gamma listing.

γ(^{152}Eu)

Iγ normalization: Iγ measured per 10^4 n captures.
Unplaced γ's are from 1978VoZP.
350.2607 level: the γ's assigned to this level are not consistent with any J^π assignment. Therefore, one or more of the γ's appear to be misassigned to this level. The two strongest γ's go to 2^- and 3^- levels (both backed by coin results); the γ to 2^- level is (E1,E2). This suggests that the 232.096γ to 2- 118.1660-keV level is E1 and J^π of this level is 2^+,3^+. The weak 169.6240γ to the 5- 180.6325-keV level would be M2 or E3 and thus probably does not belong to this level.

E$_\gamma$ [†]	I$_\gamma$ [‡i]	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Mult. [@]	δ [&]	α [j]	Comments
10.563 *14*	4.2 *5*	124.5343	4$^+$	113.9696	3$^+$	[M1]		215	α(L)=168.4 *25*; α(M)=36.7 *6*; α(N+..)=9.84 *15* α(N)=8.39 *13*; α(O)=1.324 *20*; α(P)=0.1294 *19*
12.598 *15*	13.2 *13*	89.8488	4$^+$	77.2588	3$^-$	[E1]		14.70	α(L)=11.51 *17*; α(M)=2.58 *4*; α(N+..)=0.611 *9* α(N)=0.546 *8*; α(O)=0.0628 *9*; α(P)=0.00236 *4*
12.965 *15*	33 *3*	78.2335	1$^+$	65.2966	1$^-$	[E1]		13.60	α(L)=10.65 *16*; α(M)=2.38 *4*; α(N+..)=0.566 *9* α(N)=0.505 *8*; α(O)=0.0586 *9*; α(P)=0.00223 *4*
^{x}15.230 *12*	3.0 *3*								
^{x}17.886 [d] *20*	4.9 *10*								
18.265 *7*	35 *4*	108.1148	5$^+$	89.8488	4$^+$	M1+E2	0.042 *10*	50 *5*	α(L)=39 *4*; α(M)=8.5 *8*; α(N+..)=2.27 *20* α(N)=1.94 *18*; α(O)=0.299 *23*; α(P)=0.0253 *4* Mult.,δ: from adopted gammas; α(L1)exp=51 *20*, α(L2)exp=5 *3*, α(M1)exp=9 *5*, α(N1)exp=6 *3*; theory: α(L1)=29.8 *5*, α(L2)=5.5 *15*, α(M1)=6.40 *9*.
19.695 *7*	48 *5*	65.2966	1$^-$	45.5994	0$^-$	M1		33.8	α(L)=26.5 *4*; α(M)=5.73 *8*; α(N+..)=1.538 *22* α(N)=1.311 *19*; α(O)=0.207 *3*; α(P)=0.0203 *3* Mult.: α(L1)exp=51 *16*, α(L2)exp=3.7 *10*, α(M1)exp=5.7 *18*, α(N1)exp=1.1 *3*; theory: α(L1)=23.9, α(L2)=2.21, α(M1)=5.12.
21.554 *12*	5.4 *5*	146.0853	3$^+$	124.5343	4$^+$	(M1)		25.8	α(L)=20.3 *3*; α(M)=4.38 *7*; α(N+..)=1.176 *17* α(N)=1.002 *15*; α(O)=0.1584 *23*; α(P)=0.01551 *22* Mult.: α(L1)exp=13 *8*; theory: α(L1)(M1)=18.3.
24.110 *10*	80 *8*	113.9696	3$^+$	89.8488	4$^+$	M1		18.5	α(L)=14.52 *21*; α(M)=3.14 *5*; α(N+..)=0.843 *12* α(N)=0.718 *10*; α(O)=0.1136 *16*; α(P)=0.01112 *16* Mult.: α(L1)exp=12 *3*, α(L2)exp<3.4, α(M1)exp=2.5 *5*, α(N1)exp=0.6 *1*; theory: α(L1)=13.1, α(L2)=1.20, α(M1)=2.81.
29.934 *11*	24 *3*	180.6323	5$^-$	150.6869	4$^-$	M1		9.74	α(L)=7.65 *11*; α(M)=1.653 *24*; α(N+..)=0.444 *7* α(N)=0.378 *6*; α(O)=0.0598 *9*; α(P)=0.00586 *9* Mult.: α(L1)exp=8.3 *19*, α(M1)exp=3.8 *12*; theory: α(L1)=6.91, α(M1)=1.48.
30.17 *4*	3.8 *12*	178.9312	3$^+$,4$^+$	148.7364	(4)$^+$	[M1]		9.52	α(L)=7.47 *11*; α(M)=1.615 *24*; α(N+..)=0.434 *7* α(N)=0.369 *6*; α(O)=0.0584 *9*; α(P)=0.00573 *9*
^{x}30.9828 *7*	13.6 *8*					M1		8.80	α(L)=6.90 *10*; α(M)=1.492 *21*; α(N+..)=0.401 *6* α(N)=0.341 *5*; α(O)=0.0540 *8*; α(P)=0.00529 *8* Mult.: α(K)exp=8.5 *16*.

γ(^{152}Eu) (continued)

E_γ †	I_γ ‡i	E_i(level)	J^π_i	E_f	J^π_f	Mult.@	α j	Comments
31.8962 5	5.3 13	180.6323	5⁻	148.7364	(4)⁺	[E1]	1.126	α(L)=0.885 13; α(M)=0.192 3; α(N+..)=0.0484 7 α(N)=0.0423 6; α(O)=0.00580 9; α(P)=0.000320 5
32.1158 5	43 6	146.0853	3⁺	113.9696	3⁺	M1	7.91	α(L)=6.21 9; α(M)=1.342 19; α(N+..)=0.360 5 α(N)=0.307 5; α(O)=0.0486 7; α(P)=0.00476 7 Mult.: α(L1)exp<6.5, α(L2)exp=0.8 3, α(L3)exp<0.49, α(M1)exp=1.1 3: theory: α(L1)=5.61, α(L2)=0.503, α(L3)=0.094.
32.6341 3	308 30	78.2335	1⁺	45.5994	0⁻	E1	1.057	α(L)=0.831 12; α(M)=0.180 3; α(N+..)=0.0455 7 α(N)=0.0397 6; α(O)=0.00546 8; α(P)=0.000304 5 Mult.: α(L1)exp=0.35 7, α(L2)exp=0.26 5, α(L3)exp=0.27 3, α(M)exp=0.20 3; theory: α(L1)=0.370, α(L2)=0.189, α(L3)=0.272, α(M)=0.180.
32.8457 5	2.9 5	178.9312	3⁺,4⁺	146.0853	3⁺	[M1]	7.40	α(L)=5.81 9; α(M)=1.255 18; α(N+..)=0.337 5 α(N)=0.287 4; α(O)=0.0454 7; α(P)=0.00445 7
33.7100 7	2.4 4	141.8253	4⁻	108.1148	5⁺	[E1]	0.965	α(L)=0.758 11; α(M)=0.1647 23; α(N+..)=0.0416 6 α(N)=0.0363 5; α(O)=0.00501 7; α(P)=0.000282 4
ˣ33.7879ᵈ 10	0.8 3							
34.6855 4	14.1 14	124.5343	4⁺	89.8488	4⁺	M1	6.30	α(L)=4.94 7; α(M)=1.068 15; α(N+..)=0.287 4 α(N)=0.244 4; α(O)=0.0387 6; α(P)=0.00379 6 Mult.: α(L1)exp=4.5 5, α(L2)exp=0.7 3; theory: α(L1)=4.47, α(L2)=0.398.
36.0325 9	5.7 14	196.9136	3⁺,4⁺	160.8808	3⁺,4⁺	M1	5.63	α(L)=4.42 7; α(M)=0.955 14; α(N+..)=0.256 4 α(N)=0.218 3; α(O)=0.0346 5; α(P)=0.00339 5 Mult.: α(L1)exp=6 2; theory: α(L1)=4.00.
37.2171 12	3.6 7	158.0548	1⁺	120.8384	2⁺	[M1]	5.11	α(L)=4.01 6; α(M)=0.868 13; α(N+..)=0.233 4 α(N)=0.199 3; α(O)=0.0314 5; α(P)=0.00308 5 Mult.: α(L1)exp=2.0 6; theory: α(L1)=3.63.
38.8068 5	17.4 17	180.6323	5⁻	141.8253	4⁻	M1	4.52	α(L)=3.55 5; α(M)=0.767 11; α(N+..)=0.206 3 α(N)=0.1755 25; α(O)=0.0278 4; α(P)=0.00272 4 Mult.: α(L1)exp=3.3 6, α(L2)exp≈0.7, α(M1)exp=1.1 2; theory: α(L1)=3.21, α(L2)=0.284, α(M1)=0.688.
ˣ39.1072 17	1.3 3							
39.9319 5	12.9 13	118.1660	2⁻	78.2335	1⁺	[E1]	0.600	α(L)=0.472 7; α(M)=0.1022 15; α(N+..)=0.0260 4 α(N)=0.0226 4; α(O)=0.00318 5; α(P)=0.000190 3 Mult.: α(L1)exp<0.8.
40.6218 5	58 5	148.7364	(4)⁺	108.1148	5⁺	M1	3.95	α(L)=3.10 5; α(M)=0.670 10; α(N+..)=0.180 3 α(N)=0.1533 22; α(O)=0.0243 4; α(P)=0.00238 4 Mult.: α(L1)exp=3.3 6; theory: α(L1)=2.81.
ˣ42.1311 7	1.7 3							
42.5730 8	3.2 4	150.6869	4⁻	108.1148	5⁺	[E1]	0.501	α(L)=0.394 6; α(M)=0.0853 12; α(N+..)=0.0217 3 α(N)=0.0189 3; α(O)=0.00267 4; α(P)=0.0001633 23
42.6051 5	27.8 22	120.8384	2⁺	78.2335	1⁺	M1	3.43	α(L)=2.69 4; α(M)=0.582 9; α(N+..)=0.1564 22 α(N)=0.1332 19; α(O)=0.0211 3; α(P)=0.00207 3 Mult.: α(L1)exp=2.6 4, α(L2)exp=0.25 4, α(L3)exp=1.3 2, α(M1)exp=0.4 2; theory: theory: α(L1)=2.44, α(L2)=0.214, α(L3)=0.0395, α(M1)=0.523.
ˣ42.6406ᵈ 9	0.23 7							

$^{152}_{63}$Eu$_{89}$-4

γ(^{152}Eu) (continued)

E$_γ$[†]	I$_γ$[‡i]	E$_i$(level)	$J^π_i$	E$_f$	$J^π_f$	Mult.[@]	δ[&]	α[j]	Comments
^{x}43.1385 *7*	0.99 *15*								
43.7926 *6*	12.8 *9*	109.0892	$(1)^-$	65.2966	1^-	M1+E2	0.14 *2*	4.3 *4*	α(L)=3.4 *3*; α(M)=0.75 *7*; α(N+..)=0.196 *16* α(N)=0.169 *14*; α(O)=0.0255 *19*; α(P)=0.00188 *3* Mult.: α(L1)exp=2.5 *6*, α(L2)exp=0.59 *15*, α(M1)exp=0.9 *2*; theory: α(L1)=2.22 *4*, α(L2)=0.61 *13*, α(M1)=0.475 *7*.
^{x}44.8991 *8*	1.11 *17*								
45.0579 *10*	1.23 *18*	203.1119	$1^-,2^-$	158.0548	1^+				
46.1504 *6*	146 *9*	111.4472	2^-	65.2966	1^-	M1		2.71	α(L)=2.13 *3*; α(M)=0.460 *7*; α(N+..)=0.1236 *18* α(N)=0.1053 *15*; α(O)=0.01666 *24*; α(P)=0.001636 *23* Mult.: α(L1)exp=3.0 *3*, α(L2)exp=0.5 *2*, α(L3)exp<0.20, α(M1)exp=0.64, α(N1)exp=0.18 *2*; theory: α(L1)=1.93, α(L2)=0.169, α(L3)=0.0310, α(M1)=0.413.
46.758 *5*	8.7 *15*	332.7919	3^+	286.0330	2^-				
47.4291[#l]	3.7[#]	301.1897	$3^+,4^+$	253.7604	3^+				
^{x}49.1043 *12*	1.8 *6*								
50.4445 *6*	2.3 *5*	201.1319	3^+	150.6869	4^-				
50.7355 *10*	2.2 *4*	307.4575	$2^+,3^+$	256.7235	$3^+,4^+$				
50.8284 *4*	5.6 *10*	196.9136	$3^+,4^+$	146.0853	3^+	[M1]		12.95	α(K)=10.91 *16*; α(L)=1.602 *23*; α(M)=0.346 *5*; α(N+..)=0.0930 *13* α(N)=0.0792 *11*; α(O)=0.01255 *18*; α(P)=0.001232 *18*
50.9280 *5*	3.3 *7*	199.6645	$4^+,5^+$	148.7364	$(4)^+$	[M1]		12.88	α(K)=10.86 *16*; α(L)=1.592 *23*; α(M)=0.344 *5*; α(N+..)=0.0925 *13* α(N)=0.0788 *11*; α(O)=0.01247 *18*; α(P)=0.001225 *18*
51.303 *7*	1.9 *4*	265.7205	3^-	214.4269	4^+				
51.4202 *10*	0.87 *22*	347.7464	$3^+,4$	296.3270	3^+				
51.9769 *4*	139 *24*	141.8253	4^-	89.8488	4^+	E1		1.602	α(K)=1.316 *19*; α(L)=0.225 *4*; α(M)=0.0486 *7*; α(N+..)=0.01246 *18* α(N)=0.01081 *16*; α(O)=0.001557 *22*; α(P)=0.0001013 *15* Mult.: α(L1)exp=0.13 *4*, α(L2)exp<0.51, α(L3)exp<0.22; theory: α(L1)=0.124, α(L2)=0.0423, α(L3)=0.0578.
52.2145 *12*	1.4 *6*	141.8253	4^-	89.6130	4^-	[M1,E2]		21 *10*	α(K)=7 *4*; α(L)=11 *10*; α(M)=2.6 *23*; α(N+..)=0.7 *6* α(N)=0.6 *5*; α(O)=0.08 *7*; α(P)=0.0007 *4*
52.4957 *4*	9.9 *17*	203.1822	4^-	150.6869	4^-	[M1]		11.8	Mult.: α(L1)exp<8.9, α(L2)exp<9.5, α(L3)exp<1.5, α(M)exp<1.1. α(L)exp and α(M)exp are consistent only with mult=E1 or M1. Placement in the level scheme requires Δπ=no.
^{x}52.5591 *9*	1.6 *3*								
52.6485 *12*	0.56 *22*	309.3742	3^-	256.7235	$3^+,4^+$				
52.7664 *5*	3.0 *6*	160.8808	$3^+,4^+$	108.1148	5^+	[M1]		11.67	α(K)=9.84 *14*; α(L)=1.435 *20*; α(M)=0.310 *5*; α(N+..)=0.0833 *12* α(N)=0.0710 *10*; α(O)=0.01124 *16*; α(P)=0.001104 *16*
52.8693 *4*	64 *11*	118.1660	2^-	65.2966	1^-	M1		11.61	α(K)=9.79 *14*; α(L)=1.427 *20*; α(M)=0.308 *5*; α(N+..)=0.0829 *12* α(N)=0.0706 *10*; α(O)=0.01118 *16*; α(P)=0.001098 *16* Mult.: α(L1)exp=1.2 *3*, α(L2)exp<0.12, α(L3)exp<0.37, α(M)exp<0.60; theory: α(L1)=1.29, α(L2)=0.112, α(L3)=0.0205, α(M)=0.308.
53.5460 *6*	2.1 *4*	214.4269	4^+	160.8808	$3^+,4^+$	(M1)		11.19	α(K)=9.44 *14*; α(L)=1.374 *20*; α(M)=0.297 *5*; α(N+..)=0.0798 *12*

γ(^{152}Eu) (continued)

E_γ †	I_γ ‡i	E_i(level)	J_i^π	E_f	J_f^π	Mult. @	α j	Comments
								α(N)=0.0680 10; α(O)=0.01077 15; α(P)=0.001058 15 Mult.: α(L1)exp=5.7 20; theory: α(L1)=1.25.
54.0986 6	1.8 3	174.9373	$2^-,3^-$	120.8384	2^+	[E1]	1.449	α(K)=1.194 17; α(L)=0.201 3; α(M)=0.0434 6; α(N+..)=0.01115 16 α(N)=0.00966 14; α(O)=0.001396 20; α(P)=9.20×10^{-5} 13
54.3964 8	7.0 12	178.9312	$3^+,4^+$	124.5343	4^+	M1	10.70	α(K)=9.03 13; α(L)=1.312 19; α(M)=0.284 4; α(N+..)=0.0762 11 α(N)=0.0649 9; α(O)=0.01028 15; α(P)=0.001010 15 Mult.: α(L1)exp=2.1 5; theory: α(L1)=1.19.
55.0469 5	13.8 23	201.1319	3^+	146.0853	3^+	M1	10.34	α(K)=8.73 13; α(L)=1.267 18; α(M)=0.274 4; α(N+..)=0.0736 11 α(N)=0.0627 9; α(O)=0.00993 14; α(P)=0.000976 14 Mult.: α(L1)exp=1.2 2; theory: α(L1)=1.15.
55.084 3	1.4 3	196.9136	$3^+,4^+$	141.8253	4^-	[E1]	1.384	α(K)=1.141 16; α(L)=0.191 3; α(M)=0.0412 6; α(N+..)=0.01060 15 α(N)=0.00918 13; α(O)=0.001329 19; α(P)=8.80×10^{-5} 13
55.5419 5	15 3	120.8384	2^+	65.2966	1^-	[E1]	1.354	α(K)=1.117 16; α(L)=0.186 3; α(M)=0.0403 6; α(N+..)=0.01036 15 α(N)=0.00897 13; α(O)=0.001299 19; α(P)=8.63×10^{-5} 12
56.0978 5	5.2 9	180.6323	5^-	124.5343	4^+	[E1]	1.320	α(K)=1.090 16; α(L)=0.181 3; α(M)=0.0391 6; α(N+..)=0.01007 15 α(N)=0.00872 13; α(O)=0.001264 18; α(P)=8.42×10^{-5} 12
56.2362 5	23 4	146.0853	3^+	89.8488	4^+	M1	9.73	α(K)=8.21 12; α(L)=1.190 17; α(M)=0.257 4; α(N+..)=0.0691 10 α(N)=0.0589 9; α(O)=0.00933 13; α(P)=0.000916 13 Mult.: α(K)exp=18 9, α(L1)exp=0.8 3; theory: α(K)=8.2, α(L1)=1.08.
56.4712 15	1.34 23	146.0853	3^+	89.6130	4^-	[E1]	1.298	α(K)=1.072 15; α(L)=0.1778 25; α(M)=0.0384 6; α(N+..)=0.00989 14 α(N)=0.00856 12; α(O)=0.001242 18; α(P)=8.28×10^{-5} 12
56.7715 5	21 3	174.9373	$2^-,3^-$	118.1660	2^-	M1	9.46	α(K)=7.99 12; α(L)=1.158 17; α(M)=0.250 4; α(N+..)=0.0672 10 α(N)=0.0573 8; α(O)=0.00907 13; α(P)=0.000891 13 Mult.: α(L1)exp=1.5 3; theory: α(L1)=1.051.
56.8466 12	2.5 6	177.6867	$(2,3)^+$	120.8384	2^+	[M1]	9.43	α(K)=7.96 12; α(L)=1.153 17; α(M)=0.249 4; α(N+..)=0.0670 10 α(N)=0.0571 8; α(O)=0.00904 13; α(P)=0.000888 13
56.8566 6	11.3 19	237.4890	4^-	180.6323	5^-			
58.4311 7	2.3 4	399.6746	$2,3^+$	341.2435	2^-			
^{x}58.8836 d 10	0.75 19							
59.1175 6	1.35 20	258.7822	$4^+,5^+$	199.6645	$4^+,5^+$			
59.2201 d 9	0.59 15	283.7187	3^+	224.4999	3^-			
59.3070 15	0.55 11	201.1319	3^+	141.8253	4^-			
^{x}59.7145 5	12.1 18					M1	8.18	α(K)=6.91 10; α(L)=0.998 14; α(M)=0.216 3; α(N+..)=0.0580 9 α(N)=0.0494 7; α(O)=0.00782 11; α(P)=0.000769 11 Mult.: α(L1)exp=1.2 3.
^{x}59.8127 8	4.8 7							
^{x}60.0920 8	4.1 6							
60.9669 8	1.09 19	174.9373	$2^-,3^-$	113.9696	3^+	[E1]	1.063	α(K)=0.881 13; α(L)=0.1433 20; α(M)=0.0309 5; α(N+..)=0.00798 12 α(N)=0.00691 10; α(O)=0.001007 14; α(P)=6.87×10^{-5} 10
61.0727 12	0.59 12	150.6869	4^-	89.6130	4^-	[M1,E2]	12 5	α(K)=4.9 16; α(L)=5 5; α(M)=1.2 11; α(N+..)=0.3 3 α(N)=0.28 23; α(O)=0.04 3; α(P)=0.00049 23
62.4113 7	2.1 3	237.3482	2^-	174.9373	$2^-,3^-$			
62.5522 8	4.2 6	237.4890	4^-	174.9373	$2^-,3^-$			

γ(^{152}Eu) (continued)

E$_\gamma$ [†]	I$_\gamma$ [‡i]	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Mult. [@]	δ [&]	α [j]	Comments
62.8810 *6*	12.9 *19*	462.5552	4	399.6746	2,3$^+$	M1,E2		11 *4*	Mult.: α(K)exp=3.7 *12*; theory: α(K)(E2)=3.21, α(K)(M1)=5.95.
[x]63.0581 *15*	0.42 *13*								
[x]63.0961 *12*	0.54 *9*								
63.4902[k] *4*	20.4[k] *24*	109.0892	(1)$^-$	45.5994	0$^-$	M1		6.85	α(K)=5.78 *8*; α(L)=0.834 *12*; α(M)=0.180 *3*; α(N+..)=0.0485 *7* α(N)=0.0413 *6*; α(O)=0.00654 *10*; α(P)=0.000643 *9* Mult.: α(K)exp=8.9 *20*, α(L1)exp=0.64 *16*; theory: α(K)=5.78, α(L1)=0.758.
63.4902[k] *4*	20.4[k] *24*	174.9373	2$^-$,3$^-$	111.4472	2$^-$	(M1)		6.85	α(K)=5.78 *8*; α(L)=0.834 *12*; α(M)=0.180 *3*; α(N+..)=0.0485 *7* α(N)=0.0413 *6*; α(O)=0.00654 *10*; α(P)=0.000643 *9* Mult.: α(K)exp=8.9 *20*, α(L1)exp=0.64 *16*; theory: α(K)=5.78, α(L1)=0.758.
[x]63.5163 *20*	0.99 *20*								
63.7388 *9*	1.56 *23*	214.4269	4$^+$	150.6869	4$^-$				
64.3341 *10*	2.7 *3*	285.1288	3$^-$,4$^-$	220.7952	3$^-$				
64.4596 *7*	3.6 *5*	267.6410	4$^-$	203.1822	4$^-$				
64.5670 *5*	13.3 *16*	141.8253	4$^-$	77.2588	3$^-$	M1		6.52	α(K)=5.51 *8*; α(L)=0.794 *12*; α(M)=0.1717 *24*; α(N+..)=0.0462 *7* α(N)=0.0393 *6*; α(O)=0.00623 *9*; α(P)=0.000612 *9* Mult.: α(L1)exp=0.9 *3*, α(K)exp=6 *3* for the 64.4596γ+64.5670γ doublet; theory: α(K)exp=5.52, α(L1)=0.724 for Eγ=64.51.
[x]64.8277 *6*	0.85 *13*								
64.9619 *5*	14.3 *17*	178.9312	3$^+$,4$^+$	113.9696	3$^+$	M1		6.41	α(K)=5.41 *8*; α(L)=0.780 *11*; α(M)=0.1687 *24*; α(N+..)=0.0453 *7* α(N)=0.0386 *6*; α(O)=0.00612 *9*; α(P)=0.000602 *9* Mult.: α(L1)exp=0.64 *15*; theory: α(L1)=0.709.
65.1512 *8*	1.23 *18*	332.7919	3$^+$	267.6410	4$^-$				
65.2965 *5*	12.7 *15*	65.2966	1$^-$	0.0	3$^-$	E2		12.18	α(K)=3.04 *5*; α(L)=7.06 *10*; α(M)=1.660 *24*; α(N+..)=0.416 *6* α(N)=0.367 *6*; α(O)=0.0491 *7*; α(P)=0.000233 *4* Mult.: α(L1)exp<0.47, α(L2)exp=4.4 *13*, α(L3)exp=3.9 *9*, α(M)exp=2.0 *3*; theory: α(L1)=0.273, α(L2)=3.15, α(L3)=3.64, α(M)=1.66.
[x]65.7931 *9*	2.5 *3*								
65.8478[k] *9*	1.99[k] *24*	111.4472	2$^-$	45.5994	0$^-$	[E2]		11.79	α(K)=3.00 *5*; α(L)=6.79 *10*; α(M)=1.595 *23*; α(N+..)=0.400 *6* α(N)=0.353 *5*; α(O)=0.0472 *7*; α(P)=0.000229 *4*
65.8478[k] *9*	1.99[k] *24*	174.9373	2$^-$,3$^-$	109.0892	(1)$^-$	[M1,E2]		9 *3*	α(K)=4.1 *11*; α(L)=4 *3*; α(M)=0.9 *8*; α(N+..)=0.22 *18* α(N)=0.19 *16*; α(O)=0.027 *21*; α(P)=0.00040 *18*
65.9486 *5*	10.1 *10*	287.1585	(4$^+$)	221.2097	3$^+$				Mult.: α(K)exp≈3.0 for the 65.7931γ+65.8478γ+65.9486γ multiplet; theory: α(K)(E1)=0.719, α(K)(E2)=3.00, α(K)(M1)=5.18.
[x]66.0645 *20*	0.53 *11*								
[x]66.3690 *10*	0.96 *14*								
[x]66.6655 *8*	1.90 *23*								
66.8396[k] *6*	2.2[k] *2*	227.7204	3$^+$	160.8808	3$^+$,4$^+$				
66.8396[k] *6*	2.2[k] *2*	339.2171	2	272.3775	2$^+$				
[x]66.8627 *6*	1.50 *18*								

From ENSDF

$^{152}_{63}$Eu$_{89}$-7

γ(^{152}Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[@]	δ[&]	α[j]	Comments
^{x}67.1559 *6*	11.5 *12*					M1+E2	2.1 *3*	9.9 *2*	α(K)=3.9 *10*; α(L)=3 *3*; α(M)=0.8 *7*; α(N+..)=0.20 *17* α(N)=0.18 *15*; α(O)=0.024 *19*; α(P)=0.00038 *17* Mult.,δ: α(K)exp=3.8 *6*, α(L1)exp=0.26 *13*.
^{x}67.2172 *9*	1.08 *16*								
67.305 *5*	0.51 *13*	353.3447	3,4$^-$	286.0330	2$^-$				
^{x}67.6125 *7*	1.08 *13*								
67.7232 *10*	0.80 *12*	246.6549	3$^-$,4$^-$	178.9312	3$^+$,4$^+$				
67.8516 *5*	5.9 *6*	146.0853	3$^+$	78.2335	1$^+$	E2		10.48	α(K)=2.86 *4*; α(L)=5.88 *9*; α(M)=1.383 *20*; α(N+..)=0.347 *5* α(N)=0.306 *5*; α(O)=0.0410 *6*; α(P)=0.000215 *3* Mult.: α(L2)exp=2.7 *8*, α(L3)exp=1.7 *3*; theory: α(L2)=2.63, α(L3)=3.00.
^{x}67.9300 *8*	0.92 *11*								
67.9766 *10*	0.74 *11*	267.6410	4$^-$	199.6645	4$^+$,5$^+$				
^{x}68.3159 *8*	1.14 *11*								
68.3397[k] *9*	1.18[k] *12*	214.4269	4$^+$	146.0853	3$^+$				
68.3397[k] *9*	1.18[k] *12*	340.7195	(3$^-$)	272.3775	2$^+$				
^{x}69.0000 *9*	1.37 *14*								
69.2928 *8*	1.85 *19*	283.7187	3$^+$	214.4269	4$^+$				
69.6269 *12*	0.65 *13*	353.3447	3,4$^-$	283.7187	3$^+$				
69.9532 *10*	0.73 *9*	294.4521	3$^-$,4$^-$	224.4999	3$^-$				
70.1083 *5*	9.5 *8*	220.7952	3$^-$	150.6869	4$^-$	M1		5.14	α(K)=4.34 *6*; α(L)=0.625 *9*; α(M)=0.1350 *19*; α(N+..)=0.0363 *5* α(N)=0.0309 *5*; α(O)=0.00490 *7*; α(P)=0.000482 *7* Mult.: α(K)exp=4.2 *12*; theory: α(K)=4.34.
^{x}70.3505 *15*	0.83 *10*								
70.604 *4*	0.34 *14*	483.3410	3$^+$	412.7454	3$^+$				
^{x}70.7452 *5*	12.5 *11*								
70.8170[k] *10*	0.79[k] *8*	178.9312	3$^+$,4$^+$	108.1148	5$^+$	[M1,E2]		6.9 *20*	α(K)=3.4 *8*; α(L)=2.7 *21*; α(M)=0.6 *5*; α(N+..)=0.16 *13* α(N)=0.14 *11*; α(O)=0.019 *15*; α(P)=0.00033 *14*
70.8170[k] *10*	0.79[k] *8*	248.5030	1$^-$,2$^-$	177.6867	(2,3)$^+$				
71.0323 *5*	79 *7*	160.8808	3$^+$,4$^+$	89.8488	4$^+$	M1+E2	0.24 *1*	5.15	α(K)=4.10 *6*; α(L)=0.827 *22*; α(M)=0.183 *5*; α(N+..)=0.0482 *13* α(N)=0.0415 *11*; α(O)=0.00626 *16*; α(P)=0.000449 *7* Mult.,δ: α(K)exp=3.2 *6*, α(L1)exp=0.57 *6*, α(L2)exp=0.17 *2*, α(L3)exp=0.16 *2*; theory: α(K)=4.10, α(L1)=0.530 *8*, α(L2)=0.159 *8*, α(L3)=0.138 *11 10*, α(L3)=1.2 *11*.
^{x}71.2421 *10*	1.33 *13*								
71.2663 *9*	0.93 *9*	160.8808	3$^+$,4$^+$	89.6130	4$^-$	[E1]		0.705	α(K)=0.587 *9*; α(L)=0.0923 *13*; α(M)=0.0199 *3*; α(N+..)=0.00516 *8* α(N)=0.00445 *7*; α(O)=0.000656 *10*; α(P)=4.67×10^{-5} *7*
71.6718 *6*	5.1 *5*	286.0330	2$^-$	214.3604	2$^-$	M1,E2		6.6 *19*	α(K)=3.3 *8*; α(L)=2.6 *20*; α(M)=0.6 *5*; α(N+..)=0.15 *12* α(N)=0.13 *11*; α(O)=0.018 *14*; α(P)=0.00032 *13* Mult.: α(K)exp=3.5 *14*; theory: α(K)(M1)=4.07, α(K)(E2)=2.59.
^{x}71.9640 *5*	4.2 *4*								

γ(^{152}Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[@]	δ[&]	α[j]	Comments
72.3796 6	2.9 3	196.9136	$3^+,4^+$	124.5343	4^+	[M1,E2]		6.4 18	α(K)=3.2 8; α(L)=2.5 19; α(M)=0.6 5; α(N+..)=0.14 12 α(N)=0.13 10; α(O)=0.017 13; α(P)=0.00031 13
[x]72.4510 8	1.10 17								
72.5190 6	75 7	180.6323	5^-	108.1148	5^+	E1		0.673	α(K)=0.561 8; α(L)=0.0878 13; α(M)=0.0189 3; α(N+..)=0.00491 7 α(N)=0.00424 6; α(O)=0.000626 9; α(P)=4.47×10^{-5} 7 Mult.: α(K)exp<4.1, α(L1)exp<0.35, α(L2)exp<0.06, α(L3)exp<1.0; theory: α(K)=0.561, α(L1)=0.0549, α(L2)=0.0142, α(L3)=0.0186.
72.5663 7	2.04 24	118.1660	2^-	45.5994	0^-	[E2]		8.07	α(K)=2.53 4; α(L)=4.28 6; α(M)=1.005 14; α(N+..)=0.253 4 α(N)=0.223 4; α(O)=0.0299 5; α(P)=0.000186 3
72.6025 5	10.2 10	214.4269	4^+	141.8253	4^-	E1[f]		0.671	α(K)=0.559 8; α(L)=0.0875 13; α(M)=0.0189 3; α(N+..)=0.00490 7 α(N)=0.00423 6; α(O)=0.000624 9; α(P)=4.46×10^{-5} 7 Mult.: α(K)exp<4.1, α(L1)exp<0.35, α(L2)exp<0.6, α(L3)exp<1.0; theory: E1: α(K)=0.559, α(L1)=0.0548, α(L2)=0.0142, α(L3)=0.0186; M1: α(K)=3.92, α(L1)=0.513, α(L2)=0.0434, α(L3)=0.00783.
[x]72.6533 9	2.31 23								
72.9974 8	0.82 12	294.4521	$3^-,4^-$	221.4537	2^-				
[x]73.3526 7	23.5 24								
73.4280 7	143 14	150.6869	4^-	77.2588	3^-	M1+E2	0.18 1	4.59	α(K)=3.76 6; α(L)=0.656 16; α(M)=0.144 4; α(N+..)=0.0382 9 α(N)=0.0328 8; α(O)=0.00503 11; α(P)=0.000414 6 Mult.: α(K)exp=3.2 7, α(L1)exp=0.57 4, α(L2)exp=0.20 3, α(L3)exp=0.12 1, α(M)exp=0.12 2, α(N1)exp=0.03 1; theory: α(K)=3.76, α(L1)=0.488 7, α(L2)=0.097 7, α(L3)=0.071 7, α(M)=0.144 4.
73.6575 6	9.7 10	294.4521	$3^-,4^-$	220.7952	3^-	(M1)		4.45	α(K)=3.76 6; α(L)=0.541 8; α(M)=0.1169 17; α(N+..)=0.0314 5 α(N)=0.0268 4; α(O)=0.00424 6; α(P)=0.000417 6 Mult.: α(K)exp<2.1, α(L1)exp=0.54 17; theory: α(K)=3.76, α(L1)=0.492.
73.8126 7	8.5 9	224.4999	3^-	150.6869	4^-				
74.320 3	0.48 10	320.9733	$3^{(+)}$	246.6549	$3^-,4^-$				
[x]74.4815 20	0.29 7								
74.7101 10	1.00 12	220.7952	3^-	146.0853	3^+				
[x]74.9191 15	0.69 10								
[x]75.0289 12	0.44 5								
75.1305 6	7.4 7	199.6645	$4^+,5^+$	124.5343	4^+	M1,E2		5.6 15	α(K)=3.0 6; α(L)=2.1 16; α(M)=0.5 4; α(N+..)=0.12 10 α(N)=0.11 9; α(O)=0.015 11; α(P)=0.00028 12 Mult.: α(K)exp=3.9 11, α(L1)=0.36 9; theory: α(K)=3.56 (M1), 2.36 (E2); α(L1)=0.465 (M1), 0.206 (E2).
75.3688[k] 6	6.6[k] 7	221.4537	2^-	146.0853	3^+				
75.3688[k] 6	6.6[k] 7	347.7464	$3^+,4$	272.3775	2^+				
75.5243 15	0.47 6	341.2435	2^-	265.7205	3^-				
[x]75.7169 12	0.40 6								

γ(^{152}Eu) (continued)

E_γ †	I_γ ‡i	E_i(level)	J^π_i	E_f	J^π_f	Mult. @	δ &	α j	Comments
^{x}76.1380 *8*	1.96 *20*								
76.3661 *6*	2.9 *3*	436.1636	$2^+,3^+$	359.7983	2^-				
76.5958 *20*	0.62 *7*	201.1319	3^+	124.5343	4^+				
77.0330 *6*	4.0 *4*	227.7204	3^+	150.6869	4^-				
^{x}77.1276 *8*	1.55 *23*								
77.2583 *6*	354 *35*	77.2588	3^-	0.0	3^-	M1+E2	0.10 *3*	3.90	α(K)=3.27 *5*; α(L)=0.498 *20*; α(M)=0.108 *5*; α(N+..)=0.0290 *12* α(N)=0.0247 *11*; α(O)=0.00388 *14*; α(P)=0.000362 *6* Mult.: α(K)exp=3.3 *4*, α(L1)exp=0.44, α(L2)exp=0.037 *5*, α(L3)exp=0.0092, α(M1)exp=0.097 *24*, α(N1)exp=0.032 *5*; theory: α(K)=3.27 *5*, α(L1)=0.426 *7*, α(L2)=0.050 *10*, α(L3)=0.022 *11*, α(M1)=0.0913 *14*.
^{x}77.6823 *9*	0.71 *7*								
^{x}77.7953 *7*	1.03 *10*								
^{x}77.8755 *12*	0.94 *11*								
^{x}77.9183 *6*	20.1 *20*					M1		3.78	α(K)=3.20 *5*; α(L)=0.459 *7*; α(M)=0.0993 *14*; α(N+..)=0.0267 *4* α(N)=0.0227 *4*; α(O)=0.00360 *5*; α(P)=0.000355 *5* Mult.: α(K)exp=2.6 *6*, α(L1)exp=0.80, α(L2)exp=0.16.
78.1491 *9*	0.76 *9*	258.7822	$4^+,5^+$	180.6323	5^-				
^{x}78.4320 *6*	13.1 *13*								
^{x}78.5057 *7*	1.14 *11*								
78.6486 *6*	7.7 *8*	203.1822	4^-	124.5343	4^+	(E1)		0.542	α(K)=0.453 *7*; α(L)=0.0699 *10*; α(M)=0.01506 *21*; α(N+..)=0.00391 *6* α(N)=0.00338 *5*; α(O)=0.000501 *7*; α(P)=3.65×10^{-5} *6* Mult.: α(K)exp=1.2 *4*; theory: α(K)(E1)=0.453, α(K)(E2)=2.13; placement in the level scheme requires Δπ=yes, and α(K)exp gives δ(M2/E1)=0.15 *+4−5*; however, this large an M2 admixture would require, from RUL, a halflife >0.2 μs, suggesting that α(K)exp is too large.
^{x}78.7446 *17*	0.43 *7*								
78.9702 *6*	3.8 *4*	220.7952	3^-	141.8253	4^-				
79.2937 *5*	8.5 *9*	237.3482	2^-	158.0548	1^+				
^{x}79.437 *3*	0.29 *6*								
79.8216 *5*	20.7 *19*	158.0548	1^+	78.2335	1^+	M1		3.53	α(K)=2.98 *5*; α(L)=0.428 *6*; α(M)=0.0926 *13*; α(N+..)=0.0249 *4* α(N)=0.0212 *3*; α(O)=0.00336 *5*; α(P)=0.000331 *5* Mult.: α(K)exp=3.5 *8*, α(L1)exp<0.92, α(M1)exp=0.18 *7*; theory: α(K)=2.98, α(L1)=0.390, α(M1)=0.0835.
79.8509 *7*	1.85 *19*	258.7822	$4^+,5^+$	178.9312	$3^+,4^+$				
^{x}80.1586 *6*	2.16 *22*								
80.2939 *6*	6.0 *6*	201.1319	3^+	120.8384	2^+				
^{x}81.1601 *12*	0.67 *10*								
^{x}81.6208 *6*	3.6 *3*								
81.8997 *12*	0.45 *7*	296.3270	3^+	214.4269	4^+				
82.2465 *5*	6.3 *6*	303.4563	$2^+,3^+,4^+$	221.2097	3^+	(M1)		3.24	α(K)=2.74 *4*; α(L)=0.393 *6*; α(M)=0.0849 *12*; α(N+..)=0.0228 *4*

γ(^{152}Eu) (continued)

Eγ†	Iγ‡i	Ei(level)	J^π_i	Ef	J^π_f	Mult.@	αj	Comments
								α(N)=0.0194 *3*; α(O)=0.00308 *5*; α(P)=0.000303 *5* Mult.: α(L1)exp=0.45 for the 82.2465γ+82.2735γ doublet; theory: α(L1)=0.358.
82.2735 *6*	10.3 *9*	203.1119	1⁻,2⁻	120.8384	2⁺			Mult.: M1 suggested by α(L1)exp=0.45 for the 82.2465γ+82.2735γ doublet; however, placement in the level scheme requires Δπ=yes.
x82.6089 *20*	0.58 *12*							
82.6751 *6*	4.2 *4*	224.4999	3⁻	141.8253	4⁻			
82.7492 *5*	7.4 *7*	366.4673	2⁻,3⁺	283.7187	3⁺			
82.9223 *9*	1.14 *11*	286.0330	2⁻	203.1119	1⁻,2⁻			
82.9451 *9*	1.01 *10*	196.9136	3⁺,4⁺	113.9696	3⁺	[M1,E2]	4.0 *9*	α(K)=2.3 *4*; α(L)=1.3 *10*; α(M)=0.31 *23*; α(N+..)=0.08 *6* α(N)=0.07 *5*; α(O)=0.010 *7*; α(P)=0.00022 *8*
82.9659 *15*	0.72 *11*	201.1319	3⁺	118.1660	2⁻			
x83.1633 *17*	0.56 *8*							
83.4853 *10*	0.51 *8*	320.9733	3$^{(+)}$	237.4890	4⁻			
x83.7245 *17*	0.36 *5*							
x83.9574 *7*	2.47 *25*							
83.9964k *6*	3.0k *3*	285.1288	3⁻,4⁻	201.1319	3⁺			
83.9964k *6*	3.0k *3*	340.7195	(3⁻)	256.7235	3⁺,4⁺			
x84.1332 *8*	0.83 *8*							
x84.2776 *15*	0.37 *6*							
x84.3762 *8*	1.07 *11*							
x84.4135 *5*	1.59 *14*							
84.9009 *12*	0.49 *5*	286.0330	2⁻	201.1319	3⁺			
84.9454 *6*	3.4 *3*	203.1119	1⁻,2⁻	118.1660	2⁻	(M1)f	2.95	α(K)=2.49 *4*; α(L)=0.358 *5*; α(M)=0.0773 *11*; α(N+..)=0.0208 *3* α(N)=0.01770 *25*; α(O)=0.00281 *4*; α(P)=0.000276 *4* Mult.: α(K)exp=2.2 *6* for the 84.9454γ+84.9846γ doublet; theory: α(K)=2.49 for Eγ=84.96.
x84.9846 *6*	1.92 *15*							
x85.0916 *10*	0.60 *5*							
x85.3013 *6*	2.29 *18*					M1,E2	3.6 *8*	α(K)=2.1 *4*; α(L)=1.2 *9*; α(M)=0.27 *20*; α(N+..)=0.07 *5* α(N)=0.06 *5*; α(O)=0.008 *6*; α(P)=0.00020 *8* Mult.: α(K)exp=2.9 *10*.
85.3257 *30*	0.29 *7*	174.9373	2⁻,3⁻	89.6130	4⁻	[M1,E2]	3.6 *8*	α(K)=2.1 *4*; α(L)=1.2 *9*; α(M)=0.27 *20*; α(N+..)=0.07 *5* α(N)=0.06 *5*; α(O)=0.008 *6*; α(P)=0.00020 *8*
x85.4176 *7*	1.12 *10*							
x85.5375 *12*	0.49 *5*							
x85.5761 *7*	0.96 *9*							
85.6954 *20*	0.36 *5*	199.6645	4⁺,5⁺	113.9696	3⁺	[M1,E2]	3.6 *7*	α(K)=2.1 *4*; α(L)=1.2 *8*; α(M)=0.27 *20*; α(N+..)=0.07 *5* α(N)=0.06 *5*; α(O)=0.008 *6*; α(P)=0.00020 *8*
85.8963 *7*	1.53 *12*	227.7204	3⁺	141.8253	4⁻			
x86.0861 *17*	0.38 *6*							
86.1374 *9*	0.80 *8*	332.7919	3⁺	246.6549	3⁻,4⁻			
x86.2894 *6*	2.66 *21*							
86.4076 *15*	0.62 *6*	287.1585	(4⁺)	200.7496	5⁻			

