Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 200,2 (2025)	22-Aug-2022

Q(β^-)=1968.0 *8*; S(n)=6442.22 *24*; S(p)=6467.3 *7*; Q(α)=−566 *20* 2021Wa16
S(2n)=14992.50 *27*, S(2p)=15062 *26* (2021Wa16).

These data are primarily from (n,γ) studies (1987Ba52 and 1978PrZY), with some information from ^{154}Eu (46 min) isomeric decay (1975Ca22, 1976Ch08, and 1976Zo01), in-beam γ studies (1988Ka01 and 1980Be61), ^{153}Eu(d,p) studies (1987Ba52), and ^{154}Eu(p,p′) (1979La11).

Model and theory articles of interest: configurations – 1984Ro06, 1987Ba52; bandhead energies, band mixing, splitting of Gallagher-Moszkowski doublets, and configurations – 1987Gu19; discuss the rotational bands in terms of parity doublets and thus of octupole deformation – 1989Sh08; octupole deformation – 1990Af03.

^{154}Eu Levels

The (n,γ) studies of 1987Ba52 include resonance-averaged n capture with a 2-keV beam. These authors state that they have observed: (1) all of the levels with $1 \le J \le 6$ below 300 keV; (2) all of the 1^-, 2^-, 3^-, and 4^- levels up to about 450 keV; and (3) most of the 1^+, 2^+, 3^+, and 4^+ levels from 300 to 450 keV.

Band parameters are given for several bands; for many other bands the parameters are unusual and presumably reflect the influence of strong coupling among bands.

Listed configurations are the dominant ones. Some levels may contain sizable admixtures of other configurations.

Additional information 1.

Cross Reference (XREF) Flags

A	^{153}Eu(n,γ) E=th	E	^{154}Sm(^{3}He,p2nγ),(d,2nγ),(p,nγ)
B	^{153}Eu(n,γ) E=2 keV: res av	F	^{153}Eu(d,p)
C	^{153}Eu(n,γ) E=2.4 eV res	G	^{154}Eu IT decay (46.3 min)
D	^{153}Eu(n,γ) E=3.3 eV res	H	^{154}Eu(p,p′)

E(level)†	Jπ‡#	$T_{1/2}$@	XREF	Comments
0.0&	3^-	8.592 y *5*	AB DEFGH	%β^-=99.982 *12*; %ε+%β^+=0.018 *12* μ=−2.005 *6*; Q=+2.84 *10* Jπ: J measured by paramagnetic resonance (1957Ab05) and π from β^-(1855)γ(123)(θ). %ε+%β^+: Calculated by evaluator from the adopted data in ^{154}Eu ε decay and ^{154}Eu β^- decay. Same values are also obtained by the evaluation of γ emission probability data in 2004BeZQ. μ: From the evaluation of 1989Ra17 and the compilation of 2005St24, based on data of 1957Ab05. Others: −2.02 *5*, from 1989Ra17 and 2005St24, based on data of 1986Al33; −2.016 (1985Al06 and 1984AlZH, same authors as 1986Al33); and 2.007 *11* (1971He18). Q: From the evaluation of 1989Ra17 and the compilation of 2005St24, based on data of 1986Al33. Others: +3.35 *27*, from 1989Ra17 and 2005St24, based on data of 1962Ju06; 3.5 *4* (1983Do08); +3.9 *5* (1971He18 and 1970He09), and 1985Al06 and 1984AlZH (same authors as 1986Al33). $T_{1/2}$: Weighted average, 3138.1 d *20* or 8.592 y *5*, of the most precise values: 3138 d *2* (1986Wo05), 3138.3 d *22* (2010Sc08), 3138 d *4* (Erratum Appl.Radiat.Isot. 159, 108976 (2020) correcting 3141.7 d *43* from 2014Un01). Additional information 2. Additional information 3. $T_{1/2}$: These references cite work from the National Physical Laboratory in the U.K. (1986Wo05, NPL), Physikalisch-Technische Bundesanstalt in Germany (2010Sc08, PTB) and the National Institute of Standards and Technology in the

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Adopted Levels, Gammas (continued)

^{154}Eu Levels (continued)

E(level)[†]	Jπ[‡#]	T1/2[@]	XREF	Comments
				U.S. (2014Un01, NIST). Of these 2010Sc08 and 2014Un01 supersede previous results the data of which were measured by the same laboratories, reanalyzed and included with the recent references, as follows: 2010Sc08 supersede 2004Sc04 (3138.1 d *11*), 1998Si12 (3138.1 d 16 and 3146 d *11*) and 1992ScZZ (3139.0 d *20*); and 2014Un01 supersede 2012Fi12 (3138 d *4*) and 2002Un02 (3145.2 d *11*). The 3136 d *4* (1983Wa26) and 3138.2 d *61* (1992Un01) values are older results of PTB and NIST superseded by the most recent references from these labs (therefore not being independent measurements). Additional information 4. $T_{1/2}$: Other less precise values (they do not change the adopted $T_{1/2}$ if added to the set of precise values): 3105 d *73* (1970EmZY) 3110 d *180* (1972Em01), 3141 d *37* (1976BaZU), 3214 d *47* (1978GrZR), 3214 d *37* (1981KhZY), 3130 d *26* (1982DeYX), 3101 d *40* (1982HoZJ), 3170 d *55* (1993Th04), 3134 d *59* (1988RaZM), 3079 d *62* (1999Po34). $T_{1/2}$: Also, older measurements, which probably contained ^{152}Eu, are 1952Ka26, 1953Ka12, 1953Lo09, and 1957Ge07. $T_{1/2}$: Values from other evaluations are: 3136.8 d *29* (1991BaZS), 3137.8 d *18* (1991ChZY), 3138.5 d *14* (1992Ra08), 3138.5 d *3* (1993KaZZ), 3138.5 d *14* (1994Ka08), 3138.1 d *14* (2004Wo02, 2004WoZZ), 3141.4 d *15* (2004BeZQ), 3138.16 d *15* (2022Ku03). $\Delta<r^2>$(151-154)=0.69 fm^2 *4* (1986Al33). From other values of 1986Al33, one can deduce $\Delta<r^2>$(152-154)=0.16 and $\Delta<r^2>$(154-156)=0.04. From an evaluation of data on nuclear rms charge radii, 2004An14 report $<r^2>^{1/2}$=5.121 fm *32*.
68.1702[a] *4*	2+	2.2 μs *1*	AB EFG	Jπ: From E1 γ to 3− level and band assignment. $T_{1/2}$: Weighted average of 2.4 μs *4* from (n,γ) (1977St14) and 2.2 μs *1* from (^{3}He,p2nγ) (1988Ka01). Others: 4 μs *1* (1964Be41) and 4.1 μs *4* from IT decay (46 min) (1975Ca22).
71.9118[a] *6*	1+		AB EF	E(level): Level proposed by 1978PrZY, but no deexciting γ reported. Jπ: From lack of transitions from 3− levels, E1 γ from (0−), and band assignment.
80.6560[&] *7* 81.68 *12*	4−		A C E H B	Jπ: From M1 γ to 3− level and band assignment (populated in (p,p′)).
82.8200[b] *6*	1−	20 ns *5*	A DEF	Jπ: From (E1) γ′s to 1+ and 2+ levels and band assignment. $T_{1/2}$: From (n,γ) (1977St14).
99.9484[a] *4*	3+	≤2 ns	AbCDE G	XREF: b(100.39) Jπ: From M1 γ component to 2+ level, M1 from 4+, and band assignment. $T_{1/2}$: From (n,γ) (1984Ro06). Other: 91 ns *10* from (n,γ) (1977St14). 1984Ro06 also report component of 80 ns *15* related to the 31.78 γ peak, but say it does not belong to this level.
100.8612[c] *4*	4+	54 ns *3*	Ab EFG	XREF: b(100.39) Jπ: From E1 γ to 3− level, E2 to 2+, and band assignment. $T_{1/2}$: Weighted average of: 50 ns *10* from IT decay (46.0 min) (1975Ca22); 55 ns *4* from (n,γ) (1977St14); and 54 ns *5* from (n,γ) (1984Ro06). Other: 70 ns *10* (1964Be41).
122.5582[b] *5*	2−		AB EF	Jπ: From M1 γ to 1− level, E1 to 2+, and band assignment.
127.4301[a] *4*	4+	≤10 ns	Abc EfG	XREF: b(129.11)f(128.2) Jπ: From M1 γ component to 4+ level, E2 to 2+ level, and band assignment. $T_{1/2}$: From (n,γ) (1977St14).
129.6795[d] *4*	4−	≤2 ns	Abc EfG	XREF: b(129.11)f(128.2) Jπ: From E1 γ to 4+ level, M1 to 3−, and band assignment. $T_{1/2}$: From (n,γ) (1984Ro06). Other: ≤ 10 ns, from (n,γ) (1977St14).
134.7814[e] *5*	1+		Ab Ef	XREF: b(135.6)f(135.4)

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Adopted Levels, Gammas (continued)

^{154}Eu Levels (continued)