γ(^{152}Eu) (continued)

E$_\gamma$†	I$_\gamma$‡i	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Mult.@	αj	Comments
86.428 *3*	0.33 *8*	446.2217	3,4$^-$	359.7983	2$^-$			
86.761 *4*	0.34 *14*	301.1897	3$^+$,4$^+$	214.4269	4$^+$			
86.7892 *12*	0.72 *11*	265.7205	3$^-$	178.9312	3$^+$,4$^+$			
86.8032 *6*	2.30 *21*	237.4890	4$^-$	150.6869	4$^-$			
86.9483 *10*	0.73 *6*	324.2956	2$^+$	237.3482	2$^-$			
87.0077 *7*	1.67 *12*	267.6410	4$^-$	180.6323	5$^-$			
87.1618 *6*	10.9 *8*	201.1319	3$^+$	113.9696	3$^+$	M1,E2	3.4 *7*	α(K)=2.0 *4*; α(L)=1.1 *8*; α(M)=0.25 *18*; α(N+..)=0.06 *5* α(N)=0.06 *4*; α(O)=0.008 *5*; α(P)=0.00019 *7* Mult.: α(K)exp<3.7, α(L1)exp=0.39 *15*; theory: α(K)=2.32 (M1), 1.68 (E2); α(L1)=0.302 (M1), 0.147 (E2).
^{x}87.3609 *15*	0.32 *4*							
^{x}87.4443 *12*	0.43 *4*							
^{x}87.5192 *8*	1.03 *8*							
87.7342 *10*	1.01 *9*	334.3909	4$^-$	246.6549	3$^-$,4$^-$			
^{x}87.8648 *9*	1.07 *7*							
87.9210 *7*	1.59 *11*	309.3742	3$^-$	221.4537	2$^-$			
^{x}87.9785 *6*	3.57 *25*							
^{x}88.0459 *17*	0.55 *11*							
^{x}88.0874 *17*	0.40 *6*							
^{x}88.1170 *20*	0.33 *6*							
^{x}88.2605 *9*	0.76 *7*							
^{x}88.4419 *7*	1.78 *13*							
^{x}88.4959 *17*	0.51 *5*							
88.7102 *8*	0.97 *7*	267.6410	4$^-$	178.9312	3$^+$,4$^+$			
88.7982 *6*	21.5 *13*	196.9136	3$^+$,4$^+$	108.1148	5$^+$	M1,E2	3.2 *6*	α(K)=1.9 *3*; α(L)=1.0 *7*; α(M)=0.23 *17*; α(N+..)=0.06 *4* α(N)=0.05 *4*; α(O)=0.007 *5*; α(P)=0.00018 *7* Mult.: α(K)exp=2.4 *9*, α(L1)exp<0.36: theory: α(K)=2.20 (M1), 1.60 (E2); α(L1)=0.286 (M1), 0.141 (E2).
^{x}88.9065 *10*	0.42 *6*							
88.9629 *12*	0.42 *4*	347.7464	3$^+$,4	258.7822	4$^+$,5$^+$			
89.0818 *17*	0.38 *5*	178.9312	3$^+$,4$^+$	89.8488	4$^+$	[M1,E2]	3.1 *6*	α(K)=1.9 *3*; α(L)=1.0 *7*; α(M)=0.23 *16*; α(N+..)=0.06 *4* α(N)=0.05 *4*; α(O)=0.007 *5*; α(P)=0.00018 *7*
89.2124 *6*	5.2 *4*	203.1822	4$^-$	113.9696	3$^+$			Mult.: α(K)exp=3.2 *16*, α(L1)exp=1.0 *5* for dominant component of multiplet. α(K)exp and α(L1) are reasonably consistent with M1, which is what the authors show, or with E2; however, placement in the level scheme requires $\Delta\pi$=yes. Mult=E1+M2 gives good agreement with both α(K)exp and α(L1)exp for $\delta\approx$0.5, but as for the 78γ, this would require a large halflife. theory: α(K)=0.324 (E1), 2.17 (M1), 1.58 (E2); α(L1)=0.0326 (E1), 0.283 (M1), 0.140 (E2).
89.3182 *15*	0.32 *4*	178.9312	3$^+$,4$^+$	89.6130	4$^-$	[E1]	0.385	α(K)=0.323 *5*; α(L)=0.0488 *7*; α(M)=0.01052 *15*; α(N+..)=0.00274 *4* α(N)=0.00236 *4*; α(O)=0.000353 *5*; α(P)=2.65×10^{-5} *4*
^{x}89.4254 *10*	0.64 *10*							
^{x}89.5360 *9*	2.07 *14*							
^{x}89.5613 *20*	0.47 *7*							

γ(^{152}Eu) (continued)

E_γ [†]	I_γ [‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [@]	α [j]	Comments
89.6128 *6*	57 *4*	89.6130	4$^-$	0.0	3$^-$	M1	2.53	α(K)=2.14 *3*; α(L)=0.306 *5*; α(M)=0.0662 *10*; α(N+..)=0.01780 *25* α(N)=0.01516 *22*; α(O)=0.00240 *4*; α(P)=0.000237 *4* Mult.: α(K)exp=3.2 *16*, α(L1)exp=1.0 *5*; theory: α(K)=2.14, α(L1)=0.279.
89.6844 *10*	1.43 *21*	201.1319	3$^+$	111.4472	2$^-$			
89.8492 *7*	3.22×10^3 *23*	89.8488	4$^+$	0.0	3$^-$	E1	0.379	α(K)=0.318 *5*; α(L)=0.0480 *7*; α(M)=0.01035 *15*; α(N+..)=0.00270 *4* α(N)=0.00232 *4*; α(O)=0.000347 *5*; α(P)=2.61×10^{-5} *4* Mult.: α(K)exp=0.32 *2*, α(L1)exp=0.030 *2*, α(L2)exp=0.0050 *6*, α(L3)exp=0.0095 *7*, α(M)exp=0.0084 *7*; theory: α(K)=0.318, α(L1)=0.0320, α(L2)=0.00702, α(L3)=0.00896, α(M)=0.0104.
90.4483 *10*	0.94 *8*	248.5030	1$^-$,2$^-$	158.0548	1$^+$			
90.7834 *6*	37 *3*	180.6323	5$^-$	89.8488	4$^+$	E1	0.368	α(K)=0.309 *5*; α(L)=0.0466 *7*; α(M)=0.01005 *14*; α(N+..)=0.00262 *4* α(N)=0.00226 *4*; α(O)=0.000337 *5*; α(P)=2.54×10^{-5} *4* Mult.: α(K)exp=0.39 *8*, α(L1)exp=0.09 *5*; theory: α(K)=0.309, α(L1)=0.0312.
^{x}90.9056 *7*	5.1 *4*					M1,E2	2.9 *6*	α(K)=1.8 *3*; α(L)=0.9 *6*; α(M)=0.21 *15*; α(N+..)=0.05 *4* α(N)=0.05 *4*; α(O)=0.006 *5*; α(P)=0.00017 *6* Mult.: α(K)exp=2.4 *7*.
91.0192 *7*	2.73 *22*	180.6323	5$^-$	89.6130	4$^-$	[M1,E2]	2.9 *5*	α(K)=1.8 *3*; α(L)=0.9 *6*; α(M)=0.21 *15*; α(N+..)=0.05 *4* α(N)=0.05 *4*; α(O)=0.006 *4*; α(P)=0.00017 *6*
^{x}91.0754 *7*	2.47 *17*							
91.2627 *7*	5.3 *4*	237.3482	2$^-$	146.0853	3$^+$			
91.2762 *20*	0.80 *12*	249.3303	1$^+$	158.0548	1$^+$			
91.3366 *20*	1.26 *10*	294.4521	3$^-$,4$^-$	203.1119	1$^-$,2$^-$			
91.4036 *8*	1.16 *9*	237.4890	4$^-$	146.0853	3$^+$			
^{x}91.5225 *15*	0.45 *5*							
91.5493 *7*	9.0 *6*	199.6645	4$^+$,5$^+$	108.1148	5$^+$	E2,M1	2.9 *5*	α(K)=1.7 *3*; α(L)=0.9 *6*; α(M)=0.20 *14*; α(N+..)=0.05 *4* α(N)=0.04 *3*; α(O)=0.006 *4*; α(P)=0.00017 *6* Mult.: α(K)exp=1.6 *4*; theory: α(K)(E2)=1.48, α(K)(M1)=2.01.
^{x}91.760 *3*	0.35 *5*							
^{x}91.8199 *10*	0.86 *8*							
^{x}91.8716 *20*	0.30 *5*							
^{x}91.9704 *15*	0.35 *4*							
^{x}92.195 *3*	0.39 *6*							
^{x}92.3114 *7*	2.89 *23*							
^{x}92.3461 *10*	0.89 *8*							
^{x}92.6652 *7*	1.59 *13*							
92.7030 *6*	5.4 *4*	267.6410	4$^-$	174.9373	2$^-$,3$^-$			
92.7575 *6*	10.5 *8*	158.0548	1$^+$	65.2966	1$^-$	[E1]	0.348	α(K)=0.292 *4*; α(L)=0.0439 *7*; α(M)=0.00946 *14*; α(N+..)=0.00247 *4* α(N)=0.00213 *3*; α(O)=0.000318 *5*; α(P)=2.41×10^{-5} *4*
^{x}92.7769 *7*	2.30 *21*							
^{x}93.408 *3*	0.25 *5*							
^{x}93.5159 *15*	1.19 *24*							
^{x}93.5266 *10*	2.0 *3*							

γ(^{152}Eu) (continued)

E_γ†	$I_\gamma$$^{\ddagger i}$	E_i(level)	J^π_i	E_f	J^π_f	Mult.$^{@}$	α^{j}	Comments
93.5895 17	0.28 4	214.4269	4^+	120.8384	2^+			
^{x}93.6619 8	1.40 21							
94.0141 8	0.94 9	434.7356	4	340.7195	(3^-)			
^{x}94.2992 15	0.41 6							
94.5638 10	0.74 7	353.3447	$3,4^-$	258.7822	$4^+,5^+$			
94.5887 6	3.3 3	341.2435	2^-	246.6549	$3^-,4^-$			
^{x}94.6653 15	0.39 4							
^{x}94.7758 6	4.4 4							
^{x}94.8883 9	0.48 7							
94.942 3	0.24 5	309.3742	3^-	214.4269	4^+			
95.0670 6	9.7 8	203.1822	4^-	108.1148	5^+	(E1)	0.325	α(K)=0.273 4; α(L)=0.0410 6; α(M)=0.00882 13; α(N+..)=0.00230 4 α(N)=0.00198 3; α(O)=0.000297 5; α(P)=2.26×10^{-5} 4 Mult.: α(K)exp=0.6 3; theory: α(K)(E1)=0.273, α(K)(E2)=1.34.
^{x}95.1080 12	0.49 5							
^{x}95.144^{d} 8	0.13 9							
95.1946 6	12.1 10	296.3270	3^+	201.1319	3^+	M1^{f}	2.13	α(K)=1.80 3; α(L)=0.257 4; α(M)=0.0556 8; α(N+..)=0.01495 21 α(N)=0.01274 18; α(O)=0.00202 3; α(P)=0.000199 3 Mult.: α(K)exp=2.5 8; theory: α(K)=1.80.
^{x}95.2387 7	1.37 12							
95.446 3	0.41 6	332.7919	3^+	237.3482	2^-			
95.6629 8	1.13 9	237.4890	4^-	141.8253	4^-			
95.7382 20	0.33 7	508.4795	$2^+,3^+$	412.7454	3^+			
95.970 5	0.19 5	246.6549	$3^-,4^-$	150.6869	4^-			
96.1945 7	8.8 7	214.3604	2^-	118.1660	2^-	M1,E2^{f}	2.4 4	α(K)=1.52 23; α(L)=0.7 5; α(M)=0.16 11; α(N+..)=0.04 3 α(N)=0.036 24; α(O)=0.005 3; α(P)=0.00014 5 Mult.: α(K)exp=0.68 10 for the 96.1045γ+96.2607γ doublet; theory: α(K)(M1)=1.74, α(K)(E2)=1.30.
96.2607 7	1.44 13	220.7952	3^-	124.5343	4^+			
96.4750 12	0.79 20	320.9733	$3^{(+)}$	224.4999	3^-			
96.495 3	0.42 8	350.2607	$(3^+,4^-)$	253.7604	3^+			
96.6210 10	0.66 7	353.3447	$3,4^-$	256.7235	$3^+,4^+$			
96.6734 10	0.75 7	221.2097	3^+	124.5343	4^+			
^{x}97.474 6	0.8 4							
^{x}97.6867 10	0.71 6							
97.9045 15	0.39 4	258.7822	$4^+,5^+$	160.8808	$3^+,4^+$			
^{x}98.2932 15	0.50 5							
^{x}98.7158 15	0.36 4							
^{x}98.8054 12	0.56 5							
99.2611 7	3.5 3	440.5049	$3,4^-$	341.2435	2^-			
^{x}99.2910 17	0.48 6							
99.4145 9	1.14 17	296.3270	3^+	196.9136	$3^+,4^+$			
99.4533 8	17.1 14	177.6867	$(2,3)^+$	78.2335	1^+	M1,E2	2.2 3	α(K)=1.39 20; α(L)=0.6 4; α(M)=0.14 10; α(N+..)=0.036 23

γ(^{152}Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[@]	α[j]	Comments
								α(N)=0.031 *20*; α(O)=0.004 *3*; α(P)=0.00013 *5* Mult.: α(K)exp=1.5 *2*; theory: α(K)(M1)=1.59, α(K)(E2)=1.19.
99.5186 *20*	0.33 *4*	320.9733	$3^{(+)}$	221.4537	2^-			
^{x}99.682 *3*	0.33 *8*							
^{x}99.7710 *7*	7.9 *6*					M1	1.86	α(K)=1.571 *22*; α(L)=0.225 *4*; α(M)=0.0486 *7*; α(N+..)=0.01306 *19* α(N)=0.01113 *16*; α(O)=0.001764 *25*; α(P)=0.0001739 *25* Mult.: α(K)exp=2.0 *5*.
^{x}99.8638 *8*	1.06 *10*							
99.9571[cl] *10*	4.6 *7*	220.7952	3^-	120.8384	2^+			
99.9653 *12*	2.5 *5*	224.4999	3^-	124.5343	4^+			
100.0584 *7*	2.14 *17*	301.1897	$3^+,4^+$	201.1319	3^+			
^{x}100.3981 *8*	1.31 *11*							
^{x}100.4631 *12*	0.65 *7*							
^{x}100.5118 *8*	3.5 *3*							
^{x}100.5623 *8*	3.6 *3*							
100.6159 *8*	3.7 *3*	221.4537	2^-	120.8384	2^+			
^{x}100.9088 *20*	0.32 *5*							
^{x}100.9470 *8*	2.14 *17*							
^{x}101.0114 *20*	0.28 *4*							
^{x}101.109 *3*	0.23 *5*							
101.285 *3*	0.51 *6*	440.5049	$3,4^-$	339.2171	2			
^{x}101.3223 *9*	3.4 *3*							
^{x}101.349 *7*	0.37 *19*							
^{x}101.480[d] *5*	0.57 *23*							
^{x}101.5295 *12*	0.60 *6*							
^{x}101.5754 *9*	0.88 *7*							
101.6733 *7*	16.0 *11*	178.9312	$3^+,4^+$	77.2588	3^-	E1	0.271	α(K)=0.228 *4*; α(L)=0.0339 *5*; α(M)=0.00730 *11*; α(N+..)=0.00191 *3* α(N)=0.001644 *23*; α(O)=0.000247 *4*; α(P)=1.91×10^{-5} *3* Mult.: α(K)exp=0.33 *7*; theory: α(K)=0.201.
^{x}101.8425 *10*	1.30 *10*							
^{x}101.9409 *8*	1.08 *9*							
^{x}101.9982 *9*	0.93 *8*							
^{x}102.0312 *20*	0.29 *5*							
^{x}102.124 *4*	0.15 *5*							
^{x}102.2059 *17*	0.30 *5*							
102.325 *3*	0.30 *5*	303.4563	$2^+,3^+,4^+$	201.1319	3^+			
^{x}102.3591 *8*	4.7 *3*							
^{x}102.5003 *7*	3.59 *25*							
^{x}102.5931 *20*	0.63 *8*							
102.6292 *7*	18.0 *13*	220.7952	3^-	118.1660	2^-	M1	1.713	α(K)=1.449 *21*; α(L)=0.207 *3*; α(M)=0.0448 *7*; α(N+..)=0.01204 *17* α(N)=0.01026 *15*; α(O)=0.001626 *23*; α(P)=0.0001604 *23* Mult.: α(K)exp=1.4 *3*, α(L1)exp=0.2 *1*; theory: α(K)=1.45, α(L1)=0.189.
102.8412 *8*	2.62 *21*	324.2956	2^+	221.4537	2^-			

γ(^{152}Eu) (continued)

E_γ [†]	I_γ [‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [@]	α [j]	Comments
[x]102.8750 *8*	9.2 *6*							
[x]102.9101 *17*	0.69 *10*							
103.2314 *17*	0.87 *13*	340.7195	(3$^-$)	237.4890	4$^-$			
103.2866 *7*	10.3 *7*	221.4537	2$^-$	118.1660	2$^-$	M1	1.682	α(K)=1.423 *20*; α(L)=0.204 *3*; α(M)=0.0440 *7*; α(N+..)=0.01183 *17* α(N)=0.01007 *14*; α(O)=0.001597 *23*; α(P)=0.0001575 *22* Mult.: α(K)exp=1.7 *2*: theory: α(K)=1.42.
103.3722[k] *10*	2.13[k] *15*	180.6323	5$^-$	77.2588	3$^-$	[E2]	2.15	α(K)=1.075 *15*; α(L)=0.832 *12*; α(M)=0.194 *3*; α(N+..)=0.0490 *7* α(N)=0.0431 *6*; α(O)=0.00587 *9*; α(P)=7.94×10^{-5} *12*
103.3722[k] *10*	2.13[k] *15*	340.7195	(3$^-$)	237.3482	2$^-$			
[x]103.442 *3*	0.37 *6*							
103.5007 *7*	51 *4*	324.2956	2$^+$	220.7952	3$^-$	E1	0.259	α(K)=0.218 *3*; α(L)=0.0323 *5*; α(M)=0.00695 *10*; α(N+..)=0.00182 *3* α(N)=0.001564 *22*; α(O)=0.000235 *4*; α(P)=1.82×10^{-5} *3* Mult.: α(K)exp=0.37, α(L1)exp=0.03 *2*; theory: α(K)=0.218, α(L1)=0.0223.
[x]103.5719 *15*	0.99 *15*							
[x]103.5940 *10*	1.62 *16*							
[x]103.6110 *10*	2.33 *21*							
103.6619 *8*	2.86 *20*	224.4999	3$^-$	120.8384	2$^+$			
103.7389 *15*	0.68 *7*	387.4565	2$^+$,3$^+$	283.7187	3$^+$			
[x]103.7746 *8*	2.75 *22*							
[x]103.8147 *12*	0.86 *7*							
[x]103.9699 *15*	0.80 *12*							
[x]104.017 *3*	0.30 *5*							
[x]104.2109 *10*	1.04 *7*							
104.2777 *12*	0.93 *7*	301.1897	3$^+$,4$^+$	196.9136	3$^+$,4$^+$			
[x]104.3324[c] *15*	0.62 *16*							
[x]104.3651[b] *17*	0.38 *6*							
[x]104.418 *3*	0.36 *4*							
104.4979 *8*	1.57 *11*	285.1288	3$^-$,4$^-$	180.6323	5$^-$			
[x]104.7404 *8*	6.1 *4*							
104.7887 *8*	1.73 *12*	283.7187	3$^+$	178.9312	3$^+$,4$^+$			
104.981 *3*	0.48 *7*	446.2217	3,4$^-$	341.2435	2$^-$			
[x]105.0437 *8*	1.91 *13*							
[x]105.154 *3*	0.28 *3*							
[x]105.3338 *12*	6.2 *5*					M1	1.590	α(K)=1.345 *19*; α(L)=0.192 *3*; α(M)=0.0416 *6*; α(N+..)=0.01118 *16* α(N)=0.00952 *14*; α(O)=0.001509 *22*; α(P)=0.0001489 *21* Mult.: α(K)exp=1.2 *2*, α(L)exp=0.48 *24*.
[x]105.3490 *20*	0.82 *16*							
[x]105.403 *7*	0.34 *8*							
[x]105.5168 *12*	0.49 *4*							
[x]105.7171 *7*	2.31 *18*					M1,E2	1.78 *21*	α(K)=1.17 *17*; α(L)=0.5 *3*; α(M)=0.11 *7*; α(N+..)=0.028 *17* α(N)=0.024 *15*; α(O)=0.0034 *19*; α(P)=0.00011 *4* Mult.: α(K)exp=1.3 *7*.

$^{152}_{63}$Eu$_{89}$-16

γ(^{152}Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[@]	α[j]	Comments
[x]105.8379 17	0.41 4							
[x]105.976[d] 7	0.16 8							
[x]105.996 3	0.37 4							
106.0373 8	3.03 18	256.7235	$3^+,4^+$	150.6869	4^-			
[x]106.1631 17	0.96 7							
106.1906 10	1.59 10	309.3742	3^-	203.1822	4^-			
106.3117 8	27.1 16	214.4269	4^+	108.1148	5^+	M1	1.549	α(K)=1.310 19; α(L)=0.187 3; α(M)=0.0405 6; α(N+..)=0.01089 16 α(N)=0.00927 13; α(O)=0.001470 21; α(P)=0.0001450 21 Mult.: α(K)exp=0.96, α(L1)exp=0.19 for the 106.3117γ+106.3339γ doublet; theory: α(K)=1.31, α(L1)=0.171 for Eγ=106.32.
106.3339 8	45 3	224.4999	3^-	118.1660	2^-	M1	1.548	α(K)=1.309 19; α(L)=0.187 3; α(M)=0.0405 6; α(N+..)=0.01088 16 α(N)=0.00926 13; α(O)=0.001469 21; α(P)=0.0001449 21 Mult.: α(K)exp=0.96, α(L1)exp=0.19 for the 106.3117γ+106.3339γ doublet; theory: α(K)=1.31, α(L1)=0.171 for Eγ=106.32.
[x]106.370 3	1.20 18							
[x]106.4233 15	0.63 6							
[x]106.504 4	0.23 5							
106.5460 9	2.25 16	320.9733	$3^{(+)}$	214.4269	4^+			
[x]106.575 3	0.50 8							
106.6709 20	0.58 5	334.3909	4^-	227.7204	3^+			
106.7617 10	2.17 17	267.6410	4^-	160.8808	$3^+,4^+$			
[x]106.7781 12	0.90 9							
107.0642 10	8.9 5	196.9136	$3^+,4^+$	89.8488	4^+	M1,E2	1.71 19	α(K)=1.13 16; α(L)=0.4 3; α(M)=0.10 7; α(N+..)=0.026 16 α(N)=0.023 14; α(O)=0.0032 18; α(P)=0.00011 4 Mult.: α(K)exp=1.4 5; theory: α(K)(E2)=0.976, α(K)(M1)=1.28.
[x]107.172 4	0.41 10							
[x]107.195 4	0.44 9							
107.225 7	0.23 2	492.0884	$3^-,4^-$	384.8623	$3^-,4^-$			
[x]107.313 3	0.47 7							
107.3527 8	11.9 7	328.1484	2^-	220.7952	3^-	M1,E2	1.69 19	α(K)=1.12 16; α(L)=0.4 3; α(M)=0.10 7; α(N+..)=0.026 16 α(N)=0.023 14; α(O)=0.0032 18; α(P)=0.00011 4 Mult.: α(K)exp=1.5 3; theory: α(K)(M1)=1.27, α(K)(E2)=0.97.
107.4837 8	17.0 10	221.4537	2^-	113.9696	3^+	E1	0.233	α(K)=0.197 3; α(L)=0.0290 4; α(M)=0.00625 9; α(N+..)=0.001636 23 α(N)=0.001407 20; α(O)=0.000212 3; α(P)=1.657×10^{-5} 24 Mult.: α(K)exp=0.18 9; theory: α(K)=0.197.
[x]107.5031 20	0.92 18							
107.675 6	0.14 4	253.7604	3^+	146.0853	3^+			
[x]107.870[c] 6	0.30 8							
108.098 3	0.21 4	258.7822	$4^+,5^+$	150.6869	4^-			
108.238 3	0.38 4	309.3742	3^-	201.1319	3^+			
108.2918[k] 10	1.58[k] 11	332.7919	3^+	224.4999	3^-			
108.2918[k] 10	1.58[k] 11	345.6383	$(1^+,2^+)$	237.3482	2^-			
108.346 5	0.23 7	286.0330	2^-	177.6867	$(2,3)^+$			

From ENSDF

$^{152}_{63}$Eu$_{89}$-17

γ(^{152}Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[@]	α[j]	Comments
^{x}108.3657 *10*	0.92 *7*							
^{x}108.441 *4*	0.15 *3*							
^{x}108.7222 *15*	0.38 *4*							
108.8891 *10*	1.16 *8*	374.6084	(3$^-$)	265.7205	3$^-$			
^{x}109.2041 *9*	1.24 *9*							
109.3490 *8*	46 *3*	220.7952	3$^-$	111.4472	2$^-$	M1,E2	1.59 *17*	α(K)=1.06 *15*; α(L)=0.41 *24*; α(M)=0.09 *6*; α(N+..)=0.024 *14* α(N)=0.021 *13*; α(O)=0.0030 *16*; α(P)=0.00010 *4* Mult.: α(K)exp=1.3 *4*; theory: α(K)(M1)=1.21, α(K)(E2)=0.920.
^{x}109.4153 *9*	2.85 *20*							
^{x}109.484 *4*	0.32 *6*							
109.608 *4*	0.26 *7*	393.3279	3$^-$	283.7187	3$^+$			
109.6429 *12*	3.22 *23*	174.9373	2$^-$,3$^-$	65.2966	1$^-$	[M1,E2]	1.58 *17*	α(K)=1.06 *15*; α(L)=0.40 *24*; α(M)=0.09 *6*; α(N+..)=0.024 *14* α(N)=0.021 *13*; α(O)=0.0029 *16*; α(P)=0.00010 *4*
109.8163 *9*	5.8 *4*	199.6645	4$^+$,5$^+$	89.8488	4$^+$	M1,E2	1.57 *16*	α(K)=1.05 *15*; α(L)=0.40 *24*; α(M)=0.09 *6*; α(N+..)=0.024 *14* α(N)=0.021 *13*; α(O)=0.0029 *16*; α(P)=0.00010 *4* Mult.: α(K)exp=1.3 *2*; theory: α(K)(E2)=0.910, α(K)(M1)=1.19.
^{x}109.903 *5*	0.14 *4*							
109.9360 *12*	0.51 *5*	324.2956	2$^+$	214.3604	2$^-$			
110.0074 *12*	1.01 *8*	221.4537	2$^-$	111.4472	2$^-$			
110.0466 *10*	2.13 *15*	258.7822	4$^+$,5$^+$	148.7364	(4)$^+$			
^{x}110.0883 *15*	0.28 *4*							
^{x}110.1276 *15*	0.41 *6*							
^{x}110.1846 *17*	0.60 *5*							
110.255 *6*	0.32 *6*	347.7464	3$^+$,4	237.4890	4$^-$			
^{x}110.3542 *9*	4.2 *3*							
110.5305 *10*	1.13 *8*	224.4999	3$^-$	113.9696	3$^+$			
^{x}110.5539 *17*	0.64 *8*							
110.6392 *8*	26.1 *18*	256.7235	3$^+$,4$^+$	146.0853	3$^+$	M1	1.382	α(K)=1.169 *17*; α(L)=0.1671 *24*; α(M)=0.0361 *5*; α(N+..)=0.00971 *14* α(N)=0.00827 *12*; α(O)=0.001311 *19*; α(P)=0.0001294 *19* Mult.: α(K)exp=1.1, α(L1)exp=0.13 *3*; theory: α(K)=1.17, α(L1)=0.152.
^{x}110.8281 *15*	1.06 *9*							
^{x}110.8486 *15*	0.66 *7*							
^{x}110.971 *3*	0.28 *5*							
^{x}111.0115 *10*	0.97 *8*							
^{x}111.1109 *20*	2.33 *23*							
111.1361 *10*	21.8 *15*	200.7496	5$^-$	89.6130	4$^-$	M1	1.365	α(K)=1.154 *17*; α(L)=0.1650 *23*; α(M)=0.0356 *5*; α(N+..)=0.00958 *14* α(N)=0.00816 *12*; α(O)=0.001294 *19*; α(P)=0.0001277 *18* Mult.: α(L1)exp=0.12 *2*; theory: α(L1)=0.151.
^{x}111.2576 *12*	0.60 *6*							
111.2957 *12*	1.01 *8*	359.7983	2$^-$	248.5030	1$^-$,2$^-$			
111.3384 *9*	2.78 *19*	332.7919	3$^+$	221.4537	2$^-$			
^{x}111.3927 *10*	1.03 *9*							
111.444 *7*	0.20 *7*	111.4472	2$^-$	0.0	3$^-$	[M1,E2]	1.50 *15*	α(K)=1.01 *14*; α(L)=0.38 *22*; α(M)=0.09 *6*; α(N+..)=0.022 *13* α(N)=0.019 *12*; α(O)=0.0027 *15*; α(P)=0.00010 *3*

γ(^{152}Eu) (continued)

E_γ [†]	I_γ [‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [@]	δ [&]	α [j]	Comments
[x]111.5022 *10*	0.97 *10*								
111.9351 *12*	2.27 *16*	253.7604	3^+	141.8253	4^-				
[x]112.0260 *17*	0.67 *6*								
[x]112.0717 *9*	3.06 *21*								
[x]112.157 *4*	0.22 *9*								
[x]112.308[d] *7*	0.19 *5*								
[x]112.4203 *10*	1.28 *13*								
112.4557 *8*	13.0 *9*	158.0548	1^+	45.5994	0^-	(E1)		0.207	α(K)=0.1741 *25*; α(L)=0.0256 *4*; α(M)=0.00550 *8*; α(N+..)=0.001442 *21* α(N)=0.001240 *18*; α(O)=0.000187 *3*; α(P)=1.477×10^{-5} *21* Mult.: α(K)exp=0.44 *22*; theory α(K)(E1)=0.861, α(K)(E2)=0.175.
112.9552 *10*	1.88 *15*	237.4890	4^-	124.5343	4^+				
113.0527 *9*	26.0 *18*	224.4999	3^-	111.4472	2^-	M1+E2	0.8 *2*	1.40 *3*	α(K)=0.97 *14*; α(L)=0.36 *20*; α(M)=0.08 *5*; α(N+..)=0.021 *12* α(N)=0.018 *11*; α(O)=0.0026 *14*; α(P)=9.E−5 *3* Mult.: α(K)exp=0.85, α(L2)exp=0.08 *2*, α(L3)exp=0.08 *2*; theory: M1: α(K)=1.10, α(L2)=0.0116, α(L3)=0.00206; E2: α(K)=0.838, α(L2)=0.239, α(L3)=0.239.
113.1694 *15*	0.53 *5*	361.6731	$2,3,4^-$	248.5030	$1^-,2^-$				
113.3345 *10*	1.53 *12*	203.1822	4^-	89.8488	4^+				
[x]113.537 *5*	0.19 *5*								
113.572 *3*	0.60 *7*	203.1822	4^-	89.6130	4^-				
113.5969 *17*	0.74 *7*	334.3909	4^-	220.7952	3^-				
113.6419 *20*	0.58 *5*	399.6746	$2,3^+$	286.0330	2^-				
[x]113.682 *3*	0.30 *5*								
[x]113.772[d] *8*	0.15 *9*								
113.8212 *9*	11.2 *8*	294.4521	$3^-,4^-$	180.6323	5^-				
113.9694 *12*	0.75 *6*	113.9696	3^+	0.0	3^-	[E1]		0.199	α(K)=0.1679 *24*; α(L)=0.0246 *4*; α(M)=0.00530 *8*; α(N+..)=0.001389 *20* α(N)=0.001195 *17*; α(O)=0.000180 *3*; α(P)=1.427×10^{-5} *20*
[x]114.2174 *15*	0.52 *5*								
114.3213 *10*	5.9 *4*	272.3775	2^+	158.0548	1^+				
114.420 *5*	0.20 *2*	460.0671	2^-	345.6383	$(1^+,2^+)$				
114.539[d] *5*	0.16 *5*	399.6746	$2,3^+$	285.1288	$3^-,4^-$				
[x]114.667 *4*	0.24 *5*								
114.7144 *15*	0.77 *12*	339.2171	2	224.4999	3^-				
[x]114.758 *4*	0.28 *5*								
[x]114.792 *4*	0.50 *8*								
[x]114.815 *3*	0.68 *8*								
114.8973 *10*	1.67 *13*	256.7235	$3^+,4^+$	141.8253	4^-				
115.034 *3*	0.35 *4*	265.7205	3^-	150.6869	4^-				
[x]115.1709 *9*	4.3 *3*								
[x]115.4010 *15*	0.50 *5*								
115.5183 *12*	0.64 *6*	294.4521	$3^-,4^-$	178.9312	$3^+,4^+$				

$^{152}_{63}$Eu$_{89}$-19

γ(^{152}Eu) (continued)

E_γ †	I_γ ‡i	E_i(level)	J_i^π	E_f	J_f^π	Mult.@	α j	Comments
x115.7547 9	3.9 3							
115.8549 12	0.71 7	353.3447	3,4$^-$	237.4890	4$^-$			
x116.0667 9	2.02 16					(M1)	1.206	α(K)=1.020 15; α(L)=0.1457 21; α(M)=0.0315 5; α(N+..)=0.00847 12 α(N)=0.00721 10; α(O)=0.001143 16; α(P)=0.0001129 16 Mult.: α(K)exp=1.9 4.
x116.138 5	0.29 4							
x116.5135 9	1.20 10							
x116.729 3	0.27 3							
x116.9320 12	1.28 13							
116.9547 10	11.4 9	267.6410	4$^-$	150.6869	4$^-$	M1,E2 f	1.28 10	α(K)=0.88 12; α(L)=0.31 17; α(M)=0.07 4; α(N+..)=0.018 10 α(N)=0.016 9; α(O)=0.0023 12; α(P)=8.E−5 3 Mult.: α(K)exp=1.2 2, α(K)exp=0.8 2; theory: α(K)(M1)=0.998, α(K)(E2)=0.761.
117.1836 12	0.59 5	338.3901	4$^{(-)}$	221.2097	3$^+$			
x117.2245 12	0.91 8							
x117.288 b 6	0.29 9							
117.3976 8	16.0 13	296.3270	3$^+$	178.9312	3$^+$,4$^+$	M1	1.167	α(K)=0.988 14; α(L)=0.1410 20; α(M)=0.0305 5; α(N+..)=0.00819 12 α(N)=0.00698 10; α(O)=0.001107 16; α(P)=0.0001093 16 Mult.: α(K)exp=1.6 3; theory: α(K)=0.988.
x117.457 3	0.35 6							
117.599 3	0.42 8	338.3901	4$^{(-)}$	220.7952	3$^-$			
x117.6230 10	2.57 21							
117.773 4	0.27 5	339.2171	2	221.4537	2$^-$			
x117.801 4	0.31 6							
x118.0373 12	0.48 5							
x118.1485 15	0.60 10							
118.1666 12	1.17 12	118.1660	2$^-$	0.0	3$^-$	[M1,E2]	1.24 10	α(K)=0.85 12; α(L)=0.30 16; α(M)=0.07 4; α(N+..)=0.017 10 α(N)=0.015 9; α(O)=0.0022 11; α(P)=8.E−5 3
118.2940 15	0.69 8	412.7454	3$^+$	294.4521	3$^-$,4$^-$			
x118.3268 8	9.2 7							
118.359 3	0.51 15	332.7919	3$^+$	214.4269	4$^+$			
x118.3908 9	3.3 3							
x118.4402 15	0.53 5							
x118.513 d 4	0.18 5							
x118.600 4	0.21 8							
x118.8055 20	0.59 6							
x118.8587 10	1.40 11							
x118.9936 d 20	0.59 10							
x119.0364 17	0.50 5							
119.1819 12	0.59 5	237.3482	2$^-$	118.1660	2$^-$			
x119.222 d 8	0.5 4							
119.2658 10	1.54 12	340.7195	(3$^-$)	221.4537	2$^-$			

γ(^{152}Eu) (continued)

E_γ [†]	I_γ [‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [@]	α [j]	Comments
119.331 5	0.21 3	237.4890	4^-	118.1660	2^-			
^{x}119.4669 15	0.47 6							
^{x}119.5068 12	1.77 18							
119.6051 9	9.4 8	227.7204	3^+	108.1148	5^+	(E2)[f]	1.272	α(K)=0.714 10; α(L)=0.432 6; α(M)=0.1006 14; α(N+..)=0.0255 4 α(N)=0.0224 4; α(O)=0.00307 5; α(P)=5.42×10^{-5} 8 Mult.: α(K)exp≈0.9; theory: α(K)(M1)=0.937, α(K)(E2)=0.714; level scheme requires E2.
119.6328[k] 12	1.99[k] 20	265.7205	3^-	146.0853	3^+			
119.6328[k] 12	1.99[k] 20	508.4795	$2^+,3^+$	388.8423				
119.6544 12	2.40 22	196.9136	$3^+,4^+$	77.2588	3^-	[E1]	0.1746	α(K)=0.1473 21; α(L)=0.0215 3; α(M)=0.00462 7; α(N+..)=0.001213 17 α(N)=0.001043 15; α(O)=0.0001579 23; α(P)=1.260×10^{-5} 18
^{x}119.7052 10	1.08 11							
119.7894 10	1.96 16	341.2435	2^-	221.4537	2^-			
119.8421 12	1.39 11	320.9733	$3^{(+)}$	201.1319	3^+			
^{x}119.9192 10	1.17 11							
^{x}120.018 3	0.30 3							
^{x}120.2590 9	3.17 25							
^{x}120.4065 12	0.66 6							
120.4467 10	0.93 8	341.2435	2^-	220.7952	3^-			
^{x}120.5533 15	0.62 9							
^{x}120.739[d] 7	0.28 7							
^{x}120.8246 8	10.8 9							
^{x}120.8696 17	0.71 7							
121.1837 10	1.09 10	324.2956	2^+	203.1119	$1^-,2^-$			
^{x}121.2542 15	0.52 6							
^{x}121.350 3	0.32 5							
^{x}121.462 4	0.33 7							
121.5558 9	5.1 4	267.6410	4^-	146.0853	3^+			
^{x}121.7208 17	3.2 5							
^{x}121.822 4	1.5 5							
^{x}121.9888 20	0.45 7							
^{x}122.041 4	0.32 4							
122.118 3	0.29 9	246.6549	$3^-,4^-$	124.5343	4^+			
122.2568 9	5.5 4	301.1897	$3^+,4^+$	178.9312	$3^+,4^+$	E2,M1	1.11 7	α(K)=0.78 11; α(L)=0.26 14; α(M)=0.06 4; α(N+..)=0.015 8 α(N)=0.013 7; α(O)=0.0019 9; α(P)=7.4×10^{-5} 24 Mult.: α(K)exp=0.9 3; theory: α(K)(E2)=0.670, α(K)(M1)=0.880.
^{x}122.311 4	0.26 5							
^{x}122.6624 12	0.70 7							
^{x}122.742 3	0.24 5							
^{x}122.9715 10	1.54 14							
123.1628 12	0.76 9	324.2956	2^+	201.1319	3^+			
^{x}123.2327 8	8.5 7					(M1)	1.017	α(K)=0.861 12; α(L)=0.1228 18; α(M)=0.0265 4; α(N+..)=0.00714 10

$^{152}_{63}$Eu$_{89}$-21

γ(^{152}Eu) (continued)

Eγ[†]	Iγ[‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[@]	α[j]	Comments
								α(N)=0.00608 *9*; α(O)=0.000964 *14*; α(P)=9.52×10^{-5} *14*
								Mult.: α(K)exp=0.85.
^{x}123.2956 *15*	0.63 *6*							
^{x}123.3513 *12*	0.84 *8*							
123.3784 *12*	1.04 *10*	237.3482	2$^-$	113.9696	3$^+$			
123.5186 *9*	8.7 *7*	237.4890	4$^-$	113.9696	3$^+$			
^{x}123.622 *15*	0.22 *11*							
^{x}123.7672 *8*	4.6 *4*							
123.8731 *9*	17.6 *14*	201.1319	3$^+$	77.2588	3$^-$	E1	0.1590	α(K)=0.1342 *19*; α(L)=0.0195 *3*; α(M)=0.00420 *6*; α(N+..)=0.001102 *16*
								α(N)=0.000947 *14*; α(O)=0.0001436 *20*; α(P)=1.154×10^{-5} *17*
								Mult.: α(K)exp=0.1 *1*; theory: α(K)=0.134.
123.8952 *12*	1.43 *17*	265.7205	3$^-$	141.8253	4$^-$			
123.9630 *10*	1.37 *12*	338.3901	4$^{(-)}$	214.4269	4$^+$			
^{x}124.0237 *12*	3.3 *3*							
124.063 *3*	0.72 *9*	320.9733	3$^{(+)}$	196.9136	3$^+$,4$^+$			
^{x}124.1597 *20*	0.38 *4*							
^{x}124.238 *3*	0.78 *12*							
^{x}124.257 *3*	0.61 *12*							
^{x}124.307 *6*	0.25 *5*							
^{x}124.5130 *15*	0.41 *7*							
124.5787 *8*	12.5 *10*	214.4269	4$^+$	89.8488	4$^+$	M1	0.986	α(K)=0.835 *12*; α(L)=0.1191 *17*; α(M)=0.0257 *4*; α(N+..)=0.00692 *10*
								α(N)=0.00589 *9*; α(O)=0.000934 *13*; α(P)=9.23×10^{-5} *13*
								Mult.: α(K)exp=1.0 *2*; theory: α(K)=0.835.
^{x}124.7137 *10*	3.2 *3*							
^{x}124.765 *3*	0.28 *4*							
^{x}124.8782 *8*	38 *3*					E1	0.1555	α(K)=0.1313 *19*; α(L)=0.0191 *3*; α(M)=0.00410 *6*; α(N+..)=0.001078 *15*
								α(N)=0.000926 *13*; α(O)=0.0001404 *20*; α(P)=1.130×10^{-5} *16*
								Mult.: α(K)exp=0.16 *5*.
^{x}125.0078 *10*	1.24 *11*							
^{x}125.0521 *12*	0.78 *8*							
^{x}125.184 *4*	0.45 *5*							
^{x}125.2727 *12*	2.21 *22*							
^{x}125.3145 *15*	0.97 *12*							
^{x}125.480 *4*	0.25 *5*							
125.6252 *12*	1.54 *14*	353.3447	3,4$^-$	227.7204	3$^+$			
125.6600 *20*	0.59 *6*	283.7187	3$^+$	158.0548	1$^+$			
^{x}125.752 *3*	0.51 *5*							
125.8163[kl] *10*	5.4[k] *4*	246.6549	3$^-$,4$^-$	120.8384	2$^+$			
125.8163[k] *10*	5.4[k] *4*	267.6410	4$^-$	141.8253	4$^-$			
^{x}125.8780 *17*	1.58 *24*							
125.8981 *17*	1.9 *3*	237.3482	2$^-$	111.4472	2$^-$			
125.9224 *9*	11.3 *9*	203.1822	4$^-$	77.2588	3$^-$	M1,E2[f]	1.01 *6*	α(K)=0.71 *10*; α(L)=0.23 *12*; α(M)=0.05 *3*; α(N+..)=0.013 *7*

$^{152}_{63}Eu_{89}$-22

γ(^{152}Eu) (continued)

E_γ [†]	I_γ [‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [@]	α [j]	Comments
								α(N)=0.012 *6*; α(O)=0.0017 *8*; α(P)=6.8×10^{-5} *22* Mult.: α(K)exp=1.0 *3*; theory: α(K)(M1)=0.810, α(K)(E2)=0.615.
[x]126.0362 *15*	1.02 *10*							
126.104 *3*	0.27 *4*	374.6084	(3$^-$)	248.5030	1$^-$,2$^-$			
[x]126.1513 *20*	0.35 *5*							
[x]126.1892 *15*	0.66 *7*							
126.2513 *15*	0.68 *7*	301.1897	3$^+$,4$^+$	174.9373	2$^-$,3$^-$			
126.294[k] *4*	0.21[k] *4*	272.3775	2$^+$	146.0853	3$^+$			
126.294[k] *4*	0.21[k] *4*	340.7195	(3$^-$)	214.4269	4$^+$			
126.294[k] *4*	0.21[k] *4*	347.7464	3$^+$,4	221.4537	2$^-$			
[x]126.5208 *10*	0.98 *9*							
[x]126.7739 *10*	4.0 *4*					M1	0.939	α(K)=0.794 *12*; α(L)=0.1133 *16*; α(M)=0.0245 *4*; α(N+..)=0.00658 *10* α(N)=0.00561 *8*; α(O)=0.000889 *13*; α(P)=8.78×10^{-5} *13* Mult.: α(K)exp=1.1 *3*.
126.878 *3*	0.48 *5*	341.2435	2$^-$	214.3604	2$^-$			
[x]126.973 *8*	0.19 *8*							
[x]127.0118 *10*	1.43 *13*							
[x]127.095 *6*	0.26 *4*							
127.624 *10*	0.31 *9*	393.3279	3$^-$	265.7205	3$^-$			
127.6669 *15*	0.57 *6*	248.5030	1$^-$,2$^-$	120.8384	2$^+$			
[x]127.8222 *12*	0.80 *7*							
[x]127.864[d] *6*	0.12 *4*							
127.9781 *10*	5.8 *5*	286.0330	2$^-$	158.0548	1$^+$			
[x]128.0989 *15*	0.56 *6*							
[x]128.1260 *15*	0.49 *7*							
[x]128.250 *3*	0.57 *6*							
128.288 *4*	0.28 *5*	395.9255	3$^+$,4$^+$	267.6410	4$^-$			
[x]128.315 *7*	0.40 *8*							
[x]128.432 *10*	0.44 *13*							
128.4897 *9*	14.5 *13*	246.6549	3$^-$,4$^-$	118.1660	2$^-$	M1,E2	0.95 *5*	α(K)=0.67 *10*; α(L)=0.21 *11*; α(M)=0.048 *25*; α(N+..)=0.012 *7* α(N)=0.011 *6*; α(O)=0.0015 *7*; α(P)=6.5×10^{-5} *20* Mult.: α(K)exp=0.6 *1*; theory: α(K)(M1)=0.765, α(K)(E2)=0.580.
[x]128.6846 *15*	0.68 *10*							
[x]128.761 *3*	0.47 *9*							
128.8435 *20*	0.67 *11*	353.3447	3,4$^-$	224.4999	3$^-$			
[x]128.9553 *15*	1.86 *17*							
[x]129.0393 *12*	1.10 *17*							
[x]129.066 *4*	0.65 *16*							
129.2266 *10*	1.86 *17*	253.7604	3$^+$	124.5343	4$^+$			
[x]129.3521 *17*	0.99 *15*							
129.3734 *12*	5.1 *5*	237.4890	4$^-$	108.1148	5$^+$			
[x]129.4137 *10*	2.48 *22*							
129.4706 *15*	0.58 *9*	350.2607	(3$^+$,4$^-$)	220.7952	3$^-$			

$^{152}_{63}$Eu$_{89}$-23

γ(^{152}Eu) (continued)

E_γ †	I_γ ‡i	E_i(level)	J^π_i	E_f	J^π_f	Mult. @	α j	Comments
x129.5545 *10*	3.2 *3*							
129.6105 *12*	1.18 *11*	332.7919	3+	203.1822	4−			
x129.7550 *15*	0.66 *7*							
x129.7847 *12*	2.22 *20*							
x129.917 *12*	0.20 *8*							
x130.0070 *10*	2.38 *21*							
x130.135 *3*	0.42 *6*							
x130.2274 *10*	3.9 *4*							
x130.285 *3*	0.54 *11*							
130.3377 *10*	6.1 *6*	248.5030	1−,2−	118.1660	2−			
x130.3650 *17*	0.81 *12*							
130.4449 *12*	0.85 *8*	309.3742	3−	178.9312	3+,4+			
x130.6347 *17*	0.62 *6*							
130.7328 *15*	1.17 *14*	387.4565	2+,3+	256.7235	3+,4+			
x130.7582 *15*	1.01 *10*							
x130.8745 *12*	1.05 *11*							
130.9440 *12*	0.85 *8*	220.7952	3−	89.8488	4+			
x131.0661 *12*	0.87 *9*							
131.1647 *10*	5.1 *5*	249.3303	1+	118.1660	2−			
131.2732 *15*	0.55 *6*	345.6383	(1+,2+)	214.3604	2−			
x131.4942 *10*	5.2 *5*							
131.5969 *9*	10.7 *10*	221.2097	3+	89.6130	4−			
131.6628 *17*	0.71 *12*	332.7919	3+	201.1319	3+			
x131.699 *5*	0.32 *16*							
x131.754 *4*	0.21 *4*							
x131.8006 *10*	5.2 *5*					M1,E2	0.87 *4*	α(K)=0.62 *9*; α(L)=0.19 *9*; α(M)=0.044 *22*; α(N+..)=0.011 *6* α(N)=0.010 *5*; α(O)=0.0014 *6*; α(P)=6.0×10^{-5} *19* Mult.: α(K)exp=0.7 *3*.
132.119 *3*	0.38 *6*	388.8423		256.7235	3+,4+			
132.1888 *12*	2.10 *19*	256.7235	3+,4+	124.5343	4+			
x132.2772 *15*	0.76 *8*							
x132.4547 *10*	6.8 *6*					M1,E2	0.86 *3*	α(K)=0.62 *9*; α(L)=0.19 *9*; α(M)=0.043 *22*; α(N+..)=0.011 *6* α(N)=0.010 *5*; α(O)=0.0014 *6*; α(P)=5.9×10^{-5} *19* Mult.: α(K)exp=0.5 *2*.
132.549 *3*	0.84 *14*	353.3447	3,4−	220.7952	3−			
x132.571 *3*	0.69 *14*							
x132.6146 *15*	0.76 *11*							
x132.6549 *17*	1.64 *25*							
132.6827 *15*	3.0 *3*	246.6549	3−,4−	113.9696	3+			
132.9212 *12*	22.0 *20*	253.7604	3+	120.8384	2+	M1,E2 f	0.85 *3*	α(K)=0.61 *9*; α(L)=0.19 *9*; α(M)=0.042 *21*; α(N+..)=0.011 *6* α(N)=0.009 *5*; α(O)=0.0014 *6*; α(P)=5.9×10^{-5} *18* Mult.: α(K)exp=0.67 *13*; theory: α(K)(M1)=0.695, α(K)(E2)=0.525.
133.0317 *10*	7.5 *7*	283.7187	3+	150.6869	4−			

From ENSDF

γ(^{152}Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[@]	α[j]	Comments
133.3181 *12*	1.31 *13*	347.7464	3$^+$,4	214.4269	4$^+$			
133.495 *7*	0.22 *4*	442.8569	2$^+$,3$^-$	309.3742	3$^-$			
133.5738 *15*	0.97 *10*	294.4521	3$^-$,4$^-$	160.8808	3$^+$,4$^+$			
133.6964 *15*	0.75 *7*	387.4565	2$^+$,3$^+$	253.7604	3$^+$			
[x]133.812 *6*	0.42 *4*							
133.874 *6*	0.44 *4*	508.4795	2$^+$,3$^+$	374.6084	(3$^-$)			
[x]133.9714 *17*	0.55 *6*							
[x]134.027[d] *8*	0.27 *5*							
[x]134.157 *8*	0.24 *10*							
[x]134.198 *9*	0.21 *8*							
134.2482 *10*	7.5 *7*	258.7822	4$^+$,5$^+$	124.5343	4$^+$	M1,E2[f]	0.82 *3*	α(K)=0.59 *9*; α(L)=0.18 *9*; α(M)=0.041 *20*; α(N+..)=0.010 *5* α(N)=0.009 *5*; α(O)=0.0013 *6*; α(P)=5.7×10^{-5} *18* Mult.: α(K)exp=0.6 *1*; theory: α(K)(M1)=0.676, α(K)(E2)=0.510.
[x]134.342 *15*	0.30 *5*							
134.4392[k] *15*	1.46[k] *15*	285.1288	3$^-$,4$^-$	150.6869	4$^-$			
134.4392[k] *15*	1.46[k] *15*	309.3742	3$^-$	174.9373	2$^-$,3$^-$			
[x]134.5976 *15*	1.21 *11*							
134.6517 *17*	0.73 *7*	224.4999	3$^-$	89.8488	4$^+$			
134.7280 *15*	0.94 *9*	334.3909	4$^-$	199.6645	4$^+$,5$^+$			
[x]134.801 *6*	0.36 *5*							
[x]134.920 *3*	0.52 *9*							
[x]134.9927 *17*	5.4 *5*							
135.2075 *10*	27.8 *25*	246.6549	3$^-$,4$^-$	111.4472	2$^-$	M1,E2	0.803 *24*	α(K)=0.58 *9*; α(L)=0.17 *8*; α(M)=0.039 *19*; α(N+..)=0.010 *5* α(N)=0.009 *5*; α(O)=0.0013 *6*; α(P)=5.6×10^{-5} *18* Mult.: α(K)exp=0.8 *2*; theory: α(K)(M1)=0.662, α(K)(E2)=0.499.
135.3008 *12*	2.73 *25*	359.7983	2$^-$	224.4999	3$^-$			
[x]135.3541 *15*	0.76 *8*							
135.4468 *20*	0.39 *6*	296.3270	3$^+$	160.8808	3$^+$,4$^+$			
[x]135.491 *3*	0.55 *8*							
[x]135.546 *4*	0.50 *10*							
135.5944 *10*	11.7 *11*	253.7604	3$^+$	118.1660	2$^-$	(E1)	0.1244	α(K)=0.1052 *15*; α(L)=0.01516 *22*; α(M)=0.00326 *5*; α(N+..)=0.000858 *12* α(N)=0.000737 *11*; α(O)=0.0001121 *16*; α(P)=9.15×10^{-6} *13* Mult.: α(K)exp=0.4 *1*; theory: α(K)(E1)=0.105, α(K)(E2)=0.495. α(K)exp agrees best with E2; however, placement in the level scheme requires $\Delta\pi$=yes.
[x]135.670 *15*	0.23 *9*							
[x]135.822 *3*	0.51 *10*							
135.8786 *20*	0.71 *9*	332.7919	3$^+$	196.9136	3$^+$,4$^+$			
[x]135.9118 *12*	5.8 *5*					M1	0.771	α(K)=0.653 *10*; α(L)=0.0930 *13*; α(M)=0.0201 *3*; α(N+..)=0.00540 *8* α(N)=0.00460 *7*; α(O)=0.000730 *11*; α(P)=7.21×10^{-5} *10* Mult.: α(K)exp=0.9 *2*.

$^{152}_{63}$Eu$_{89}$-25

γ(^{152}Eu) (continued)

E$_\gamma$[†]	I$_\gamma$[‡i]	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Mult.[@]	α[j]	Comments
^{x}135.954 *3*	0.73 *12*							
136.067 *9*	0.13 *5*	510.6746	3	374.6084	(3$^-$)			
136.1045 *15*	0.64 *6*	339.2171	2	203.1119	1$^-$,2$^-$			
136.378 *8*	0.28 *6*	285.1288	3$^-$,4$^-$	148.7364	(4)$^+$			
^{x}136.4664 *15*	0.74 *9*							
^{x}136.511 *6*	0.38 *6*							
^{x}136.631 *5*	0.35 *11*							
^{x}136.8010 *15*	0.47 *6*							
^{x}137.005 *5*	0.22 *4*							
137.0544 *12*	4.1 *4*	248.5030	1$^-$,2$^-$	111.4472	2$^-$	M1,E2	0.770 *20*	α(K)=0.56 *8*; α(L)=0.16 *8*; α(M)=0.037 *18*; α(N+..)=0.010 *5* α(N)=0.008 *4*; α(O)=0.0012 *5*; α(P)=5.4×10^{-5} *17* Mult.: α(K)exp≈0.6 for the 137.0544γ+137.1676γ doublet; theory: α(K)(M1)=0.649, α(K)(E2)=0.484.
137.1676 *15*	1.16 *12*	214.4269	4$^+$	77.2588	3$^-$			
^{x}137.2274 *15*	1.46 *15*							
^{x}137.2752 *17*	0.51 *6*							
137.4780 *12*	1.21 *11*	334.3909	4$^-$	196.9136	3$^+$,4$^+$			
137.5367 *12*	1.96 *18*	340.7195	(3$^-$)	203.1822	4$^-$			
137.6336 *15*	4.9 *4*	283.7187	3$^+$	146.0853	3$^+$			
137.707 *10*	0.25 *6*	483.3410	3$^+$	345.6383	(1$^+$,2$^+$)			
137.816 *4*	1.11 *17*	203.1119	1$^-$,2$^-$	65.2966	1$^-$			
137.8710 *10*	14.1 *13*	227.7204	3$^+$	89.8488	4$^+$			
^{x}137.923 *3*	0.82 *10*							
^{x}138.077 *3*	0.38 *6*							
^{x}138.1367 *12*	2.09 *21*							
^{x}138.1658 *20*	0.94 *24*							
^{x}138.1892 *17*	1.58 *24*							
^{x}138.3034 *20*	1.23 *12*							
138.3458 *12*	1.90 *17*	359.7983	2$^-$	221.4537	2$^-$			
138.4105 *17*	0.53 *5*	434.7356	4	296.3270	3$^+$			
^{x}138.4950 *20*	0.44 *4*							
^{x}138.5640 *15*	3.0 *3*							
^{x}138.598 *4*	0.21 *4*							
^{x}138.8851 *17*	0.82 *12*							
138.9182 *20*	0.95 *10*	353.3447	3,4$^-$	214.4269	4$^+$			
139.0057 *15*	0.84 *8*	359.7983	2$^-$	220.7952	3$^-$			
^{x}139.058 *6*	0.25 *4*							
^{x}139.1790 *15*	0.68 *10*							
^{x}139.364 *7*	0.40 *7*							
^{x}139.4650 *12*	3.4 *3*					M1	0.717	α(K)=0.607 *9*; α(L)=0.0864 *12*; α(M)=0.0187 *3*; α(N+..)=0.00502 *7* α(N)=0.00428 *6*; α(O)=0.000678 *10*; α(P)=6.71×10^{-5} *10* Mult.: α(K)exp=0.8 *2*.
^{x}139.561 *3*	0.38 *6*							

γ(^{152}Eu) (continued)

E_γ [†]	I_γ [‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [@]	α [j]	Comments
^{x}139.692[d] *15*	0.22 *15*							
139.7914 *10*	29 *3*	253.7604	3^+	113.9696	3^+	M1,E2[f]	0.723 *15*	α(K)=0.53 *8*; α(L)=0.15 *7*; α(M)=0.035 *16*; α(N+..)=0.009 *4* α(N)=0.008 *4*; α(O)=0.0011 *5*; α(P)=5.1×10^{-5} *16* Mult.: α(K)exp=0.63 *9*; theory: α(K)(M1)=0.603, α(K)(E2)=0.452.
^{x}139.888 *5*	0.38 *10*							
139.9487 *15*	1.71 *17*	286.0330	2^-	146.0853	3^+			
140.1134 *10*	7.4 *7*	341.2435	2^-	201.1319	3^+			
140.3094 *10*	22.6 *20*	301.1897	$3^+,4^+$	160.8808	$3^+,4^+$	M1,E2	0.715 *14*	α(K)=0.52 *8*; α(L)=0.15 *7*; α(M)=0.034 *16*; α(N+..)=0.009 *4* α(N)=0.008 *4*; α(O)=0.0011 *5*; α(P)=5.1×10^{-5} *16* Mult.: α(K)exp=0.51 *14*; theory: α(K)(M1)=0.597, α(K)(E2)=0.447.
140.472 *10*	0.36 *14*	361.6731	$2,3,4^-$	221.2097	3^+			
^{x}140.756[d] *6*	0.61 *24*							
^{x}140.7963 *12*	5.4 *5*					E2	0.715	α(K)=0.442 *7*; α(L)=0.212 *3*; α(M)=0.0490 *7*; α(N+..)=0.01245 *18* α(N)=0.01090 *16*; α(O)=0.001512 *22*; α(P)=3.49×10^{-5} *5* Mult.: α(K)exp=0.37 *7*.
^{x}140.903 *9*	0.19 *5*							
141.189 *5*	0.39 *8*	265.7205	3^-	124.5343	4^+			
^{x}141.243 *8*	0.20 *6*							
^{x}141.3129 *17*	1.07 *11*							
^{x}141.4063 *15*	4.9 *5*							
^{x}141.423[d] *8*	0.5 *3*							
141.4776 *12*	2.25 *20*	338.3901	$4^{(-)}$	196.9136	$3^+,4^+$			
141.8255 *15*	6.0 *5*	141.8253	4^-	0.0	3^-	[M1,E2]	0.691 *12*	α(K)=0.51 *8*; α(L)=0.14 *7*; α(M)=0.033 *15*; α(N+..)=0.008 *4* α(N)=0.007 *4*; α(O)=0.0011 *4*; α(P)=4.9×10^{-5} *15* Mult.: α(K)exp=0.34 *4* for the 141.8255γ+141.8499γ doublet.
^{x}141.8499 *17*	1.39 *17*							
^{x}142.154 *3*	0.36 *7*							
^{x}142.215 *4*	0.31 *8*							
^{x}142.5385 *17*	0.91 *9*							
^{x}142.711 *5*	0.38 *10*							
142.7573 *15*	4.4 *4*	256.7235	$3^+,4^+$	113.9696	3^+			
^{x}142.842 *7*	0.37 *6*							
^{x}143.1274 *17*	1.40 *17*							
143.2204 *12*	74 *7*	221.4537	2^-	78.2335	1^+	E1	0.1073	α(K)=0.0908 *13*; α(L)=0.01302 *19*; α(M)=0.00280 *4*; α(N+..)=0.000737 *11* α(N)=0.000633 *9*; α(O)=9.65×10^{-5} *14*; α(P)=7.96×10^{-6} *12* Mult.: α(K)exp=0.09 *3*; theory: α(K)=0.0908.
143.3026 *15*	3.9 *4*	285.1288	$3^-,4^-$	141.8253	4^-			
^{x}143.500 *4*	0.39 *8*							
143.5360 *12*	5.4 *5*	220.7952	3^-	77.2588	3^-	M1,E2	0.665	α(K)=0.49 *8*; α(L)=0.14 *6*; α(M)=0.031 *14*; α(N+..)=0.008 *4* α(N)=0.007 *3*; α(O)=0.0010 *4*; α(P)=4.7×10^{-5} *15* Mult.: α(K)exp=0.7 *2*; theory: α(K)(M1)=0.560, α(K)(E2)=0.418.

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γ(^{152}Eu) (continued)

$E_γ$[†]	$I_γ$[‡i]	E_i(level)	$J_i^π$	E_f	$J_f^π$	Mult.[@]	α[j]	Comments
^{x}143.6134 *15*	1.19 *12*							
143.7655 *12*	5.5 *5*	294.4521	$3^-,4^-$	150.6869	4^-	M1	0.658	α(K)=0.557 *8*; α(L)=0.0793 *12*; α(M)=0.01714 *24*; α(N+..)=0.00461 *7* α(N)=0.00392 *6*; α(O)=0.000623 *9*; α(P)=6.16×10^{-5} *9* Mult.: α(K)exp=0.69 *11*; theory: α(K)=0.557.
^{x}144.165 *6*	0.66 *11*							
144.1935 *10*	22.3 *20*	221.4537	2^-	77.2588	3^-	M1	0.653	α(K)=0.553 *8*; α(L)=0.0787 *11*; α(M)=0.01699 *24*; α(N+..)=0.00457 *7* α(N)=0.00389 *6*; α(O)=0.000617 *9*; α(P)=6.11×10^{-5} *9* Mult.: α(K)exp=0.55 *4*; theory: α(K)=0.553.
^{x}144.285 *10*	0.18 *7*							
144.3424 *12*	1.97 *18*	492.0884	$3^-,4^-$	347.7464	$3^+,4$			
^{x}144.4972 *15*	1.06 *13*							
^{x}144.689 *3*	0.72 *11*							
^{x}144.738 *5*	0.23 *5*							
144.8096 *20*	0.57 *10*	258.7822	$4^+,5^+$	113.9696	3^+			
144.8832 *15*	7.0 *6*	265.7205	3^-	120.8384	2^+			
145.019[k] *15*	0.35[k] *14*	366.4673	$2^-,3^+$	221.4537	2^-			
145.019[k] *15*	0.35[k] *14*	446.2217	$3,4^-$	301.1897	$3^+,4^+$			
145.105 *7*	0.32 *5*	412.7454	3^+	267.6410	4^-			
^{x}145.2017 *20*	0.72 *7*							
^{x}145.4253 *20*	0.89 *13*							
^{x}145.4447 *15*	3.1 *3*							
^{x}145.5211 *15*	1.76 *16*							
145.6383 *20*	0.57 *6*	296.3270	3^+	150.6869	4^-			
^{x}145.697 *5*	0.36 *5*							
^{x}145.7716 *20*	0.47 *6*							
^{x}145.849 *7*	0.25 *6*							
^{x}145.9030[c] *17*	0.69 *7*							
^{x}145.962 *10*	0.33 *13*							
146.038 *3*	0.45 *7*	320.9733	$3^{(+)}$	174.9373	$2^-,3^-$			
146.0865 *20*	0.77 *12*	146.0853	3^+	0.0	3^-	[E1]	0.1017	α(K)=0.0860 *12*; α(L)=0.01233 *18*; α(M)=0.00265 *4*; α(N+..)=0.000698 *10* α(N)=0.000599 *9*; α(O)=9.14×10^{-5} *13*; α(P)=7.56×10^{-6} *11*
^{x}146.113 *3*	0.93 *14*							
^{x}146.3124 *15*	2.65 *24*							
^{x}146.4229 *15*	0.60 *6*							
^{x}146.480 *3*	0.38 *5*							
^{x}146.5728 *15*	3.4 *3*							
146.6080 *15*	1.93 *17*	324.2956	2^+	177.6867	$(2,3)^+$			
^{x}146.7884 *15*	1.20 *12*							
^{x}146.988 *3*	0.36 *7*							
^{x}147.039 *3*	0.50 *8*							
147.1491 *15*	4.5 *4*	350.2607	$(3^+,4^-)$	203.1119	$1^-,2^-$			
^{x}147.1748 *15*	6.4 *6*							

γ(^{152}Eu) (continued)

E_γ †	I_γ ‡i	E_i(level)	J_i^π	E_f	J_f^π	Mult.@	α j	Comments
x147.2480 *17*	1.48 *15*							
x147.3368 *17*	0.75 *8*							
x147.4465 *15*	2.08 *19*							
147.5558 *12*	15.1 *14*	265.7205	3^-	118.1660	2^-	M1,E2	0.610	α(K)=0.45 *7*; α(L)=0.12 *5*; α(M)=0.028 *12*; α(N+..)=0.007 *3* α(N)=0.006 *3*; α(O)=0.0009 *4*; α(P)=4.4×10^{-5} *14* Mult.: α(K)exp=0.46 *8*; theory: α(K)(M1)=0.518, α(K)(E2)=0.384.
147.634 *8*	0.33 *10*	237.4890	4^-	89.8488	4^+			
x147.7091 *17*	0.67 *7*							
x147.813 *5*	0.29 *4*							
x147.827 *5*	0.42 *7*							
147.848 *5*	0.30 *5*	272.3775	2^+	124.5343	4^+			
147.887 *12*	0.26 *8*	237.4890	4^-	89.6130	4^-			
x148.030 *9*	0.21 *8*							
148.0816 *20*	2.13 *21*	347.7464	3^+,4	199.6645	4^+,5^+			
x148.2208 *20*	1.80 *18*							
x148.259 *4*	0.36 *6*							
148.3636 *17*	1.44 *14*	294.4521	3^-,4^-	146.0853	3^+			
x148.3911 *12*	6.9 *6*							
148.6069 *12*	6.4 *6*	256.7235	3^+,4^+	108.1148	5^+	M1,E2	0.596	α(K)=0.44 *7*; α(L)=0.12 *5*; α(M)=0.027 *12*; α(N+..)=0.007 *3* α(N)=0.006 *3*; α(O)=0.0009 *4*; α(P)=4.3×10^{-5} *13* Mult.: α(K)exp=0.48 *19*; theory: α(K)(M1)=0.508, α(K)(E2)=0.376.
x148.7501 *15*	0.85 *9*							
x148.8213 *12*	9.8 *9*							
x148.913 *12*	0.22 *11*							
x148.980 *3*	0.40 *6*							
149.0637 *12*	13.4 *12*	214.3604	2^-	65.2966	1^-	M1,E2	0.591 *10*	α(K)=0.44 *7*; α(L)=0.12 *5*; α(M)=0.027 *12*; α(N+..)=0.007 *3* α(N)=0.0060 *25*; α(O)=0.0009 *4*; α(P)=4.3×10^{-5} *13* Mult.: α(K)exp=0.39 *11*; theory: α(K)(M1)=0.503, α(K)(E2)=0.373.
x149.2282 *20*	0.50 *5*							
x149.3539 *15*	3.0 *3*							
149.402 *3*	0.79 *12*	307.4575	2^+,3^+	158.0548	1^+			
x149.419 *6*	3.3 *4*							
x149.4301 *15*	3.1 *3*							
149.4726 *17*	2.9 *3*	267.6410	4^-	118.1660	2^-			
x149.780 *3*	0.78 *16*							
x149.872 *5*	0.49 *15*							
x150.1153 *17*	1.73 *17*							
150.163 *3*	0.43 *6*	353.3447	3,4^-	203.1822	4^-			
x150.399 *3*	0.42 *5*							
150.4619k *15*	1.52k *14*	227.7204	3^+	77.2588	3^-			
150.4619k *15*	1.52k *14*	328.1484	2^-	177.6867	$(2,3)^+$			
150.5042 *20*	0.50 *5*	301.1897	3^+,4^+	150.6869	4^-			
150.6691 *15*	14.8 *13*	258.7822	4^+,5^+	108.1148	5^+	M1,E2	0.571 *10*	α(K)=0.42 *7*; α(L)=0.11 *5*; α(M)=0.026 *11*; α(N+..)=0.007 *3*

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γ(^{152}Eu) (continued)

E_γ†	I_γ‡i	E_i(level)	J_i^π	E_f	J_f^π	Mult.@	αj	Comments
								α(N)=0.0058 *24*; α(O)=0.0008 *3*; α(P)=4.1×10^{-5} *13* Mult.: α(K)exp=0.48 *13* for the 150.6691γ+150.6883γ doublet; theory: α(K)(M1)=0.489, α(K)(E2)=0.361.
150.6883 *15*	10.1 *10*	150.6869	4$^-$	0.0	3$^-$	M1,E2	0.571 *10*	α(K)=0.42 *7*; α(L)=0.11 *5*; α(M)=0.026 *11*; α(N+..)=0.007 *3* α(N)=0.0058 *24*; α(O)=0.0008 *3*; α(P)=4.1×10^{-5} *13* Mult.: α(K)exp=0.48 *13* for the 150.6691γ+150.6883γ doublet; theory: α(K)(M1)=0.488, α(K)(E2)=0.361 for Eγ=150.68.
150.8340 *17*	4.5 *4*	347.7464	3$^+$,4	196.9136	3$^+$,4$^+$			
^{x}150.9454 *17*	0.59 *7*							
^{x}151.0265 *20*	0.59 *9*							
151.1737 *15*	0.99 *9*	399.6746	2,3$^+$	248.5030	1$^-$,2$^-$			
^{x}151.475 *3*	0.70 *12*							
^{x}151.517 *3*	0.73 *9*							
^{x}151.551 *4*	0.28 *6*							
^{x}151.8540 *15*	2.52 *25*							
^{x}151.971 *5*	0.48 *12*							
^{x}152.078 *6*	0.30 *6*							
152.216 *3*	0.64 *8*	353.3447	3,4$^-$	201.1319	3$^+$			
^{x}152.2667 *12*	6.3 *6*							
^{x}152.372 *3*	0.39 *7*							
^{x}152.4392 *15*	1.44 *14*							
^{x}152.569 *8*	0.22 *7*							
152.6257 *15*	1.14 *11*	294.4521	3$^-$,4$^-$	141.8253	4$^-$			
^{x}152.694 *9*	0.20 *6*							
^{x}152.749 *7*	0.29 *7*							
^{x}152.858 *3*	3.1 *5*							
^{x}153.0238 *15*	2.70 *24*							
^{x}153.094 *3*	0.30 *8*							
153.155 *3*	0.58 *6*	374.6084	(3$^-$)	221.4537	2$^-$			
153.214 *5*	0.41 *7*	328.1484	2$^-$	174.9373	2$^-$,3$^-$			
^{x}153.292 *3*	0.40 *6*							
^{x}153.364 *7*	0.20 *5*							
^{x}153.4202 *15*	2.45 *22*							
^{x}153.495 *8*	0.26 *7*							
^{x}153.553 *12*	0.28 *11*							
^{x}153.6279 *20*	1.66 *20*							
153.6711 *12*	23.8 *21*	267.6410	4$^-$	113.9696	3$^+$	E1	0.0887	α(K)=0.0751 *11*; α(L)=0.01072 *15*; α(M)=0.00230 *4*; α(N+..)=0.000607 *9* α(N)=0.000521 *8*; α(O)=7.96×10^{-5} *12*; α(P)=6.64×10^{-6} *10* Mult.: α(K)exp≈0.16 for the 153.6279γ+153.6711γ doublet; theory: α(K)=0.0751.
153.811 *3*	0.34 *5*	374.6084	(3$^-$)	220.7952	3$^-$			
^{x}153.9528 *20*	0.65 *8*							
^{x}154.095 *6*	0.37 *7*							
^{x}154.230 *3*	1.05 *16*							

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γ(^{152}Eu) (continued)

E_γ [†]	I_γ [‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [@]	α [j]	Comments
154.2724 *15*	28 *3*	265.7205	3^-	111.4472	2^-	M1,E2	0.530 *13*	α(K)=0.40 *6*; α(L)=0.10 *4*; α(M)=0.024 *10*; α(N+..)=0.0061 *24* α(N)=0.0053 *21*; α(O)=0.0008 *3*; α(P)=3.9×10^{-5} *12* Mult.: α(K)exp=0.50 *11*; theory: α(K)(M1)=0.457, α(K)(E2)=0.336.
^{x}154.442 *5*	0.42 *6*							
^{x}154.4981 *15*	1.92 *29*							
^{x}154.702 *3*	0.77 *12*							
154.802 *3*	0.37 *6*	482.9446		328.1484	2^-			
^{x}155.0131 *15*	3.7 *3*							
155.1024 *15*	4.9 *4*	301.1897	$3^+,4^+$	146.0853	3^+			
^{x}155.2300 *20*	0.68 *7*							
^{x}155.3150 *20*	1.29 *12*							
^{x}155.393 *3*	0.39 *6*							
^{x}155.4682 *15*	2.06 *19*							
^{x}155.541 *4*	0.41 *5*							
^{x}155.676 *3*	0.49 *8*							
^{x}155.714 *9*	0.34 *10*							
^{x}155.771 *7*	0.31 *6*							
^{x}155.8483 *20*	0.71 *7*							
^{x}156.1603 *15*	8.7 *8*							
156.193 *4*	0.87 *17*	267.6410	4^-	111.4472	2^-			
^{x}156.3814 *15*	2.80 *25*							
156.4302 *20*	0.64 *6*	353.3447	$3,4^-$	196.9136	$3^+,4^+$			
^{x}156.6915 *15*	1.51 *14*							
^{x}156.7599 *17*	1.68 *17*							
156.806 *3*	0.49 *7*	246.6549	$3^-,4^-$	89.8488	4^+			
^{x}156.883 *7*	0.51 *10*							
157.0407 *20*	2.09 *19*	246.6549	$3^-,4^-$	89.6130	4^-			
^{x}157.1058 *20*	1.08 *11*							
^{x}157.1767 *15*	2.10 *19*							
^{x}157.343 *3*	0.40 *6*							
157.5135 *12*	23.4 *21*	203.1119	$1^-,2^-$	45.5994	0^-	M1	0.5097	α(K)=0.432 *6*; α(L)=0.0613 *9*; α(M)=0.01325 *19* α(N)=0.00303 *5*; α(O)=0.000481 *7*; α(P)=4.77×10^{-5} *7* Mult.: α(K)exp=0.41 *6* and 0.44 *5* from two determinations. α(K)=0.4315 (M1) and 0.3157 (E2).
^{x}157.635 *3*	0.41 *5*							
157.7608 *15*	2.52 *23*	338.3901	$4^{(-)}$	180.6323	5^-			
157.853 *3*	0.72 *9*	332.7919	3^+	174.9373	$2^-,3^-$			
^{x}157.8889 *20*	1.11 *13*							
^{x}157.9883 *20*	0.59 *7*							
^{x}158.125 *7*	0.42 *8*							
^{x}158.190 *10*	0.21 *6*							
158.4069 *12*	7.9 *7*	272.3775	2^+	113.9696	3^+	(E2)	0.475	α(K)=0.310 *5*; α(L)=0.1278 *18*; α(M)=0.0295 *5*; α(N+..)=0.00751 *11* α(N)=0.00657 *10*; α(O)=0.000919 *13*; α(P)=2.51×10^{-5} *4* Mult.: α(K)exp=0.29 *6*; theory: α(K)=0.310.

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γ(^{152}Eu) (continued)

E_γ [†]	I_γ [‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [@]	α [j]	Comments
[x]158.5412 17	1.88 17							
158.6502 17	2.43 22	482.9446		324.2956	2^+			
158.6873 15	9.1 8	309.3742	3^-	150.6869	4^-	M1,E2	0.486 15	α(K)=0.37 6; α(L)=0.09 4; α(M)=0.021 9; α(N+..)=0.0055 20 α(N)=0.0047 18; α(O)=0.00069 22; α(P)=3.6×10^{-5} 11 Mult.: α(K)exp=0.24 for the 158.6502γ+158.6873γ doublet; theory: α(K)(M1)=0.423, α(K)(E2)=0.309.
[x]158.756 4	0.24 5							
158.969 12	0.31 12	412.7454	3^+	253.7604	3^+			
[x]159.022 4	0.73 11							
159.1152 20	1.20 12	237.3482	2^-	78.2335	1^+			
[x]159.2624 20	2.11 21					M1	0.494	α(K)=0.418 6; α(L)=0.0595 9; α(M)=0.01284 18; α(N+..)=0.00345 5 α(N)=0.00294 5; α(O)=0.000467 7; α(P)=4.62×10^{-5} 7 Mult.: α(K)exp=0.5 1.
159.300 3	0.80 14	492.0884	3^-,4^-	332.7919	3^+			
159.3609 20	1.08 11	301.1897	3^+,4^+	141.8253	4^-			
159.456[k] 8	0.31[k] 6	334.3909	4^-	174.9373	2^-,3^-			
159.456[k] 8	0.31[k] 6	338.3901	$4^{(-)}$	178.9312	3^+,4^+			
159.5248 15	1.94 17	267.6410	4^-	108.1148	5^+			
[x]159.593 3	0.35 5							
[x]159.653 9	0.24 6							
[x]159.878 3	0.59 6							
[x]159.9847 17	1.20 14							
160.0878[k] 15	13.1[k] 12	237.3482	2^-	77.2588	3^-	(M1)[a]	0.487	α(K)=0.412 6; α(L)=0.0586 9; α(M)=0.01266 18; α(N+..)=0.00340 5 α(N)=0.00290 4; α(O)=0.000460 7; α(P)=4.55×10^{-5} 7
160.0878[k] 15	13.2[k] 12	340.7195	(3^-)	180.6323	5^-	(E2)[a]		
[x]160.113 3	1.47 25							
160.2284 17	1.45 13	237.4890	4^-	77.2588	3^-			
[x]160.3205 17	3.4 3							
160.3611 17	4.0 4	384.8623	3^-,4^-	224.4999	3^-			
[x]160.400 5	0.30 6							
[x]160.491 3	0.52 5							
[x]160.6188 15	3.9 4							
160.726 4	0.29 6	508.4795	2^+,3^+	347.7464	3^+,4			
[x]160.911 5	0.31 4							
[x]160.982 6	0.85 9							
[x]161.018 3	0.77 9							
161.1240 17	4.8 4	388.8423		227.7204	3^+			
[x]161.2142 17	2.36 21							
[x]161.280 3	0.54 9							
[x]161.341 3	0.56 7							
161.528 7	0.28 5	339.2171	2	177.6867	$(2,3)^+$			
[x]161.611 4	0.48 7							
[x]161.693 3	0.60 12							

$^{152}_{63}$Eu$_{89}$-32

γ(^{152}Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J^π_i	E_f	J^π_f
[x]161.756 *9*	0.42 *8*				
161.786 *6*	0.49 *15*	340.7195	(3^-)	178.9312	$3^+,4^+$
[x]161.831 *5*	0.34 *5*				
[x]161.872 *4*	0.48 *7*				
[x]161.918 *3*	0.77 *8*				
[x]162.035 *3*	0.81 *10*				
[x]162.060 *5*	0.49 *10*				
[x]162.2303 *20*	2.46 *25*				
[x]162.426 *5*	0.36 *5*				
162.5023 *20*	0.88 *8*	446.2217	$3,4^-$	283.7187	3^+
[x]162.559 *7*	0.28 *6*				
[x]162.638 *3*	0.53 *8*				
[x]162.720 *15*	0.48 *14*				
[x]162.8136 *20*	2.47 *22*				
162.8824 *17*	2.68 *24*	283.7187	3^+	120.8384	2^+
[x]162.950 *3*	0.84 *10*				
[x]163.022 *5*	0.37 *6*				
[x]163.080 *6*	0.33 *6*				
[x]163.131 *3*	0.48 *7*				
[x]163.241 *3*	1.10 *17*				
163.2903[k] *17*	5.0[k] *5*	272.3775	2^+	109.0892	$(1)^-$
163.2903[k] *17*	5.0[k] *5*	309.3742	3^-	146.0853	3^+
[x]163.3840 *17*	5.1 *5*				
163.448 *6*	0.50 *9*	338.3901	$4^{(-)}$	174.9373	$2^-,3^-$
[x]163.535 *5*	0.26 *7*				
[x]163.5735 *20*	0.89 *13*				
163.657 *4*	0.43 *9*	384.8623	$3^-,4^-$	221.2097	3^+
[x]163.7210 *15*	5.5 *4*				
163.7854 *17*	1.48 *13*	436.1636	$2^+,3^+$	272.3775	2^+
163.9106 *12*	9.3 *7*	253.7604	3^+	89.8488	4^+
[x]164.0107 *17*	4.2 *4*				
164.0677 *17*	2.64 *24*	384.8623	$3^-,4^-$	220.7952	3^-
[x]164.1238 *17*	2.08 *19*				
[x]164.162 *4*	0.41 *8*				
164.247[d] *20*	0.23 *9*	339.2171	2	174.9373	$2^-,3^-$
[x]164.413 *5*	0.32 *5*				
[x]164.564 *3*	0.46 *5*				
[x]164.639 *8*	0.29 *5*				
[x]164.8093 *20*	1.12 *10*				
[x]164.893 *5*	0.59 *18*				
[x]164.9278 *17*	5.9 *5*				
[x]165.089 *3*	0.58 *5*				
165.1919 *20*	1.34 *12*	286.0330	2^-	120.8384	2^+

γ(^{152}Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[@]	α[j]	Comments
165.360 15	0.16 8	366.4673	$2^-,3^+$	201.1319	3^+			
[x]165.427 6	0.27 5							
[x]165.5102 17	2.03 18							
165.553 3	1.01 10	283.7187	3^+	118.1660	2^-			
[x]165.652 3	0.44 5							
[x]165.7429 15	4.4 4							
[x]165.843 8	0.35 7							
[x]165.932 4	0.31 6							
[x]166.021 5	0.62 9							
[x]166.070 5	0.64 10							
166.2401 20	3.3 3	324.2956	2^+	158.0548	1^+			
166.3072 20	2.33 21	341.2435	2^-	174.9373	$2^-,3^-$			
[x]166.389 3	0.57 6							
[x]166.494 3	0.87 9							
166.8732 12	25.3 23	256.7235	$3^+,4^+$	89.8488	4^+	M1[f]	0.434	α(K)=0.367 6; α(L)=0.0522 8; α(M)=0.01127 16; α(N+..)=0.00303 5 α(N)=0.00258 4; α(O)=0.000409 6; α(P)=4.06×10^{-5} 6 Mult.,δ: α(K)exp=0.39 8 is consistent with M1(+E2) with δ<1.2.
166.961 3	0.82 8	285.1288	$3^-,4^-$	118.1660	2^-			
[x]167.027 3	1.78 16							
[x]167.081 3	2.51 25							
167.110[k] 3	0.95[k] 14	256.7235	$3^+,4^+$	89.6130	4^-			
167.110[k] 3	0.95[k] 14	347.7464	$3^+,4$	180.6323	5^-			
[x]167.220 4	0.41 6							
[x]167.3192 20	1.73 16							
167.396 7	0.24 5	388.8423		221.4537	2^-			
[x]167.509 3	0.69 7							
167.5480 15	5.3 4	309.3742	3^-	141.8253	4^-			
[x]167.645 6	0.51 8							
[x]167.7171[b] 20	0.90 8							
167.757[d] 5	0.41 10	508.4795	$2^+,3^+$	340.7195	(3^-)			
[x]167.8104 20	2.20 20							
167.867 4	0.39 6	286.0330	2^-	118.1660	2^-			
168.229[d] 17	0.27 7	395.9255	$3^+,4^+$	227.7204	3^+			
[x]168.286 3	1.32 12							
[x]168.323 3	1.46 13							
[x]168.405 3	0.44 4							
[x]168.658 3	0.55 1							
168.7608 12	49 4	214.3604	2^-	45.5994	0^-	E2	0.382	α(K)=0.256 4; α(L)=0.0980 14; α(M)=0.0225 4; α(N+..)=0.00576 8 α(N)=0.00503 7; α(O)=0.000706 10; α(P)=2.11×10^{-5} 3 Mult.: α(K)exp=0.25 3, α(L1)exp=0.011-0.10, α(L2)exp<0.06, α(L3)exp<0.027; theory: E2: α(K)=0.256, α(L1)=0.0257, α(L2)=0.0384, α(L3)=0.0338; M1: α(K)=0.356, α(L1)=0.0464, α(L2)=0.00356, α(L3)=0.000623.