E(level)[†]	Jπ[‡#]	$T_{1/2}$[@]	XREF	Comments
				Jπ: From M1 γ′s to 1^+ and 2^+ levels and band assignment.
136.6967[c] *5*	5^+		Ab EfG	XREF: b(135.6)f(135.4) Jπ: From M1 γ component to 4^+ level and band assignment.
145.3[g] *3*	8^-	46.3 min *4*	A EFG	%IT=100 E(level): From (d,p) (1987Ba52). Jπ: From analogy to $J^\pi=8^-$, 96-min isomer in ^{152}Eu and the observed half-life (Recommended Upper Limits (RUL)). $T_{1/2}$: Weighted average of 48.2 m *17* (1975Ca22), 45.8 m *3* (1976Ch08), 46.8 m *6* (1976Zo01) from IT decay and 47.0 m *5* from (^{3}He,p2nγ) (1988Ka01).
162.4299[f] *6*	1^-	≤0.1 ns	ABCDEF	Jπ: From M1 γ to 2^- level, E1′s to 1^+ and 2^+, and band assignment.
173.6022[b] *5*	3^-		ABCDEF	Jπ: From M1 γ to 2^- level, E1′s to 4^+, and band assignment.
175.4817[d] *5*	5^-		A E	Jπ: From M1 component in γ to 4^- level, E1′s to 4^+ and 5^+, and band assignment.
180.7439[&] *11*	5^-		Ab dEf H	XREF: b(181.07)f(180.0) Jπ: From M1 γ to 4^- level and band assignment (populated in (p,p′)).
180.8092[f] *5*	2^-		Ab dEf	XREF: b(181.07)f(180.0) Jπ: From M1 γ to 3^-, E1′s to 1^+ and 2^+ and band assignment.
185.0509[e] *6*	2^+		ABCD F	Jπ: From M1 γ′s to 1^+ and 4^+ levels, E1 to 1^-, and band assignment.
192.2939[a] *5*	$(5)^+$		A EF	Jπ: From M1 γ to 4^+ level, $J^\pi=3^+,4^+,5^+$. From the band assignment, $J^\pi=5^+$.
196.1211[c] *8*	$(6)^+$		A EF	XREF: E(197.2) Jπ: From M1 γ to 5^+ level, $J^\pi=4^+,5^+,6^+$. From the band assignment, $J^\pi=6^+$.
203.8168[h] *5*	$(4)^+$	0.80 ns *10*	ABCDEF	Jπ: From M1 γ to 4^+ level, E1 to 4^-, $J^\pi=3^+,4^+,5^+$. From the band assignment, $J^\pi=4^+$.
214.0746[f] *4*	3^-	≤0.1 ns	ABCDEF	Jπ: From E1 γ′s to 2^+ and 4^+ levels and band assignment.
219.48 *2*			E	
229.7951[d] *9*	$(6)^-$		A E	Jπ: From (E1) γ to 5^+ level, $J^\pi=(4,5,6)$. From the band assignment, $J^\pi=6^-$.
230.8810[b] *5*	4^-		AB EF	Jπ: From M1 γ′s to 3^- and 4^- levels and band assignment.
235.2787[i] *5*	4^-	≤0.1 ns	ABC EF	Jπ: From M1 γ′s to 3^- and 4^- levels, E1 to 4^+, and band assignment.
239.2889[j] *6*	3^-	0.96 ns *15*	AB EF	Jπ: From M1 γ′s to 3^- and 4^- levels, E1 to 2^+, and band assignment.
249.4186[k] *6*	$(1)^+$	≤0.2 ns	Abc Ef	XREF: b(250.3)f(251.0) Jπ: From M1 γ′s to 1^+ and 2^+ levels, E1′s to 1^- and 2^- levels, $J^\pi=1^+,2^+$. From the band assignment, $J^\pi=1^+$.
251.8253[e] *6*	3^+		Abc f	XREF: b(250.3)f(251.0) Jπ: From M1 γ′s to 2^+ and 4^+ levels, E1 to 2^-, and band assignment.
255.2096[h] *7*	$(5)^+$		AB	Jπ: From M1 γ′s to 4^+ and 5^+ levels, γ′s to 4^- and 5^-, $J^\pi=4^+,5^+$. From the band assignment, $J^\pi=5^+$.
258.1901[a] *10*	$(6)^+$		A F	Jπ: From M1 γ to $(4,5)^+$ level, $J^\pi=4^+,5^+,6^+$. From the band assignment, $J^\pi=6^+$.
272.8512[b] *5*	5^-	≤0.1 ns	A E	Jπ: From M1 γ′s to 4^- levels, E1 to 4^+, and band assignment.
276.7[c]	(7^+)		E	Jπ: From γ to $(6,7)^+$ level and band assignment.
278.5480[k] *6*	2^+		Ab Ef	XREF: b(278.8)f(277.8) Jπ: From M1 γ′s to 1^+ and 2^+ levels, E1′s to 1^- and 3^-, and band assignment.
279.0377[l] *11*	$(0)^-$		Ab Ef	XREF: b(278.8)f(277.8) Jπ: From E1 γ′s to 1^+ levels and band assignment.
279.3791[f] *6*	4^-		Ab Ef	XREF: b(278.8)f(277.8) Jπ: From M1 γ′s to 3^- and 5^- levels, E1 to 4^+, and band assignment.
281.6791[m] *6*	$(3)^+$	0.25 ns *10*	Ab Ef	XREF: b(282.0)f(280.9)

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Adopted Levels, Gammas (continued)

^{154}Eu Levels (continued)

E(level)[†]	Jπ[‡#]	$T_{1/2}$[@]	XREF	Comments
				Jπ: From E1 γ's to 3⁻ and 4⁻ levels, J^π=3⁺,4⁺. From the band assignment, J^π=3⁺.
282.8087[n] 6	(2)⁺	≤0.6 ns	Ab Ef	XREF: b(282.0)f(280.9) Jπ: From M1 γ's to 1⁺ and 2⁺ levels, E1's to 1⁻ and 2⁻, J^π=1⁺,2⁺. From the band assignment, J^π=2⁺.
286.9494[o] 13	(0)⁺		A	Jπ: From M1 γ to 1⁺ levels, E1 to 1⁻, J^π=0⁺,1⁺,2⁺. From the band assignment, J^π=0⁺.
292.8200[h] 9	(6)⁺		A	Jπ: From M1 γ to 5⁺, J^π=4⁺,5⁺,6⁺. From band assignment, J^π=6⁺.
294.0[d]	(7⁻)		E	Jπ: From γ to (6⁻,5⁻) and band assignment.
295.9225[m] 6	(4)⁺		AB EF	Jπ: From M1 γ's to 3⁺ and 4⁺ levels, J^π=3⁺,4⁺. From band assignment, J^π=4⁺.
296.66 8			E	
299.8081[&] 15	(6)⁻		A E H	Jπ: From (M1) γ to 5⁻ level, population in (p,p'), and band assignment.
309.9953[n] 7	3⁺	≤0.1 ns	AB	Jπ: From M1 γ's to 2⁺ and 4⁺ levels, E1's to 2⁻ and 3⁻, and band assignment.
311.3[g]	(9⁻)		E	Jπ: From γ to 8⁻ level and band assignment.
312.2856[i] 3	(5)⁻		A F	Jπ: From E1 γ to 4⁺ level and band assignment.
315.3133[l] 8	(1)⁻		AB	Jπ: From M1 γ's to 1⁻ and 2⁻, E1's to 1⁺ and 2⁺, J^π=1⁻,2⁻. From band assignment, J^π=1⁻.
319.200[p] 13	(3)⁺	≤0.1 ns	AB EF	Jπ: From E1 γ's to 3⁻ and 4⁻ levels, J^π=3⁺,4⁺. From band assignment, J^π=3⁺.
326.8726 10	3⁺,4⁺		Abcd f	XREF: b(327.96)f(327.07) Jπ: From E1 γ to 4⁻ level, M1's to 3⁺ and 4⁺.
328.0177[j] 7	(4)⁻		AbcdEf	XREF: b(327.96)f(327.07) Jπ: From E1 γ to 4⁺ level, M1's to 3⁻ levels, J^π=3⁻,4⁻. From band assignment, J^π=4⁻.
332.324[m] 3	(5)⁺		A	Jπ: From E2 γ's to 4⁺ and 5⁺ levels, γ to 4⁻, J^π=3⁺,4⁺,5⁺. From band assignment, J^π=5⁺.
334.8346[o] 10	(1)⁺		Abcd f	XREF: b(334.4)f(335.8) Jπ: From E1 γ's to 1⁻ levels, M1 γ to 2⁺, J^π=1⁺,2⁺. From the band assignment, J^π=1⁺.
335.7621[k] 8	3⁺		AbcdEf	XREF: b(334.4)f(335.8) Jπ: From E1 γ's to 2⁻ and 3⁻ levels, M1's to 2⁺, 3⁺, and 4⁺, and band assignment.
338.0996[e] 14	4⁺		AbcdEf	XREF: b(341.93)f(341.8) Jπ: From E1 γ to 3⁻ level, M1's to 4⁺, γ to 5⁻, and band assignment.
342.1315[l] 7	2⁻		AbcdEf	XREF: b(341.93)f(341.8) Jπ: From E1 γ's to 1⁺ and 3⁺ levels.
344.0			E	
349.8207[o] 8	2⁺		ABCD F	Jπ: From E1 γ's to 1⁻ and 3⁻ levels.
356			E	
356.1031[b] 11	(6)⁻		A EF	Jπ: From M1 γ to 5⁻ level, J^π=4⁻,5⁻,6⁻. From the band assignment, J^π=6⁻.
362.5962[r] 20	(1)⁻		Ab Ef	XREF: b(363.21)f(364.01) Jπ: From E1 γ to 1⁺ level, M1 γ's to 1⁻ and 2⁻, J^π=1⁻,2⁻. From band assignment, J^π=1⁻.
363.9665 16	(5)⁻	≤0.1 ns	Ab Ef	XREF: b(363.21)f(364.01) Jπ: From E1 γ to 4⁺ level, M1,E2 to 5⁻, J^π=4⁻,5⁻. Possible K^π=5⁻ bandhead, conf=(π 5/2[413])+(ν 5/2[523]) (1987Ba52).
364.0549[n] 18	(4)⁺		Ab f	XREF: b(363.21)f(364.01) Jπ: From E1 γ to 3⁻, M1 γ to 4⁺, J^π=3⁺,4⁺. From the band assignment, J^π=4⁺.
367	(8⁻)		E	Jπ: From γ's to (7⁻) and (7⁺) levels and pattern of J^π's from in-beam studies.
371.8996[q] 9	2⁺		AB DEF	XREF: E(371.5,371.8)F(373.0) Jπ: From E1 γ's to 1⁻ and 3⁻ levels.
375.9			E	

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Adopted Levels, Gammas (continued)

^{154}Eu Levels (continued)

E(level)[†]	J$^{\pi}$[‡#]	XREF	Comments
376.8[c]	(8$^+$)	E	J$^{\pi}$: From γ's to (7$^-$) and (7$^+$) levels and band assignment.
378.7268[f] *12*	(5)$^-$	A EF	XREF: E(378,378.7) J$^{\pi}$: From M1 γ to 4$^-$ level and band assignment.
390.4267[r] *15*	2$^-$	AbcdEf	XREF: b(390.30)E(390.2)f(389.8) J$^{\pi}$: From E1 γ's to 1$^+$ and 3$^+$ levels.
390.4489[p] *14*	4$^+$	AbcdEf	XREF: b(390.30)E(390.5)f(389.8) J$^{\pi}$: From E1 γ's to 3$^-$ and 5$^-$ levels.
400		E	
401		E	
401.091[o] *3*	(3)$^+$	Abcd f	XREF: b(402.0)f(403.1) J$^{\pi}$: From E1 γ to 2$^-$ level, M1 γ's to 2$^+$, J^{π}=1$^+$,2$^+$,3$^+$. From the band assignment, J^{π}=3$^+$.
402.7890[s] *26*	(1)$^+$	Abcd f	XREF: b(402.0)f(403.1) J$^{\pi}$: From M1 γ's to 1$^+$ and 2$^+$ levels, J^{π}=1$^+$,2$^+$. From the band assignment, J^{π}=1$^+$.
403.5175[k] *9*	(4)$^+$	Abcd f	XREF: b(402.0)f(403.1) J$^{\pi}$: From M1 γ to 3$^+$ level, γ's to 4$^-$ and 4$^+$, J^{π}=3$^+$,4$^+$. From the band assignment, J^{π}=4$^+$.
407.0338[l] *21*	(3)$^-$	Abcd F	XREF: b(408.23)F(406.5) J$^{\pi}$: From M1 γ's to 3$^-$ and 4$^-$ levels, J^{π}=3$^-$,4$^-$. From band assignment, J^{π}=3$^-$.
410.0748[t] *26*	(1)$^-$	Abcd F	XREF: b(408.23)F(406.5) J$^{\pi}$: From M1 γ to 1$^-$ level, γ to 2$^+$, J^{π}=1$^-$,2$^-$. From band assignment, J^{π}=1$^-$.
411.8891 *23*	4$^+$	A F	J$^{\pi}$: From M1 γ's to 3$^+$ and 5$^+$ levels.
414.698[t] *5*	(0)$^-$	A	J$^{\pi}$: From M1 γ to 1$^-$ level and band assignment.
415.6551 *10*	(5)$^+$	A E	J$^{\pi}$: From E1 γ's to 4$^-$ levels, M1 to 5$^+$, J^{π}=4$^+$,5$^+$. Possible bandhead of a K^{π}=5$^+$ band, conf=(π 5/2[413])+(ν 5/2[642]) (1987Ba52).
419.6903[u] *11*	2$^-$	ABC EF	XREF: F(418.6) J$^{\pi}$: From E1 γ's to 1$^+$ and 2$^+$ levels, E2 to (0)$^-$, and band assignment.
425.472[q] *7*	(1)$^+$	Abcd	XREF: b(424.6) J$^{\pi}$: From E1 γ to 2$^-$ level, M1 to 1$^+$, J^{π}=1$^+$,2$^+$. From the band assignment, J^{π}=1$^+$.
425.7890 *16*	(4)$^-$	Abcd	XREF: b(424.6) J$^{\pi}$: From M1 γ's to 4$^-$ and 5$^-$ levels, J^{π}=4$^-$,5$^-$. Possible K^{π}=4$^-$ bandhead, conf=(π 5/2[532])+(ν 3/2[651]) (1987Ba52).
428.1890[j] *20*	(5)$^-$	Abcd f	XREF: b(429.1)f(428.3) J$^{\pi}$: From E1 γ's to 4$^+$ and 5$^+$ levels, M1 to 5$^-$, J^{π}=4$^-$,5$^-$. From band assignment, J^{π}=5$^-$.
428.7117 *17*	(4)$^+$	Abcd f	XREF: b(429.1)f(428.3) J$^{\pi}$: From E1 γ's to 4$^-$ and 5$^-$, J^{π}=4$^+$,5$^+$. Possible K^{π}=4$^+$ bandhead, conf=(π 5/2[532])+(ν 3/2[532]) (1987Ba52).
429.9187[r] *10*	(3)$^-$	Abcd f	XREF: b(429.1)f(428.3) J$^{\pi}$: From E1 γ to 2$^+$ level, M1 to 3$^-$, and band assignment.
435.940 *3*	(1,2)$^-$	AB D	J$^{\pi}$: From E1 γ's to 1$^+$ and 2$^+$ levels.
438.1[&] *5*	7$^-$	E H	J$^{\pi}$: From population of ground-state band in (p,p$'$) and expected band structure.
446.0 *8*		F	
451.0074[s] *24*	2$^+$	A	J$^{\pi}$: From M1 γ's to 1$^+$ and 3$^+$ levels.
451.356[t] *3*	2$^-$	AB D F	J$^{\pi}$: From E1 γ's to 1$^+$ and 3$^+$ levels.
454		B E	
467.5320 *23*	(4)$^-$	ABC	J$^{\pi}$: From M1 γ to 4$^-$ level, J^{π}=3$^-$,4$^-$,5$^-$. Possible K^{π}=4$^-$ bandhead, conf=(π 5/2[532])+(ν 3/2[402]) (1987Ba52).
471.1510[t] *24*	(3)$^-$	Abcd f	XREF: b(471.59)f(471.6) J$^{\pi}$: From E1 γ to 3$^+$ level, M1 to 4$^-$, J^{π}=3$^-$,4$^-$. From the band assignment, J^{π}=3$^-$.
471.8890 *10*	4$^-$	Abcd f	XREF: b(471.59)f(471.6) J$^{\pi}$: From M1 γ to 4$^-$, E1 to 4$^+$, and M1 γ's to 3$^-$ and 5$^-$ levels. Possible bandhead of a K^{π}=4$^-$ band, conf=(π 3/2[411])-(ν 11/2[505]) (1987Ba52).
475		E	
479.142[u] *3*	3$^-$	ABCD F	J$^{\pi}$: From E1 γ's to 2$^+$ and 3$^+$ levels and γ to 4$^+$.
480.4[p]	(5$^+$)	E	J$^{\pi}$: From γ's to 4$^-$ and 5$^-$ and band assignment.

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Adopted Levels, Gammas (continued)

^{154}Eu Levels (continued)

E(level)[†]	Jπ[‡#]	XREF	Comments
484.6[g]	(10⁻)	E	Jπ: From γ to (9⁻) level and band assignment.
485.1826[r] *20*	4⁻	Abcd f	XREF: b(485.12)f(485.9) Jπ: From M1 γ to 4⁻ level, γ′s to 2⁻, 3⁺, and 5⁺, and band assignment.
486.3840 *16*	(3)⁺	Abcd f	XREF: b(485.12)f(485.9) Jπ: From M1 γ′s to 3⁺ and 4⁺ levels, J^π=3⁺,4⁺. Probable K^π=3⁺ bandhead, conf=(π 5/2[413])+(ν 1/2[400]), based in part on (d,p) data and model considerations (1987Ba52).
490.5 *6*		F	
494[c]	(9⁺)	E	Jπ: From γ to (8⁺) level and band assignment.
495.3 *5*		EF	
505.1400 *20*	3⁻	AB F	XREF: F(506.2) Jπ: From M1 γ′s to 2⁻ and 4⁻ levels.
513.271[l] *4*	(4)⁻	Abcd f	XREF: b(514.82)f(516.2) Jπ: From E1 γ to 3⁺ level, M1 γ to 3⁻, J^π=2⁻,3⁻,4⁻. From band assignment, J^π=4⁻.
515.9284 *17*	3⁻	Abcd f	XREF: b(514.82)f(516.2) Jπ: From E1 γ′s 2⁺ and 4⁺ levels. Probable K^π=3⁻ bandhead, conf=(π 5/2[413])+(ν 1/2[530]) (1987Ba52).
521.0540[s] *27*	3⁺	ABCD F	Jπ: From M1 γ′s to 2⁺ levels and γ′s to 4⁺ and 4⁻.
532.7393 *16*	3⁻,4⁻	AB D	Jπ: From M1 γ′s to 3⁻ and 4⁻ levels, E1 γ to 3⁺.
538.8 *2*		F	
545.949 *3*	2⁻	AB F	Jπ: From M1 γ′s to 1⁻ and 3⁻ levels.
549.587[v] *3*	(1)⁻	Ab	XREF: b(550.73) Jπ: From M1 γ to (0)⁻ level. Possible K^π=1⁻ bandhead.
551.3139 *24*	(4,5)⁻	Ab	XREF: b(550.73) Jπ: From M1 γ′s to 4⁻ and 5⁻ levels.
553.734[r] *4*	(5)⁻	A	Jπ: From E1 γ to 4⁺ level, M1 to 5⁻, J^π=4⁻,5⁻. From band assignment, J^π=5⁻.
555.3030 *20*	(3,4)⁻	AB	Jπ: From M1 γ to 3⁻ level and γ to 4⁺.
566		E	
572.469 *4*	4⁻	ABC	Jπ: From M1 γ to 5⁻ level, E2 to 3⁻, and γ to 3⁺.
584.3902 *25*	3⁻	ABCD	Jπ: From E1 γ to 2⁺ level, M1 to 3⁻, and γ to 4⁺.
589.3[p]	(6⁺)	E	Jπ: From γ to 6⁻ level and band assignment.
593.142 *6*	3⁻	Abc	XREF: b(592.58)c(592.58) Jπ: From E2 γ to 3⁻ level and γ′s to 2⁺ and 4⁺.
593.3[&] *7*	(8⁻)	E H	XREF: H(596) Jπ: From γ to 7⁻ level and band assignment (populated in (p,p′)).
593.7260 *23*	4⁻	Abc	XREF: b(592.58)c(592.58) Jπ: From M1 γ′s to 3⁻ and 5⁻ levels.
599.633[v] *6*	(2)⁻	ABC	Jπ: From M1 γ′s to 1⁻ and 4⁻, γ′s to 3⁺, 3⁻, and (0)⁻ and band assignment.(Note that the M1 deexcitation to the 1⁻ and 4⁻ levels is problematic.).
619.6 *3*		A	
635.8 *6*		A	
663.5 *3*		A	
702		E	
722[p]	(7⁺)	E	Jπ: From γ to 6⁻ level and band assignment.
741.3 *3*		A	
765.8[&] *8*	(9⁻)	E	Jπ: From γ to (8⁻) level and band assignment.
784.1 *6*		A	
796.70 *23*		A	
828.6 *5*		A	
849.3 *7*		A	
857.3 *8*		A	
905.6 *3*		A	
945.2 *3*		A	
952[&] *2*	(10⁻)	E	Jπ: From γ to (9⁻) level and band assignment.
960.5 *4*		A	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{154}Eu Levels (continued)