$^{152}_{63}$Eu$_{89}$-34

γ(^{152}Eu) (continued)

$E_γ$ †	$I_γ$ ‡i	E_i(level)	$J^π_i$	E_f	$J^π_f$	Mult. @	α j	Comments
168.809 4	1.25 25	347.7464	3+,4	178.9312	3+,4+			
168.933 3	0.94 9	258.7822	4+,5+	89.8488	4+			
169.010 6	0.73 11	434.7356	4	265.7205	3−			
x169.136 10	0.24 6							
x169.188 5	0.36 6							
x169.304 9	0.45 23							
x169.349 5	0.59 18							
169.3973 12	38 3	246.6549	3−,4−	77.2588	3−	E2,M1	0.397 21	α(K)=0.30 5; α(L)=0.073 24; α(M)=0.016 6; α(N+..)=0.0043 14 α(N)=0.0037 13; α(O)=0.00054 16; α(P)=3.0×10^{-5} 9 Mult.: α(K)exp=0.26 8, α(L1)exp<0.08, α(L23)exp<0.034; theory: E2: α(K)=0.253, α(L1)=0.0254, α(L23)=0.0710; M1: α(K)=0.352, α(L1)=0.0459, α(L23)=0.00414.
x169.5118 20	3.5 3							
169.552 4	0.56 10	366.4673	2−,3+	196.9136	3+,4+			
169.624l 15	0.44 22	350.2607	(3+,4−)	180.6323	5−			
169.746 5	0.59 10	283.7187	3+	113.9696	3+			
x169.822 3	3.2 3							
169.917 5	0.49 8	294.4521	3−,4−	124.5343	4+			
169.955 4	0.54 9	510.6746	3	340.7195	(3−)			
x170.155 3	1.22 12							
x170.196 3	3.6 3							
170.2828 20	7.7 7	320.9733	3(+)	150.6869	4−			
x170.308 3	2.7 3							
170.4359 20	2.16 19	384.8623	3−,4−	214.4269	4+			
x170.531 7	0.31 5							
x170.683 3	1.36 14							
x170.723 3	1.79 18							
x170.902 6	0.44 7							
171.0949 15	13.1 12	249.3303	1+	78.2335	1+	M1,E2f	0.385 21	α(K)=0.29 5; α(L)=0.071 22; α(M)=0.016 6; α(N+..)=0.0041 13 α(N)=0.0036 12; α(O)=0.00052 15; α(P)=2.9×10^{-5} 9 Mult.: α(K)exp=0.37 12; theory: α(K)(M1)=0.343, α(K)(E2)=0.246.
171.158 3	0.71 11	285.1288	3−,4−	113.9696	3+			
x171.299 3	0.59 6							
x171.472 3	4.5 7							
171.499 3	2.8 6	374.6084	(3−)	203.1119	1−,2−			
x171.671 5	0.36 7							
171.7901 15	12.4 11	296.3270	3+	124.5343	4+	M1,E2	0.380 21	α(K)=0.29 5; α(L)=0.070 22; α(M)=0.016 6; α(N+..)=0.0041 13 α(N)=0.0035 12; α(O)=0.00052 14; α(P)=2.9×10^{-5} 9 Mult.: α(K)exp=0.55 25; theory α(K)(M1)=0.339, α(K)(E2)=0.243.
x171.860 5	0.74 13							
171.962 5	0.68 12	399.6746	2,3+	227.7204	3+			
172.0517 12	37 3	237.3482	2−	65.2966	1−	E2,M1	0.378 21	α(K)=0.29 5; α(L)=0.069 22; α(M)=0.016 6; α(N+..)=0.0040 13 α(N)=0.0035 12; α(O)=0.00051 14; α(P)=2.9×10^{-5} 9

γ(^{152}Eu) (continued)

E_γ †	I_γ ‡i	E_i(level)	J^π_i	E_f	J^π_f	Comments
						Mult.: α(K)exp=0.35 *12* α(L1)exp<0.12; theory: α(K)(E2)=0.241, α(K)(M1)=0.338, α(L1)(E2)=0.0244, α(L1)(M1)=0.0439.
172.267 *3*	1.43 *17*	283.7187	3^+	111.4472	2^-	
x172.3841 *20*	1.24 *12*					
x172.4990 *17*	1.44 *13*					
x172.558 *3*	0.42 *6*					
x172.6651 *17*	0.96 *10*					
x172.7170 *15*	3.5 *3*					
172.810 *3*	0.75 *9*	347.7464	3^+,4	174.9373	2^-,3^-	
x172.882c *5*	1.08 *22*					
x172.959 *3*	0.88 *9*					
173.031 *3*	0.99 *10*	387.4565	2^+,3^+	214.4269	4^+	
x173.1671 *15*	4.1 *4*					
x173.2427 *17*	1.84 *17*					
x173.426 *10*	0.21 *6*					
x173.488 *4*	0.44 *7*					
173.569 *5*	0.40 *10*	482.9446		309.3742	3^-	
x173.700 *6*	0.51 *8*					
x173.750 *4*	0.72 *12*					
x173.779 *3*	1.36 *16*					
x173.885 *7*	0.57 *9*					
173.960 *8*	0.33 *7*	483.3410	3^+	309.3742	3^-	
x174.0686 *17*	2.00 *18*					
x174.384 *4*	0.63 *11*					
x174.441 *3*	1.64 *20*					
x174.684 *12*	0.47 *9*					
x174.8431 *20*	2.9 *3*					
174.888 *4*	0.49 *8*	320.9733	$3^{(+)}$	146.0853	3^+	
x174.9309 *20*	3.6 *3*					
x175.0613 *20*	0.98 *10*					
x175.192 *10*	0.29 *15*					
x175.283 *5*	0.45 *7*					
x175.4330 *20*	1.31 *13*					
175.487 *3*	1.11 *13*	296.3270	3^+	120.8384	2^+	
175.529 *4*	0.48 *10*	253.7604	3^+	78.2335	1^+	
x175.6274 *20*	2.78 *25*					
x175.804 *5*	0.78 *20*					
175.855 *5*	0.66 *11*	221.4537	2^-	45.5994	0^-	
x175.9410 *20*	1.08 *11*					
x175.997 *7*	0.41 *12*					
x176.021 *4*	0.69 *10*					
x176.0857 *20*	1.58 *16*					
x176.162 *3*	0.64 *10*					
176.288 *3*	1.59 *14*	294.4521	3^-,4^-	118.1660	2^-	

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γ(^{152}Eu) (continued)

Eγ†	Iγ‡i	Ei(level)	$J^π_i$	E_f	$J^π_f$	Mult.@	αj	Comments
x176.467 4	0.77 13							
176.500 3	3.1 3	253.7604	3^+	77.2588	3^-			
x176.5326 20	5.7 5							
x176.586 4	0.61 9							
176.661 3	0.38 6	301.1897	$3^+,4^+$	124.5343	4^+			
x176.756 10	0.39 8							
x176.838 4	0.46 7							
x176.883 3	1.29 13							
x176.969 3	1.56 16							
x177.242 12	0.13 4							
x177.311 8	0.34 6							
x177.385 3	0.77 15							
177.430 3	0.51 8	462.5552	4	285.1288	$3^-,4^-$			
177.504 4	0.33 6	338.3901	$4^{(-)}$	160.8808	$3^+,4^+$			
x177.553 3	1.28 15							
x177.660 9	0.73 18							
x177.720 9	0.95 19							
177.805 9	0.61 12	267.6410	4^-	89.8488	4^+			
178.026 3	1.11 13	267.6410	4^-	89.6130	4^-			
178.1596 20	3.5 4	296.3270	3^+	118.1660	2^-			
178.2242bcl 20	4.6 5	399.6746	$2,3^+$	221.4537	2^-			
x178.281 10	0.63 9							
178.407 9	0.50 13	353.3447	$3,4^-$	174.9373	$2^-,3^-$			
178.462 3	3.6 4	399.6746	$2,3^+$	221.2097	3^+			
x178.518 5	0.62 16							
x178.622 3	1.55 16							
178.882 4	1.27 13	399.6746	$2,3^+$	220.7952	3^-			
178.928 3	1.7 3	178.9312	$3^+,4^+$	0.0	3^-	[E1]	0.0590	α(K)=0.0500 7; α(L)=0.00705 10; α(M)=0.001516 22; α(N+..)=0.000401 6 α(N)=0.000343 5; α(O)=5.27×10^{-5} 8; α(P)=4.50×10^{-6} 7
178.960 4	1.61 19	393.3279	3^-	214.3604	2^-			
179.153 5	0.46 9	320.9733	$3^{(+)}$	141.8253	4^-			
179.465 3	3.7 4	256.7235	$3^+,4^+$	77.2588	3^-			
x179.508 5	0.46 12							
x179.747 3	5.8 9							
x179.8286 17	16.3 16							
x179.857 3	4.0 6							
x179.9050 20	6.0 6							
x180.264 8	0.32 5							
x180.422 6	0.32 8							
x180.477 3	1.89 19							
x180.512 3	1.23 18							
180.632 5	0.41 12	180.6323	5^-	0.0	3^-	[E2]	0.303	α(K)=0.208 3; α(L)=0.0739 11; α(M)=0.01696 24; α(N+..)=0.00434 6 α(N)=0.00379 6; α(O)=0.000534 8; α(P)=1.739×10^{-5} 25

γ(^{152}Eu) (continued)

E$_\gamma$ [†]	I$_\gamma$ [‡i]	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Mult. [@]	α [j]	Comments
[x]180.705 *3*	0.86 *17*							
[x]180.876 *5*	0.55 *14*							
180.981 *4*	0.73 *15*	434.7356	4	253.7604	3^+			
[x]181.0290 *20*	5.6 *6*							
[x]181.117 *4*	0.57 *14*							
181.165 *3*	4.9 *5*	339.2171	2	158.0548	1^+			
[x]181.272 *6*	0.38 *10*							
[x]181.312 *5*	0.61 *12*							
[x]181.371 *6*	0.39 *10*							
[x]181.436 *3*	0.68 *14*							
[x]181.574 *15*	0.26 *10*							
[x]181.632 *7*	0.76 *19*							
181.683 *3*	1.51 *15*	384.8623	$3^-,4^-$	203.1822	4^-			
[x]181.754 *5*	0.50 *10*							
[x]181.864 *3*	0.62 *19*							
[x]182.004 *5*	0.80 *24*							
[x]182.039 *3*	3.5 *4*							
182.1050 *20*	6.0 *6*	332.7919	3^+	150.6869	4^-			
[x]182.278 *12*	0.49 *20*							
182.3587 *17*	19.6 *18*	296.3270	3^+	113.9696	3^+	M1 [f]	0.339	α(K)=0.287 *4*; α(L)=0.0407 *6*; α(M)=0.00879 *13*; α(N+..)=0.00237 *4* α(N)=0.00201 *3*; α(O)=0.000320 *5*; α(P)=3.17×10^{-5} *5* Mult.: α(K)exp=0.31 *7*; theory: α(K)=0.287.
182.399 *5*	4.0 *8*	436.1636	$2^+,3^+$	253.7604	3^+			
[x]182.425 *4*	3.3 *8*							
[x]182.553 *4*	0.52 *8*							
[x]182.683 *4*	0.60 *12*							
182.723 *6*	0.32 *13*	492.0884	$3^-,4^-$	309.3742	3^-			
182.921 *9*	0.29 *6*	307.4575	$2^+,3^+$	124.5343	4^+			
183.005 *3*	0.67 *10*	294.4521	$3^-,4^-$	111.4472	2^-			
[x]183.250 *3*	1.23 *18*							
[x]183.437 *6*	0.58 *17*							
[x]183.560 *6*	0.68 *12*							
[x]183.632 *3*	2.7 *3*							
[x]183.663 *6*	0.85 *17*							
183.705 *4*	3.0 *5*	334.3909	4^-	150.6869	4^-			
183.732 *3*	5.6 *6*	384.8623	$3^-,4^-$	201.1319	3^+			
[x]183.953 *10*	0.27 *14*							
184.0338 *20*	3.7 *4*	249.3303	1^+	65.2966	1^-			
[x]184.336 *4*	0.73 *12*							
[x]184.430 [d] *12*	0.33 *10*							
[x]184.585 [d] *15*	0.35 *14*							
[x]184.686 *6*	0.58 *15*							
[x]184.767 *10*	0.32 *10*							

γ(^{152}Eu) (continued)

E$_\gamma$[†]	I$_\gamma$[‡i]	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Mult.[@]	α[j]	Comments
[x]184.871 *3*	0.89 *13*							
[x]184.985 *6*	0.36 *14*							
[x]185.071 *3*	0.59 *9*							
[x]185.155 *4*	0.55 *8*							
[x]185.302 *4*	1.54 *23*							
185.357 *9*	0.41 *8*	294.4521	3$^-$,4$^-$	109.0892	(1)$^-$			
[x]185.473 *9*	0.29 *9*							
[x]185.590 *3*	0.58 *10*							
185.739 *10*	0.47 *7*	388.8423		203.1119	1$^-$,2$^-$			
[x]185.917 *8*	0.22 *7*							
[x]186.053 *10*	0.37 *9*							
[x]186.101 *10*	0.42 *11*							
186.135 *9*	0.33 *17*	442.8569	2$^+$,3$^-$	256.7235	3$^+$,4$^+$			
[x]186.211[c] *7*	1.6 *4*							
[x]186.239 *4*	2.1 *3*							
186.325 *4*	2.3 *3*	328.1484	2$^-$	141.8253	4$^-$			
[x]186.356 *4*	1.25 *25*							
[x]186.413 *4*	0.79 *12*							
186.6223 *17*	14.4 *13*	307.4575	2$^+$,3$^+$	120.8384	2$^+$	(M1,E2)[f]	0.295 *24*	α(K)=0.23 *4*; α(L)=0.051 *14*; α(M)=0.012 *4*; α(N+..)=0.0030 *8* α(N)=0.0026 *8*; α(O)=0.00038 *9*; α(P)=2.3×10^{-5} *7* Mult.: α(K)exp=0.21 *5* for the 186.6223γ+186.7420γ+186.8670γ multiplet; theory: α(K)(M1)=0.270, α(K)(E2)=0.188.
186.7420 *20*	5.5 *6*	440.5049	3,4$^-$	253.7604	3$^+$			
186.8670 *20*	11.7 *11*	347.7464	3$^+$,4	160.8808	3$^+$,4$^+$			
[x]186.998 *5*	0.40 *7*							
[x]187.091 *4*	0.70 *11*							
187.222 *3*	3.1 *3*	301.1897	3$^+$,4$^+$	113.9696	3$^+$			
[x]187.318 *3*	0.99 *10*							
[x]187.523 *4*	0.70 *12*							
187.5833 *20*	7.5 *8*	345.6383	(1$^+$,2$^+$)	158.0548	1$^+$	(M1)[f]	0.314	α(K)=0.266 *4*; α(L)=0.0376 *6*; α(M)=0.00813 *12*; α(N+..)=0.00219 *3* α(N)=0.00186 *3*; α(O)=0.000295 *5*; α(P)=2.93×10^{-5} *5* Mult.: α(K)exp=0.53 *15*; theory: α(K)=0.266.
[x]187.634 *3*	2.2 *4*							
187.709 *3*	10.4 *10*	338.3901	4$^{(-)}$	150.6869	4$^-$	(M1)[f]	0.313	α(K)=0.265 *4*; α(L)=0.0376 *6*; α(M)=0.00811 *12*; α(N+..)=0.00218 *3* α(N)=0.00186 *3*; α(O)=0.000295 *5*; α(P)=2.93×10^{-5} *4* Mult.: α(K)exp=0.49 *20*; theory: α(K)=0.270.
[x]187.742 *4*	2.3 *5*							
[x]187.914 *4*	1.32 *20*							
[x]187.9534 *20*	8.0 *8*							
[x]188.006 *3*	1.81 *22*							
188.090[k] *15*	0.47[k] *14*	388.8423		200.7496	5$^-$			

γ(^{152}Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[@]	α[j]	Comments
188.090[k] *15*	0.47[k] *14*	434.7356	4	246.6549	3⁻,4⁻			
[x]188.162 *20*	0.32 *13*							
188.242 *3*	2.14 *21*	412.7454	3⁺	224.4999	3⁻			
[x]188.315 *3*	1.23 *12*							
[x]188.436 *3*	1.00 *10*							
[x]188.541 *3*	3.0 *3*							
[x]188.680 *15*	0.51 *15*							
[x]188.752 *10*	1.06 *21*							
[x]188.850 *3*	1.03 *10*							
[x]189.213 *10*	0.35 *9*							
[x]189.300 *3*	1.44 *14*							
189.380 *15*	0.26 *9*	350.2607	(3⁺,4⁻)	160.8808	3⁺,4⁺			
[x]189.518 *4*	1.07 *11*							
[x]189.683 *4*	0.66 *10*							
[x]189.758 *3*	0.97 *10*							
[x]189.830 *4*	0.99 *10*							
[x]189.945 *6*	0.80 *14*							
190.038 *3*	3.2 *3*	340.7195	(3⁻)	150.6869	4⁻			
190.141 *3*	2.05 *21*	393.3279	3⁻	203.1822	4⁻			
190.239 *17*	0.38 *19*	393.3279	3⁻	203.1119	1⁻,2⁻			
[x]190.320 *8*	0.86 *22*							
190.3852 *20*	13.3 *13*	267.6410	4⁻	77.2588	3⁻	M1[f]	0.301	α(K)=0.255 *4*; α(L)=0.0361 *5*; α(M)=0.00780 *11*; α(N+..)=0.00210 *3* α(N)=0.00179 *3*; α(O)=0.000284 *4*; α(P)=2.81×10^{-5} *4* Mult.: α(K)exp=0.27 *5*; theory: α(K)=0.260.
[x]190.467 *17*	0.47 *19*							
190.549 *5*	0.76 *11*	341.2435	2⁻	150.6869	4⁻			
[x]190.668 *3*	0.77 *12*							
[x]190.751 *4*	0.85 *13*							
[x]190.841[d] *17*	0.5 *4*							
[x]190.869[d] *17*	0.8 *5*							
190.904 *7*	0.68 *17*	492.0884	3⁻,4⁻	301.1897	3⁺,4⁺			
190.9650 *20*	9.5 *10*	332.7919	3⁺	141.8253	4⁻			
[x]191.092 *4*	0.81 *12*							
191.210 *3*	1.95 *20*	309.3742	3⁻	118.1660	2⁻			
191.285 *9*	0.62 *16*	412.7454	3⁺	221.4537	2⁻			
[x]191.322 *9*	0.88 *18*							
[x]191.4378 *17*	19.2 *17*					M1,E2	0.273 *24*	α(K)=0.21 *4*; α(L)=0.047 *12*; α(M)=0.011 *3*; α(N+..)=0.0027 *7* α(N)=0.0024 *7*; α(O)=0.00035 *8*; α(P)=2.1×10^{-5} *7* Mult.: α(K)exp=0.22 *4*.
[x]191.674 *3*	0.71 *11*							
191.933 *7*	0.60 *9*	388.8423		196.9136	3⁺,4⁺			
[x]192.036 *9*	0.27 *11*							
[x]192.190 *3*	1.04 *10*							

$^{152}_{63}$Eu$_{89}$-40

γ(^{152}Eu) (continued)

$E_γ$ †	$I_γ$ ‡i	E_i(level)	$J^π_i$	E_f	$J^π_f$	Mult. @	α j	Comments
ˣ192.262 15	0.45 14							
192.428 3	4.8 5	460.0671	2⁻	267.6410	4⁻			
ˣ192.477 4	0.65 10							
192.563 3	5.0 5	334.3909	4⁻	141.8253	4⁻			
ˣ192.752 4	1.48 22							
ˣ192.806 4	1.49 25							
ˣ192.8578 17	21.2 19					(M1) f	0.291	α(K)=0.246 4; α(L)=0.0349 5; α(M)=0.00753 11; α(N+..)=0.00202 3 α(N)=0.001724 25; α(O)=0.000274 4; α(P)=2.71×10⁻⁵ 4
ˣ192.912 4	1.34 23							
193.077 4	12.7 25	301.1897	3⁺,4⁺	108.1148	5⁺			
193.143 8	0.40 16	339.2171	2	146.0853	3⁺			
ˣ193.340 3	2.40 24							
193.482 4	0.79 12	307.4575	2⁺,3⁺	113.9696	3⁺			
ˣ193.606 10	0.55 14							
ˣ193.695 10	0.56 14							
ˣ193.806 5	1.16 17							
193.873 3	3.4 5	283.7187	3⁺	89.8488	4⁺			
ˣ194.084 4	1.29 22							
194.1428 20	23.0 23	272.3775	2⁺	78.2335	1⁺	M1,E2 f	0.262 24	α(K)=0.20 4; α(L)=0.045 11; α(M)=0.010 3; α(N+..)=0.0026 7 α(N)=0.0023 6; α(O)=0.00033 7; α(P)=2.0×10⁻⁵ 7 Mult.: α(K)exp=0.23 3; theory: α(K)(M1)=0.242, α(K)(E2)=0.167.
ˣ194.244 5	0.73 11							
194.354 3	2.20 22	442.8569	2⁺,3⁻	248.5030	1⁻,2⁻			
ˣ194.453 5	1.09 16							
ˣ194.518 3	3.2 3							
194.634 3	1.42 14	340.7195	(3⁻)	146.0853	3⁺			
ˣ194.778 4	1.20 18							
ˣ194.846 b 4	2.0 8							
ˣ194.931 6	0.63 13							
ˣ195.044 3	0.91 11							
ˣ195.192 5	0.95 14							
ˣ195.360 10	0.37 15							
ˣ195.413 4	2.8 3							
195.520 3	6.8 6	285.1288	3⁻,4⁻	89.6130	4⁻	M1,E2 f	0.256 24	α(K)=0.20 4; α(L)=0.044 10; α(M)=0.0097 25; α(N+..)=0.0025 6 α(N)=0.0022 6; α(O)=0.00033 7; α(P)=2.0×10⁻⁵ 7 Mult.: α(K)exp=0.24 9; theory: α(K)(M1)=0.237, α(K)(E2)0.163.
ˣ195.593 4	1.01 12							
195.764 cl 4	0.73 9	492.0884	3⁻,4⁻	296.3270	3⁺			
ˣ195.834 9	0.47 7							
ˣ195.965 15	0.35 11							
ˣ196.035 10	0.65 13							
ˣ196.232 3	1.87 19							
ˣ196.343 3	3.3 3							

γ(^{152}Eu) (continued)

Eγ[†]	Iγ[‡i]	Ei(level)	J^π_i	E_f	J^π_f	Mult.[@]	α[j]	Comments
196.419 *4*	8.7 *9*	286.0330	2⁻	89.6130	4⁻			
[x]196.451 *4*	2.8 *4*							
196.565[k] *3*	2.9[k] *3*	338.3901	4$^{(-)}$	141.8253	4⁻			
196.565[k] *3*	2.9[k] *3*	399.6746	2,3⁺	203.1119	1⁻,2⁻			
[x]196.657 *4*	0.67 *10*							
196.829 *3*	1.50 *18*	462.5552	4	265.7205	3⁻			
[x]196.875 *4*	1.03 *12*							
196.925 *4*	0.50 *8*	374.6084	(3⁻)	177.6867	(2,3)⁺			
[x]197.020 *10*	0.37 *15*							
197.062 *3*	1.81 *22*	347.7464	3⁺,4	150.6869	4⁻			
[x]197.116 *5*	0.82 *14*							
197.249 *3*	2.6 *3*	434.7356	4	237.4890	4⁻			
197.313[k] *4*	1.17[k] *14*	287.1585	(4⁺)	89.8488	4⁺			
197.313[k] *4*	1.17[k] *14*	483.3410	3⁺	286.0330	2⁻			
[x]197.379 *4*	1.34 *20*							
[x]197.502 *3*	2.8 *3*							
197.551 *3*	9.2 *9*	287.1585	(4⁺)	89.6130	4⁻			Mult.: α(K)exp=0.15 of the 197.55 − 197.93 multiplet where I(197.55γ)/Iγ(total)≈0.3; theory: α(K)(E1)=0.0384. α(K)(E2)=0.158, α(K)(M1)=0.230.
[x]197.603 *6*	1.26 *19*							
197.822 *8*	0.52 *16*	482.9446		285.1288	3⁻,4⁻			
197.9292 *17*	17.8 *16*	309.3742	3⁻	111.4472	2⁻	M1,E2[f]	0.247 *25*	α(K)=0.19 *4*; α(L)=0.042 *10*; α(M)=0.0093 *24*; α(N+..)=0.0024 *6* α(N)=0.0021 *5*; α(O)=0.00031 *6*; α(P)=1.9×10^{-5} *6* Mult.: α(K)exp=0.26 *10*; theory: α(K)(M1)=0.229, α(K)(E2)=0.157.
198.227 *15*	0.39 *12*	483.3410	3⁺	285.1288	3⁻,4⁻			
198.305 *17*	0.65 *20*	412.7454	3⁺	214.4269	4⁺			
198.364[k] *12*	0.79[k] *24*	307.4575	2⁺,3⁺	109.0892	(1)⁻			
198.364[k] *12*	0.79[k] *24*	412.7454	3⁺	214.3604	2⁻			
198.543 *3*	1.28 *13*	399.6746	2,3⁺	201.1319	3⁺			
[x]198.738 *25*	0.55 *11*							
198.812 *5*	0.88 *18*	436.1636	2⁺,3⁺	237.3482	2⁻			
198.898 *3*	4.1 *4*	340.7195	(3⁻)	141.8253	4⁻			
[x]198.962[c] *4*	2.0 *4*							
199.104[d] *17*	0.5 *4*	508.4795	2⁺,3⁺	309.3742	3⁻			
[x]199.1795 *17*	42 *4*					(E2)[f]	0.218	α(K)=0.1544 *22*; α(L)=0.0496 *7*; α(M)=0.01134 *16*; α(N+..)=0.00291 *4* α(N)=0.00254 *4*; α(O)=0.000361 *5*; α(P)=1.319×10^{-5} *19* Mult.: α(K)exp=0.07-0.17, α(L12)exp<0.06, α(L3)exp<0.017.
[x]199.398 *4*	0.63 *9*							
[x]199.517 *9*	0.72 *29*							
199.561 *3*	4.5 *5*	446.2217	3,4⁻	246.6549	3⁻,4⁻			
[x]199.711 *20*	0.43 *22*							

$^{152}_{63}$Eu$_{89}$-42

γ(^{152}Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[@]	α[j]	Comments
[x]199.933 8	0.59 18							
[x]199.974 5	1.8 3							
[x]200.066 6	0.81 12							
200.134 4	2.7 3	320.9733	$3^{(+)}$	120.8384	2^+			
[x]200.193 4	0.84 13							
[x]200.344 5	1.37 14							
[x]200.444 7	0.83 12							
[x]200.672 4	0.96 12							
200.748 4	1.18 12	200.7496	5^-	0.0	3^-			
[x]200.840 8	0.55 8							
[x]200.923 8	0.51 8							
[x]201.002[c] 6	1.4 4							
[x]201.053 7	0.74 15							
201.132 3	4.8 5	201.1319	3^+	0.0	3^-			
[x]201.269[b] 15	0.61 18							
[x]201.374 4	1.40 17							
[x]201.442 7	0.60 15							
[x]201.557 3	1.99 20							
201.665 10	0.44 9	347.7464	3^+,4	146.0853	3^+			
201.742 3	1.78 18	359.7983	2^-	158.0548	1^+			
[x]201.859 8	0.47 9							
[x]202.000 4	0.56 8							
[x]202.230 4	1.60 16							
[x]202.406[b] 12	0.36 9							
202.658 3	4.1 4	353.3447	$3,4^-$	150.6869	4^-			
202.810 3	3.4 3	320.9733	$3^{(+)}$	118.1660	2^-			
202.9013 20	15.7 14	248.5030	$1^-,2^-$	45.5994	0^-	M1,E2[f]	0.229 24	α(K)=0.18 4; α(L)=0.038 8; α(M)=0.0085 20; α(N+..)=0.0022 5 α(N)=0.0019 5; α(O)=0.00029 5; α(P)=1.8×10^{-5} 6 Mult.: α(K)exp=0.20 5; theory: α(K)(M1)=0.214, α(K)(E2)0.146.
[x]202.963 4	1.9 3							
203.16[d] 3	0.7 4	203.1822	4^-	0.0	3^-			
[x]203.305 4	3.8 4							
[x]203.392 3	3.3 3							
203.457 3	4.1 4	324.2956	2^+	120.8384	2^+			
[x]203.5256 20	7.2 6							
[x]203.661 3	2.09 21							
203.732 3	5.4 5	249.3303	1^+	45.5994	0^-			
[x]203.952 6	0.44 11							
[x]204.059 3	5.0 5							
204.177 6	2.4 5	350.2607	$(3^+,4^-)$	146.0853	3^+			
204.214 9	1.2 4	384.8623	$3^-,4^-$	180.6323	5^-			
[x]204.292 8	0.75 19							

$^{152}_{63}$Eu$_{89}$-43

$\gamma(^{152}$Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	α[j]	Comments
[x]204.472 *10*	0.46 *9*							
[x]204.541 *3*	1.35 *16*							
[x]204.642 *6*	0.83 *12*							
204.848 *15*	0.52 *21*	294.4521	$3^-,4^-$	89.6130	4^-			
[x]204.9386 *20*	22.6 *20*					E1[f]	0.0411	α(K)=0.0349 *5*; α(L)=0.00488 *7*; α(M)=0.001049 *15*; α(N+..)=0.000278 *4* α(N)=0.000238 *4*; α(O)=3.67×10^{-5} *6*; α(P)=3.19×10^{-6} *5* Mult.: α(K)exp=0.04 *1*.
[x]205.003 *5*	1.10 *19*							
[x]205.239 *5*	0.81 *12*							
[x]205.343 *4*	1.1 *3*							
[x]205.395 *5*	0.66 *13*							
[x]205.530 *4*	1.08 *16*							
205.825[b] *12*	0.74 *19*	462.5552	4	256.7235	$3^+,4^+$			
[x]205.890 *5*	1.40 *24*							
205.930 *3*	8.7 *8*	384.8623	$3^-,4^-$	178.9312	$3^+,4^+$			
206.1303 *20*	17.0 *16*	324.2956	2^+	118.1660	2^-			
[x]206.211 *10*	0.9 *4*							
[x]206.256 *8*	1.9 *5*							
[x]206.3664 *20*	35 *3*							
206.4617 *20*	36 *3*	283.7187	3^+	77.2588	3^-			
[x]206.625 *3*	2.8 *3*							
[x]206.699 *4*	1.54 *15*							
[x]206.746 *4*	2.17 *22*							
[x]206.818 *4*	0.74 *11*							
206.947 *8*	0.63 *16*	492.0884	$3^-,4^-$	285.1288	$3^-,4^-$			
207.004 *3*	7.0 *6*	320.9733	$3^{(+)}$	113.9696	3^+			
207.075 *4*	1.08 *16*	272.3775	2^+	65.2966	1^-			
207.260 *4*	4.4 *5*	353.3447	$3,4^-$	146.0853	3^+			
207.296 *3*	13.3 *13*	508.4795	$2^+,3^+$	301.1897	$3^+,4^+$			
[x]207.384[c] *5*	1.01 *15*							
[x]207.581[b] *7*	0.85 *17*							
[x]207.633 *9*	1.0 *3*							
[x]207.689 *3*	7.8 *7*							
207.7987 *20*	11.2 *10*	286.0330	2^-	78.2335	1^+			
207.870 *4*	1.67 *20*	285.1288	$3^-,4^-$	77.2588	3^-			
[x]207.953 *4*	3.6 *4*							
[x]208.025 *5*	0.83 *21*							
[x]208.219 *4*	1.34 *13*							
[x]208.290 *4*	1.06 *13*							
208.418 *5*	1.13 *17*	366.4673	$2^-,3^+$	158.0548	1^+			
[x]208.472 *5*	1.30 *20*							
[x]208.514 *3*	3.9 *4*							
[x]208.692 *10*	0.81 *20*							

$^{152}_{63}$Eu$_{89}$-44

γ(^{152}Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	α[j]	Comments
208.7722 *20*	23.1 *21*	286.0330	2^-	77.2588	3^-	M1,E2[f]	0.210 *24*	α(K)=0.17 *4*; α(L)=0.035 *7*; α(M)=0.0077 *17*; α(N+..)=0.0020 *4* α(N)=0.0017 *4*; α(O)=0.00026 *4*; α(P)=1.7×10^{-5} *6* Mult.: α(K)exp=0.21 *10*: theory: α(K)(M1)=0.198, α(K)(E2)=0.134.
^{x}208.860 *5*	2.21 *33*							
^{x}208.951 *12*	0.68 *20*							
^{x}209.008 *5*	1.8 *3*							
^{x}209.083 *5*	1.48 *22*							
^{x}209.373[b] *9*	0.97 *15*							
209.478 *4*	3.0 *3*	510.6746	3	301.1897	$3^+,4^+$			
^{x}209.550 *3*	5.0 *5*							
^{x}209.683 *8*	0.77 *15*							
^{x}209.724 *5*	1.58 *24*							
209.856 *3*	6.0 *5*	334.3909	4^-	124.5343	4^+			
209.922 *4*	1.46 *18*	384.8623	$3^-,4^-$	174.9373	$2^-,3^-$			
209.987 *5*	0.96 *16*	328.1484	2^-	118.1660	2^-			
^{x}210.059 *4*	1.58 *16*							
210.233 *4*	1.7 *3*	434.7356	4	224.4999	3^-			
^{x}210.295 *5*	2.4 *4*							
^{x}210.355 *4*	6.3 *6*							
^{x}210.394 *4*	7.4 *7*							
210.744 *12*	0.46 *9*	460.0671	2^-	249.3303	1^+			
^{x}210.808 *4*	0.97 *12*							
^{x}211.001 *6*	0.87 *13*							
^{x}211.061 *4*	1.70 *17*							
211.166 *9*	0.54 *8*	388.8423		177.6867	$(2,3)^+$			
211.341 *25*	0.50 *25*	301.1897	$3^+,4^+$	89.8488	4^+			
^{x}211.409[d] *25*	0.4 *3*							
211.530 *6*	0.55 *9*	353.3447	$3,4^-$	141.8253	4^-			
211.663 *3*	3.9 *4*	436.1636	$2^+,3^+$	224.4999	3^-			
^{x}211.790 *17*	0.48 *19*							
^{x}211.933 *4*	1.59 *16*							
^{x}212.061 *5*	1.14 *17*							
^{x}212.239 *10*	0.73 *18*							
^{x}212.327 *3*	12.9 *12*							
^{x}212.410 *7*	0.76 *19*							
^{x}212.488 *5*	0.87 *22*							
^{x}212.566 *3*	3.0 *3*							
212.696 *3*	7.1 *6*	393.3279	3^-	180.6323	5^-			
212.844 *3*	2.7 *3*	324.2956	2^+	111.4472	2^-			
^{x}212.912 *7*	0.75 *15*							
^{x}213.105 *4*	1.13 *11*							
^{x}213.213 *4*	1.14 *11*							
^{x}213.343 *4*	1.77 *18*							

$^{152}_{63}$Eu$_{89}$-45

γ(^{152}Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	α[j]	Comments
^{x}213.461 *15*	0.39 *10*							
^{x}213.636 *3*	6.1 *5*							
213.867[b] *4*	2.18 *22*	338.3901	$4^{(-)}$	124.5343	4^+			
^{x}213.987 *4*	0.95 *10*							
^{x}214.130 *5*	0.95 *14*							
^{x}214.267 *6*	1.2 *3*							
^{x}214.314 *7*	1.2 *3*							
214.398 *3*	21.1 *19*	393.3279	3^-	178.9312	$3^+,4^+$			
^{x}214.454 *6*	1.7 *3*							
214.625 *3*	18.3 *16*	332.7919	3^+	118.1660	2^-			
214.718 *4*	2.3 *3*	436.1636	$2^+,3^+$	221.4537	2^-			
^{x}214.835 *15*	0.64 *16*							
214.981 *15*	0.78 *20*	436.1636	$2^+,3^+$	221.2097	3^+			
215.210 *3*	5.4 *5*	324.2956	2^+	109.0892	$(1)^-$			
^{x}215.378 *3*	2.54 *23*							
^{x}215.568 *4*	3.3 *3*							
215.694 *7*	0.78 *13*	483.3410	3^+	267.6410	4^-			
^{x}215.750 *8*	0.63 *13*							
^{x}215.811 *7*	1.21 *18*							
^{x}215.859 *9*	0.53 *13*							
^{x}215.971 *4*	0.63 *9*							
^{x}216.052 *5*	2.6 *4*							
^{x}216.206 *5*	1.9 *3*							
^{x}216.270 *8*	0.80 *20*							
^{x}216.324 *4*	4.7 *5*							
^{x}216.464[d] *20*	0.42 *25*							
^{x}216.520 *4*	1.68 *17*							
^{x}216.721 *4*	0.90 *9*							
216.992 *3*	14.8 *15*	395.9255	$3^+,4^+$	178.9312	$3^+,4^+$	M1[f]	0.2104	α(K)=0.15 *3*; α(L)=0.030 *5*; α(M)=0.0067 *13*; α(N+..)=0.0018 *3* α(N)=0.0015 *3*; α(O)=0.00023 *3*; α(P)=1.5×10^{-5} *5* Mult.: α(K)exp=0.16 *2*; theory: α(K)(M1)=0.178.
^{x}217.044 *6*	2.3 *5*							
217.197 *4*	2.25 *23*	294.4521	$3^-,4^-$	77.2588	3^-			
^{x}217.264 *5*	0.68 *10*							
^{x}217.391 *20*	0.53 *21*							
^{x}217.523 *4*	1.98 *20*							
^{x}217.580 *6*	0.88 *15*							
^{x}217.681 *8*	0.71 *14*							
^{x}217.977 *10*	0.56 *11*							
^{x}218.068 *7*	0.64 *11*							
^{x}218.116 *7*	0.68 *12*							
^{x}218.297 *5*	0.57 *9*							
218.377 *3*	4.7 *4*	339.2171	2	120.8384	2^+			

$^{152}_{63}$Eu$_{89}$-46

γ(^{152}Eu) (continued)

E_γ †	I_γ ‡i	E_i(level)	J^π_i	E_f	J^π_f	Mult. @	α j	Comments
218.503 *10*	0.74 *11*	446.2217	3,4$^-$	227.7204	3$^+$			
^{x}218.646 *6*	0.72 *14*							
^{x}218.776 *10*	0.81 *16*							
218.824 *9*	0.74 *15*	332.7919	3$^+$	113.9696	3$^+$			
^{x}218.940 *12*	0.67 *17*							
219.0699 *20*	17.9 *14*	296.3270	3$^+$	77.2588	3$^-$	E1	0.0344	α(K)=0.0293 *4*; α(L)=0.00408 *6*; α(M)=0.000876 *13*; α(N+..)=0.000232 *4* α(N)=0.000199 *3*; α(O)=3.07×10^{-5} *5*; α(P)=2.70×10^{-6} *4* Mult.: α(K)exp=0.05 *2*; theory: α(K)=0.0293.
^{x}219.346 *15*	0.30 *6*							
^{x}219.465 *4*	1.18 *24*							
219.518 *8*	0.75 *15*	309.3742	3$^-$	89.8488	4$^+$			
^{x}219.590 *7*	0.60 *9*							
^{x}219.832 *9*	0.74 *13*							
^{x}219.959 *5*	1.41 *14*							
^{x}220.248 *3*	3.3 *3*							
220.314 *4*	1.46 *15*	434.7356	4	214.4269	4$^+$			
220.404 *3*	6.4 *6*	341.2435	2$^-$	120.8384	2$^+$			
^{x}220.476 *3*	1.98 *20*							
220.747 *4*	4.6 *5*	399.6746	2,3$^+$	178.9312	3$^+$,4$^+$			
^{x}220.808 *4*	3.7 *4*							
^{x}220.899 *12*	0.8 *3*							
221.060 *5*	3.1 *5*	339.2171	2	118.1660	2$^-$			
221.2111 *20*	161 *13*	221.2097	3$^+$	0.0	3$^-$	E1	0.0336	α(K)=0.0285 *4*; α(L)=0.00397 *6*; α(M)=0.000854 *12*; α(N+..)=0.000226 *4* α(N)=0.000194 *3*; α(O)=2.99×10^{-5} *5*; α(P)=2.63×10^{-6} *4* M α(K)exp<0.023, α(L12)exp<0.07, α(L3)exp<0.006: theory: α(K)=0.0285, α(L12)=0.00355, α(L3)=0.000421.
221.349 *15*	1.1 *4*	332.7919	3$^+$	111.4472	2$^-$			
221.447 *7*	0.91 *18*	221.4537	2$^-$	0.0	3$^-$			
^{x}221.751 *4*	2.24 *22*							
221.813 *7*	1.41 *24*	436.1636	2$^+$,3$^+$	214.3604	2$^-$			
^{x}221.874 *8*	1.07 *21*							
^{x}221.948 *3*	3.6 *3*							
^{x}222.079 *20*	0.52 *16*							
^{x}222.212 *5*	0.93 *14*							
^{x}222.374 *17*	0.9 *5*							
222.552 *3*	5.6 *5*	340.7195	(3$^-$)	118.1660	2$^-$			
^{x}222.643 *6*	0.96 *14*							
^{x}222.757 *5*	1.15 *14*							
^{x}222.985 *15*	0.6 *3*							
^{x}223.036 *6*	2.7 *5*							
223.073 *3*	8.3 *7*	341.2435	2$^-$	118.1660	2$^-$			
^{x}223.131 *9*	0.70 *21*							
223.212 *4*	3.8 *4*	347.7464	3$^+$,4	124.5343	4$^+$			
^{x}223.308 *4*	2.61 *23*							