E(level)†	XREF	E(level)†	XREF	E(level)†	XREF	E(level)†	XREF
970.36 *20*	A	1173.1 *3*	A	1289.5 *9*	A	1344.4 *4*	A
1045.5 *4*	A	1211.13 *21*	A	1308.1 *11*	A	1407.5 *7*	A
1068.55 *23*	A	1217.7 *3*	A	1316.8 *11*	A	1423.4 *8*	A
1120.0 *3*	A	1263.6 *6*	A	1330.76 *23*	A	1434.7 *8*	A

† The best value from the individual excitation modes; those from the (n,γ) study are from a least-squares fit to γ energies as quoted by 1987Ba52.

‡ 1987Ba52 give a detailed discussion of the model-independent arguments for most of the J^π assignments included here, as well as the model-dependent arguments for the J^π, band, and configuration assignments. These assignments are based on: (1) measured γ multipolarities; (2) the existence of rotational bands and the configurations that are expected to occur at low energy; and (3) the completeness of the set of observed levels. These J^π arguments are not always listed here and should be referred to by the interested reader.

In a number of cases, the J^π assignments from the (n,γ) study (1987Ba52) are not unique. In these instances, where the band structure seems well established (i.e., at least three levels observed), the evaluator has used band-structure considerations to select from the possibilities only one value. These spins are generally shown in parentheses.

@ From (n,γ) by 1984Ro06, unless otherwise noted.

& Band(A): $K^\pi=3^-$ band, conf=(π 5/2[413])-(ν 11/2[505]). A=10.21, B=−0.0041.

a Band(B): $K^\pi=1^+$ band, conf=(π 5/2[413])-(ν 3/2[651]).

b Band(C): $K^\pi=1^-$ band, conf=(π 5/2[413])-(ν 3/2[521]). A=11.08, B=−0.143.

c Band(D): $K^\pi=4^+$ band, conf=(π 5/2[413])+(ν 3/2[402]).

d Band(E): $K^\pi=4^-$ band, conf=(π 5/2[413])+(ν 3/2[532]).

e Band(F): $K^\pi=1^+$ band, conf=(π 5/2[413])-(ν 3/2[402]). A=13.72, B=−0.144.

f Band(G): $K^\pi=1^-$ band, conf=(π 5/2[413])-(ν 3/2[532]).

g Band(H): $K^\pi=8^-$ band, conf=(π 5/2[413])+(ν 11/2[505]).

h Band(I): $K^\pi=4^+$ band, conf=(π 5/2[413])+(ν 3/2[651]). A=9.70, B=−0.091.

i Band(J): $K^\pi=4^-$ band, conf=(π 5/2[413])+(ν 3/2[521]). A=7.701.

j Band(K): $K^\pi=3^-$ band, conf=(π 3/2[411])+(ν 3/2[521]). A=13.000, B=−0.060.

k Band(L): $K^\pi=1^+$ band, conf=(π 5/2[532])-(ν 3/2[532]).

l Band(M): $K^\pi=0^-$ band, conf=(π 3/2[411])-(ν 3/2[521]).

m Band(N): $K^\pi=3^+$ band, conf=(π 3/2[411])+(ν 3/2[651]).

n Band(O): $K^\pi=2^+$ band, conf=(π 5/2[413])-(ν 1/2[400]).

o Band(P): $K^\pi=0^+$ band, conf=(π 5/2[413])-(ν 5/2[642]).

p Band(Q): $K^\pi=3^+$ band, conf=(π 5/2[532])-(ν 11/2[505]). A=8.748, B=0.005.

q Band(R): $K^\pi=0^+$ band, conf=(π 3/2[411])-(ν 3/2[651]).

r Band(S): $K^\pi=1^-$ band, conf=(π 5/2[532])-(ν 3/2[402]). A=7.258, B=−0.038.

s Band(T): $K^\pi=1^+$ band, on conf=(π 5/2[532])-(ν 3/2[521]). A=12.359, B=−0.038.

t Band(U): $K^\pi=0^-$ band, conf=(π 5/2[413])-(ν 5/2[523]).

u Band(V): $K^\pi=2^-$ band, conf=(π 5/2[413])-(ν 1/2[530]). A=9.909.

v Band(W): Proposed $K^\pi=1^-$ band, conf=(π 5/2[532])-(ν3/2[651]).

Adopted Levels, Gammas (continued)

$\gamma(^{154}Eu)$

Additional information 5.
Primary γ's from (n,γ) are not included here; see the ^{153}Eu(n,γ) data sets for this information.
Unplaced γ's are not given here; see ^{153}Eu(n,γ) and ^{154}Sm(^{3}He,p2nγ).

E_i(level)	J_i^π	E_γ †	I_γ	E_f	J_f^π	Mult. ‡	δ ‡	α #	$I_{(\gamma+ce)}$	Comments
68.1702	2^+	68.1711 *5*	100	0.0	3^-	E1		0.793 *11*		B(E1)(W.u.)=1.89×10^{-7} *9* α(K)=0.660 *9*; α(L)=0.1046 *15*; α(M)=0.02256 *32* α(N)=0.00505 *7*; α(O)=0.000742 *10*; α(P)=5.22×10^{-5} *7* δ: δ(M2/E1) < 0.07 from 1977St14.
71.9118	1^+	(3.74)		68.1702	2^+					
80.6560	4^-	80.6559 *11*	100	0.0	3^-	M1		3.43 *5*		α(K)=2.90 *4*; α(L)=0.416 *6*; α(M)=0.0898 *13* α(N)=0.02057 *29*; α(O)=0.00326 *5*; α(P)=0.000321 *4*
82.8200	1^-	10.905 *14*	34 *7*	71.9118	1^+	(E1)		21.73 *31*		B(E1)(W.u.)=1.7×10^{-4} *+6−4* α(L)=16.98 *24*; α(M)=3.85 *6* α(N)=0.807 *12*; α(O)=0.0891 *13*; α(P)=0.00315 *4*
		14.634 *17*	100 *19*	68.1702	2^+	(E1)		9.77 *14*		B(E1)(W.u.)=2.0×10^{-4} *+7−5* α(L)=7.66 *11*; α(M)=1.703 *24* α(N)=0.363 *5*; α(O)=0.0434 *6*; α(P)=0.001742 *25*
99.9484	3^+	31.7783 *4*	100	68.1702	2^+	M1+E2	0.030 *3*	8.43 *13*		α(L)=6.61 *10*; α(M)=1.433 *22* α(N)=0.327 *5*; α(O)=0.0515 *8*; α(P)=0.00491 *7* δ: From 1987Ba52. Other: 0.08 (1976Ch08).
100.8612	4^+	(0.91)		99.9484	3^+	[M1,E2]			115	
		32.700 *4*	0.30 *3*	68.1702	2^+	E2		265 *4*		B(E2)(W.u.)=5.3 *+7−6* α(L)=205.4 *29*; α(M)=48.0 *7* α(N)=10.59 *15*; α(O)=1.399 *20*; α(P)=0.000817 *11*
		100.8592 *10*	100 *2*	0.0	3^-	E1		0.277 *4*		B(E1)(W.u.)=1.32×10^{-6} *+14−12* α(K)=0.2332 *33*; α(L)=0.0347 *5*; α(M)=0.00747 *10* α(N)=0.001681 *24*; α(O)=0.0002525 *35*; α(P)=1.949×10^{-5} *27* δ: δ(M2/E1) < 0.12 (1977St14).
122.5582	2^-	39.7374 *7*	100 *6*	82.8200	1^-	M1		4.21 *6*		α(L)=3.31 *5*; α(M)=0.715 *10* α(N)=0.1636 *23*; α(O)=0.0259 *4*; α(P)=0.00254 *4* δ: < 0.33.
		50.6419 *15*	6.5 *12*	71.9118	1^+	(E1)		1.706 *24*		α(K)=1.399 *20*; α(L)=0.2417 *34*; α(M)=0.0523 *7* α(N)=0.01162 *16*; α(O)=0.001671 *23*; α(P)=0.0001079 *15*
		54.3872 *15*	7.7 *7*	68.1702	2^+	E1		1.429 *20*		α(K)=1.178 *16*; α(L)=0.1977 *28*; α(M)=0.0427 *6* α(N)=0.00952 *13*; α(O)=0.001376 *19*; α(P)=9.08×10^{-5} *13*
127.4301	4^+	27.4815 *3*	100 *19*	99.9484	3^+	M1+E2	0.032 *5*	13.18 *28*		α(L)=10.34 *22*; α(M)=2.24 *5* α(N)=0.512 *11*; α(O)=0.0803 *16*; α(P)=0.00754 *11* δ: From 1987Ba52. Other: 0.08 (1976Ch08).

From ENSDF

$^{154}_{63}Eu_{91}$-8

Adopted Levels, Gammas (continued)

γ(^{154}Eu) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[‡]	δ[‡]	α[#]	Comments
127.4301	4$^+$	59.260 *3*	4.9 *10*	68.1702	2$^+$	E2		17.96 *25*	α(K)=3.43 *5*; α(L)=11.24 *16*; α(M)=2.64 *4* α(N)=0.584 *8*; α(O)=0.0779 *11*; α(P)=0.000284 *4*
129.6795	4$^-$	28.8182 *2*	100 *10*	100.8612	4$^+$	E1		1.496 *21*	α(L)=1.176 *16*; α(M)=0.256 *4* α(N)=0.0561 *8*; α(O)=0.00759 *11*; α(P)=0.000403 *6*
		129.6773 *9*	1.49 *12*	0.0	3$^-$	M1		0.880 *12*	α(K)=0.745 *10*; α(L)=0.1062 *15*; α(M)=0.02295 *32* α(N)=0.00526 *7*; α(O)=0.000834 *12*; α(P)=8.24×10^{-5} *12*
134.7814	1$^+$	62.8705 *23*	76 *9*	71.9118	1$^+$	M1		7.05 *10*	α(K)=5.95 *8*; α(L)=0.859 *12*; α(M)=0.1856 *26* α(N)=0.0425 *6*; α(O)=0.00673 *9*; α(P)=0.000662 *9*
		66.6114 *4*	100 *6*	68.1702	2$^+$	M1		5.96 *8*	α(K)=5.03 *7*; α(L)=0.725 *10*; α(M)=0.1568 *22* α(N)=0.0359 *5*; α(O)=0.00569 *8*; α(P)=0.000559 *8* δ: < 0.4.
136.6967	5$^+$	35.8352 *4*	100	100.8612	4$^+$	M1+E2	0.09 *2*	7.0 *6*	α(L)=5.5 *5*; α(M)=1.21 *12* α(N)=0.274 *26*; α(O)=0.0420 *34*; α(P)=0.00342 *5*
145.3	8$^-$	(8.6)		136.6967	5$^+$	[E3]		≈5.6×10^7	B(E3)(W.u.)=0.00160 *12* α: For a discussion of the problems associated with this value, see the ^{154}Eu IT decay data set. E_γ: From difference in level energies. Mult.: Half-life indicates mult=E3 or M3. The analogous state in ^{152}Eu decays via an E3 transition.
162.4299	1$^-$	39.8704 *10*	3.5 *7*	122.5582	2$^-$	M1		4.17 *6*	α(L)=3.28 *5*; α(M)=0.708 *10* α(N)=0.1620 *23*; α(O)=0.0256 *4*; α(P)=0.002515 *35*
		79.6105 *5*	2.1 *3*	82.8200	1$^-$	[M1,E2]		4.6 *11*	α(K)=2.5 *5*; α(L)=1.6 *12*; α(M)=0.37 *28* α(N)=0.08 *6*; α(O)=0.011 *8*; α(P)=2.4×10^{-4} *9*
		90.5157 *22*	62 *3*	71.9118	1$^+$	E1		0.371 *5*	α(K)=0.312 *4*; α(L)=0.0470 *7*; α(M)=0.01013 *14* α(N)=0.002277 *32*; α(O)=0.000340 *5*; α(P)=2.56×10^{-5} *4*
		94.2626 *16*	100 *5*	68.1702	2$^+$	E1		0.333 *5*	α(K)=0.280 *4*; α(L)=0.0420 *6*; α(M)=0.00904 *13* α(N)=0.002032 *28*; α(O)=0.000304 *4*; α(P)=2.314×10^{-5} *32*
173.6022	3$^-$	46.1720 *6*	50 *5*	127.4301	4$^+$	E1		0.399 *6*	α(L)=0.314 *4*; α(M)=0.0678 *9* α(N)=0.01506 *21*; α(O)=0.002147 *30*; α(P)=0.0001347 *19*
		51.0429 *5*	77 *10*	122.5582	2$^-$	M1		12.81 *18*	α(K)=10.79 *15*; α(L)=1.582 *22*; α(M)=0.342 *5* α(N)=0.0783 *11*; α(O)=0.01239 *17*; α(P)=0.001217 *17* δ: < 0.33.
		73.6546 *5*	7.9 *8*	99.9484	3$^+$				
		105.4308 *12*	100 *5*	68.1702	2$^+$	E1		0.2460 *34*	α(K)=0.2071 *29*; α(L)=0.0306 *4*; α(M)=0.00660 *9* α(N)=0.001485 *21*; α(O)=0.0002235 *31*; α(P)=1.741×10^{-5} *24*
175.4817	5$^-$	38.7850 *2*	40 *3*	136.6967	5$^+$	E1		0.651 *9*	α(L)=0.512 *7*; α(M)=0.1110 *16* α(N)=0.02453 *34*; α(O)=0.00344 *5*; α(P)=0.0002034 *28*
		45.8021 *4*	100 *8*	129.6795	4$^-$	M1+E2	0.08 *1*	3.08 *9*	α(L)=2.41 *7*; α(M)=0.526 *16* α(N)=0.120 *4*; α(O)=0.0186 *5*; α(P)=0.001665 *23*
		74.6205 *10*	46.1 *20*	100.8612	4$^+$	E1		0.623 *9*	α(K)=0.520 *7*; α(L)=0.0810 *11*; α(M)=0.01747 *24* α(N)=0.00391 *5*; α(O)=0.000579 *8*; α(P)=4.16×10^{-5} *6*

From ENSDF

$^{154}_{63}Eu_{91}$-9

Adopted Levels, Gammas (continued)

γ(^{154}Eu) (continued)

E_i(level)	J_i^π	E_γ †	I_γ	E_f	J_f^π	Mult.‡	α#	Comments
180.7439	5⁻	100.0880 *10*	100	80.6560	4⁻	M1	1.841 *26*	α(K)=1.557 *22*; α(L)=0.2228 *31*; α(M)=0.0481 *7* α(N)=0.01102 *15*; α(O)=0.001748 *24*; α(P)=0.0001723 *24*
180.8092	2⁻	46.0278 *10*	11.0 *10*	134.7814	1⁺			
		80.8607 *9*	56 *3*	99.9484	3⁺	E1	0.503 *7*	α(K)=0.421 *6*; α(L)=0.0646 *9*; α(M)=0.01393 *19* α(N)=0.00312 *4*; α(O)=0.000464 *6*; α(P)=3.41×10^{-5} *5* E_γ: Placement questionable since J^π's require M2 multipolarity.
		108.8929 *15*	100 *5*	71.9118	1⁺	E1	0.2254 *32*	α(K)=0.1898 *27*; α(L)=0.0280 *4*; α(M)=0.00602 *8* α(N)=0.001357 *19*; α(O)=0.0002045 *29*; α(P)=1.603×10^{-5} *22*
		112.6393 *16*	24.5 *13*	68.1702	2⁺	E1	0.2057 *29*	α(K)=0.1733 *24*; α(L)=0.0254 *4*; α(M)=0.00548 *8* α(N)=0.001234 *17*; α(O)=0.0001864 *26*; α(P)=1.471×10^{-5} *21*
		180.804 *3*	1.1 *3*	0.0	3⁻	M1	0.347 *5*	α(K)=0.294 *4*; α(L)=0.0417 *6*; α(M)=0.00900 *13* α(N)=0.002062 *29*; α(O)=0.000327 *5*; α(P)=3.25×10^{-5} *5*
185.0509	2⁺	50.2690 *13*	70 *11*	134.7814	1⁺	M1	13.34 *19*	α(K)=11.23 *16*; α(L)=1.655 *23*; α(M)=0.358 *5* α(N)=0.0819 *11*; α(O)=0.01296 *18*; α(P)=0.001273 *18*
		85.1003 *10*	100 *4*	99.9484	3⁺	M1	2.93 *4*	α(K)=2.481 *35*; α(L)=0.356 *5*; α(M)=0.0769 *11* α(N)=0.01761 *25*; α(O)=0.00279 *4*; α(P)=0.000275 *4*
		102.2250 *25*	40.9 *22*	82.8200	1⁻	E1	0.267 *4*	α(K)=0.2250 *31*; α(L)=0.0334 *5*; α(M)=0.00719 *10* α(N)=0.001619 *23*; α(O)=0.0002434 *34*; α(P)=1.883×10^{-5} *26*
		113.1398 *6*	25.2 *22*	71.9118	1⁺	E2,M1	1.42 *13*	α(K)=0.97 *13*; α(L)=0.36 *20*; α(M)=0.08 *5* α(N)=0.018 *10*; α(O)=0.0026 *13*; α(P)=9.2×10^{-5} *29*
		116.8813 *16*	48 *3*	68.1702	2⁺	M1	1.182 *17*	α(K)=1.000 *14*; α(L)=0.1428 *20*; α(M)=0.0309 *4* α(N)=0.00707 *10*; α(O)=0.001121 *16*; α(P)=0.0001106 *15*
192.2939	(5)⁺	64.8638 *3*	100 *7*	127.4301	4⁺	M1	6.44 *9*	α(K)=5.44 *8*; α(L)=0.784 *11*; α(M)=0.1694 *24* α(N)=0.0388 *5*; α(O)=0.00614 *9*; α(P)=0.000604 *8*
		92.3440 *22*	4.6 *6*	99.9484	3⁺			
196.1211	(6)⁺	59.4244 *6*	100 *4*	136.6967	5⁺	M1	8.29 *12*	α(K)=7.00 *10*; α(L)=1.013 *14*; α(M)=0.2189 *31* α(N)=0.0501 *7*; α(O)=0.00794 *11*; α(P)=0.000780 *11*
203.8168	(4)⁺	74.1383 *9*	25.5 *10*	129.6795	4⁻	E1	0.634 *9*	B(E1)(W.u.)=5.9×10^{-5} *+9−7* α(K)=0.529 *7*; α(L)=0.0825 *12*; α(M)=0.01780 *25* α(N)=0.00399 *6*; α(O)=0.000589 *8*; α(P)=4.23×10^{-5} *6*
		102.9558 *3*	100 *3*	100.8612	4⁺	M1	1.698 *24*	B(M1)(W.u.)=0.0081 *+12−9* α(K)=1.436 *20*; α(L)=0.2054 *29*; α(M)=0.0444 *6* α(N)=0.01016 *14*; α(O)=0.001611 *23*; α(P)=0.0001589 *22* δ: < 0.33.
214.0746	3⁻	33.2651 *3*	12.6 *10*	180.8092	2⁻	(M1)	7.13 *10*	α(L)=5.59 *8*; α(M)=1.209 *17* α(N)=0.277 *4*; α(O)=0.0438 *6*; α(P)=0.00429 *6*
		84.4003 *16*	1.85 *20*	129.6795	4⁻	[M1,E2]	3.8 *8*	α(K)=2.2 *4*; α(L)=1.2 *9*; α(M)=0.29 *21* α(N)=0.06 *5*; α(O)=0.009 *6*; α(P)=2.1×10^{-4} *8*
		86.6444 *2*	21.9 *13*	127.4301	4⁺	E1	0.418 *6*	α(K)=0.350 *5*; α(L)=0.0532 *7*; α(M)=0.01146 *16* α(N)=0.00257 *4*; α(O)=0.000384 *5*; α(P)=2.86×10^{-5} *4*