$^{152}_{63}$Eu$_{89}$-47

γ(^{152}Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[@]	α[j]	Comments
^{x}223.450 *12*	0.79 *13*							
^{x}223.592 *7*	0.71 *14*							
^{x}223.726 *15*	0.31 *8*							
^{x}223.888 *5*	1.62 *24*							
^{x}223.946 *5*	1.8 *3*							
^{x}224.028 *7*	0.93 *11*							
^{x}224.107[b] *10*	0.83 *12*							
^{x}224.268 *9*	1.3 *3*							
^{x}224.311[d] *17*	0.5 *3*							
^{x}224.484 *4*	1.77 *18*							
224.635 *5*	7.4 *7*	366.4673	$2^-,3^+$	141.8253	4^-			
^{x}224.713 *4*	5.7 *5*							
224.802 *4*	10.3 *9*	345.6383	$(1^+,2^+)$	120.8384	2^+			
^{x}225.073 *3*	16.6 *13*							
^{x}225.234 *6*	1.05 *16*							
^{x}225.316 *20*	0.78 *23*							
225.411 *20*	0.61 *24*	446.2217	$3,4^-$	220.7952	3^-			
^{x}225.649 *8*	0.77 *19*							
^{x}225.707 *5*	3.6 *5*							
^{x}225.748 *6*	2.0 *4*							
^{x}225.815 *8*	1.6 *3*							
225.859 *8*	1.7 *3*	374.6084	(3^-)	148.7364	$(4)^+$			
^{x}225.925 *4*	1.96 *20*							
^{x}226.066 *5*	2.13 *21*							
226.254 *15*	0.90 *18*	334.3909	4^-	108.1148	5^+			
^{x}226.413 *4*	5.6 *5*							
^{x}226.479 *4*	5.5 *5*							
^{x}226.595 *4*	2.14 *21*							
226.746[b] *4*	4.1 *4*	340.7195	(3^-)	113.9696	3^+			
226.91[k] *3*	0.46[k] *23*	338.3901	$4^{(-)}$	111.4472	2^-			
226.91[k] *3*	0.46[k] *23*	347.7464	$3^+,4$	120.8384	2^+	(M1,E2)[fg]	0.164 *23*	α(K)=0.13 *3*; α(L)=0.026 *4*; α(M)=0.0058 *10*; α(N+..)=0.00151 *22* α(N)=0.00130 *21*; α(O)=0.000196 *21*; α(P)=1.3×10^{-5} *5*
227.276 *3*	18.4 *15*	341.2435	2^-	113.9696	3^+	E1	0.0313	α(K)=0.0266 *4*; α(L)=0.00370 *6*; α(M)=0.000794 *12*; α(N+..)=0.000211 *3* α(N)=0.000180 *3*; α(O)=2.79×10^{-5} *4*; α(P)=2.46×10^{-6} *4* Mult.: α(K)exp=0.03 *1*; theory: α(K)=0.0266.
227.475 *8*	1.0 *3*	345.6383	$(1^+,2^+)$	118.1660	2^-			
^{x}227.591 *6*	1.17 *14*							
227.713 *12*	0.74 *15*	227.7204	3^+	0.0	3^-			
^{x}228.077 *4*	1.28 *15*							
^{x}228.359 *8*	0.58 *15*							
228.432 *6*	1.53 *23*	442.8569	$2^+,3^-$	214.4269	4^+			

γ(^{152}Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[@]	α[j]	Comments
228.498 3	12.4 12	442.8569	$2^+,3^-$	214.3604	2^-	E1[f]	0.0308	α(K)=0.0262 4; α(L)=0.00364 6; α(M)=0.000783 11; α(N+..)=0.000208 3 α(N)=0.0001777 25; α(O)=2.75×10^{-5} 4; α(P)=2.43×10^{-6} 4 Mult.: α(K)exp=0.02 1; theory: α(K)=0.0262.
228.531 8	2.9 15	374.6084	(3^-)	146.0853	3^+			
[x]228.586 4	2.8 3							
228.820 7	0.62 12	353.3447	$3,4^-$	124.5343	4^+			
[x]228.903 4	1.76 16							
[x]229.115 12	0.68 14							
229.225 3	12.0 11	307.4575	$2^+,3^+$	78.2335	1^+	M1,E2[f]	0.159 23	α(K)=0.13 3; α(L)=0.025 4; α(M)=0.0056 9; α(N+..)=0.00146 21 α(N)=0.00126 19; α(O)=0.000189 20; α(P)=1.3×10^{-5} 4 Mult.: α(K)exp=0.17 8; theory: α(K)(M1)=0.154, α(K)(E2)=0.101.
229.273 5	3.5 5	340.7195	(3^-)	111.4472	2^-			
229.409 4	4.4 4	387.4565	$2^+,3^+$	158.0548	1^+			
[x]229.674 5	1.24 12							
229.794 5	1.48 15	341.2435	2^-	111.4472	2^-			
[x]229.945[b] 6	1.34 20							
[x]230.078[b] 6	1.93 23							
230.267 4	2.64 24	338.3901	$4^{(-)}$	108.1148	5^+			
[x]230.346 7	1.44 22							
[x]230.933 15	0.67 13							
[x]231.185 20	0.41 12							
231.332 20	0.35 14	320.9733	$3^{(+)}$	89.6130	4^-			
[x]231.471 17	0.65 16							
231.552 6	1.4 4	434.7356	4	203.1822	4^-			
231.614[k] 8	1.45[k] 22	340.7195	(3^-)	109.0892	$(1)^-$			
231.614[k] 8	1.45[k] 22	434.7356	4	203.1119	$1^-,2^-$			
231.666 4	3.6 3	345.6383	$(1^+,2^+)$	113.9696	3^+			
231.797 6	1.07 11	446.2217	$3,4^-$	214.4269	4^+			
[x]231.937 4	5.1 4							
[x]232.020 12	0.9 4							
232.096 3	10.4 8	350.2607	$(3^+,4^-)$	118.1660	2^-	(E1,E2)[f]		Mult.: α(K)exp<0.11; theory: α(K)(E2)=0.0968, α(K)(E1)=0.0252.
232.345 5	0.95 10	460.0671	2^-	227.7204	3^+			
[x]232.517 5	1.50 15							
[x]232.71[d] 4	0.6 4							
[x]232.799 7	1.52 23							
[x]232.947 3	34 3					E1[f]	0.0293	α(K)=0.0249 4; α(L)=0.00346 5; α(M)=0.000744 11; α(N+..)=0.000197 3 α(N)=0.0001688 24; α(O)=2.61×10^{-5} 4; α(P)=2.31×10^{-6} 4 Mult.: α(K)exp<0.06, α(L12)exp<0.018.
233.061 9	1.3 3	436.1636	$2^+,3^+$	203.1119	$1^-,2^-$			

γ(^{152}Eu) (continued)

E_γ [†]	I_γ [‡i]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [@]	α [j]	Comments
[x]233.188 *4*	1.59 *16*							
[x]233.404 *20*	0.62 *25*							
233.610[k] *4*	4.2[k] *3*	434.7356	4	201.1319	3^+			
233.610[k] *4*	4.2[k] *3*	482.9446		249.3303	1^+			
[x]233.717 *10*	4.3 *4*							
233.780 *4*	6.2 *5*	347.7464	3^+,4	113.9696	3^+			
[x]233.930 *17*	0.51 *25*							
[x]234.012[b] *5*	2.29 *23*							
[x]234.143 *5*	2.31 *23*							
[x]234.204 *6*	2.2 *3*							
[x]234.371 *6*	1.5 *3*							
[x]234.469 *12*	0.9 *4*							
[x]234.548 *4*	7.7 *6*							
[x]234.792 *7*	2.04 *20*							
[x]234.966 *10*	1.20 *18*							
235.048 *6*	3.3 *5*	395.9255	$3^+,4^+$	160.8808	$3^+,4^+$			
[x]235.119 *7*	2.2 *4*							
235.196 *15*	0.8 *3*	353.3447	$3,4^-$	118.1660	2^-			
[x]235.295 *8*	1.42 *17*							
[x]235.393 *7*	0.94 *14*							
[x]235.586 *6*	1.24 *19*							
[x]235.651 *6*	2.1 *3*							
[x]235.856 *12*	0.50 *15*							
[x]235.924 *8*	1.41 *21*							
[x]236.015 *5*	1.44 *14*							
[x]236.170 *6*	1.22 *18*							
236.292[k] *4*	6.9[k] *6*	347.7464	3^+,4	111.4472	2^-			
236.292[k] *4*	6.9[k] *6*	350.2607	$(3^+,4^-)$	113.9696	3^+	(M1,E2)[fg]	0.146 *22*	α(K)=0.117 *25*; α(L)=0.023 *3*; α(M)=0.0050 *8*; α(N+..)=0.00132 *17* α(N)=0.00114 *16*; α(O)=0.000171 *15*; α(P)=1.2×10^{-5} *4*
236.292[k] *4*	6.9[k] *6*	482.9446		246.6549	$3^-,4^-$	(M1,E2)[fg]	0.146 *22*	α(K)=0.117 *25*; α(L)=0.023 *3*; α(M)=0.0050 *8*; α(N+..)=0.00132 *17* α(N)=0.00114 *16*; α(O)=0.000171 *15*; α(P)=1.2×10^{-5} *4*
[x]236.465 *5*	1.86 *19*							
[x]236.647 *6*	1.00 *12*							
[x]236.787 *7*	0.86 *15*							
[x]236.924 *8*	1.29 *19*							
[x]236.956 *6*	2.24 *22*							
[x]236.975 *9*	1.02 *17*							
[x]237.074 *10*	1.35 *14*							
[x]237.251 *10*	0.76 *9*							
237.411 *9*	0.75 *15*	440.5049	$3,4^-$	203.1119	$1^-,2^-$			
[x]237.516 *9*	0.71 *14*							
[x]237.583 *4*	2.87 *23*							

$^{152}_{63}$Eu$_{89}$-50

γ(^{152}Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[@]	α[j]	Comments
237.811 *3*	15.8 *11*	412.7454	3⁺	174.9373	2⁻,3⁻			
[x]237.883[c] *12*	3.5 *11*							
[x]237.962 *10*	1.36 *23*							
[x]238.024[b] *15*	0.97 *19*							
[x]238.187 *5*	3.0 *3*							
[x]238.263 *7*	1.15 *17*							
238.321 *5*	1.6 *3*	492.0884	3⁻,4⁻	253.7604	3⁺			
[x]238.530 *4*	3.6 *3*							
[x]238.659 *9*	0.72 *12*							
[x]238.750 *8*	1.51 *23*							
[x]238.835 *8*	1.63 *24*							
[x]238.899 *7*	2.6 *3*							
238.960 *9*	1.9 *3*	359.7983	2⁻	120.8384	2⁺			
[x]239.019 *12*	0.73 *22*							
239.248 *5*	4.0 *4*	436.1636	2⁺,3⁺	196.9136	3⁺,4⁺			
239.379[k] *3*	14.2[k] *10*	353.3447	3,4⁻	113.9696	3⁺	(M1)[f]	0.1611	α(K)=0.1366 *20*; α(L)=0.0192 *3*; α(M)=0.00415 *6*; α(N+..)=0.001116 *16* α(N)=0.000951 *14*; α(O)=0.0001509 *22*; α(P)=1.502×10^{-5} *21* Mult.: α(K)exp=0.14 *3*; theory: α(K)=0.137.
239.379[k] *3*	14.2[k] *10*	440.5049	3,4⁻	201.1319	3⁺	(M1)[f]	0.1611	α(K)=0.1366 *20*; α(L)=0.0192 *3*; α(M)=0.00415 *6*; α(N+..)=0.001116 *16* α(N)=0.000951 *14*; α(O)=0.0001509 *22*; α(P)=1.502×10^{-5} *21* Mult.: α(K)exp=0.14 *3*; theory: α(K)=0.137.
[x]239.474 *6*	2.6 *3*							
239.631 *4*	7.1 *5*	347.7464	3⁺,4	108.1148	5⁺			
[x]239.944 *15*	0.53 *9*							
[x]240.065 *9*	0.95 *11*							
[x]240.309 *4*	2.82 *23*							
240.415 *17*	0.79 *20*	286.0330	2⁻	45.5994	0⁻			
[x]240.594 *4*	7.0 *5*							
[x]240.695 *6*	3.7 *4*							
[x]240.777 *7*	2.3 *4*							
240.836[k] *6*	5.7[k] *6*	361.6731	2,3,4⁻	120.8384	2⁺			
240.836[k] *6*	5.7[k] *6*	440.5049	3,4⁻	199.6645	4⁺,5⁺			
240.836[k] *6*	5.7[k] *6*	508.4795	2⁺,3⁺	267.6410	4⁻			
[x]241.052 *6*	1.13 *11*							
241.180 *5*	1.35 *14*	350.2607	(3⁺,4⁻)	109.0892	(1)⁻			
241.321 *15*	1.05 *16*	462.5552	4	221.2097	3⁺			
[x]241.442 *8*	1.27 *13*							
[x]241.540[d] *20*	0.6 *4*							
241.630[k] *8*	2.9[k] *6*	359.7983	2⁻	118.1660	2⁻			
241.630[k] *8*	2.9[k] *6*	399.6746	2,3⁺	158.0548	1⁺			
[x]241.914 *5*	3.2 *3*							

$^{152}_{63}$Eu$_{89}$-51

$\gamma(^{152}Eu)$ (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[@]	α[j]	Comments
242.155[k] *12*	0.77[k] *23*	307.4575	$2^+,3^+$	65.2966	1^-			
242.155[k] *12*	0.77[k] *23*	350.2607	$(3^+,4^-)$	108.1148	5^+			
[x]242.224 *6*	2.11 *21*							
[x]242.313 *8*	2.3 *6*							
[x]242.359 *4*	11.6 *10*							
242.750[k] *5*	5.2[k] *4*	388.8423		146.0853	3^+			
242.750[k] *5*	5.2[k] *4*	508.4795	$2^+,3^+$	265.7205	3^-			
[x]242.905 *6*	3.1 *3*							
[x]242.970 *6*	2.54 *25*							
243.032[k] *4*	5.0[k] *4*	384.8623	$3^-,4^-$	141.8253	4^-			
243.032[k] *4*	5.1[k] *4*	446.2217	$3,4^-$	203.1822	4^-			
243.032[k] *4*	5.0[k] *4*	510.6746	3	267.6410	4^-			
243.164 *20*	0.82 *21*	332.7919	3^+	89.6130	4^-			
[x]243.437 *6*	1.60 *16*							
243.714 *3*	24.4 *17*	320.9733	$3^{(+)}$	77.2588	3^-	(E1)[f]	0.0261	α(K)=0.0222 *4*; α(L)=0.00307 *5*; α(M)=0.000660 *10*; α(N+..)=0.0001750 *25* α(N)=0.0001498 *21*; α(O)=2.32×10^{-5} *4*; α(P)=2.06×10^{-6} *3* Mult.: α(K)exp=0.05 *2*; theory: α(K)=0.0222.
[x]243.800[d] *25*	0.7 *4*							
[x]244.00[b] *3*	0.6 *3*							
[x]244.258 *6*	1.33 *16*							
[x]244.423 *10*	0.83 *21*							
244.547 *3*	33.4 *23*	334.3909	4^-	89.8488	4^+	E1[f]	0.0258	α(K)=0.0220 *3*; α(L)=0.00304 *5*; α(M)=0.000654 *10*; α(N+..)=0.0001735 *25* α(N)=0.0001484 *21*; α(O)=2.30×10^{-5} *4*; α(P)=2.05×10^{-6} *3* Mult.: α(K)exp<0.07, α(L1)exp<0.009; theory: α(K)exp=0.0220, α(L1)=0.00248.
[x]244.903 *4*	7.2 *6*							
[x]244.968 *7*	2.0 *3*							
[x]245.056 *12*	1.2 *3*							
[x]245.126 *10*	1.1 *3*							
245.230 *4*	7.8 *6*	395.9255	$3^+,4^+$	150.6869	4^-			
[x]245.316 *4*	6.3 *5*							
245.439 *7*	2.2 *3*	492.0884	$3^-,4^-$	246.6549	$3^-,4^-$			
[x]245.531 *3*	19.0 *13*							
245.622 *12*	1.1 *3*	366.4673	$2^-,3^+$	120.8384	2^+			
245.827 *4*	7.4 *6*	359.7983	2^-	113.9696	3^+			
245.932 *7*	1.05 *16*	442.8569	$2^+,3^-$	196.9136	$3^+,4^+$			
[x]246.077[b] *5*	3.7 *3*							
[x]246.212 *5*	2.23 *22*							
[x]246.519 *10*	0.79 *20*							

$^{152}_{63}Eu_{89}$-52

γ(^{152}Eu) (continued)

E_γ †	I_γ ‡i	E_i(level)	J^π_i	E_f	J^π_f	Mult.@	α j	Comments
246.657 *4*	17.2 *12*	246.6549	$3^-,4^-$	0.0	3^-	M1 f	0.1486	α(K)=0.1260 *18*; α(L)=0.01772 *25*; α(M)=0.00382 *6*; α(N+..)=0.001029 *15* α(N)=0.000876 *13*; α(O)=0.0001391 *20*; α(P)=1.385×10^{-5} *20* Mult.: α(K)exp=0.13 *2*: theory: α(K)=0.126.
x246.785 *10*	0.82 *16*							
247.039 *3*	13.0 *9*	324.2956	2^+	77.2588	3^-			
x247.106 *9*	1.5 *3*							
247.191 *12*	0.63 *16*	395.9255	$3^+,4^+$	148.7364	$(4)^+$			
x247.329 *15*	0.79 *16*							
x247.514 *5*	2.95 *24*							
247.687 *12*	0.80 *24*	361.6731	$2,3,4^-$	113.9696	3^+			
x247.759 *10*	1.49 *25*							
x248.072 *7*	1.53 *15*							
248.353 *4*	4.2 *3*	359.7983	2^-	111.4472	2^-			
x248.574 b *6*	2.25 *23*							
248.775 b *5*	3.1 *3*	338.3901	$4^{(-)}$	89.6130	4^-			
x248.910 *6*	2.02 *20*							
x249.165 *4*	3.6 *3*							
x249.279 *5*	3.0 *3*							
x249.433 *10*	1.06 *21*							
x249.741 *20*	1.1 *3*							
249.921 *4*	4.6 *4*	328.1484	2^-	78.2335	1^+			
250.081 *5*	2.14 *19*	374.6084	(3^-)	124.5343	4^+			
x250.338 *15*	0.94 *14*							
x250.490 *12*	1.45 *17*							
x250.616 *20*	1.2 *3*							
x250.754 *5*	3.3 *3*							
x250.830 *12*	1.55 *23*							
251.103 *17*	0.91 *18*	340.7195	(3^-)	89.6130	4^-			
x251.289 *17*	0.75 *15*							
x251.418 *6*	1.51 *14*							
x251.575 *4*	2.39 *22*							
251.791 *25*	0.82 *25*	508.4795	$2^+,3^+$	256.7235	$3^+,4^+$			
x252.154 *15*	0.73 *15*							
x252.233 *8*	1.51 *18*							
252.478 *25*	0.36 *11*	366.4673	$2^-,3^+$	113.9696	3^+			
x252.658 *10*	0.86 *22*							
x252.726 *20*	0.8 *3*							
x252.813 *5*	7.9 *6*							
x252.870 *8*	2.0 *5*							
x252.964 *12*	1.0 *3*							
x253.048 *6*	2.35 *19*							
x253.177 *5*	2.57 *21*							
x253.331 *6*	2.55 *20*							

γ(^{152}Eu) (continued)

E_{γ}[†]	I_{γ}[‡i]	E_i(level)	J^{π}_i	E_f	J^{π}_f	Mult.[@]	α[j]	Comments
[x]253.466 20	0.75 15							
253.595 5	1.78 12	399.6746	2,3$^+$	146.0853	3$^+$			
253.768 4	4.9 3	374.6084	(3$^-$)	120.8384	2$^+$			
[x]254.021 10	1.25 21							
254.108 4	10.4 6	434.7356	4	180.6323	5$^-$			
[x]254.217 5	2.27 18							
[x]254.410 25	0.41 12							
254.563 5	1.47 13	332.7919	3$^+$	78.2335	1$^+$			
[x]254.803 6	1.89 17							
[x]254.997 10	1.53 18							
[x]255.096[c] 20	1.8 4							
[x]255.307 25	0.45 18							
255.531 4	6.0 4	332.7919	3$^+$	77.2588	3$^-$			
[x]255.67 6	0.6 3							
[x]255.801 6	2.36 21							
[x]255.946 6	2.36 24							
[x]256.075 4	14.9 9							
[x]256.224 6	3.7 3							
[x]256.573 6	2.4 4							
256.886 6	1.84 15	460.0671	2$^-$	203.1822	4$^-$			
257.047 7	2.16 22	434.7356	4	177.6867	(2,3)$^+$			
[x]257.151 6	4.0 4							
[x]257.271 6	3.5 4							
[x]257.326 12	2.4 6							
[x]257.420 15	0.9 4							
[x]257.769 9	0.96 12							
[x]258.176 10	0.96 16							
[x]258.255 12	1.49 25							
258.449 8	1.1 3	482.9446		224.4999	3$^-$			
[x]258.514 7	2.1 3							
258.818[k] 25	0.68[k] 20	258.7822	4$^+$,5$^+$	0.0	3$^-$			
258.818[k] 25	0.68[k] 20	483.3410	3$^+$	224.4999	3$^-$			
258.920 12	1.2 3	460.0671	2$^-$	201.1319	3$^+$			
258.998 15	1.0 3	324.2956	2$^+$	65.2966	1$^-$			
[x]259.065 8	3.5 3							
259.381 9	0.93 23	462.5552	4	203.1822	4$^-$			
[x]259.599 5	1.88 15							
259.802 6	1.59 14	434.7356	4	174.9373	2$^-$,3$^-$			
[x]260.050 6	1.45 10							
[x]260.242 8	2.31 23							
260.327 3	25.9 13	384.8623	3$^-$,4$^-$	124.5343	4$^+$	E1[f]	0.0220	α(K)=0.0187 3; α(L)=0.00258 4; α(M)=0.000554 8; α(N+..)=0.0001472 21 α(N)=0.0001260 18; α(O)=1.95×10^{-5} 3; α(P)=1.752×10^{-6} 25 Mult.: α(K)exp=0.013 5; theory: α(K)=0.0187.

$^{152}_{63}Eu_{89}$-54

γ(^{152}Eu) (continued)

E_γ †	I_γ ‡i	E_i(level)	J^π_i	E_f	J^π_f	Comments
x260.502 12	0.64 6					
260.662 7	1.07 9	350.2607	(3+,4−)	89.6130	4−	
260.991 17	0.87 17	339.2171	2	78.2335	1+	
261.142 6	2.6 4	338.3901	4(−)	77.2588	3−	
261.223 7	2.09 25	436.1636	2+,3+	174.9373	2−,3−	
x261.307 15	1.01 25					
261.419 5	10.3 6	462.5552	4	201.1319	3+	
x261.704b 8	3.0 5					
261.799b 9	1.7 3	462.5552	4	200.7496	5−	
262.052 5	3.95 24	412.7454	3+	150.6869	4−	
x262.510 5	1.74 12					
x262.684 20	0.7 3					
x262.748 17	0.9 4					
262.857 7	3.9 5	328.1484	2−	65.2966	1−	
262.924 6	6.1 5	387.4565	2+,3+	124.5343	4+	
263.022 10	2.3 4	341.2435	2−	78.2335	1+	
x263.099 8	4.8 5					
263.158 4	11.4 7	374.6084	(3−)	111.4472	2−	
x263.262 10	1.09 19					
263.470 10	1.45 25	340.7195	(3−)	77.2588	3−	
x263.774 6	1.89 17					
x263.891 7	2.08 21					
263.971 8	3.4 5	341.2435	2−	77.2588	3−	
264.020k 5	9.8k 7	384.8623	3−,4−	120.8384	2+	
264.020k 5	9.8k 7	510.6746	3	246.6549	3−,4−	
x264.153 6	2.04 16					
x264.242 9	0.96 14					
264.386 10	1.17 18	492.0884	3−,4−	227.7204	3+	
x264.825 5	7.2 4					
x264.933 9	1.30 20					
x265.028 9	1.32 20					
x265.329b 10	1.25 13					
x265.443 10	1.9 5					
265.513 6	5.3 5	374.6084	(3−)	109.0892	(1)−	
x265.616 8	3.6 3					
x265.786 17	0.70 14					
x265.978 6	1.68 15					
x266.267 5	4.1 3					
x266.447 25	0.97 24					
266.613 10	2.1 3	387.4565	2+,3+	120.8384	2+	
266.701 6	5.1 4	384.8623	3−,4−	118.1660	2−	
x266.813 6	6.1 5					

$^{152}_{63}$Eu$_{89}$-55

γ(^{152}Eu) (continued)

E_γ [†]	I_γ [‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [@]	α [j]	Comments
[x]267.020 *20*	0.85 *21*							
267.265 *17*	0.48 *19*	446.2217	3,4⁻	178.9312	3⁺,4⁺			
267.403 *6*	7.1 *4*	345.6383	(1⁺,2⁺)	78.2335	1⁺			
[x]267.479 *8*	2.3 *3*							
267.590 *6*	5.7 *5*	492.0884	3⁻,4⁻	224.4999	3⁻			
[x]267.663 *6*	2.4 *4*							
267.91 *3*	0.48 *19*	442.8569	2⁺,3⁻	174.9373	2⁻,3⁻			
[x]268.398 *9*	1.17 *18*							
[x]268.724 *12*	1.5 *3*							
268.802 *10*	3.2 *5*	393.3279	3⁻	124.5343	4⁺			
268.99[d] *3*	0.8 *3*	483.3410	3⁺	214.3604	2⁻			
[x]269.200 *6*	4.3 *4*							
269.298 *6*	2.20 *23*	387.4565	2⁺,3⁺	118.1660	2⁻			
[x]269.411 *15*	1.1 *3*							
[x]269.756 *6*	2.31 *23*							
[x]269.894 *17*	1.3 *5*							
[x]270.012 *12*	1.9 *5*							
[x]270.214 *7*	2.59 *23*							
270.483 *9*	2.35 *19*	347.7464	3⁺,4	77.2588	3⁻			
270.603 *17*	1.75 *18*	492.0884	3⁻,4⁻	221.4537	2⁻			
270.710 *20*	1.17 *18*	388.8423		118.1660	2⁻			
270.893 *4*	12.0 *7*	384.8623	3⁻,4⁻	113.9696	3⁺	E1[f]	0.0198	α(K)=0.01689 *24*; α(L)=0.00233 *4*; α(M)=0.000500 *7*; α(N+..)=0.0001328 *19* α(N)=0.0001135 *16*; α(O)=1.763×10⁻⁵ *25*; α(P)=1.588×10⁻⁶ *23* Mult.: α(K)exp<0.04; theory: α(K)=0.0169.
[x]271.081 *6*	3.29 *23*							
271.284[k] *6*	7.0[k] *5*	446.2217	3,4⁻	174.9373	2⁻,3⁻			
271.284[k] *6*	7.0[k] *5*	492.0884	3⁻,4⁻	220.7952	3⁻			
271.379 *7*	1.47 *25*	395.9255	3⁺,4⁺	124.5343	4⁺			
[x]271.705 *15*	0.89 *13*							
272.031 *7*	1.58 *16*	350.2607	(3⁺,4⁻)	78.2335	1⁺			
[x]272.239 *10*	1.8 *4*							
[x]272.345 *15*	1.1 *3*							
272.489 *6*	2.44 *22*	393.3279	3⁻	120.8384	2⁺			
[x]272.630 *25*	0.79 *24*							
[x]272.796 *10*	1.4 *3*							
[x]272.904 *10*	1.6 *3*							
272.997 *4*	13.3 *9*	350.2607	(3⁺,4⁻)	77.2588	3⁻			
273.314 *12*	1.50 *18*	510.6746	3	237.3482	2⁻			
273.488 *7*	11.5 *14*	387.4565	2⁺,3⁺	113.9696	3⁺			
[x]273.574 *10*	2.0 *6*							
[x]273.754 *9*	1.02 *17*							
273.858 *5*	14.6 *13*	434.7356	4	160.8808	3⁺,4⁺			

$^{152}_{63}$Eu$_{89}$-56

γ(^{152}Eu) (continued)

E_γ †	I_γ ‡ i	E_i(level)	J^π_i	E_f	J^π_f
273.925 6	7.1 7	339.2171	2	65.2966	1^-
^{x}274.174 17	1.2 3				
^{x}274.251 15	1.1 3				
^{x}274.359 10	1.42 21				
^{x}274.453 12	1.23 21				
^{x}274.547 12	1.6 3				
^{x}274.627 12	1.1 3				
^{x}274.972 20	1.6 3				
^{x}275.189 8	1.7 3				
275.425 15	1.25 25	340.7195	(3^-)	65.2966	1^-
^{x}275.535 9	2.0 3				
^{x}275.675 12	2.3 5				
275.764 10	2.7 5	384.8623	$3^-,4^-$	109.0892	$(1)^-$
275.952 4	14.1 10	341.2435	2^-	65.2966	1^-
276.077 5	9.2 6	353.3447	$3,4^-$	77.2588	3^-
^{x}276.225 10	1.24 25				
^{x}276.307 9	1.9 3				
^{x}276.703 25	0.81 20				
276.868 20	1.37 23	366.4673	$2^-,3^+$	89.6130	4^-
^{x}277.040 6	3.8 3				
^{x}277.176 7	2.05 21				
^{x}277.293 9	2.2 3				
277.379 9	1.7 3	388.8423		111.4472	2^-
^{x}277.603 25	0.97 19				
277.729 5	3.3 3	492.0884	$3^-,4^-$	214.3604	2^-
278.105 6	2.48 22	436.1636	$2^+,3^+$	158.0548	1^+
^{x}278.232 10	1.15 14				
^{x}278.600 12	1.2 3				
^{x}278.703 12	1.3 3				
278.858 12	1.1 3	399.6746	$2,3^+$	120.8384	2^+
^{x}278.972 9	2.2 3				
^{x}279.11 3	1.1 4				
279.352 8	1.29 19	393.3279	3^-	113.9696	3^+
^{x}279.508 5	9.9 8				
279.609 20	1.6 8	440.5049	$3,4^-$	160.8808	$3^+,4^+$
^{x}279.790 5	4.5 4				
^{x}279.965 8	1.75 21				
^{x}280.273 20	0.9 4				
^{x}280.355 6	3.41 23				
^{x}280.495 7	2.05 16				
280.724 7	2.39 24	388.8423		108.1148	5^+
^{x}280.827 8	3.0 5				
^{x}280.908 25	0.8 3				
^{x}281.041 8	1.8 3				

From ENSDF

γ(^{152}Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	α[j]	Comments
[x]281.122 *8*	3.1 *4*							
[x]281.232 *9*	2.3 *3*							
[x]281.320 *5*	9.0 *7*							
281.500 *8*	6.1 *9*	399.6746	2,3$^+$	118.1660	2$^-$			
281.561 *8*	5.3 *8*	359.7983	2$^-$	78.2335	1$^+$			
[x]281.669[c] *20*	0.8 *3*							
281.918 *6*	5.5 *6*	462.5552	4	180.6323	5$^-$			
281.998 *15*	1.7 *4*	442.8569	2$^+$,3$^-$	160.8808	3$^+$,4$^+$			
282.200 *9*	1.7 *3*	483.3410	3$^+$	201.1319	3$^+$			
[x]282.292 *6*	5.3 *4*							
282.548 *5*	12.1[e] *10*	359.7983	2$^-$	77.2588	3$^-$	M1,E2[f]	0.087 *17*	α(K)=0.071 *17*; α(L)=0.0126 *4*; α(M)=0.00277 *14*; α(N+..)=0.000732 *23* α(N)=0.000629 *25*; α(O)=9.58×10^{-5} *15*; α(P)=7.3×10^{-6} *24* Mult.: α(K)exp=0.06 *3*; theory: α(K)(M1)=0.0875, α(K)(E2)=0.0536.
[x]282.748 *10*	1.8 *3*							
[x]282.844 *15*	1.2 *4*							
[x]283.19 *4*	0.6 *3*							
[x]283.31 *3*	0.9 *3*							
[x]283.469 *6*	2.54 *25*							
283.603 *15*	1.62 *19*	462.5552	4	178.9312	3$^+$,4$^+$			
[x]283.741 *8*	3.3 *5*							
[x]283.818 *7*	5.9 *9*							
[x]283.915 *12*	1.2 *3*							
284.042 *6*	4.3 *4*	434.7356	4	150.6869	4$^-$			
[x]284.295 *12*	1.4 *3*							
284.417 *7*	6.1 *5*	361.6731	2,3,4$^-$	77.2588	3$^-$			
[x]284.515 *8*	2.4 *4*							
[x]284.69 *3*	1.2 *5*							
284.865 *25*	1.3 *4*	462.5552	4	177.6867	(2,3)$^+$			
[x]285.041 *7*	4.5 *7*							
285.132 *4*	38 *3*	285.1288	3$^-$,4$^-$	0.0	3$^-$	(M1,E2)	0.084 *17*	α(K)=0.069 *17*; α(L)=0.0122 *3*; α(M)=0.00269 *12*; α(N+..)=0.000711 *20* α(N)=0.000611 *22*; α(O)=9.30×10^{-5} *16*; α(P)=7.1×10^{-6} *23* Mult.: α(K)exp=0.05 *4*; theory: α(K)(M1)=0.0854, α(K)(E2)=0.0522, α(K)(E1)=0.0148. α(K)exp is consistent with E1; however, placement in the level scheme requires $\Delta\pi$=no.
285.31 *4*	1.4 *6*	446.2217	3,4$^-$	160.8808	3$^+$,4$^+$			
[x]285.525 *15*	1.6 *3*							
286.004 *7*	2.45 *20*	434.7356	4	148.7364	(4)$^+$			
286.164 *12*	1.32 *13*	510.6746	3	224.4999	3$^-$			
286.406 *15*	1.6 *3*	483.3410	3$^+$	196.9136	3$^+$,4$^+$			
[x]286.500 *9*	2.1 *3*							
[x]286.664 *7*	3.6 *4*							
[x]286.796[b] *20*	1.2 *4*							
287.159 *7*	14.6 *13*	287.1585	(4$^+$)	0.0	3$^-$			

γ(^{152}Eu) (continued)

E_γ †	I_γ ‡i	E_i(level)	J_i^π	E_f	J_f^π
287.276 20	0.7 3	508.4795	2$^+$,3$^+$	221.2097	3$^+$
^{x}287.502 6	6.7 6				
287.611 6	5.0 5	462.5552	4	174.9373	2$^-$,3$^-$
287.815 10	1.69 25	395.9255	3$^+$,4$^+$	108.1148	5$^+$
288.218 5	6.3 6	399.6746	2,3$^+$	111.4472	2$^-$
^{x}288.356 9	1.53 23				
288.659 6	6.8 5	434.7356	4	146.0853	3$^+$
^{x}288.996 6	6.4 6				
^{x}289.090 10	2.0 3				
289.198 7	7.1 7	366.4673	2$^-$,3$^+$	77.2588	3$^-$
^{x}289.350 10	1.30 22				
289.832 10	1.54 23	440.5049	3,4$^-$	150.6869	4$^-$
^{x}289.976 25	1.02 20				
290.123 25	0.99 20	436.1636	2$^+$,3$^+$	146.0853	3$^+$
^{x}290.315 10	1.94 23				
^{x}290.455 12	1.06 18				
^{x}290.749 15	1.04 18				
290.966 9	2.2 4	492.0884	3$^-$,4$^-$	201.1319	3$^+$
^{x}291.054 9	2.0 3				
291.347 12	1.33 23	492.0884	3$^-$,4$^-$	200.7496	5$^-$
^{x}291.457 9	2.1 3				
^{x}291.854 8	2.6 3				
^{x}292.191 6	2.76 25				
^{x}292.549 15	2.1 5				
^{x}292.662 17	1.3 4				
^{x}292.928 6	4.0 4				
^{x}293.186 8	2.18 22				
^{x}293.385 6	5.1 5				
^{x}293.562 8	4.2 4				
^{x}293.751 10	1.53 23				
^{x}293.846 9	1.7 3				
294.060 15	1.3 3	508.4795	2$^+$,3$^+$	214.4269	4$^+$
^{x}294.198 7	3.6 4				
^{x}294.300 15	1.2 3				
294.496 15	3.6 9	359.7983	2$^-$	65.2966	1$^-$
294.574 15	3.8 8	412.7454	3$^+$	118.1660	2$^-$
^{x}294.687 10	2.1 4				
^{x}294.796 25	0.9 5				
295.022 8	2.7 3	384.8623	3$^-$,4$^-$	89.8488	4$^+$
^{x}295.144 6	10.0 8				
^{x}295.392 12	1.5 3				
295.542 6	13.2 11	446.2217	3,4$^-$	150.6869	4$^-$
295.660 12	1.4 3	341.2435	2$^-$	45.5994	0$^-$
^{x}295.797 10	1.6 3				

γ(^{152}Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[@]	α[j]	Comments
[x]295.937 *6*	4.2 *4*							
296.375[k] *7*	3.2[k] *3*	361.6731	2,3,4$^-$	65.2966	1$^-$			
296.375[kl] *7*	3.2[k] *3*	374.6084	(3$^-$)	78.2335	1$^+$			With the adopted J^π for this level, this γ would have mult=M2; the γ probably does not belong here.
[x]296.506 *7*	1.97 *24*							
[x]296.703 *20*	0.89 *22*							
[x]297.148 *12*	1.6 *3*							
[x]297.246 *9*	5.0 *6*							
297.344 *6*	9.8 *9*	374.6084	(3$^-$)	77.2588	3$^-$			
297.475 *12*	1.17 *23*	446.2217	3,4$^-$	148.7364	(4)$^+$			
[x]297.701 *9*	2.0 *3*							
[x]297.898 *8*	3.7 *4*							
[x]298.222[b] *15*	1.7 *3*							
[x]298.515 *10*	1.8 *3*							
[x]298.760 *8*	4.8 *5*							
[x]299.044 *12*	2.8 *8*							
[x]299.122 *10*	2.6 *5*							
[x]299.274 *10*	3.6 *6*							
[x]299.370 *12*	1.7 *3*							
[x]299.524 *15*	1.6 *4*							
[x]299.623 *15*	1.6 *4*							
[x]299.771[b] *6*	31.4 *25*					E2,M1	0.073 *15*	α(K)=0.060 *15*; α(L)=0.01042 *16*; α(M)=0.00229 *5*; α(N+..)=0.000607 *9* α(N)=0.000521 *9*; α(O)=8.0×10^{-5} *3*; α(P)=6.2×10^{-6} *20* Mult.: α(K)exp=0.029-0.09, α(L12)exp<0.024.
[x]299.868 *7*	9.1 *9*							
[x]300.161 *7*	6.3 *6*							
[x]300.260 *10*	2.0 *3*							
[x]300.566 *9*	3.1 *5*							
[x]300.648 *15*	1.4 *4*							
[x]300.853 *10*	1.44 *24*							
[x]300.952 *9*	2.5 *4*							
301.174[k] *15*	1.4[k] *4*	301.1897	3$^+$,4$^+$	0.0	3$^-$			
301.174[k] *15*	1.4[k] *4*	366.4673	2$^-$,3$^+$	65.2966	1$^-$			
301.275 *17*	1.3 *3*	412.7454	3$^+$	111.4472	2$^-$			
[x]301.652 *10*	8.1 *7*							
[x]301.786 *8*	3.0 *3*							
[x]302.402 *6*	3.9 *4*							
[x]302.770 *12*	1.15 *20*							
[x]303.115 *15*	1.2 *3*							
[x]303.352 *10*	1.66 *25*							
303.465 *8*	8.9 *8*	303.4563	2$^+$,3$^+$,4$^+$	0.0	3$^-$	E1[f]	0.01488	α(K)=0.01267 *18*; α(L)=0.001736 *25*; α(M)=0.000373 *6*; α(N+..)=9.91×10^{-5} *14*

$^{152}_{63}$Eu$_{89}$-60

γ(^{152}Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	Comments
							α(N)=8.47×10^{-5} *12*; α(O)=1.319×10^{-5} *19*; α(P)=1.203×10^{-6} *17* Mult.: α(K)exp<0.02; theory: α(K)=0.0127.
[x]303.544 *17*	1.2 *5*						
[x]303.985 *10*	1.9 *3*						
[x]304.118 *6*	4.3 *4*						
[x]304.315 *10*	3.2 *6*						
304.401[k] *10*	3.8[k] *6*	446.2217	3,4$^-$	141.8253	4$^-$		
304.401[k] *10*	3.8[k] *6*	483.3410	3$^+$	178.9312	3$^+$,4$^+$		
[x]304.532 *7*	4.4 *4*						
[x]304.809 *6*	3.8 *3*						
[x]305.060 *25*	0.70 *21*						
[x]305.276 *8*	1.63 *24*						
[x]305.409 *10*	1.10 *17*						
[x]305.573 *10*	1.64 *20*						
[x]305.86[c] *4*	2.1 *8*						
306.080 *6*	2.52 *25*	395.9255	3$^+$,4$^+$	89.8488	4$^+$		
[x]306.409 *7*	2.61 *23*						
[x]306.716 *6*	3.7 *4*						
[x]306.996 *8*	2.8 *3*						
307.469 *10*	2.3 *4*	307.4575	2$^+$,3$^+$	0.0	3$^-$		
[x]307.581 *8*	3.2 *3*						
[x]307.801 *17*	1.38 *23*						
[x]307.979 *7*	5.0 *5*						
[x]308.359 *9*	2.2 *3*						
[x]308.775 *8*	2.32 *21*						
[x]309.11 *3*	1.7 *5*						
309.314 *4*	18.1 *14*	374.6084	(3$^-$)	65.2966	1$^-$	E1,E2[f]	Mult.: α(K)exp<0.03. α(K)=0.069 (M1), 0.041 (E2), 0.012 (E1). The authors assign mult=M1,E2; however, E1 is not ruled out, and α(K)exp seems too small for M1.
309.526 *8*	2.7 *4*	510.6746	3	201.1319	3$^+$		
[x]309.754 *15*	2.1 *3*						
[x]310.005 *20*	1.45 *25*						
310.203[k] *7*	5.2[k] *5*	387.4565	2$^+$,3$^+$	77.2588	3$^-$		
310.203[k] *7*	5.2[k] *5*	434.7356	4	124.5343	4$^+$		
[x]310.334 *9*	1.8 *3*						
[x]310.474 *20*	1.0 *3*						
[x]310.661 *6*	5.3 *5*						
[x]310.939 *20*	2.0 *4*						
[x]311.107 *12*	2.6 *4*						
311.86 *4*	1.36 *23*	462.5552	4	150.6869	4$^-$		
[x]312.309[b] *10*	3.1 *5*						
[x]312.440 *10*	3.3 *5*						
[x]312.613 *12*	2.0 *3*						