From ENSDF

$^{154}_{63}Eu_{91}$-10

Adopted Levels, Gammas (continued)

$\gamma(^{154}Eu)$ (continued)

E_i(level)	J_i^π	E_γ †	I_γ	E_f	J_f^π	Mult.‡	α#	Comments
214.0746	3^-	91.5170 *8*	4.37 *20*	122.5582	2^-	[M1,E2]	2.9 *5*	α(K)=1.75 *27*; α(L)=0.9 *6*; α(M)=0.20 *14* α(N)=0.045 *31*; α(O)=0.006 *4*; α(P)=1.7×10^{-4} *6*
		113.2135 *19*	1.32 *7*	100.8612	4^+	[E1]	0.2029 *28*	α(K)=0.1710 *24*; α(L)=0.02509 *35*; α(M)=0.00540 *8* α(N)=0.001217 *17*; α(O)=0.0001838 *26*; α(P)=1.452×10^{-5} *20*
		114.1248 *9*	3.6 *3*	99.9484	3^+	E1	0.1985 *28*	α(K)=0.1673 *23*; α(L)=0.02453 *34*; α(M)=0.00528 *7* α(N)=0.001190 *17*; α(O)=0.0001798 *25*; α(P)=1.422×10^{-5} *20*
		131.2560 *16*	2.12 *20*	82.8200	1^-	(E2)	0.915 *13*	α(K)=0.545 *8*; α(L)=0.287 *4*; α(M)=0.0666 *9* α(N)=0.01481 *21*; α(O)=0.002045 *29*; α(P)=4.22×10^{-5} *6*
		145.9048 *4*	100 *3*	68.1702	2^+	E1	0.1021 *14*	α(K)=0.0863 *12*; α(L)=0.01237 *17*; α(M)=0.00266 *4* α(N)=0.000601 *8*; α(O)=9.17×10^{-5} *13*; α(P)=7.59×10^{-6} *11*
219.48		118.62 *2*	100	100.8612	4^+			
229.7951	$(6)^-$	54.3129 *10*	61 *6*	175.4817	5^-			
		93.0991 *13*	100 *5*	136.6967	5^+	(E1)	0.344 *5*	α(K)=0.289 *4*; α(L)=0.0435 *6*; α(M)=0.00936 *13* α(N)=0.002104 *29*; α(O)=0.000315 *4*; α(P)=2.388×10^{-5} *33*
230.8810	4^-	57.2792 *5*	39 *4*	173.6022	3^-	M1	9.22 *13*	α(K)=7.79 *11*; α(L)=1.128 *16*; α(M)=0.2438 *34* α(N)=0.0558 *8*; α(O)=0.00884 *12*; α(P)=0.000868 *12*
		101.2002 *6*	29.7 *12*	129.6795	4^-	M1	1.783 *25*	α(K)=1.508 *21*; α(L)=0.2158 *30*; α(M)=0.0466 *7* α(N)=0.01068 *15*; α(O)=0.001693 *24*; α(P)=0.0001670 *23*
		103.4498 *20*	3.9 *9*	127.4301	4^+			
		130.9318 *7*	100 *4*	99.9484	3^+	E1	0.1368 *19*	α(K)=0.1156 *16*; α(L)=0.01671 *23*; α(M)=0.00360 *5* α(N)=0.000812 *11*; α(O)=0.0001233 *17*; α(P)=1.001×10^{-5} *14*
235.2787	4^-	42.9794 *26*	18.8 *23*	192.2939	$(5)^+$	[E1]	0.488 *7*	α(L)=0.384 *5*; α(M)=0.0831 *12* α(N)=0.01841 *26*; α(O)=0.00261 *4*; α(P)=0.0001597 *22*
		61.6764 *4*	40.4 *23*	173.6022	3^-	M1	7.45 *10*	α(K)=6.29 *9*; α(L)=0.908 *13*; α(M)=0.1963 *27* α(N)=0.0449 *6*; α(O)=0.00712 *10*; α(P)=0.000700 *10*
		105.6000 *6*	38.5 *23*	129.6795	4^-	M1	1.579 *22*	α(K)=1.336 *19*; α(L)=0.1910 *27*; α(M)=0.0413 *6* α(N)=0.00945 *13*; α(O)=0.001498 *21*; α(P)=0.0001478 *21*
		107.8470 *10*	5.0 *4*	127.4301	4^+	[E1]	0.2314 *32*	α(K)=0.1948 *27*; α(L)=0.0287 *4*; α(M)=0.00619 *9* α(N)=0.001394 *20*; α(O)=0.0002100 *29*; α(P)=1.643×10^{-5} *23*
		112.701 *13*	2.9 *12*	122.5582	2^-	[E2]	1.574 *22*	α(K)=0.846 *12*; α(L)=0.563 *8*; α(M)=0.1313 *18* α(N)=0.0292 *4*; α(O)=0.00399 *6*; α(P)=6.35×10^{-5} *9*
		134.414 *5*	2.9 *6*	100.8612	4^+	[E1]	0.1274 *18*	α(K)=0.1077 *15*; α(L)=0.01554 *22*; α(M)=0.00334 *5* α(N)=0.000755 *11*; α(O)=0.0001148 *16*; α(P)=9.36×10^{-6} *13*
		135.3317 *6*	100 *4*	99.9484	3^+	E1	0.1251 *18*	α(K)=0.1057 *15*; α(L)=0.01524 *21*; α(M)=0.00328 *5* α(N)=0.000741 *10*; α(O)=0.0001127 *16*; α(P)=9.20×10^{-6} *13*
239.2889	3^-	109.6097 *11*	37.8 *18*	129.6795	4^-	M1	1.419 *20*	B(M1)(W.u.)=0.0027 *+5−4* α(K)=1.201 *17*; α(L)=0.1716 *24*; α(M)=0.0371 *5* α(N)=0.00849 *12*; α(O)=0.001347 *19*; α(P)=0.0001329 *19*

From ENSDF

$^{154}_{63}Eu_{91}$-11

Adopted Levels, Gammas (continued)

γ(^{154}Eu) (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ	E_f	J_f^π	Mult.[‡]	α[#]	Comments
239.2889	3⁻	111.864 *3*	2.44 *24*	127.4301	4⁺	[E1]	0.2096 *29*	B(E1)(W.u.)=1.75×10^{-6} *+39−29* α(K)=0.1766 *25*; α(L)=0.0259 *4*; α(M)=0.00558 *8* α(N)=0.001258 *18*; α(O)=0.0001899 *27*; α(P)=1.497×10^{-5} *21*
		138.426 *3*	2.6 *6*	100.8612	4⁺	[E1]	0.1177 *16*	B(E1)(W.u.)=9.8×10^{-7} *+31−26* α(K)=0.0995 *14*; α(L)=0.01432 *20*; α(M)=0.00308 *4* α(N)=0.000696 *10*; α(O)=0.0001059 *15*; α(P)=8.68×10^{-6} *12*
		156.444 *9*	0.9 *4*	82.8200	1⁻			
		158.6326 *11*	12.2 *9*	80.6560	4⁻	M1,E2	0.486 *15*	α(K)=0.37 *6*; α(L)=0.094 *34*; α(M)=0.021 *8* α(N)=0.0048 *18*; α(O)=6.9×10^{-4} *22*; α(P)=3.6×10^{-5} *11* B(M1)(W.u.)=2.9×10^{-4} *+6−5* if M1, B(E2)(W.u.)=6.0 *+12−9* if E2.
		171.115 *3*	11.3 *12*	68.1702	2⁺	E1	0.0664 *9*	B(E1)(W.u.)=2.26×10^{-6} *+50−38* α(K)=0.0563 *8*; α(L)=0.00797 *11*; α(M)=0.001714 *24* α(N)=0.000388 *5*; α(O)=5.95×10^{-5} *8*; α(P)=5.05×10^{-6} *7*
		239.2898 *12*	100 *7*	0.0	3⁻	M1	0.1613 *23*	B(M1)(W.u.)=6.9×10^{-4} *+13−10* α(K)=0.1368 *19*; α(L)=0.01925 *27*; α(M)=0.00415 *6* α(N)=0.000951 *13*; α(O)=0.0001511 *21*; α(P)=1.503×10^{-5} *21*
249.4186	(1)⁺	68.6103 *9*	8.0 *11*	180.8092	2⁻	[E1]	0.779 *11*	α(K)=0.649 *9*; α(L)=0.1027 *14*; α(M)=0.02215 *31* α(N)=0.00496 *7*; α(O)=0.000729 *10*; α(P)=5.13×10^{-5} *7*
		86.9889 *6*	15.9 *10*	162.4299	1⁻	E1	0.413 *6*	α(K)=0.347 *5*; α(L)=0.0526 *7*; α(M)=0.01133 *16* α(N)=0.00255 *4*; α(O)=0.000379 *5*; α(P)=2.83×10^{-5} *4*
		126.8623 *12*	59.0 *16*	122.5582	2⁻	E1	0.1490 *21*	α(K)=0.1258 *18*; α(L)=0.01825 *26*; α(M)=0.00393 *5* α(N)=0.000886 *12*; α(O)=0.0001345 *19*; α(P)=1.085×10^{-5} *15*
		166.5963 *9*	100 *5*	82.8200	1⁻	E1	0.07140 *99*	α(K)=0.0605 *8*; α(L)=0.00858 *12*; α(M)=0.001845 *26* α(N)=0.000417 *6*; α(O)=6.40×10^{-5} *9*; α(P)=5.40×10^{-6} *8*
		177.5086 *12*	44 *3*	71.9118	1⁺	M1	0.365 *5*	α(K)=0.310 *4*; α(L)=0.0439 *6*; α(M)=0.00948 *13* α(N)=0.002171 *30*; α(O)=0.000345 *5*; α(P)=3.42×10^{-5} *5*
		181.2430 *18*	31.1 *23*	68.1702	2⁺	M1	0.345 *5*	α(K)=0.292 *4*; α(L)=0.0414 *6*; α(M)=0.00894 *13* α(N)=0.002048 *29*; α(O)=0.000325 *5*; α(P)=3.22×10^{-5} *5*
251.8253	3⁺	66.7749 *5*	58 *3*	185.0509	2⁺	M1	5.92 *8*	α(K)=5.00 *7*; α(L)=0.720 *10*; α(M)=0.1557 *22* α(N)=0.0356 *5*; α(O)=0.00565 *8*; α(P)=0.000555 *8*
		78.2198 *15*	5.3 *8*	173.6022	3⁻			
		117.050 *4*	10.3 *8*	134.7814	1⁺	E2	1.374 *19*	α(K)=0.759 *11*; α(L)=0.476 *7*; α(M)=0.1108 *16* α(N)=0.02461 *34*; α(O)=0.00337 *5*; α(P)=5.74×10^{-5} *8*
		124.3943 *13*	100 *6*	127.4301	4⁺	(M1+E2)	1.05 *6*	α(K)=0.74 *10*; α(L)=0.24 *12*; α(M)=0.055 *29* α(N)=0.012 *6*; α(O)=0.0018 *8*; α(P)=7.1×10^{-5} *22*
		129.2665 *9*	56 *4*	122.5582	2⁻	E1	0.1416 *20*	α(K)=0.1196 *17*; α(L)=0.01732 *24*; α(M)=0.00373 *5* α(N)=0.000841 *12*; α(O)=0.0001277 *18*; α(P)=1.034×10^{-5} *14*

From ENSDF

$^{154}_{63}Eu_{91}$-12

Adopted Levels, Gammas (continued)

γ(^{154}Eu) (continued)

E_i(level)	J_i^π	E_γ †	I_γ	E_f	J_f^π	Mult. ‡	α #	Comments
251.8253	3^+	151.888 *4*	28 *2*	99.9484	3^+	M1	0.564 *8*	α(K)=0.478 *7*; α(L)=0.0679 *10*; α(M)=0.01467 *21* α(N)=0.00336 *5*; α(O)=0.000533 *7*; α(P)=5.28×10^{-5} *7*
		179.911 *6*	5 *2*	71.9118	1^+			
255.2096	$(5)^+$	79.7292 *18*	8.5 *9*	175.4817	5^-			
		118.5129 *7*	100 *3*	136.6967	5^+	M1	1.136 *16*	α(K)=0.962 *13*; α(L)=0.1373 *19*; α(M)=0.0297 *4* α(N)=0.00679 *10*; α(O)=0.001077 *15*; α(P)=0.0001064 *15*
		125.5311 *11*	30.3 *15*	129.6795	4^-			
		154.3459 *15*	30 *3*	100.8612	4^+	M1	0.539 *8*	α(K)=0.457 *6*; α(L)=0.0649 *9*; α(M)=0.01403 *20* α(N)=0.00321 *4*; α(O)=0.000510 *7*; α(P)=5.04×10^{-5} *7*
258.1901	$(6)^+$	65.8962 *9*	100 *6*	192.2939	$(5)^+$	M1	6.15 *9*	α(K)=5.19 *7*; α(L)=0.749 *10*; α(M)=0.1618 *23* α(N)=0.0370 *5*; α(O)=0.00587 *8*; α(P)=0.000577 *8*
		130.7585 *16*	32 *3*	127.4301	4^+			
272.8512	5^-	37.5722 *8*	10.7 *12*	235.2787	4^-	M1+E2	7.×10^1 *6*	α(L)=5; α(M)=13 *12* α(N)=2.8 *26*; α(O)=0.37 *34*; α(P)=0.0018 *12* α: α(M1)=4.97 and α(E2)=134. Additional information 6.
		41.9705 *6*	17.5 *17*	230.8810	4^-	M1	3.59 *5*	α(L)=2.81 *4*; α(M)=0.608 *9* α(N)=0.1392 *19*; α(O)=0.02204 *31*; α(P)=0.002162 *30*
		99.248 *5*	1.4 *3*	173.6022	3^-	[E2]	2.493 *35*	α(K)=1.200 *17*; α(L)=1.001 *14*; α(M)=0.2339 *33* α(N)=0.0519 *7*; α(O)=0.00705 *10*; α(P)=8.81×10^{-5} *12*
		145.4210 *4*	100 *3*	127.4301	4^+	E1	0.1030 *14*	α(K)=0.0871 *12*; α(L)=0.01249 *17*; α(M)=0.00269 *4* α(N)=0.000607 *8*; α(O)=9.26×10^{-5} *13*; α(P)=7.65×10^{-6} *11*
		192.187 *5*	1.8 *3*	80.6560	4^-	M1	0.293 *4*	α(K)=0.2486 *35*; α(L)=0.0352 *5*; α(M)=0.00760 *11* α(N)=0.001740 *24*; α(O)=0.000276 *4*; α(P)=2.74×10^{-5} *4*
276.7	(7^+)	79.5		196.1211	$(6)^+$			
278.5480	2^+	29.148 *14*	38 *8*	249.4186	$(1)^+$			
		97.7396 *14*	4.4 *6*	180.8092	2^-			
		104.9464 *14*	46 *4*	173.6022	3^-	E1	0.2491 *35*	α(K)=0.2096 *29*; α(L)=0.0310 *4*; α(M)=0.00668 *9* α(N)=0.001504 *21*; α(O)=0.0002264 *32*; α(P)=1.761×10^{-5} *25*
		116.1182 *7*	30.8 *19*	162.4299	1^-	E1	0.1894 *27*	α(K)=0.1597 *22*; α(L)=0.02337 *33*; α(M)=0.00503 *7* α(N)=0.001134 *16*; α(O)=0.0001714 *24*; α(P)=1.361×10^{-5} *19*
		143.7678 *17*	7.7 *4*	134.7814	1^+	E2	0.665 *9*	α(K)=0.416 *6*; α(L)=0.1934 *27*; α(M)=0.0447 *6* α(N)=0.00996 *14*; α(O)=0.001383 *19*; α(P)=3.29×10^{-5} *5*
		155.9933 *26*	35 *3*	122.5582	2^-	E1	0.0852 *12*	α(K)=0.0721 *10*; α(L)=0.01028 *14*; α(M)=0.002211 *31* α(N)=0.000500 *7*; α(O)=7.65×10^{-5} *11*; α(P)=6.39×10^{-6} *9*
		195.725 *4*	100 *8*	82.8200	1^-	E1	0.0464 *6*	α(K)=0.0394 *6*; α(L)=0.00553 *8*; α(M)=0.001188 *17* α(N)=0.000269 *4*; α(O)=4.14×10^{-5} *6*; α(P)=3.58×10^{-6} *5*
		206.6356 *14*	62 *5*	71.9118	1^+	M1	0.2405 *34*	α(K)=0.2038 *29*; α(L)=0.0288 *4*; α(M)=0.00622 *9* α(N)=0.001424 *20*; α(O)=0.0002261 *32*; α(P)=2.245×10^{-5} *31*

From ENSDF

$^{154}_{63}Eu_{91}$-13

Adopted Levels, Gammas (continued)

γ(^{154}Eu) (continued)