From ENSDF

$^{152}_{63}$Eu$_{89}$-61

γ(^{152}Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J^π_i	E_f	J^π_f
[x]313.234 *7*	3.7 *4*				
[x]313.411 *15*	1.39 *24*				
[x]313.635 *25*	1.0 *4*				
313.763 *8*	3.2 *5*	510.6746	3	196.9136	$3^+,4^+$
314.183 *8*	5.5 *5*	359.7983	2^-	45.5994	0^-
[x]314.341 *9*	2.3 *3*				
[x]314.551 *10*	1.93 *23*				
[x]314.797 *10*	3.6 *5*				
[x]314.892 *20*	1.2 *5*				
[x]315.057 *15*	2.1 *8*				
[x]315.294 *15*	2.8 *6*				
[x]315.606 *9*	4.6 *4*				
315.956 *15*	2.8 *7*	440.5049	$3,4^-$	124.5343	4^+
316.074[k] *10*	11.0[k] *11*	361.6731	$2,3,4^-$	45.5994	0^-
316.074[k] *10*	11.0[k] *11*	393.3279	3^-	77.2588	3^-
316.478 *7*	3.2 *3*	462.5552	4	146.0853	3^+
[x]316.786 *7*	7.3 *6*				
317.154[b] *7*	4.1 *3*	492.0884	$3^-,4^-$	174.9373	$2^-,3^-$
[x]317.466 *25*	1.7 *3*				
[x]317.65 *3*	1.2 *3*				
318.005 *7*	4.8 *4*	436.1636	$2^+,3^+$	118.1660	2^-
[x]318.19 *4*	0.9 *4*				
318.664 *10*	12.2 *12*	395.9255	$3^+,4^+$	77.2588	3^-
[x]318.738[b] *10*	9.8 *25*				
[x]318.92 *3*	1.3 *4*				
[x]319.29 *4*	1.9 *6*				
[x]319.588 *7*	6.1 *5*				
[x]319.775[c] *15*	7.3 *12*				
[x]319.952 *25*	1.9 *4*				
[x]320.453 *10*	2.7 *3*				
[x]320.57 *5*	2.0 *4*				
320.760 *7*	8.4 *8*	434.7356	4	113.9696	3^+
320.943 *15*	1.4 *3*	320.9733	$3^{(+)}$	0.0	3^-
[x]321.069 *15*	2.0 *4*				
[x]321.237 *15*	2.4 *5*				
321.433 *7*	7.4 *6*	399.6746	$2,3^+$	78.2335	1^+
321.68 *5*	0.7 *4*	446.2217	$3,4^-$	124.5343	4^+
322.014 *9*	4.0 *4*	442.8569	$2^+,3^-$	120.8384	2^+
322.182[k] *10*	3.2[k] *4*	387.4565	$2^+,3^+$	65.2966	1^-
322.182[k] *10*	3.2[k] *4*	436.1636	$2^+,3^+$	113.9696	3^+
322.455[b] *17*	3.5 *5*	483.3410	3^+	160.8808	$3^+,4^+$
[x]322.710 *9*	5.9 *6*				

γ(^{152}Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[@]	α[j]	Comments
322.901 *15*	2.3 *4*	412.7454	3$^+$	89.8488	4$^+$			
[x]323.091 *12*	2.4 *4*							
323.52[d] *6*	0.6 *4*	388.8423		65.2966	1$^-$			
[x]323.715 *10*	2.06 *25*							
[x]323.861 *9*	2.8 *3*							
324.51[d] *10*	0.6 *5*	442.8569	2$^+$,3$^-$	118.1660	2$^-$			
324.716 *8*	3.8 *4*	436.1636	2$^+$,3$^+$	111.4472	2$^-$			
324.90 *3*	1.8 *4*	482.9446		158.0548	1$^+$			
325.292 *6*	19.8 *16*	483.3410	3$^+$	158.0548	1$^+$	(E2)[f]	0.0454	Mult.: α(K)exp>0.04. α(K)=0.0355 (E2), 0.0603 (M1). Placement in the level scheme not consistent with M1.
[x]325.760 *10*	1.8 *3*							
[x]326.062[b] *10*	3.3 *3*							
[x]326.401 *12*	4.1 *6*							
326.515 *15*	5.6 *8*	440.5049	3,4$^-$	113.9696	3$^+$			
326.620 *8*	13.0 *10*	434.7356	4	108.1148	5$^+$			
[x]327.309 *25*	1.60 *19*							
[x]327.65 *4*	1.2 *3*							
[x]327.817[b] *10*	3.8 *4*							
[x]328.104 *15*	1.9 *3*							
[x]328.30 *3*	1.5 *4*							
328.97[k] *5*	0.6[k] *3*	440.5049	3,4$^-$	111.4472	2$^-$			
328.97[k] *5*	0.6[k] *3*	442.8569	2$^+$,3$^-$	113.9696	3$^+$			
[x]329.262 *12*	2.6 *4*							
[x]329.45 *4*	1.8 *5*							
[x]329.912[b] *7*	7.1 *7*							
[x]330.256 *9*	3.7 *6*							
[x]330.634 *10*	5.3 *5*							
[x]330.747 *9*	5.2 *5*							
[x]330.985 *12*	3.8 *4*							
[x]331.351[b] *20*	3.1 *5*							
[x]331.807 *15*	2.1 *5*							
[x]331.974 *8*	5.1 *5*							
[x]332.140 *12*	2.0 *3*							
332.253 *17*	1.5 *4*	446.2217	3,4$^-$	113.9696	3$^+$			
[x]332.836[b] *8*	4.1 *4*							
[x]333.310 *12*	2.6 *4*							
[x]333.584 *10*	3.4 *3*							
[x]333.889 *15*	4.9 *8*							
[x]333.978 *15*	3.3 *8*							
334.373[k] *10*	4.6[k] *5*	334.3909	4$^-$	0.0	3$^-$			
334.373[k] *10*	4.6[k] *5*	399.6746	2,3$^+$	65.2966	1$^-$			

$^{152}_{63}$Eu$_{89}$-63

^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05 (continued)

γ(^{152}Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J_i^π	E_f	J_f^π
334.504 20	2.3 6	412.7454	3^+	78.2335	1^+
334.589 12	5.9 6	483.3410	3^+	148.7364	$(4)^+$
334.785 9	5.8 5	446.2217	$3,4^-$	111.4472	2^-
[x]334.932 8	4.7 5				
335.491 20	1.3 7	412.7454	3^+	77.2588	3^-
[x]335.607 12	1.5 3				
[x]336.000 10	2.03 24				
[x]336.354 20	2.6 4				
[x]336.519 15	3.4 7				
[x]336.615 12	3.6 5				
[x]336.955 25	1.7 3				
[x]337.409 20	2.6 3				
[x]337.550 10	6.4 6				
[x]337.842 10	2.22 22				
[x]338.243[c] 20	2.7 7				
[x]338.352[c] 17	4.5 8				
[x]338.546 12	3.3 3				
[x]338.787 10	3.4 3				
339.213[k] 25	1.27[k] 25	339.2171	2	0.0	3^-
339.213[k] 25	1.27[k] 25	460.0671	2^-	120.8384	2^+
[x]339.437 8	5.3 4				
[x]339.700 15	3.7 6				
[x]339.869 12	3.3 3				
[x]340.146 15	2.00 20				
[x]340.494 9	5.8 6				
340.66 3	1.7 3	340.7195	(3^-)	0.0	3^-
[x]340.873 15	2.36 24				
[x]341.086 25	1.39 24				
[x]342.377 17	2.9 6				
[x]343.113 25	1.7 4				
343.255 9	3.8 6	388.8423		45.5994	0^-
[x]343.480 20	2.3 6				
[x]343.595 20	2.2 6				
[x]344.518 15	3.2 5				
[x]344.704 25	3.7 11				
344.85[d] 4	1.4 8	434.7356	4	89.8488	4^+
345.10 4	1.4 5	434.7356	4	89.6130	4^-
[x]345.386 9	4.8 4				
[x]345.862 10	2.8 3				
346.124 25	1.6 3	460.0671	2^-	113.9696	3^+
346.34 4	1.6 4	436.1636	$2^+,3^+$	89.8488	4^+
[x]347.222 17	1.7 3				
347.601 17	2.0 4	508.4795	$2^+,3^+$	160.8808	$3^+,4^+$
[x]347.850 20	2.3 5				
[x]348.443 12	4.1 4				
348.619 10	6.0 5	460.0671	2^-	111.4472	2^-
[x]348.820 12	3.5 4				
[x]349.04 3	2.3 3				
[x]349.20 3	2.1 3				
[x]349.392 12	3.2 3				
[x]349.889 25	1.2 4				
[x]350.063 15	2.7 4				
350.25[k] 4	1.7[k] 5	350.2607	$(3^+,4^-)$	0.0	3^-
350.25[k] 4	1.7[k] 5	492.0884	$3^-,4^-$	141.8253	4^-
350.420 20	1.8 5	508.4795	$2^+,3^+$	158.0548	1^+
[x]350.543 10	4.5 5				
[x]350.720 20	2.1 4				
[x]351.252[b] 12	2.3 3				
[x]351.89 4	1.7 4				
[x]352.187 10	3.8 3				
[x]352.562[b] 10	3.5 3				
352.974[cl] 20	8.8 13	442.8569	$2^+,3^-$	89.8488	4^+
[x]353.141[c] 25	7.2 12				
[x]353.431 10	5.1 5				
[x]353.790 25	1.4 3				
[x]353.974 9	6.3 6				
[x]354.23 4	1.3 4				
354.444 9	6.1 4	462.5552	4	108.1148	5^+
[x]354.861 9	6.6 5				
[x]355.188 9	4.3 3				
[x]355.590 8	7.9 6				
[x]355.957 17	2.4 4				
356.35 6	2.1 5	446.2217	$3,4^-$	89.8488	4^+
357.458[b] 12	4.6 4	434.7356	4	77.2588	3^-
[x]357.697 20	3.3 3				
357.938 9	9.5 7	436.1636	$2^+,3^+$	78.2335	1^+
[x]358.22 4	0.9 4				
358.390 25	1.8 5	482.9446		124.5343	4^+
[x]358.606 12	3.7 3				
358.930 17	3.0 4	436.1636	$2^+,3^+$	77.2588	3^-
[x]359.209 12	4.7 4				
[x]359.417[bc] 15	7.0 18				
359.808 17	2.6 4	359.7983	2^-	0.0	3^-
359.991 10	6.8 8	510.6746	3	150.6869	4^-
[x]360.113 15	4.1 10				
[x]360.664 10	3.3 3				

From ENSDF

$^{152}_{63}Eu_{89}$-64

γ(^{152}Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J^π_i	E_f	J^π_f
[x]361.180[c] 20	6.2 16				
[x]361.42 5	1.4 3				
[x]361.81 3	2.6 4				
362.05 3	2.6 4	482.9446		120.8384	2^+
362.505 12	2.7 4	483.3410	3^+	120.8384	2^+
[x]362.751 20	1.7 3				
[x]363.823 17	2.7 5				
[x]364.49 3	2.5 8				
364.627[k] 20	5.4[k] 11	442.8569	$2^+,3^-$	78.2335	1^+
364.627[k] 20	5.4[k] 11	510.6746	3	146.0853	3^+
364.768 9	13.9 11	482.9446		118.1660	2^-
[x]365.312 9	5.3 5				
[x]365.883 15	1.93 19				
[x]366.25 3	2.1 5				
[x]366.515 8	16.5 12				
[x]366.898 12	2.6 3				
[x]367.173 15	3.2 4				
[x]367.428 25	2.6 3				
[x]368.724 20	2.8 6				
368.860 9	9.6 8	510.6746	3	141.8253	4^-
[x]369.173 25	1.8 3				
[x]369.549 15	2.15 22				
[x]370.022 10	6.3 6				
[x]370.198 10	7.0 6				
[x]370.634 10	5.2 4				
[x]370.971 10	9.7 7				
371.21[d] 5	1.9 6	492.0884	$3^-,4^-$	120.8384	2^+
[x]371.63 5	1.4 4				
371.87 4	2.7 5	483.3410	3^+	111.4472	2^-
[x]372.280 25	2.4 4				
[x]372.53 3	2.8 4				
372.75 3	2.0 3	462.5552	4	89.8488	4^+
[x]373.366 12	3.3 3				
[x]373.66 4	2.3 3				
373.91[k] 4	1.6[k] 3	482.9446		109.0892	$(1)^-$
373.91[k] 4	1.6[k] 3	492.0884	$3^-,4^-$	118.1660	2^-
[x]374.329 10	5.4 4				
374.590 12	3.6 4	374.6084	(3^-)	0.0	3^-
[x]374.89 5	1.2 3				
375.209[k] 25	1.1[k] 4	440.5049	$3,4^-$	65.2966	1^-
375.209[k] 25	1.1[k] 4	483.3410	3^+	108.1148	5^+
[x]375.71 6	1.4 6				

E_γ[†]	I_γ[‡i]	E_i(level)	J^π_i	E_f	J^π_f
[x]375.95 6	1.5 6				
[x]376.229 15	2.68 24				
[x]376.477 15	5.0 15				
[x]376.582 17	3.7 9				
[x]376.821 9	8.5 6				
[x]377.26 4	2.2 3				
377.575[b] 17	3.7 4	442.8569	$2^+,3^-$	65.2966	1^-
378.13 7	1.3 7	492.0884	$3^-,4^-$	113.9696	3^+
[x]378.38 8	1.5 8				
[x]378.667 25	1.8 7				
[x]378.865 15	5.2 5				
[x]379.034 25	2.1 4				
[x]379.252[b] 9	8.7 8				
[x]380.502 25	2.7 4				
[x]380.797 25	2.5 4				
[x]381.431[b] 10	9.3 14				
[x]382.079 17	3.3 3				
[x]382.365 20	2.5 4				
[x]383.057 25	2.0 3				
[x]384.184 25	1.4 3				
[x]384.646 12	3.3 3				
384.883 25	1.7 4	384.8623	$3^-,4^-$	0.0	3^-
385.28 7	2.0 4	462.5552	4	77.2588	3^-
386.119 15	2.9 3	510.6746	3	124.5343	4^+
[x]386.37 6	0.8 3				
[x]387.203[b] 15	3.1 3				
387.624 10	4.0 6	508.4795	$2^+,3^+$	120.8384	2^+
[x]388.161[b] 20	3.4 6				
[x]388.458 25	1.9 6				
[x]389.336[b] 17	2.3 5				
389.805[b] 17	2.3 4	510.6746	3	120.8384	2^+
390.314[b] 12	7.0 7	508.4795	$2^+,3^+$	118.1660	2^-
[x]390.65 3	2.3 6				
[x]390.931 25	2.0 3				
[x]391.107 15	2.1 3				
[x]391.462 12	3.7 4				
[x]391.919 20	1.69 25				
[x]392.23 3	1.8 4				
392.55 3	2.9 5	510.6746	3	118.1660	2^-
[x]393.023 10	4.3 4				
393.486 20	3.0 12	483.3410	3^+	89.8488	4^+
[x]393.601 25	2.6 7				

γ(^{152}Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J_i^π	E_f	J_f^π
^{x}394.351 *15*	2.1 *4*				
394.804 *25*	1.4 *3*	460.0671	2^-	65.2966	1^-
^{x}395.012 *25*	3.0 *5*				
^{x}395.789^{b} *15*	2.3 *3*				
^{x}396.119 *10*	4.6 *6*				
396.74 *4*	1.1 *3*	510.6746	3	113.9696	3^+
397.015 *10*	6.0 *6*	508.4795	$2^+,3^+$	111.4472	2^-
^{x}397.332 *15*	2.5 *3*				
^{x}397.673 *25*	1.2 *3*				
^{x}397.874^{b} *15*	2.5 *4*				
^{x}398.35 *3*	0.98 *20*				
^{x}398.74^{d} *6*	1.8 *5*				
399.389 *15*	2.3 *3*	508.4795	$2^+,3^+$	109.0892	$(1)^-$
399.665^{b} *12*	3.5 *5*	399.6746	$2,3^+$	0.0	3^-
^{x}400.271^{b} *15*	2.0 *3*				
^{x}400.786 *15*	3.0 *3*				
^{x}401.301 *20*	2.5 *5*				
^{x}401.755 *15*	3.3 *3*				
^{x}402.147^{b} *15*	2.8 *6*				
^{x}403.02 *9*	1.5 *6*				
^{x}403.480^{b} *15*	5.9 *9*				
^{x}404.032 *15*	3.1 *6*				
^{x}404.431 *15*	4.4 *7*				
404.741 *15*	3.1 *5*	482.9446		78.2335	1^+
^{x}404.933 *20*	2.3 *5*				
^{x}405.377 *15*	4.5 *7*				
^{x}406.290^{b} *15*	3.6 *4*				
^{x}406.837 *17*	2.6 *4*				
^{x}407.348 *15*	3.0 *3*				
^{x}408.35 *4*	2.2 *4*				
^{x}408.788^{b} *15*	3.5 *4*				
^{x}409.113 *15*	3.3 *4*				
^{x}410.12 *4*	1.3 *3*				
^{x}410.33 *4*	1.23 *25*				
^{x}410.74 *3*	1.3 *4*				
^{x}410.994 *20*	3.2 *5*				
^{x}411.255 *20*	3.6 *5*				
^{x}411.67^{d} *9*	1.1 *7*				
^{x}412.207 *12*	7.6 *8*				
412.725 *17*	2.6 *4*	412.7454	3^+	0.0	3^-
^{x}413.333 *12*	7.1 *9*				
^{x}413.585 *25*	1.5 *4*				
414.484 *12*	6.7 *7*	460.0671	2^-	45.5994	0^-
414.823 *17*	4.3 *7*	492.0884	$3^-,4^-$	77.2588	3^-
^{x}415.026 *25*	3.0 *6*				
^{x}415.38 *5*	1.8 *9*				
^{x}415.998 *25*	1.6 *3*				
^{x}417.053^{b} *20*	3.9 *5*				
417.677 *20*	2.9 *3*	482.9446		65.2966	1^-
^{x}418.316^{b} *15*	3.0 *5*				
^{x}419.301 *20*	2.8 *4*				
^{x}420.12 *5*	1.9 *5*				
^{x}420.57 *6*	1.9 *8*				
421.01 *8*	1.3 *7*	510.6746	3	89.6130	4^-
^{x}421.345 *20*	2.6 *4*				
^{x}421.953 *25*	2.7 *5*				
^{x}422.33 *3*	2.5 *6*				
^{x}422.57 *8*	2.6 *10*				
^{x}422.83 *6*	2.7 *8*				
^{x}423.10 *3*	3.0 *6*				
^{x}423.593 *15*	3.9 *5*				
^{x}423.864 *12*	11.3 *11*				
^{x}424.12 *4*	1.6 *5*				
^{x}424.444 *25*	2.6 *5*				
^{x}425.31 *3*	1.8 *5*				
^{x}425.90 *5*	2.3 *5*				
^{x}426.393 *25*	5.6 *11*				
^{x}426.56^{d} *10*	2.4 *22*				
^{x}427.07^{b} *3*	4.4 *7*				
^{x}427.50 *3*	3.8 *8*				
^{x}428.14 *5*	3.9 *8*				
^{x}428.93 *3*	1.2 *4*				
430.30 *6*	2.1 *7*	508.4795	$2^+,3^+$	78.2335	1^+
^{x}431.71 *5*	1.6 *4*				
^{x}432.36 *6*	2.1 *6*				
^{x}432.651 *15*	13.9 *14*				
^{x}433.12 *5*	2.0 *5*				
^{x}433.754 *20*	2.1 *3*				
^{x}434.098 *25*	2.3 *4*				
^{x}434.457 *20*	2.8 *5*				
^{x}434.695 *20*	3.6 *5*				
^{x}435.60 *7*	1.8 *7*				

γ(^{152}Eu) (continued)

E$_\gamma$ [†]	I$_\gamma$ [‡i]	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$
^{x}435.918 25	2.2 4				
436.30 8	1.4 6	436.1636	2$^+$,3$^+$	0.0	3$^-$
^{x}436.63 6	2.3 7				
^{x}436.97 5	3.5 7				
437.337 17	3.7 4	482.9446		45.5994	0$^-$
^{x}437.64 4	1.8 5				
^{x}437.846 20	2.6 4				
^{x}438.664 17	2.9 5				
^{x}439.06[b] 3	2.9 5				
^{x}439.634 25	3.9 10				
^{x}439.87 6	1.9 6				
440.57 6	3.2 8	440.5049	3,4$^-$	0.0	3$^-$
^{x}440.82 7	2.2 9				
^{x}441.442 17	6.2 7				
^{x}441.75 5	3.3 7				
^{x}442.26 6	1.7 5				
^{x}442.99 6	1.8 5				
^{x}443.34 5	4.0 7				
^{x}443.88 4	2.5 8				
^{x}444.18 7	2.0 6				
^{x}444.45 4	2.1 5				
^{x}445.039 15	5.8 10				
^{x}445.40 7	1.9 6				
^{x}445.95[b] 3	2.2 7				
^{x}446.73 9	1.6 5				
^{x}446.966 17	4.4 7				
^{x}447.686 25	2.5 6				
^{x}448.21 8	2.5 6				
^{x}448.99 5	2.2 4				
^{x}449.310 25	3.4 8				
^{x}449.60 6	3.4 6				
^{x}449.94 6	3.6 6				
^{x}450.22 4	3.5 14				
^{x}450.69 8	1.2 4				
^{x}451.03 6	2.1 4				
^{x}451.412 20	6.3 6				
^{x}451.75 5	3.3 6				
^{x}452.59 6	2.8 7				
^{x}452.93 7	2.2 7				
^{x}453.757 17	5.2 6				
^{x}454.68[b] 5	2.8 6				
^{x}455.637 15	6.4 6				
^{x}455.991 25	3.0 5				

E$_\gamma$ [†]	I$_\gamma$ [‡i]	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$
^{x}456.523 25	2.2 5				
^{x}457.28 7	3.2 8				
^{x}458.463 20	4.1 6				
^{x}458.88 8	3.5 14				
^{x}459.49 5	2.8 6				
^{x}459.835 15	12.8 12				
^{x}460.611 20	2.7 4				
^{x}461.17 4	2.6 5				
^{x}461.876[b] 20	6.7 10				
462.79[dhl] 10	2.2 11	508.4795	2$^+$,3$^+$	45.5994	0$^-$
^{x}463.89 3	3.9 8				
^{x}464.74 9	1.3 5				
^{x}465.22 9	2.0 8				
^{x}465.55 9	3.1 9				
^{x}465.82 5	5.8 6				
^{x}466.23 5	2.9 5				
^{x}467.39 6	3.5 7				
^{x}467.78 7	3.5 7				
^{x}468.14 7	2.3 7				
^{x}468.95 8	2.8 5				
^{x}469.56 9	2.5 5				
^{x}470.21 8	3.1 5				
^{x}471.16[d] 15	1.3 9				
^{x}471.46[d] 15	1.5 9				
^{x}471.88 6	4.5 9				
^{x}472.35 6	4.3 9				
^{x}472.78 5	6.3 9				
^{x}473.25 6	3.3 8				
^{x}473.85 5	3.7 6				
^{x}474.459 17	4.8 5				
^{x}475.27 6	2.0 4				
^{x}475.91 4	3.3 8				
^{x}476.78 6	1.9 4				
^{x}477.07 7	1.7 4				
^{x}477.50 15	1.5 5				
^{x}478.09 5	3.7 6				
^{x}478.91 6	3.0 6				
^{x}479.22 8	2.0 5				
^{x}479.66 6	4.6 7				
^{x}479.98 6	2.9 6				
^{x}480.59 9	2.1 4				
^{x}481.703 25	6.5 10				
^{x}482.23 7	4.1 10				

γ(^{152}Eu) (continued)

E_γ[†]	I_γ[‡i]	E_i(level)	J_i^π	E_f	J_f^π
^{x}483.17 5	2.6 7				
^{x}483.95 6	3.0 5				
^{x}484.79 8	2.5 4				
^{x}485.80 4	4.6 14				
^{x}486.02 9	5.4 22				
^{x}486.60[d] 15	1.7 10				
^{x}487.01 8	3.6 11				
^{x}488.17 7	2.4 6				
^{x}488.676 20	4.1 5				
^{x}489.19 4	5.7 17				
^{x}490.54 7	3.5 11				
^{x}491.551 25	6.6 11				
492.06 15	1.4 7	492.0884	$3^-,4^-$	0.0	3^-
^{x}492.43 9	2.7 8				
^{x}492.96 7	3.2 8				
^{x}493.43 7	3.5 7				
^{x}493.970 25	7.5 9				
^{x}494.66 3	3.8 6				
^{x}495.60 9	2.5 13				
^{x}495.87 7	4.3 13				
^{x}497.05 7	3.7 9				
^{x}497.37 8	2.7 8				
^{x}498.38 10	3.0 12				
^{x}498.71 9	3.7 15				
^{x}499.37 9	2.5 8				
^{x}499.81 9	2.3 7				
^{x}500.167 25	4.8 6				
^{x}500.82 3	7.2 11				
^{x}501.24 9	2.4 7				
^{x}501.68 4	4.4 7				
^{x}502.60 7	2.6 7				
^{x}503.21 9	1.8 6				
^{x}505.355 25	6.8 10				
^{x}506.00 3	5.0 8				
^{x}507.27 6	3.2 8				
^{x}508.179[b] 25	7.0 11				
^{x}509.35[d] 15	3.6 22				
^{x}510.06 10	4.8 19				
^{x}510.43 10	5.8 23				
^{x}510.87 8	6.6 20				
^{x}511.661 20	5.4 8				
^{x}512.25 7	4.8 8				
^{x}512.76 10	3.9 16				

E_γ[†]	I_γ[‡i]	E_i(level)
^{x}513.86[c] 3	19 3	
^{x}515.17 6	2.0 8	
^{x}516.61 5	3.0 6	
^{x}517.07 12	1.6 8	
^{x}517.62 6	3.3 10	
^{x}518.21 4	5.8 9	
^{x}518.97 10	1.9 8	
^{x}519.50 7	2.8 6	
^{x}520.17 4	7.9 16	
^{x}520.43 7	7.8 20	
^{x}522.16 9	2.3 7	
^{x}523.00 8	3.5 9	
^{x}523.52 8	3.2 8	
^{x}524.24 6	3.9 7	
^{x}525.40 9	1.8 5	
^{x}525.96 8	3.4 8	
^{x}526.48 5	6.0 9	
^{x}527.38 6	3.7 7	
^{x}528.26 9	2.6 8	
^{x}528.96 9	2.7 8	
^{x}529.60 8	3.6 9	
^{x}530.42 3	7.1 7	
^{x}532.29 7	2.9 5	
^{x}533.86 8	3.8 10	
^{x}534.36 7	6.5 10	
^{x}535.07 3	8.0 10	
^{x}535.75 8	3.0 8	
^{x}536.59 8	2.2 6	
^{x}537.94 12	4.1 10	
^{x}539.47 3	9.8 17	
^{x}539.84 12	4.1 21	
^{x}540.73 4	7.6 9	
^{x}541.68 9	4.1 12	
^{x}542.30 7	7.7 15	
^{x}542.85 9	3.9 12	
^{x}543.64 8	3.8 8	
^{x}544.50 12	4.5 11	
^{x}546.27 15	5.5 17	
^{x}547.33 12	5.5 11	
^{x}548.70 12	6.1 12	
^{x}549.59 15	5.6 14	
^{x}550.43 15	6.5 13	
^{x}551.25 12	7.9 16	

γ(^{152}Eu) (continued)

E_γ †	I_γ ‡i	E_i(level)	E_γ †	I_γ ‡i	E_i(level)	E_γ †	I_γ ‡i	E_i(level)
^{x}552.37 *15*	4.4 *11*		^{x}592.13 *8*	5.5 *8*		^{x}661.06[d] *8*	3.9 *23*	
^{x}554.03 *12*	8.0 *20*		^{x}594.77[b] *17*	4.9 *15*		^{x}667.92[c] *6*	14.1 *21*	
^{x}555.65 *6*	9.3 *19*		^{x}595.93 *12*	7.2 *22*		^{x}669.37 *12*	1.1 *6*	
^{x}556.91 *20*	3.7 *15*		^{x}598.13 *8*	6.0 *10*		^{x}674.71 *12*	3.5 *7*	
^{x}557.94 *6*	11 *4*		^{x}599.47 *9*	4.5 *9*		^{x}676.92[b] *17*	1.6 *4*	
^{x}558.92 *25*	3.0 *15*		^{x}603.79 *10*	4.5 *11*		^{x}680.2[b] *3*	4.5 *18*	
^{x}561.77 *15*	8.7 *22*		^{x}610.27 *9*	5.5 *11*		^{x}681.02 *10*	7.9 *13*	
^{x}564.39 *15*	6.3 *19*		^{x}612.25 *10*	3.7 *9*		^{x}685.66 *9*	8.7 *10*	
^{x}565.33 *15*	7.9 *20*		^{x}614.41 *10*	4.0 *10*		^{x}688.17 *10*	4.7 *8*	
^{x}567.21 *15*	9.7 *24*		^{x}615.65 *10*	5.2 *10*		^{x}699.56 *15*	4.0 *10*	
^{x}568.15 *20*	6.8 *20*		^{x}616.33 *7*	6.2 *16*		^{x}700.73 *12*	6.6 *11*	
^{x}569.36 *4*	18 *7*		^{x}617.82 *8*	11 *6*		^{x}702.78 *15*	4.7 *12*	
^{x}570.62 *15*	11.6 *23*		^{x}618.16 *8*	11 *6*		^{x}703.58 *15*	4.5 *14*	
^{x}571.49 *15*	11.6 *23*		^{x}620.99 *8*	3.9 *10*		^{x}705.15 *12*	6.1 *12*	
^{x}572.39 *15*	7.9 *20*		^{x}624.93 *9*	4.0 *7*		^{x}713.54[d] *12*	1.8 *11*	
^{x}574.32 *8*	6.7 *20*		^{x}627.82 *10*	7.7 *15*		^{x}716.00 *15*	5.5 *14*	
^{x}575.15 *12*	3.9 *16*		^{x}628.56 *15*	4.8 *14*		^{x}729.74 *15*	7.7 *19*	
^{x}576.62 *8*	5.5 *9*		^{x}629.24 *12*	4.4 *13*		^{x}730.81 *17*	6.9 *17*	
^{x}577.28 *10*	3.0 *9*		^{x}635.57 *15*	6.4 *16*		^{x}732.65 *12*	11.1 *17*	
^{x}579.18 *9*	7.6 *13*		^{x}640.84 *17*	1.3 *4*		^{x}734.20 *17*	9 *3*	
^{x}579.71 *12*	3.5 *11*		^{x}644.17 *15*	2.3 *6*		^{x}739.33 *15*	6.4 *16*	
^{x}580.37 *9*	4.0 *10*		^{x}646.13 *10*	8.3 *17*		^{x}740.26[d] *12*	1.6 *14*	
^{x}581.13 *10*	3.3 *8*		^{x}647.22 *12*	4.8 *14*		^{x}741.76 *20*	4.0 *16*	
^{x}582.09 *8*	6.5 *11*		^{x}655.47 *12*	4.3 *13*		^{x}743.24 *17*	4.8 *14*	
^{x}587.58 *7*	6.9 *10*		^{x}656.55 *17*	3.1 *12*		^{x}877.3[d] *4*	3.2 *13*	
^{x}588.25 *9*	4.7 *12*		^{x}657.36 *12*	6.4 *13*		^{x}885.2[d] *5*	2.2 *20*	
^{x}589.19 *12*	2.4 *10*		^{x}658.12 *12*	5.9 *15*		^{x}1136.0 *6*	4.9 *20*	
^{x}591.14 *9*	3.4 *7*		^{x}659.09 *15*	4.2 *13*		^{x}1175.7 *17*	6.8 *17*	

† Relative ΔE from 1978VoZP. The absolute calibration uncertainty of $1.3\times10^{-5}\times E\gamma$ is not included. Sm and Eu x rays were used as calibration standards (1959Be51).

‡ Iγ per 10^4 n captures (1978Vo05). Relative ΔIγ from 1978VoZP. The calibration uncertainty of 15% is not included.

\# Probably an x-ray.

@ From 1978Vo05, based on α(exp) and α ratios. The experimental values are from 1978VoZP.

& From 1978VoZP, based on α(exp) and α ratios, unless otherwise noted.

a α(K)exp=0.6 *2* determined for the 160γ doubly placed from the 237.3483 and 340.7195 levels is consistent with mult=M1 or E2. placement from the 237.3483 level requires mult=M1 or E2, and placement from the 340.7195 level, if correct, limits J^π for that level to 3^- requiring mult=E2.

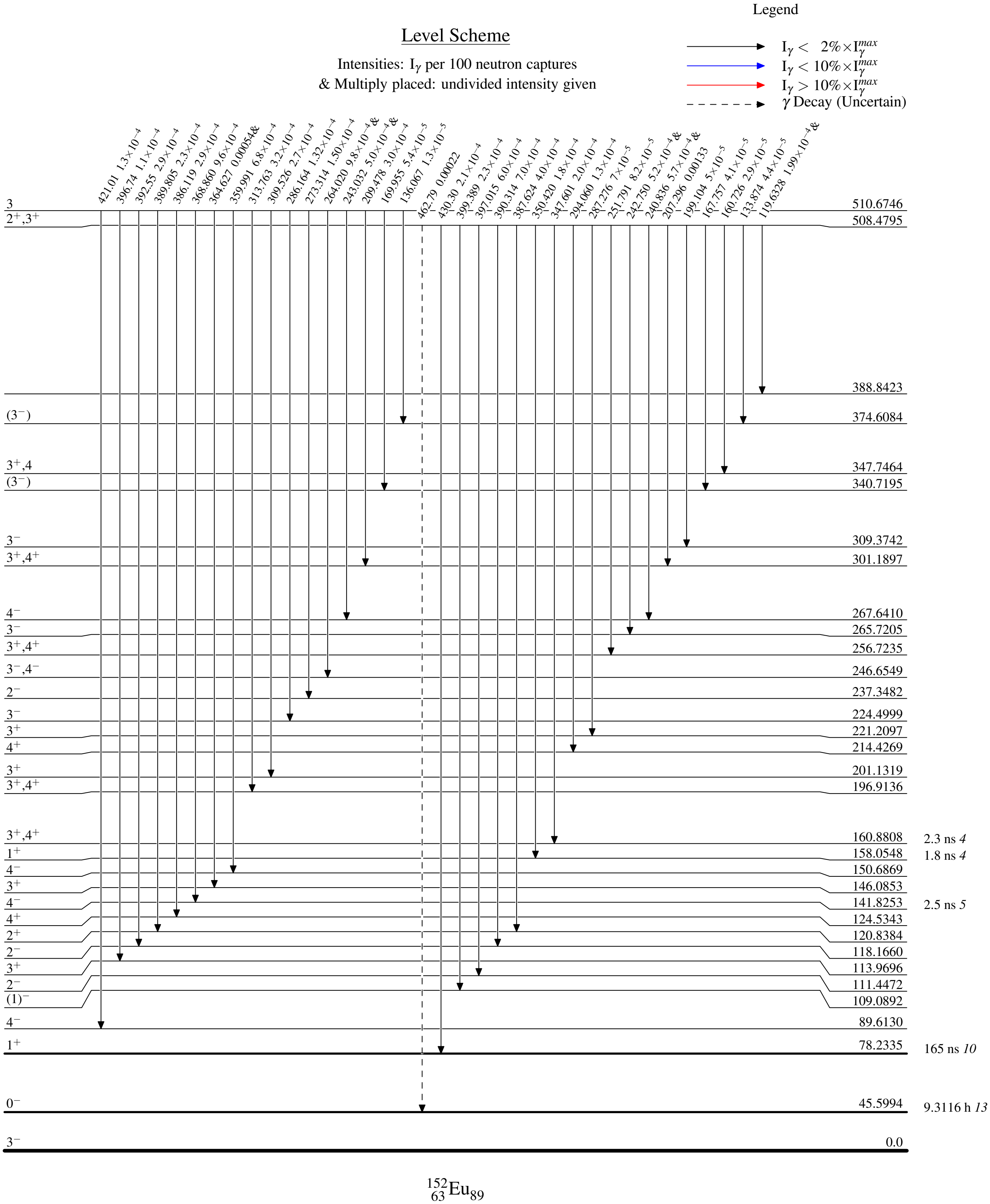
b Complex γ line.

$^{152}_{63}$Eu$_{89}$-69

γ(^{152}Eu) (continued)

[c] Probably not ^{152}Eu.
[d] Questionable line (1978VoZP).
[e] Iγ=21.1 in table 3 of 1978Vo05, Iγ=12.1 in table 4 of 1978VoZP, (list of experimental Eγ, Iγ measurements). The authors′ calculated depopulation from this level (column 9, table 3, 1978Vo05) seems to indicate that Iγ=12.1 was used for this calculation.
[f] From α(exp) for dominant component of complex multiplet.
[g] α(K)exp<0.10, α(K)exp≈0.04 for the 235.58 − 236.8 multiplet with I(236.292γ)/Iγ(total)=0.37; theory: A(K)(M1)=0.142 and kc=0.092 for eg=236.
[h] Questionable line (1978VoZP). With the adopted J^{π} it would be an M2 or E3 transition; probably does not belong here.
[i] For intensity per 100 neutron captures, multiply by 0.0001.
[j] 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.
[k] Multiply placed with undivided intensity.
[l] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

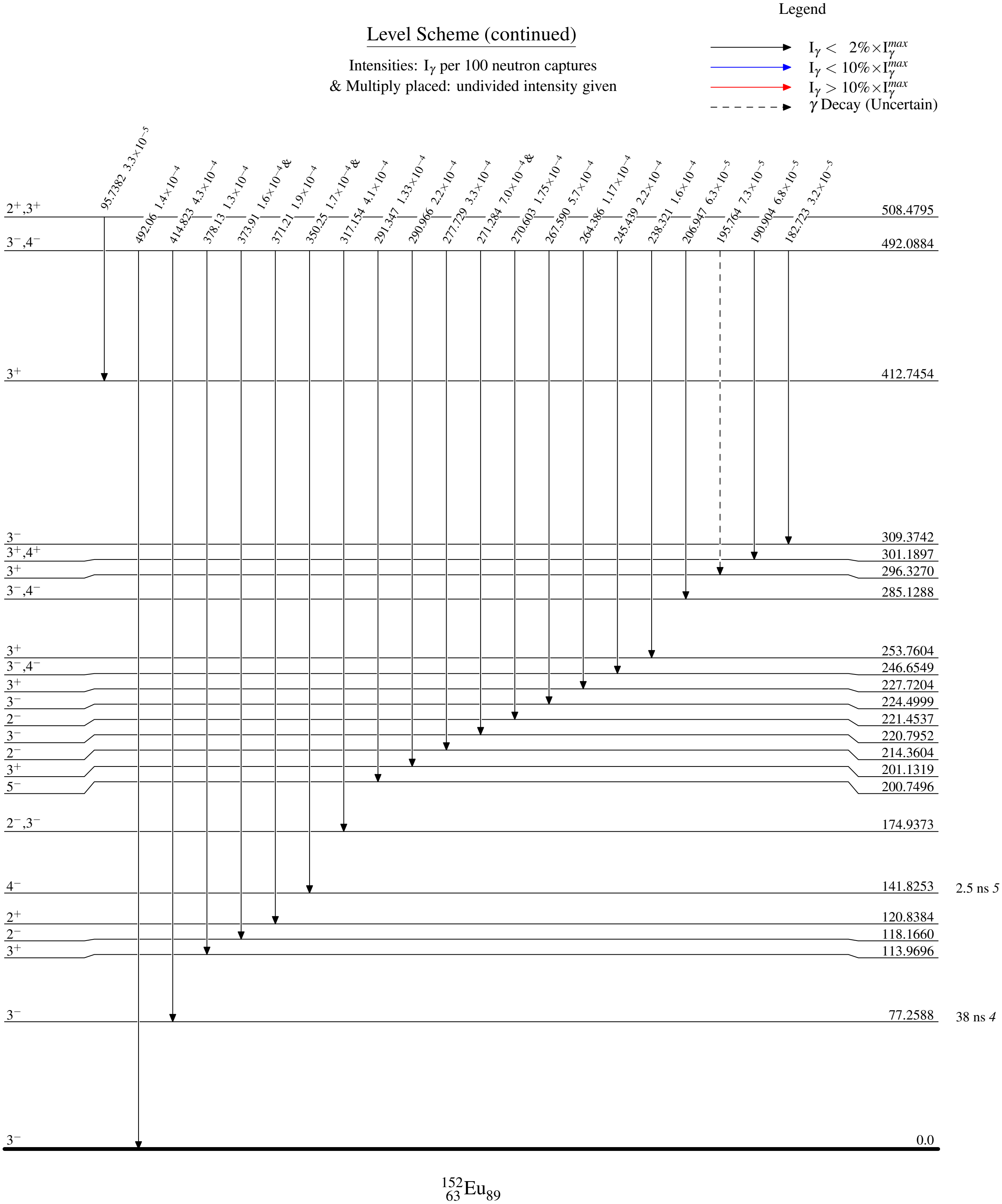


^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

Level Scheme (continued)

Intensities: I_γ per 100 neutron captures

& Multiply placed: undivided intensity given

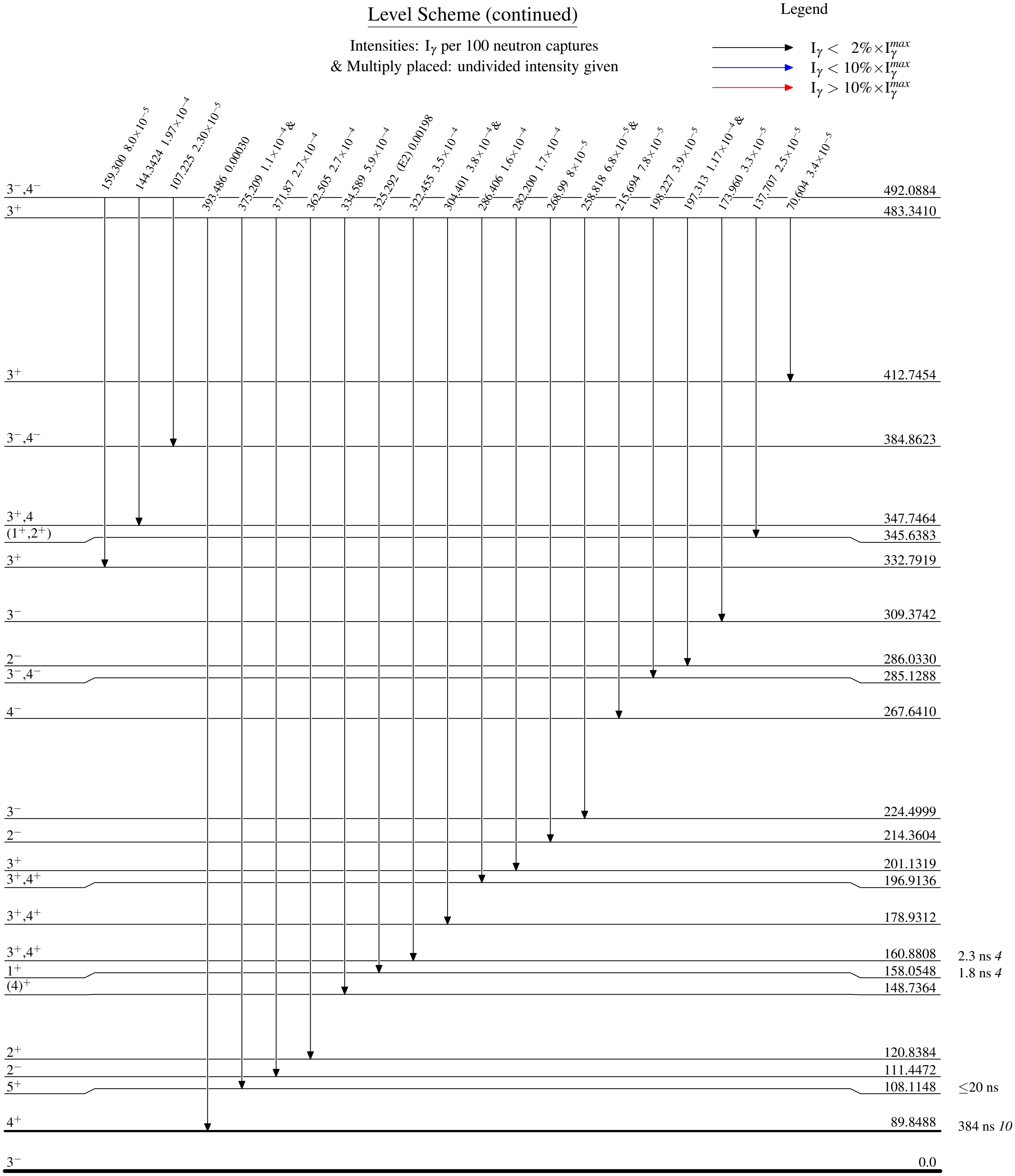


^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

Level Scheme (continued)

Intensities: I_γ per 100 neutron captures

& Multiply placed: undivided intensity given



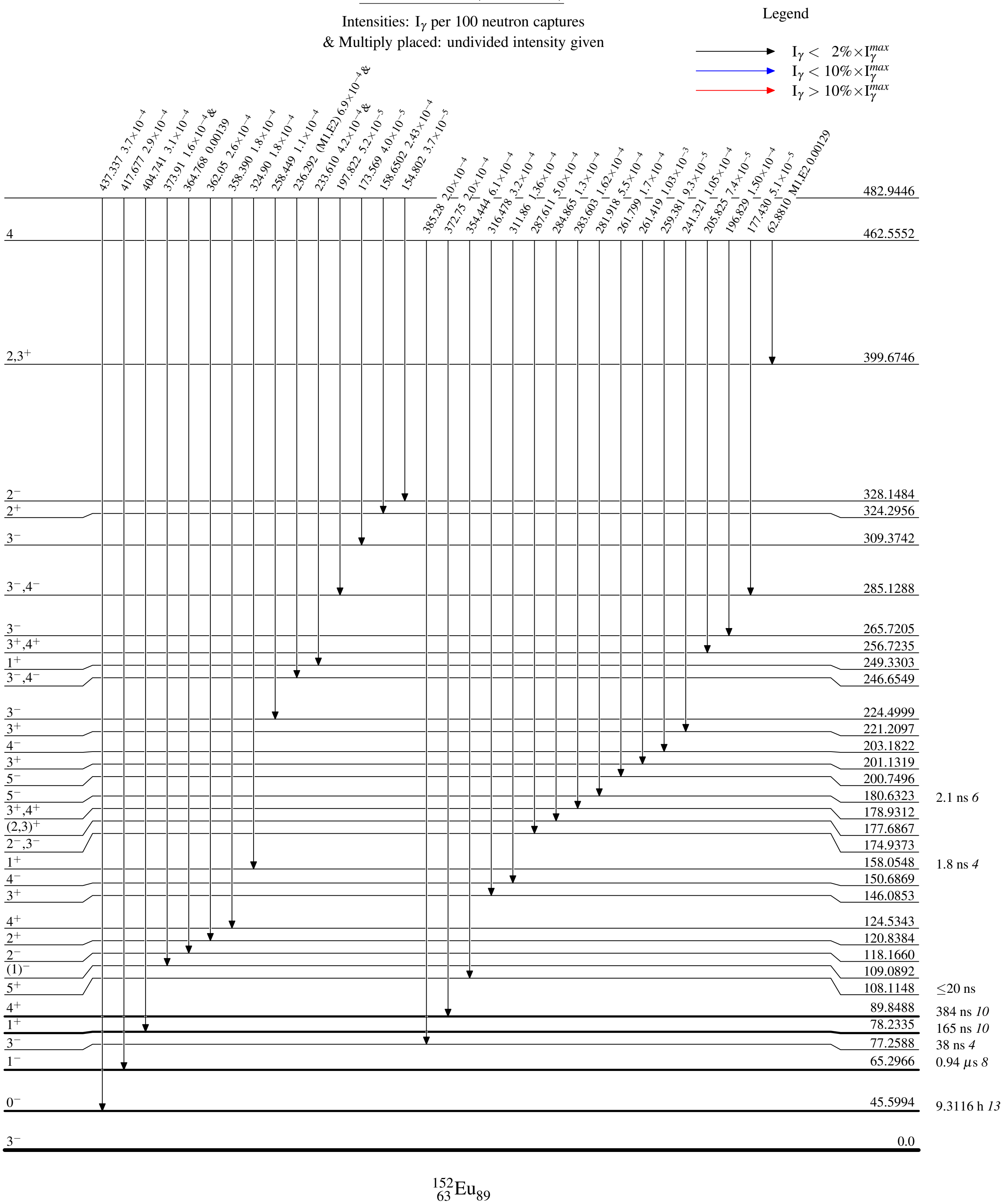
$^{152}_{63}Eu_{89}$

^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

Level Scheme (continued)

Intensities: I_γ per 100 neutron captures

& Multiply placed: undivided intensity given

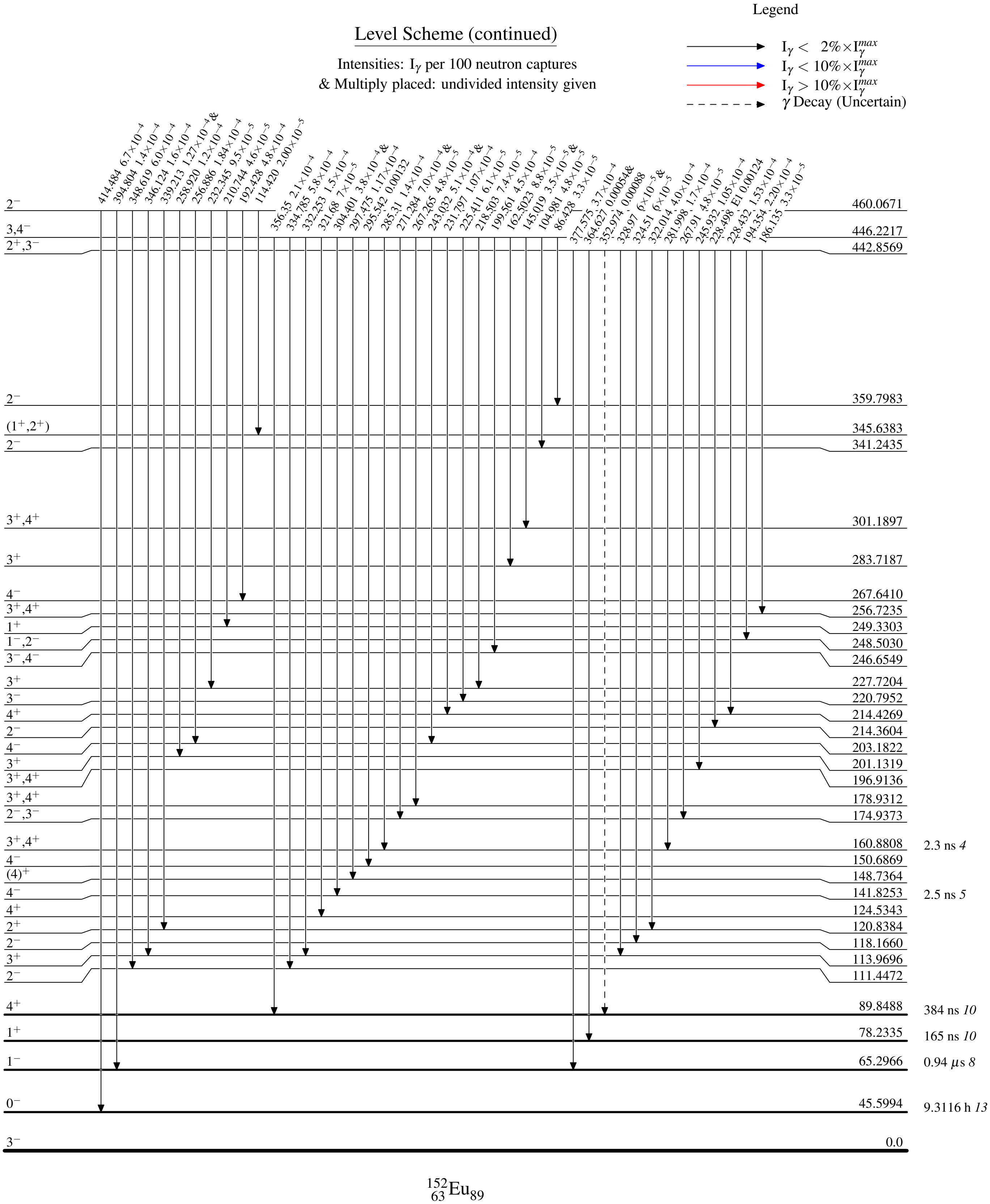


^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

Level Scheme (continued)

Intensities: I_γ per 100 neutron captures

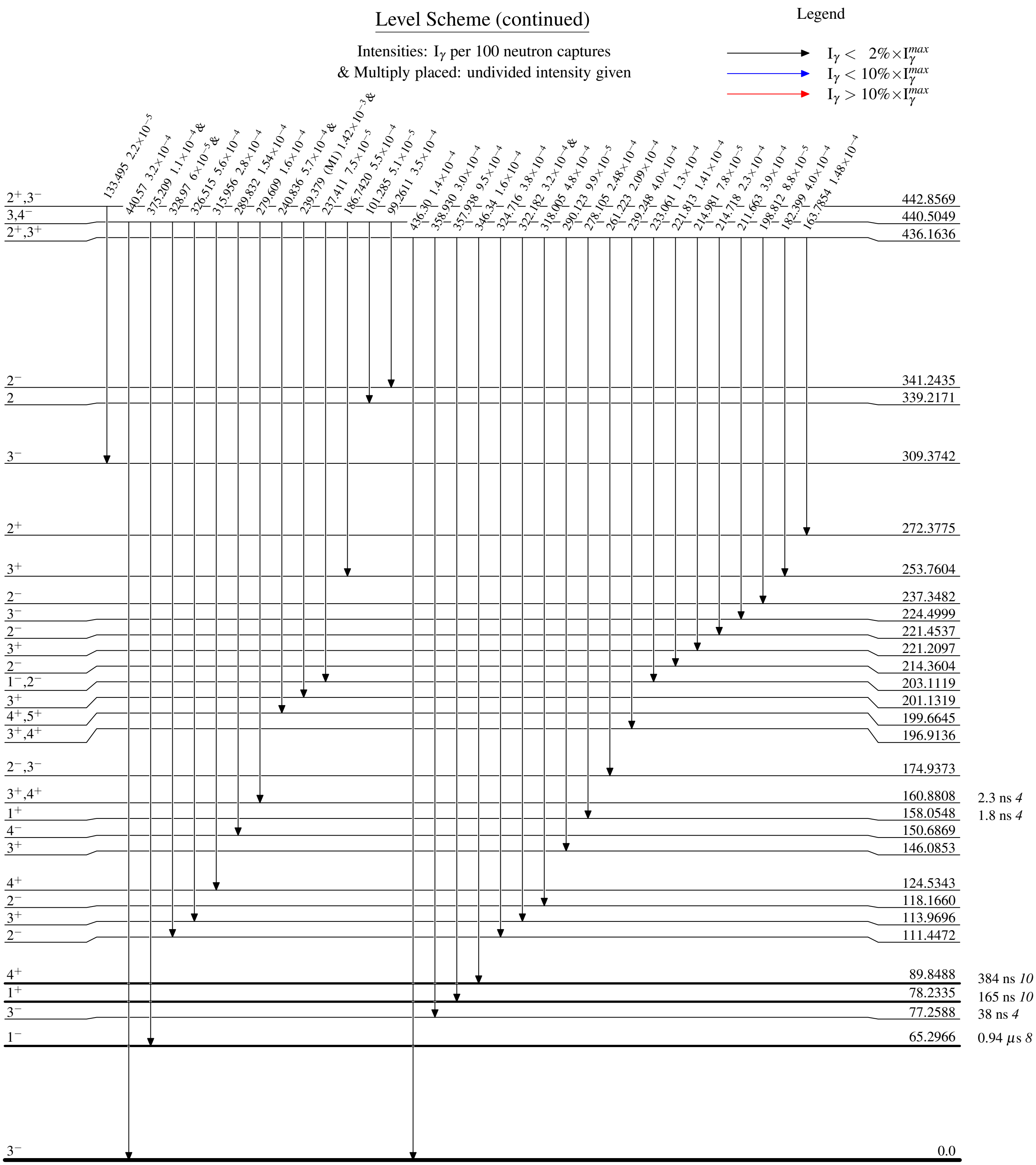
& Multiply placed: undivided intensity given



^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

Level Scheme (continued)

Intensities: I_γ per 100 neutron captures
& Multiply placed: undivided intensity given

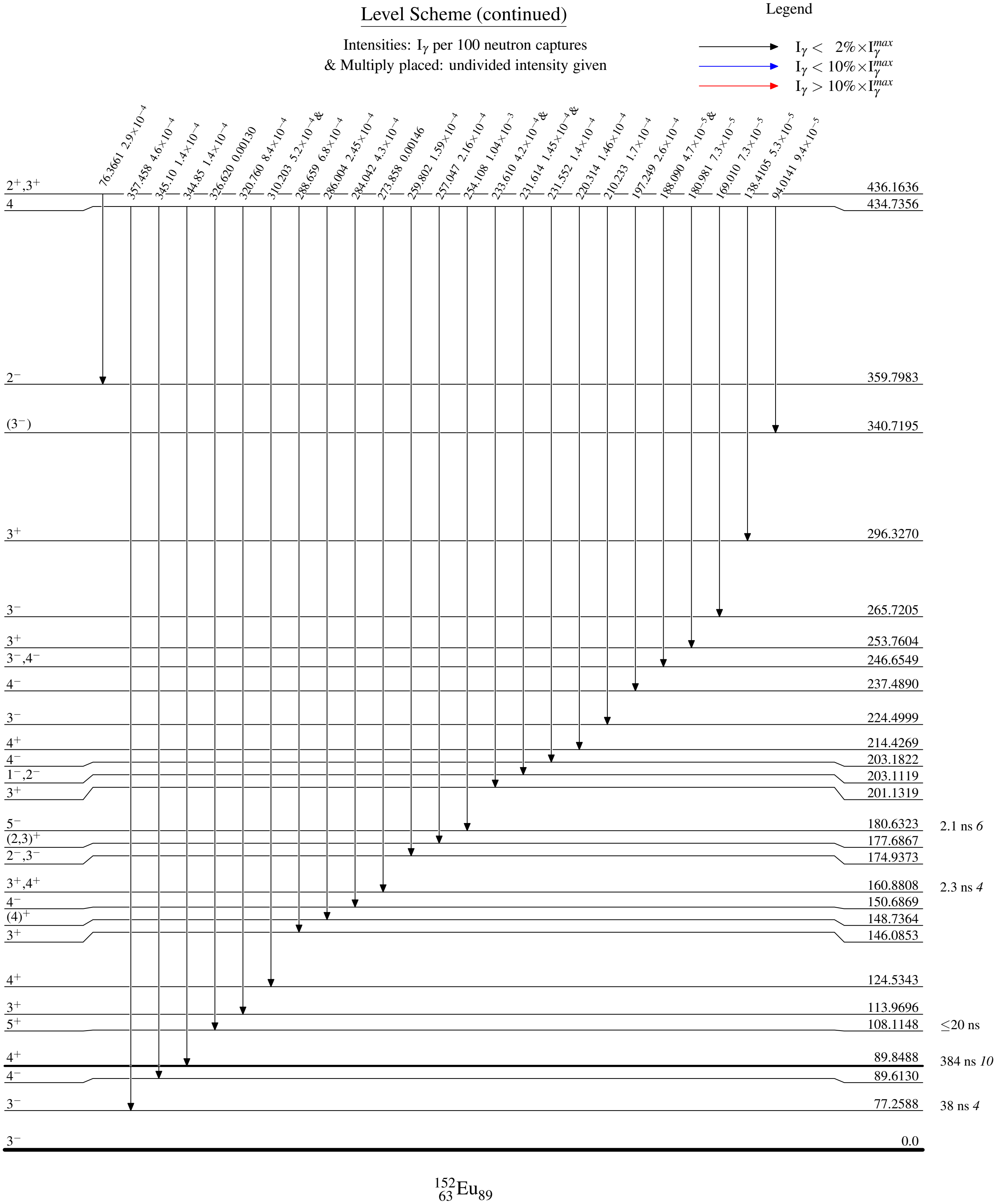


$^{152}_{63}Eu_{89}$

^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

Level Scheme (continued)

Intensities: I_γ per 100 neutron captures
& Multiply placed: undivided intensity given

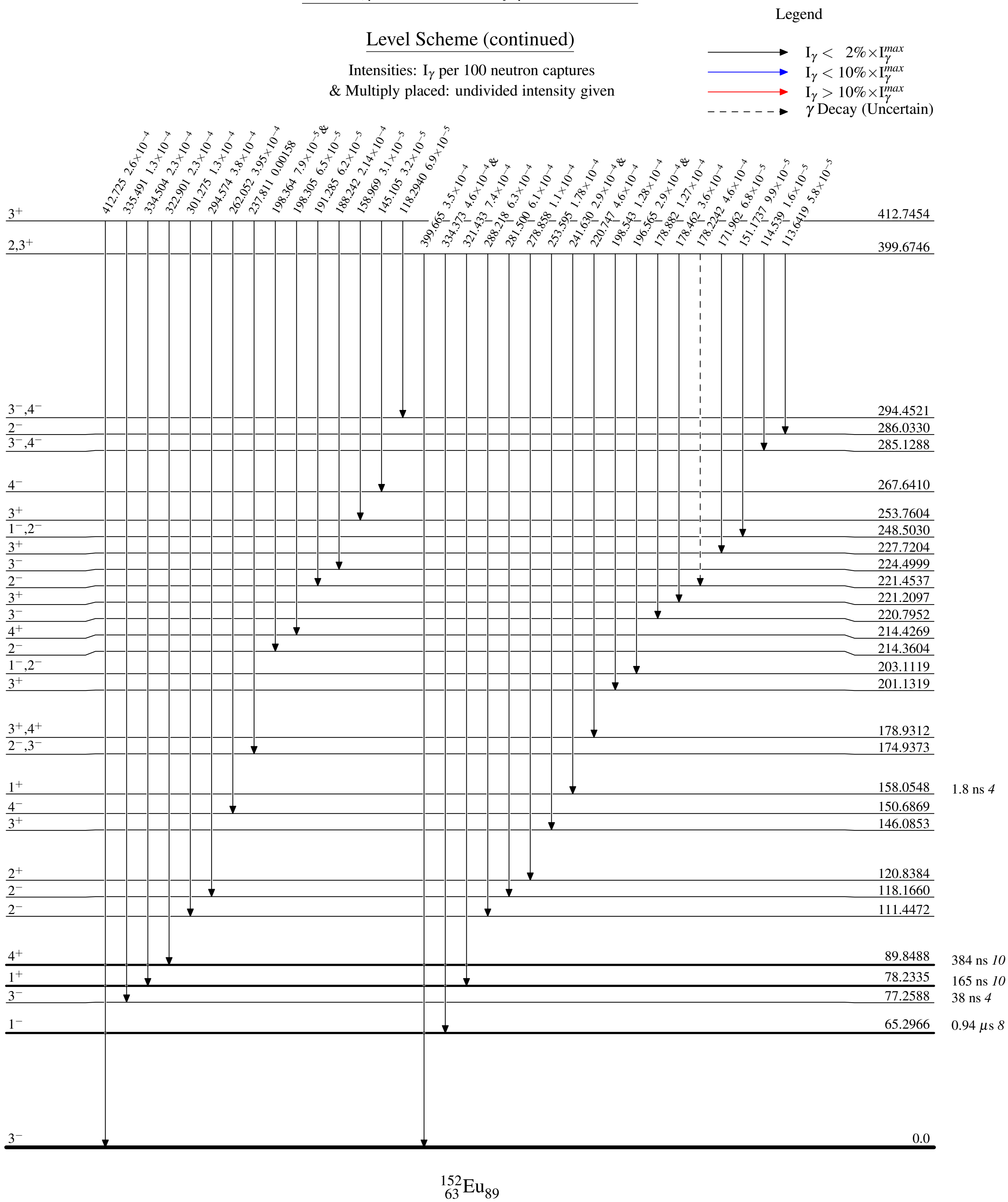


^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

Level Scheme (continued)

Intensities: I_γ per 100 neutron captures

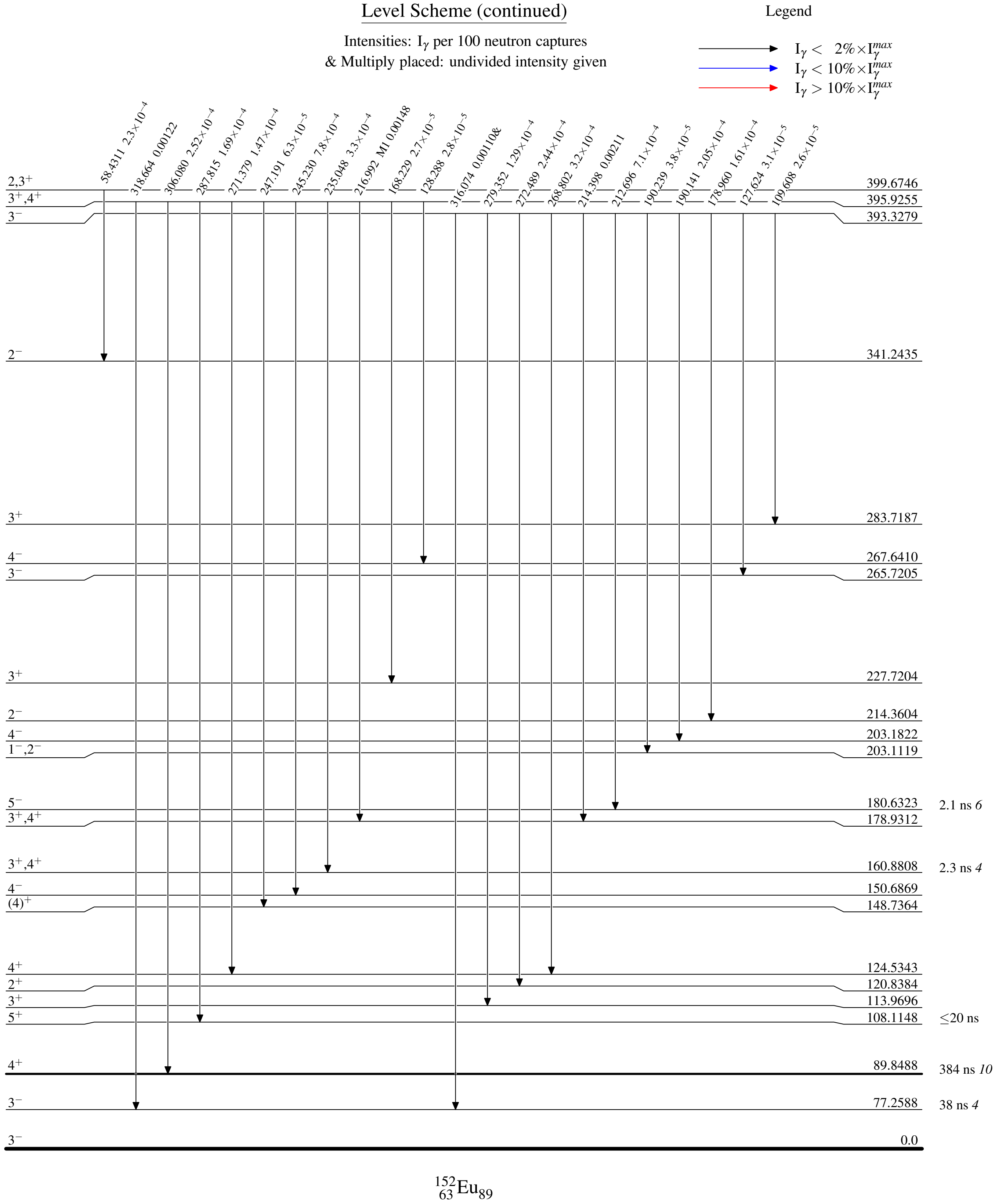
& Multiply placed: undivided intensity given



^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

Level Scheme (continued)

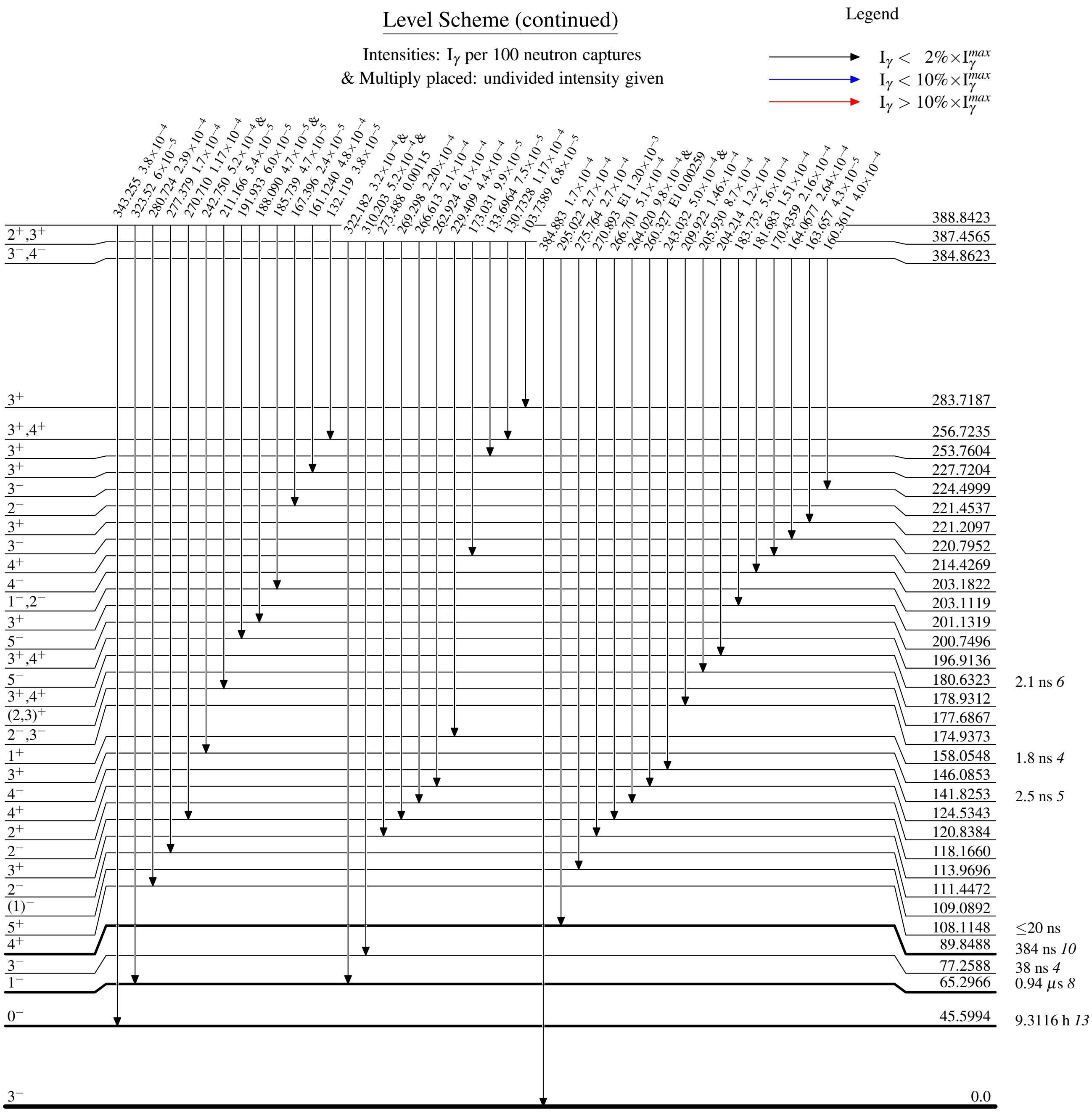
Intensities: I_γ per 100 neutron captures
& Multiply placed: undivided intensity given



^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

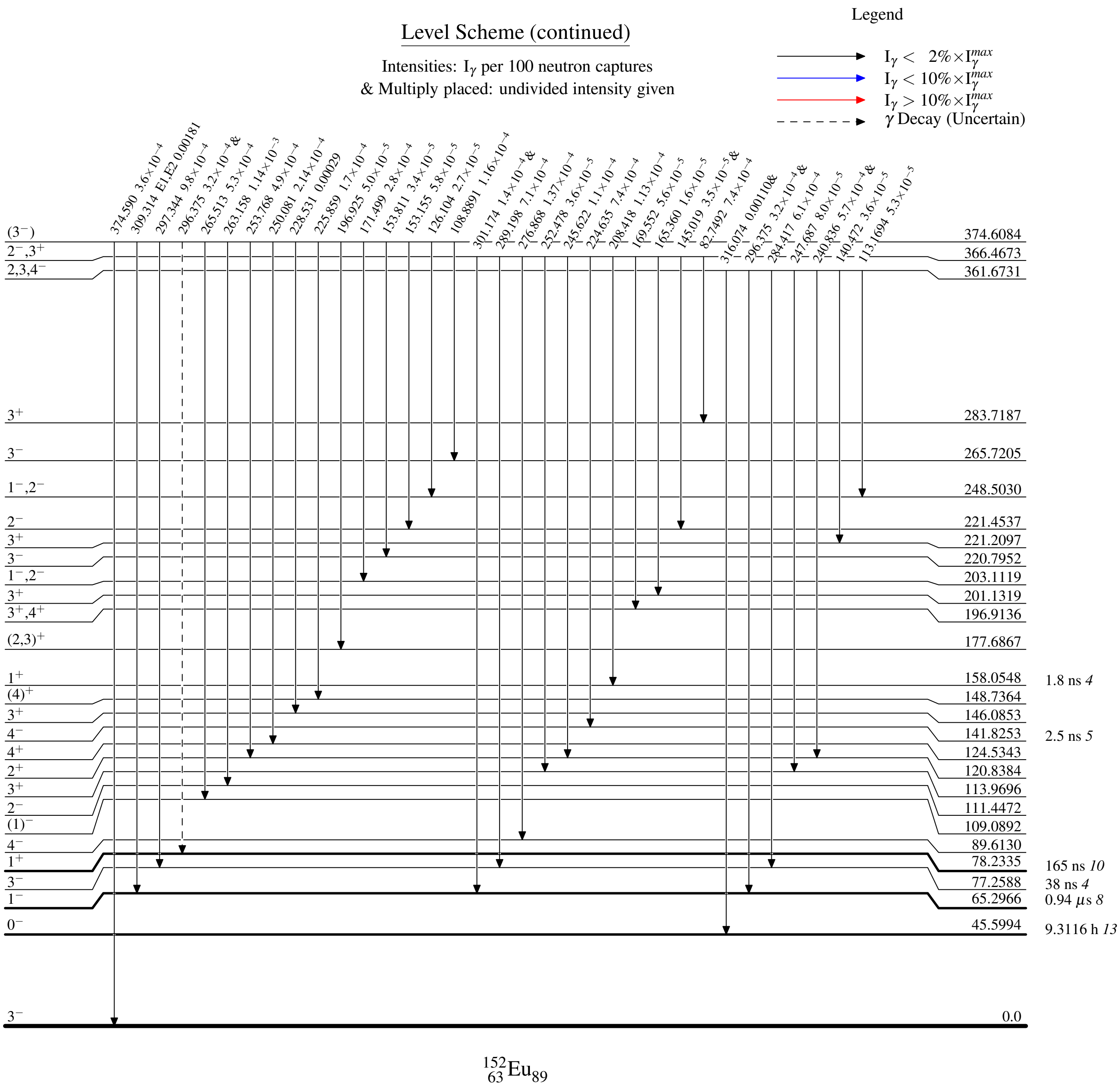
Level Scheme (continued)

Intensities: I_γ per 100 neutron captures
& Multiply placed: undivided intensity given



$^{152}_{63}Eu_{89}$

^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

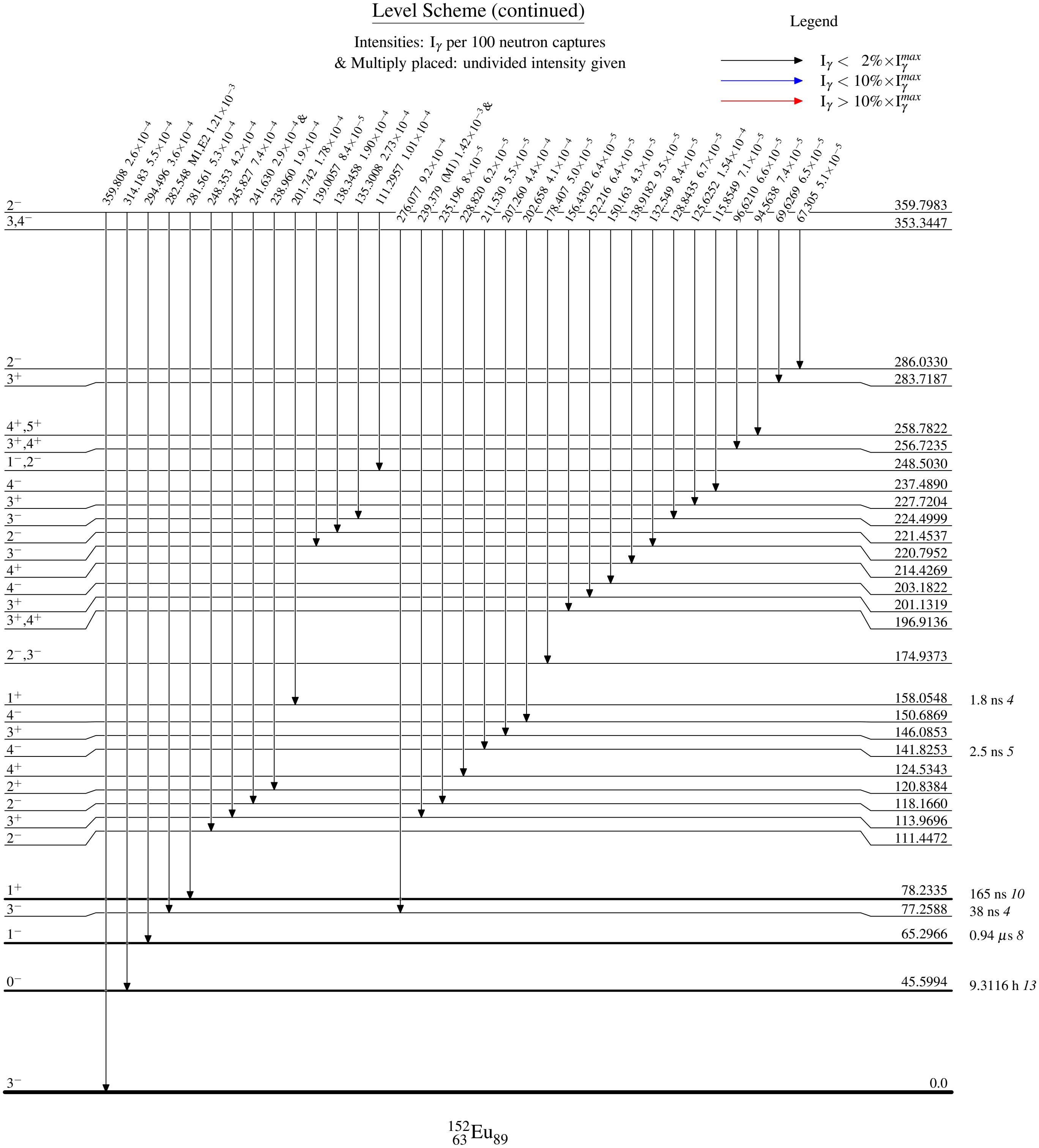


^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

Level Scheme (continued)

Intensities: I_γ per 100 neutron captures

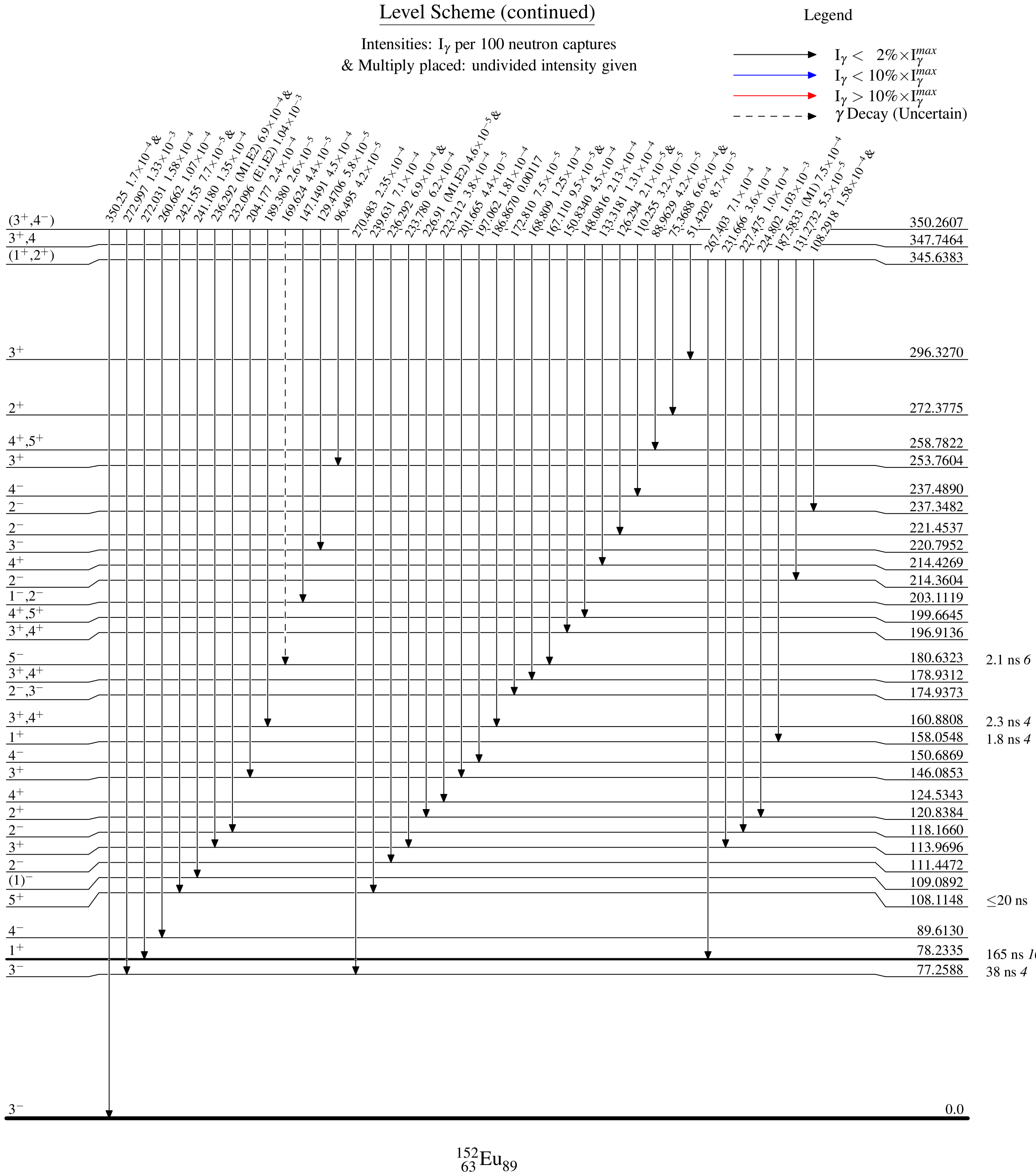
& Multiply placed: undivided intensity given



^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

Level Scheme (continued)

Intensities: I_γ per 100 neutron captures
& Multiply placed: undivided intensity given



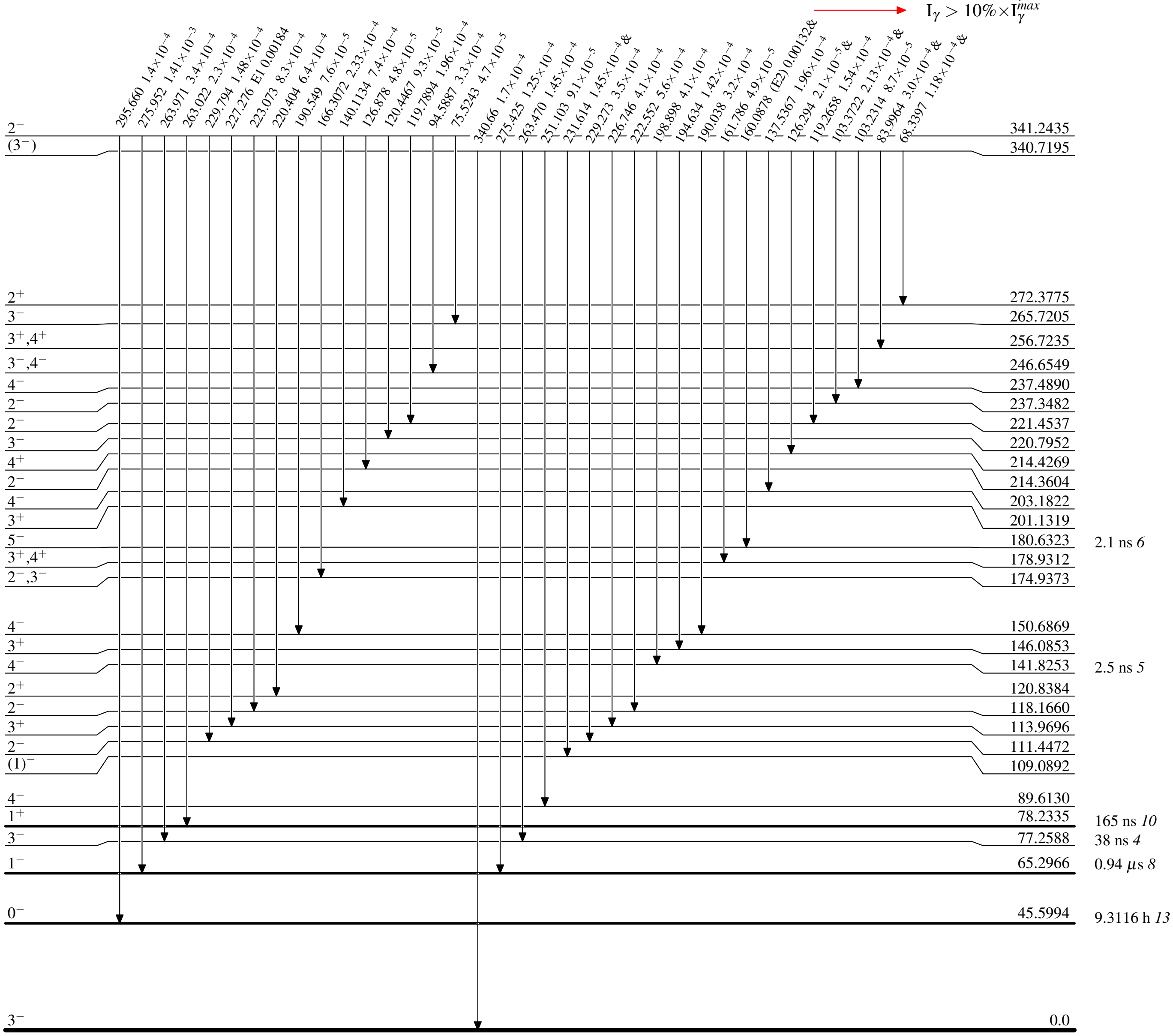
$^{152}_{63}Eu_{89}$

$^{151}Eu(n,\gamma)$ E=th: secondary γ's 1978Vo05

Level Scheme (continued)

Intensities: I_γ per 100 neutron captures
& Multiply placed: undivided intensity given

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



$^{152}_{63}Eu_{89}$

^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

Level Scheme (continued)

Intensities: I_γ per 100 neutron captures

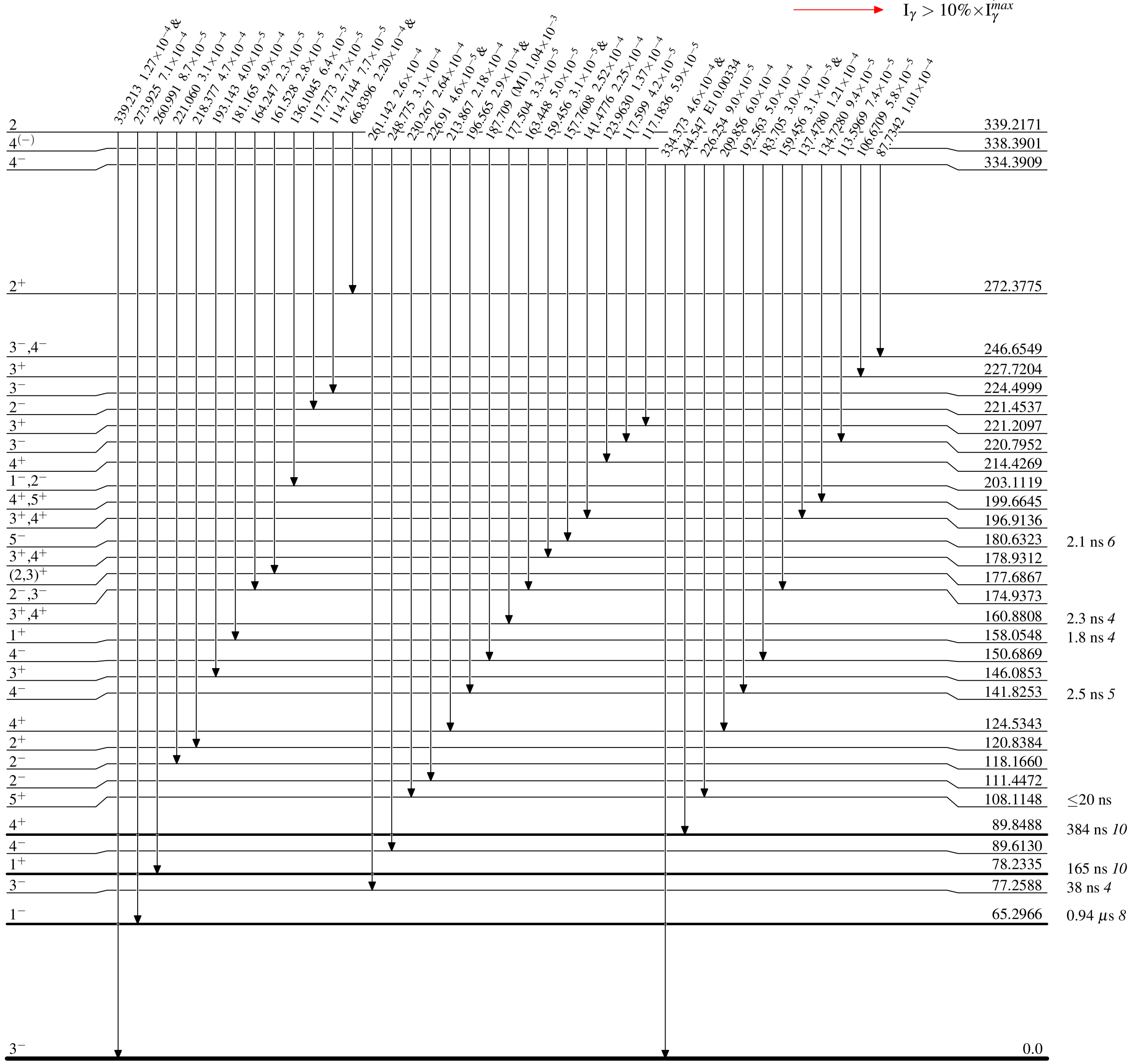
& Multiply placed: undivided intensity given

Legend

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

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

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

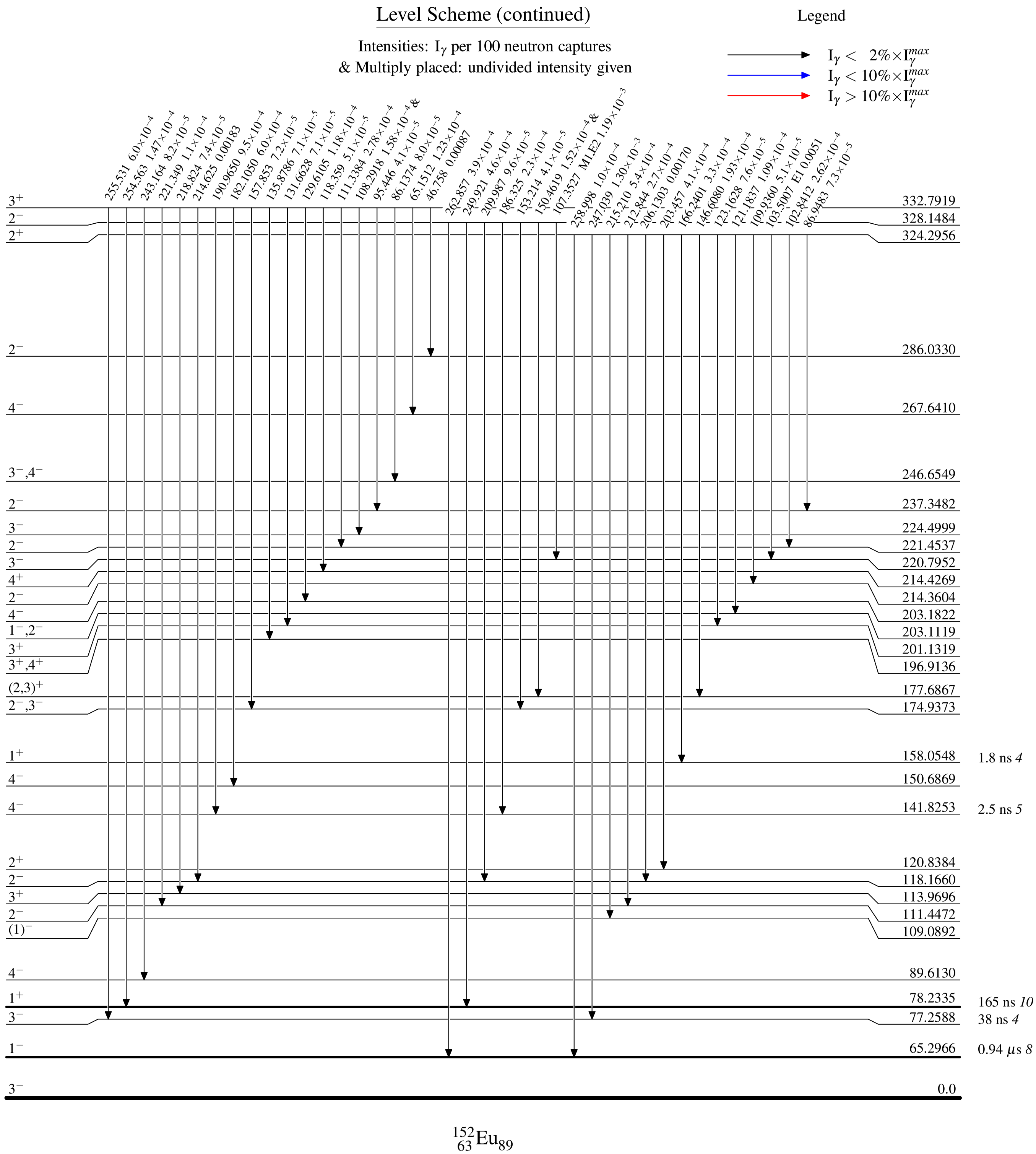


$^{152}_{63}Eu_{89}$

^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

Level Scheme (continued)

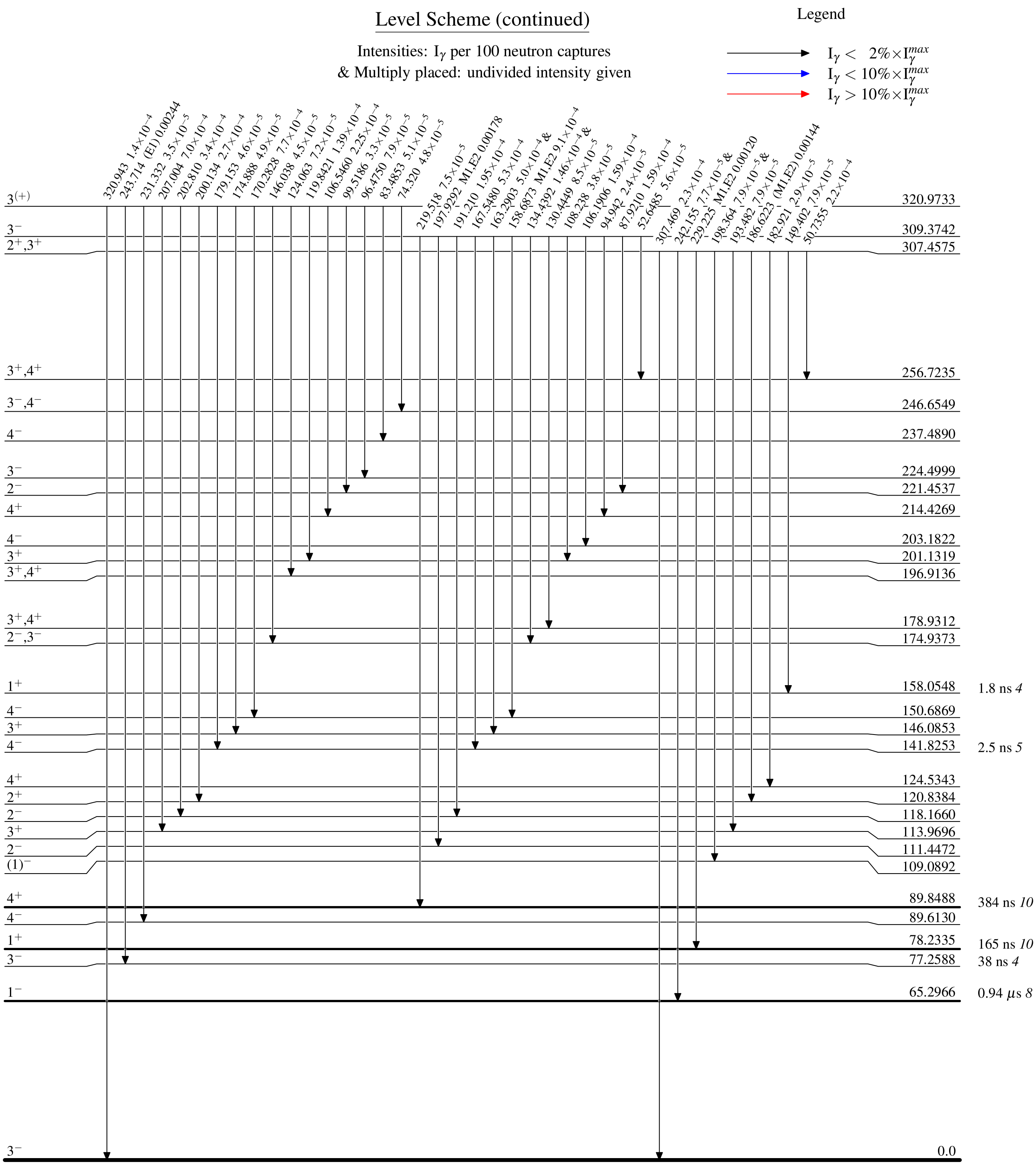
Intensities: I_γ per 100 neutron captures
& Multiply placed: undivided intensity given



^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

Level Scheme (continued)

Intensities: I_γ per 100 neutron captures
& Multiply placed: undivided intensity given



$^{152}_{63}Eu_{89}$

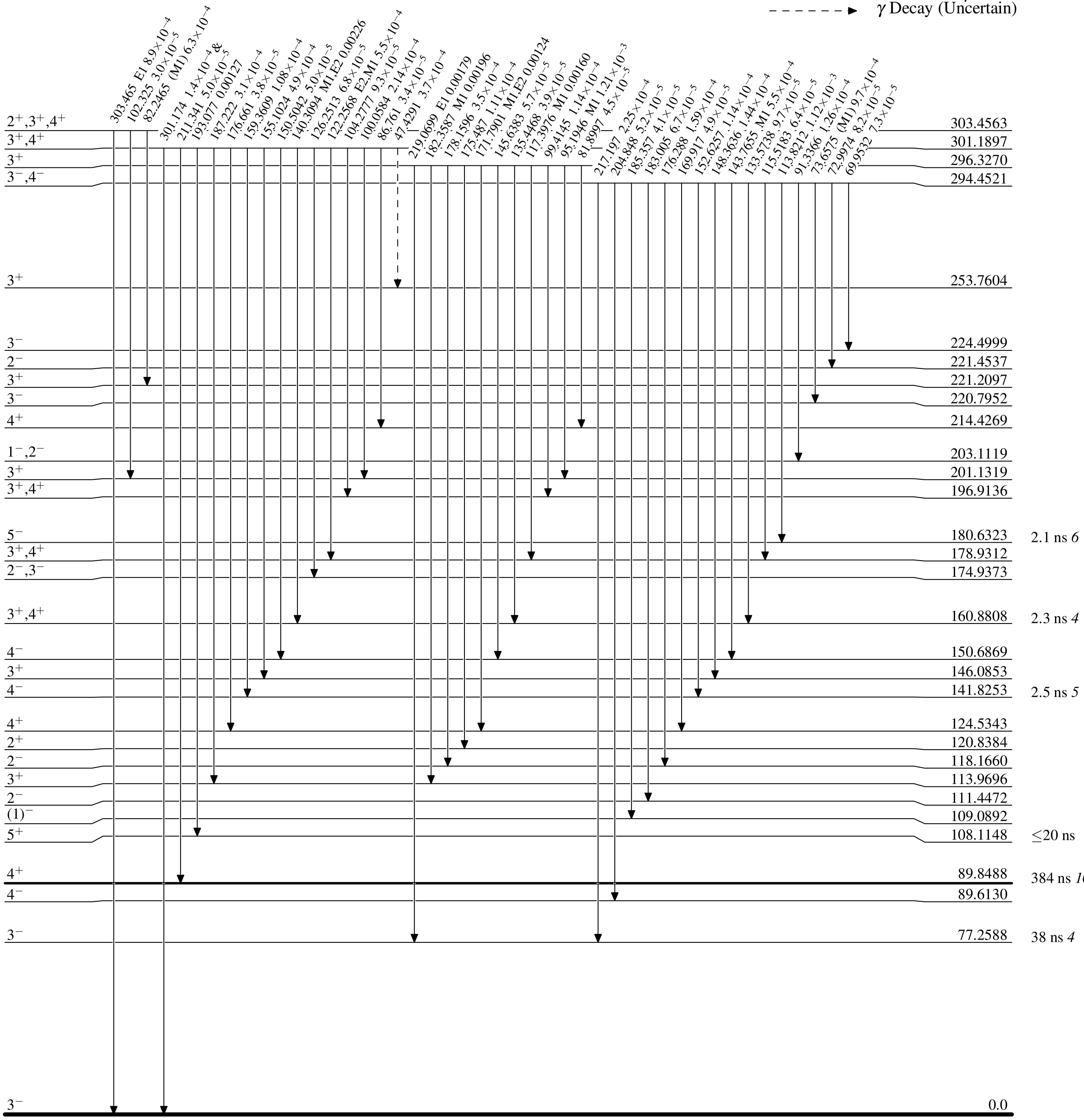
^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

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)

Level Scheme (continued)

Intensities: I_γ per 100 neutron captures
& Multiply placed: undivided intensity given



$^{152}_{63}$Eu$_{89}$

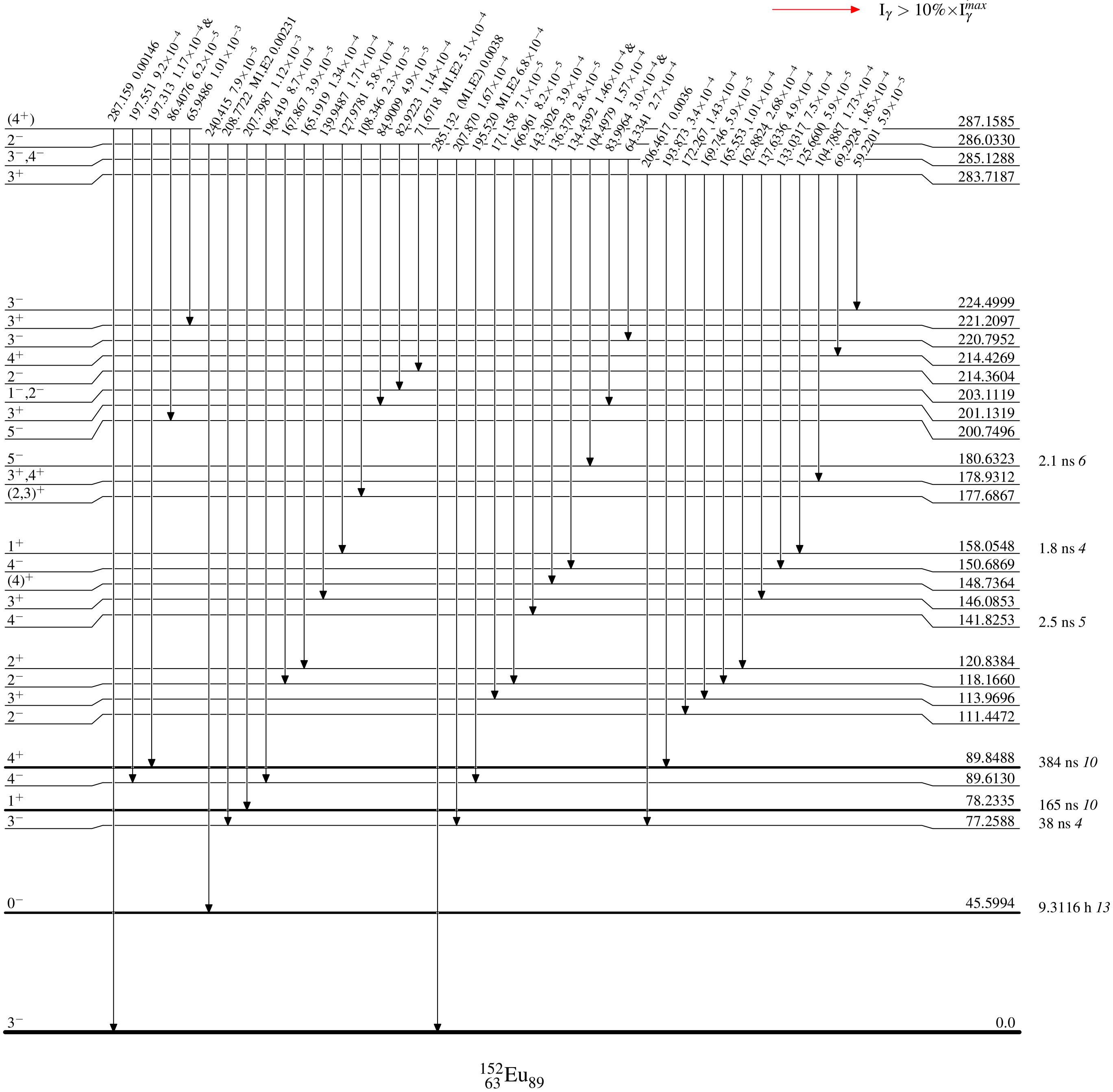
^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

Level Scheme (continued)

Intensities: I_γ per 100 neutron captures
& Multiply placed: undivided intensity given

Legend

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



^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

Level Scheme (continued)

Intensities: I_γ per 100 neutron captures

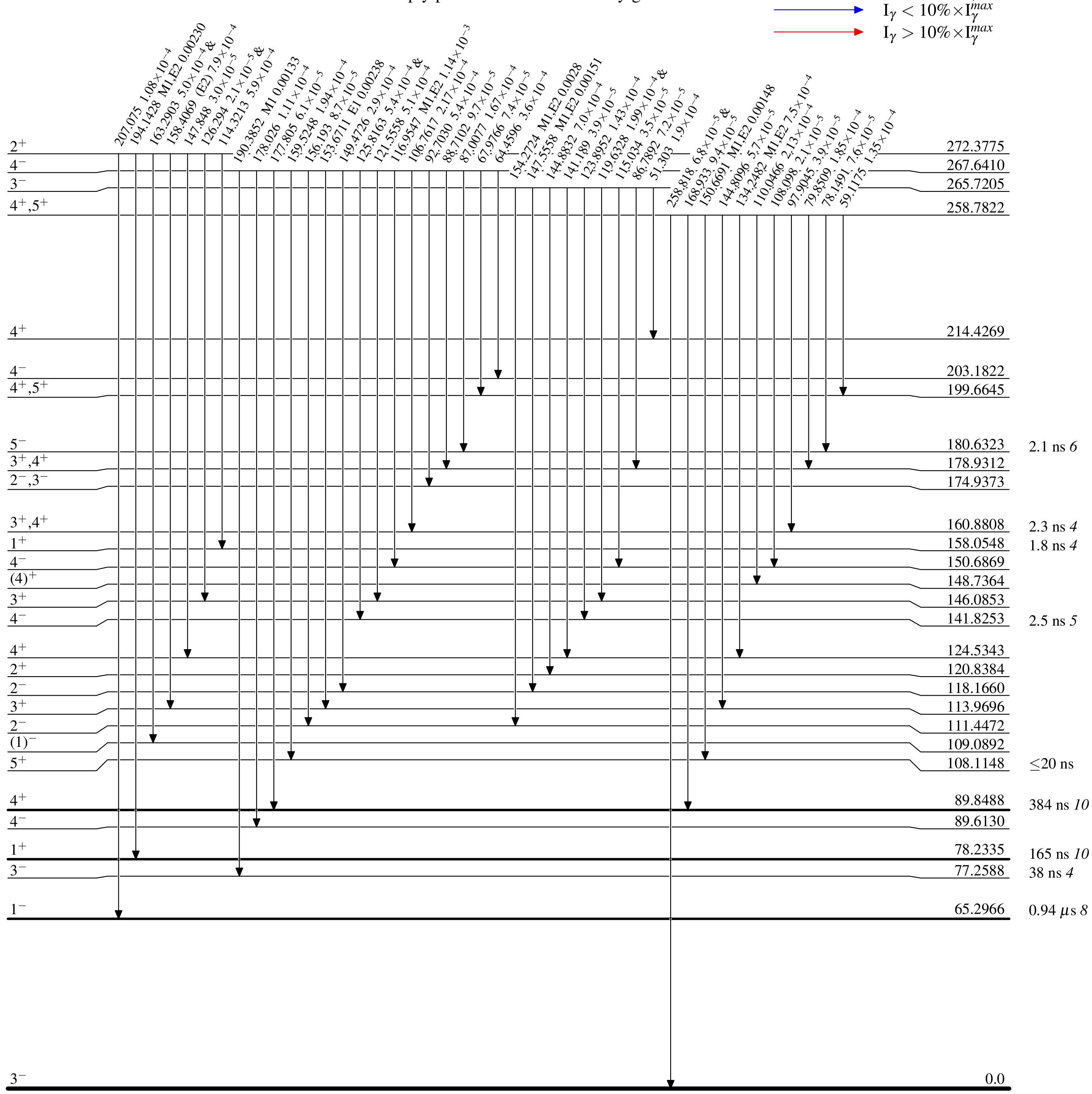
& Multiply placed: undivided intensity given

Legend

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

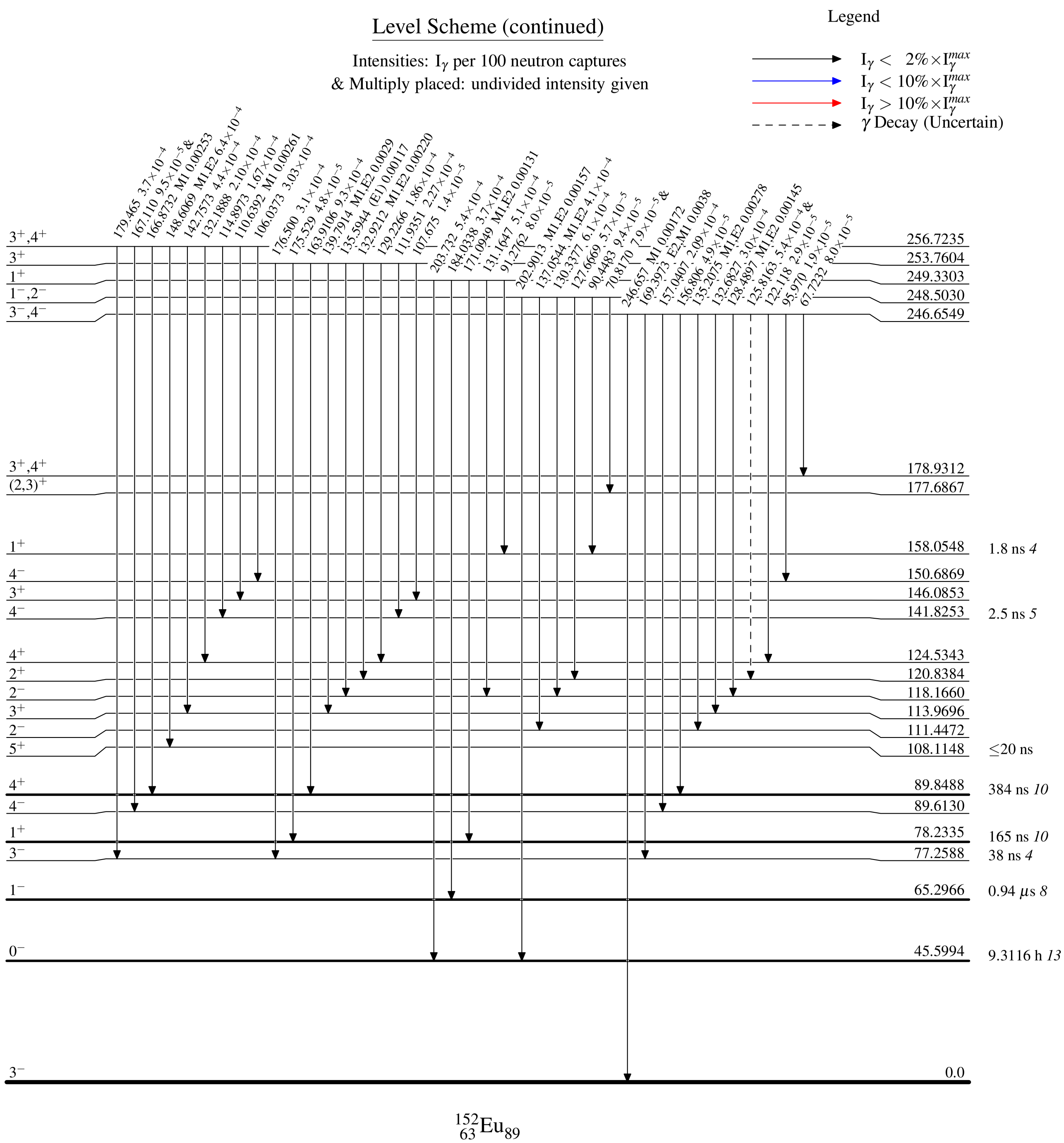
$I_\gamma < 10\% \times I_\gamma^{max}$

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



$^{152}_{63}Eu_{89}$

^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05



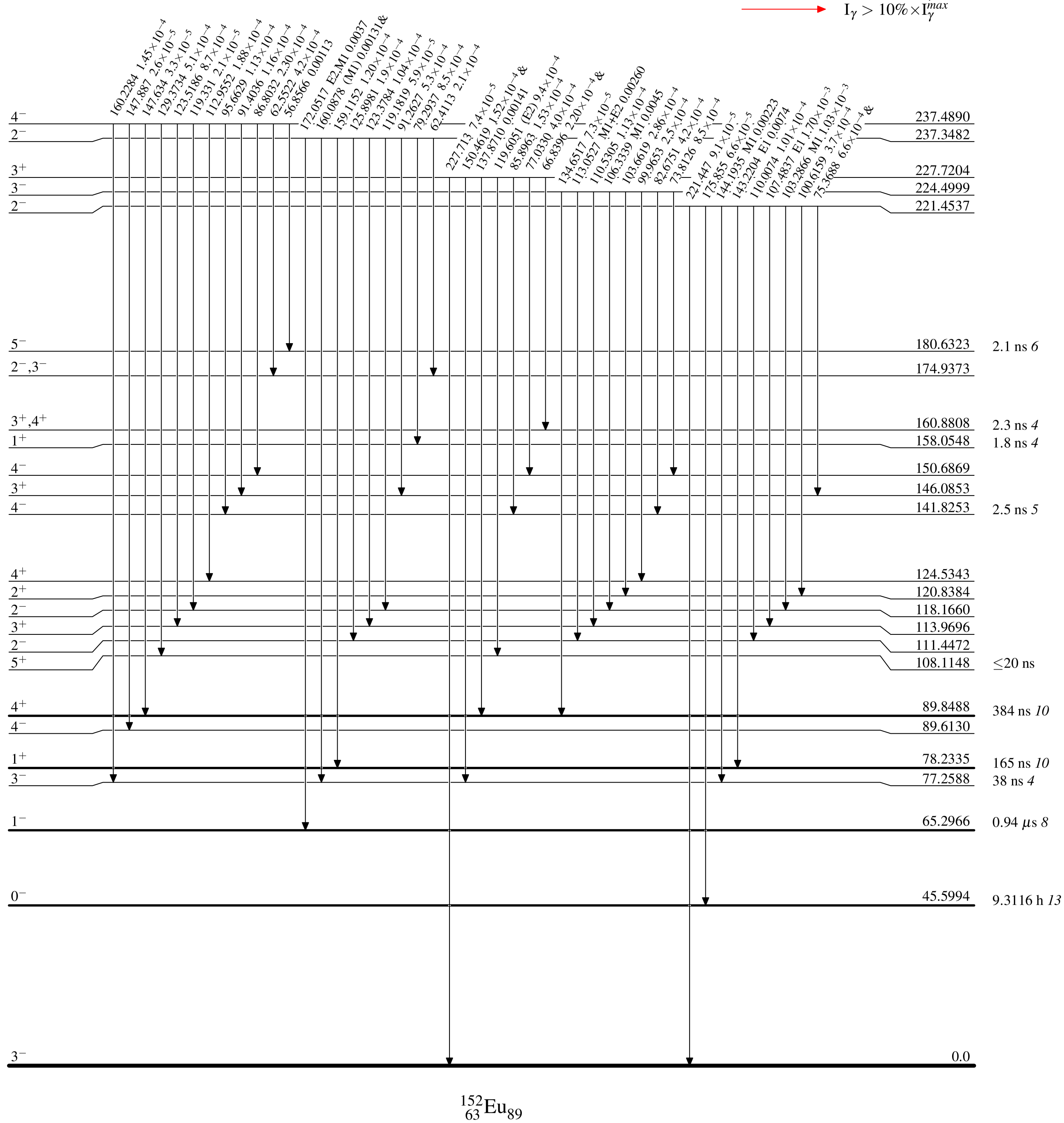
^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

Level Scheme (continued)

Intensities: I_γ per 100 neutron captures
& Multiply placed: undivided intensity given

Legend

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



$^{152}_{63}Eu_{89}$

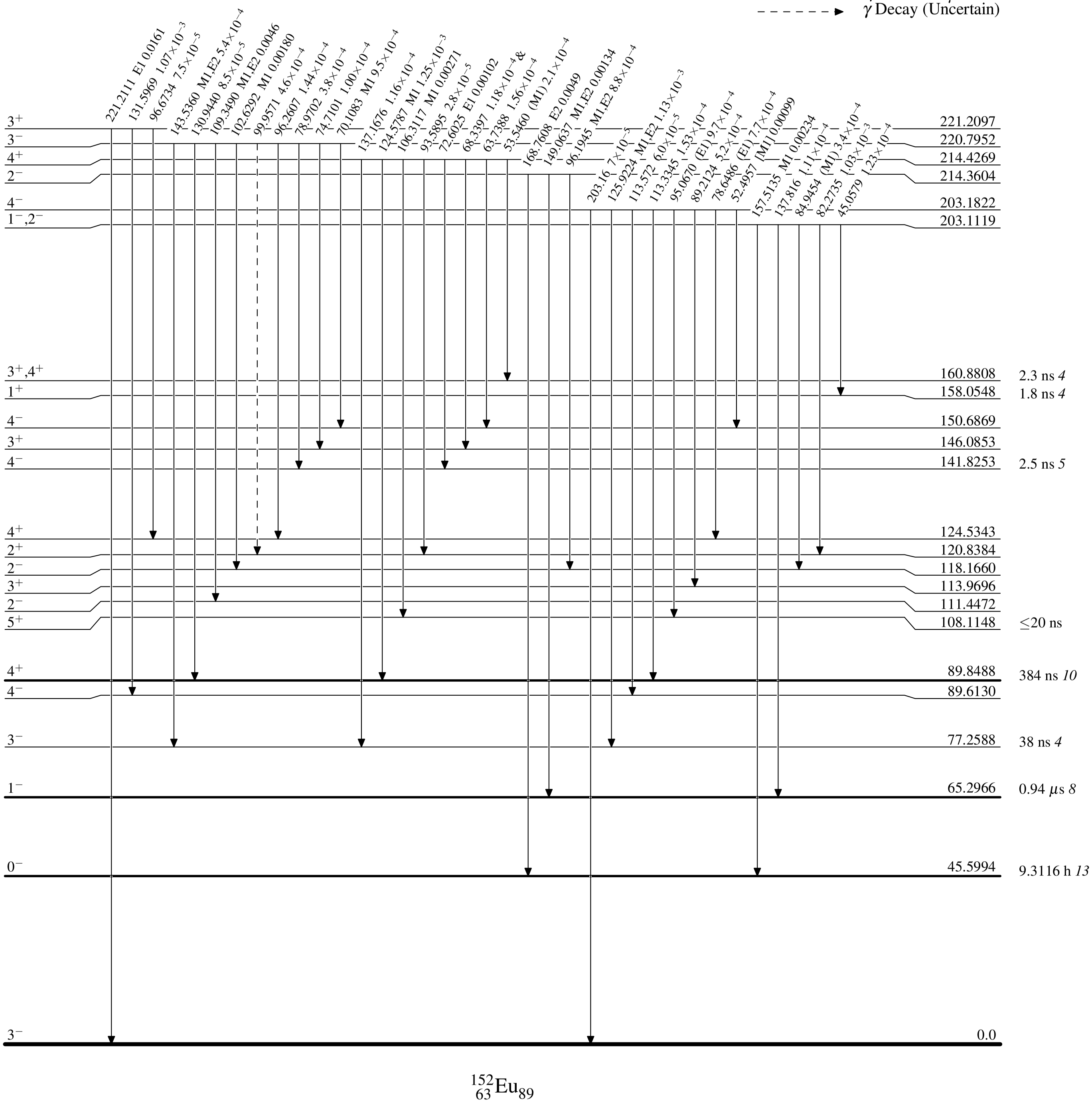
^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

Level Scheme (continued)

Intensities: I_γ per 100 neutron captures
& Multiply placed: undivided intensity given

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)



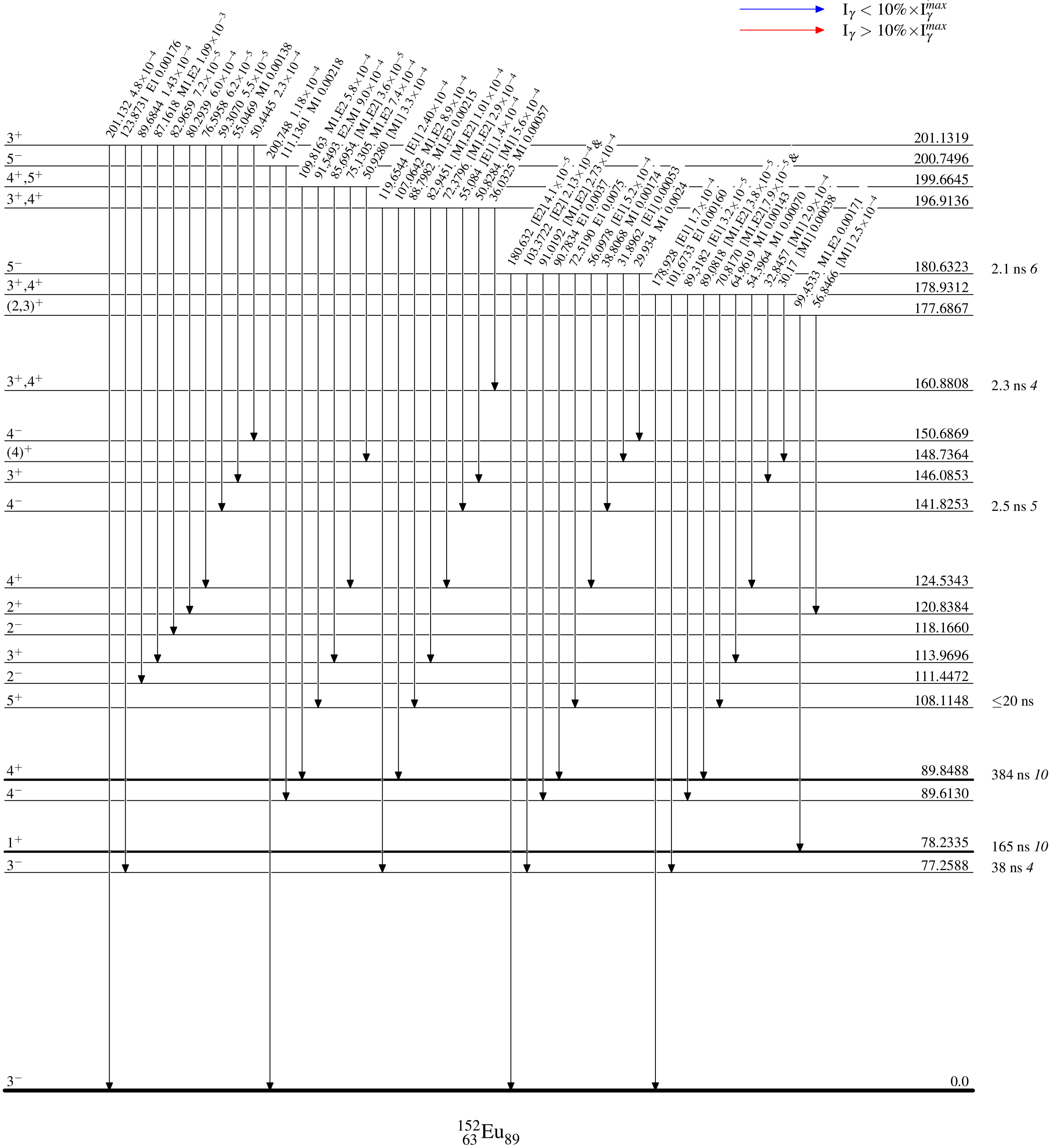
^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

Level Scheme (continued)

Intensities: I_γ per 100 neutron captures
& Multiply placed: undivided intensity given

Legend

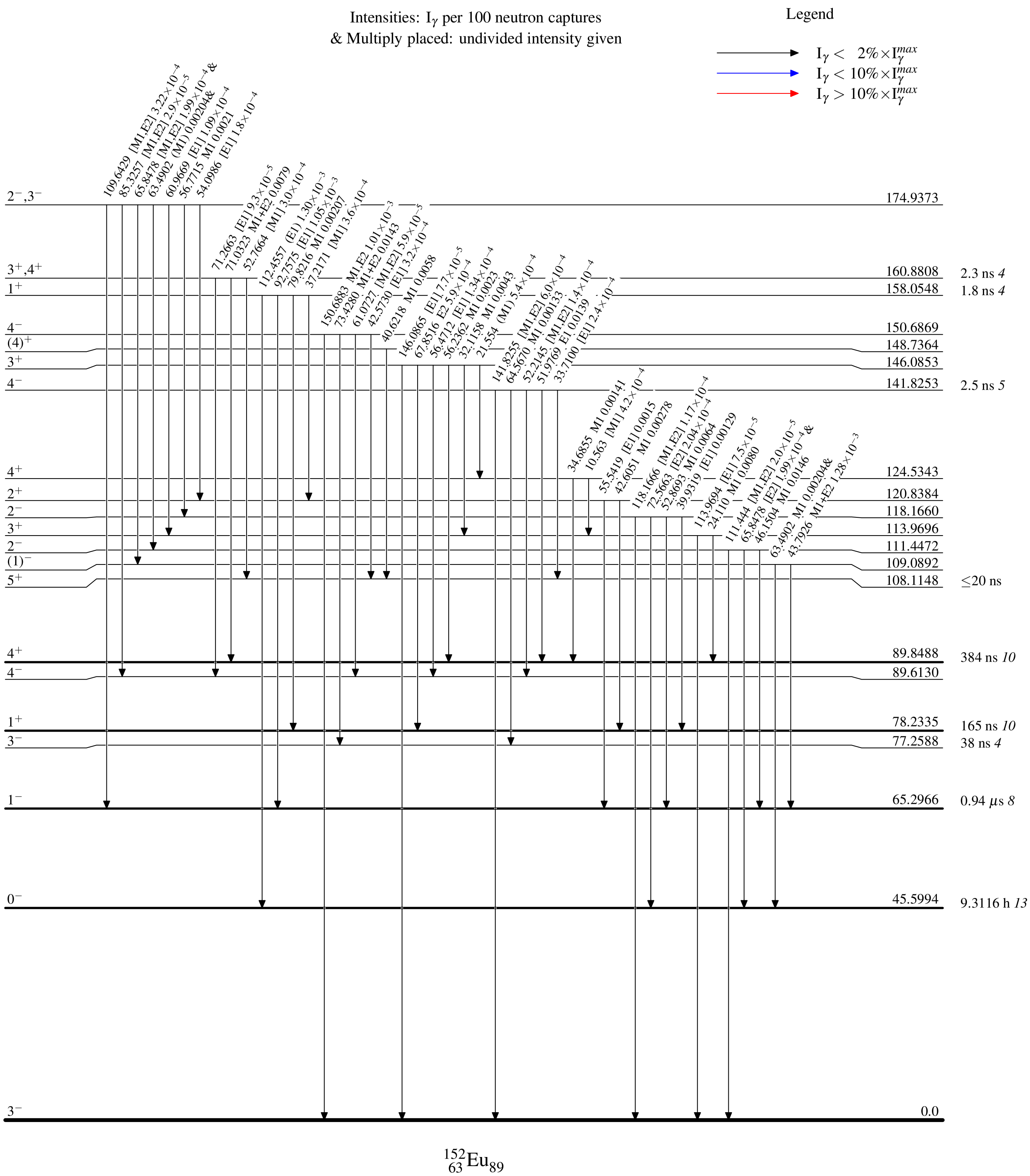
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

Level Scheme (continued)

Intensities: I_γ per 100 neutron captures
& Multiply placed: undivided intensity given



^{151}Eu(n,γ) E=th: secondary γ's 1978Vo05

Level Scheme (continued)

Intensities: I_γ per 100 neutron captures

& Multiply placed: undivided intensity given