E_i(level)	J_i^π	E_γ †	I_γ	E_f	J_f^π	Mult.‡	α#	Comments
278.5480	2^+	210.384 *3*	81 *6*	68.1702	2^+	M1	0.2289 *32*	α(K)=0.1940 *27*; α(L)=0.0274 *4*; α(M)=0.00592 *8* α(N)=0.001355 *19*; α(O)=0.0002151 *30*; α(P)=2.137×10^{-5} *30*
279.0377	$(0)^-$	116.611 *3*	24.7 *11*	162.4299	1^-			
		144.2614 *18*	36.5 *22*	134.7814	1^+	E1	0.1052 *15*	α(K)=0.0890 *12*; α(L)=0.01277 *18*; α(M)=0.00275 *4* α(N)=0.000620 *9*; α(O)=9.46×10^{-5} *13*; α(P)=7.81×10^{-6} *11*
		207.1246 *13*	100 *8*	71.9118	1^+	E1	0.0399 *6*	α(K)=0.0339 *5*; α(L)=0.00474 *7*; α(M)=0.001019 *14* α(N)=0.0002311 *32*; α(O)=3.56×10^{-5} *5*; α(P)=3.11×10^{-6} *4*
279.3791	4^-	65.3045 *4*	100 *5*	214.0746	3^-	M1	6.31 *9*	α(K)=5.33 *7*; α(L)=0.769 *11*; α(M)=0.1661 *23* α(N)=0.0380 *5*; α(O)=0.00602 *8*; α(P)=0.000592 *8*
		103.8976 *27*	9.4 *19*	175.4817	5^-			
		105.7771 *12*	18.8 *19*	173.6022	3^-	M1	1.571 *22*	α(K)=1.329 *19*; α(L)=0.1901 *27*; α(M)=0.0411 *6* α(N)=0.00941 *13*; α(O)=0.001491 *21*; α(P)=0.0001471 *21*
		156.826@ *3*	57@ *4*	122.5582	2^-			Mult.: ce data consistent with E1, but E2 required here and E1 from 572 level.
		179.4302 *11*	88 *7*	99.9484	3^+	E1	0.0585 *8*	α(K)=0.0496 *7*; α(L)=0.00700 *10*; α(M)=0.001505 *21* α(N)=0.000341 *5*; α(O)=5.23×10^{-5} *7*; α(P)=4.47×10^{-6} *6*
281.6791	$(3)^+$	42.3865 *20*	9.7 *7*	239.2889	3^-	E1	0.507 *7*	B(E1)(W.u.)=6.5×10^{-4} *+41−19* α(L)=0.399 *6*; α(M)=0.0864 *12* α(N)=0.01913 *27*; α(O)=0.00271 *4*; α(P)=0.0001650 *23*
		67.6065 *14*	1.5 *3*	214.0746	3^-	[E1]	0.810 *11*	B(E1)(W.u.)=2.5×10^{-5} *+17−8* α(K)=0.674 *9*; α(L)=0.1070 *15*; α(M)=0.02310 *32* α(N)=0.00517 *7*; α(O)=0.000759 *11*; α(P)=5.32×10^{-5} *7*
		77.8625 *4*	8.7 *4*	203.8168	$(4)^+$	M1	3.79 *5*	B(M1)(W.u.)=0.009 *+6−3* α(K)=3.21 *4*; α(L)=0.460 *6*; α(M)=0.0995 *14* α(N)=0.02278 *32*; α(O)=0.00361 *5*; α(P)=0.000355 *5*
		151.993 *4*	2.3 *3*	129.6795	4^-	E1	0.0914 *13*	B(E1)(W.u.)=3.3×10^{-6} *+23−10* α(K)=0.0774 *11*; α(L)=0.01105 *15*; α(M)=0.002376 *33* α(N)=0.000537 *8*; α(O)=8.21×10^{-5} *11*; α(P)=6.83×10^{-6} *10*
		181.716 *6*	1.69 *21*	99.9484	3^+	(E2)	0.297 *4*	B(E2)(W.u.)=2.1 *+14−7* α(K)=0.2044 *29*; α(L)=0.0721 *10*; α(M)=0.01654 *23* α(N)=0.00369 *5*; α(O)=0.000521 *7*; α(P)=1.710×10^{-5} *24*
		201.0215 *23*	16.4 *11*	80.6560	4^-	E1	0.0432 *6*	B(E1)(W.u.)=1.0×10^{-5} *+7−3* α(K)=0.0367 *5*; α(L)=0.00514 *7*; α(M)=0.001105 *15* α(N)=0.0002504 *35*; α(O)=3.86×10^{-5} *5*; α(P)=3.35×10^{-6} *5*
		213.513 *5*	2.9 *4*	68.1702	2^+	E2	0.1732 *24*	B(E2)(W.u.)=1.6 *+11−5* α(K)=0.1249 *17*; α(L)=0.0376 *5*; α(M)=0.00857 *12* α(N)=0.001918 *27*; α(O)=0.000274 *4*; α(P)=1.084×10^{-5} *15*
		281.684 *4*	100 *5*	0.0	3^-	E1	0.01796 *25*	B(E1)(W.u.)=2.3×10^{-5} *+15−7* α(K)=0.01529 *21*; α(L)=0.002103 *29*; α(M)=0.000451 *6* α(N)=0.0001026 *14*; α(O)=1.595×10^{-5} *22*; α(P)=1.443×10^{-6} *20*

From ENSDF

$^{154}_{63}Eu_{91}$-14

Adopted Levels, Gammas (continued)

γ(^{154}Eu) (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ	E_f	J_f^π	Mult.[‡]	α[#]	Comments
282.8087	$(2)^+$	33.3896 *5*	19.1 *25*	249.4186	$(1)^+$	M1	7.05 *10*	α(L)=5.53 *8*; α(M)=1.196 *17* α(N)=0.274 *4*; α(O)=0.0433 *6*; α(P)=0.00424 *6*
		102.0007 *10*	34.1 *18*	180.8092	2^-	E1	0.269 *4*	α(K)=0.2263 *32*; α(L)=0.0336 *5*; α(M)=0.00724 *10* α(N)=0.001629 *23*; α(O)=0.0002448 *34*; α(P)=1.894×10^{-5} *27*
		120.3790 *14*	93 *4*	162.4299	1^-	E1	0.1718 *24*	α(K)=0.1449 *20*; α(L)=0.02113 *30*; α(M)=0.00455 *6* α(N)=0.001025 *14*; α(O)=0.0001553 *22*; α(P)=1.241×10^{-5} *17*
		148.028 *9*	1.6 *5*	134.7814	1^+	[M1,E2]	0.604 *9*	α(K)=0.45 *7*; α(L)=0.12 *5*; α(M)=0.028 *12* α(N)=0.0062 *26*; α(O)=9.0×10^{-4} *32*; α(P)=4.4×10^{-5} *13*
		160.2498 *12*	25.0 *16*	122.5582	2^-	E1	0.0793 *11*	α(K)=0.0671 *9*; α(L)=0.00955 *13*; α(M)=0.002053 *29* α(N)=0.000464 *7*; α(O)=7.11×10^{-5} *10*; α(P)=5.97×10^{-6} *8*
		199.990 *4*	95 *7*	82.8200	1^-	E1	0.0438 *6*	α(K)=0.0372 *5*; α(L)=0.00521 *7*; α(M)=0.001120 *16* α(N)=0.000254 *4*; α(O)=3.91×10^{-5} *5*; α(P)=3.39×10^{-6} *5*
		210.9005 *21*	100 *9*	71.9118	1^+	M1	0.2274 *32*	α(K)=0.1927 *27*; α(L)=0.0272 *4*; α(M)=0.00588 *8* α(N)=0.001346 *19*; α(O)=0.0002137 *30*; α(P)=2.122×10^{-5} *30*
		214.6370 *22*	36 *3*	68.1702	2^+	M1	0.2168 *30*	α(K)=0.1837 *26*; α(L)=0.0259 *4*; α(M)=0.00560 *8* α(N)=0.001282 *18*; α(O)=0.0002036 *29*; α(P)=2.023×10^{-5} *28*
286.9494	$(0)^+$	204.1279 *21*	100 *7*	82.8200	1^-	E1	0.0415 *6*	α(K)=0.0352 *5*; α(L)=0.00493 *7*; α(M)=0.001060 *15* α(N)=0.0002403 *34*; α(O)=3.70×10^{-5} *5*; α(P)=3.22×10^{-6} *5*
		215.0344 *21*	74 *6*	71.9118	1^+	M1	0.2157 *30*	α(K)=0.1828 *26*; α(L)=0.0258 *4*; α(M)=0.00557 *8* α(N)=0.001276 *18*; α(O)=0.0002025 *28*; α(P)=2.012×10^{-5} *28*
292.8200	$(6)^+$	89.0060 *14*	14.3 *14*	203.8168	$(4)^+$			
		156.1222 *10*	100 *7*	136.6967	5^+	M1	0.522 *7*	α(K)=0.442 *6*; α(L)=0.0629 *9*; α(M)=0.01358 *19* α(N)=0.00311 *4*; α(O)=0.000493 *7*; α(P)=4.89×10^{-5} *7*
		191.961 *3*	67 *5*	100.8612	4^+	E2	0.2470 *35*	α(K)=0.1728 *24*; α(L)=0.0576 *8*; α(M)=0.01319 *18* α(N)=0.00295 *4*; α(O)=0.000418 *6*; α(P)=1.464×10^{-5} *21*
294.0	(7^-)	64.0		229.7951	$(6)^-$			
		96.8		196.1211	$(6)^+$			
295.9225	$(4)^+$	60.6437 *13*	12.3 *16*	235.2787	4^-			
		92.1069 *8*	48 *5*	203.8168	$(4)^+$	M1	2.337 *33*	α(K)=1.976 *28*; α(L)=0.283 *4*; α(M)=0.0612 *9* α(N)=0.01401 *20*; α(O)=0.002220 *31*; α(P)=0.0002188 *31*
		103.6276 *15*	8.4 *10*	192.2939	$(5)^+$	M1	1.666 *23*	α(K)=1.409 *20*; α(L)=0.2016 *28*; α(M)=0.0436 *6* α(N)=0.00998 *14*; α(O)=0.001582 *22*; α(P)=0.0001560 *22*
		115.176 *4*	4.5 *6*	180.7439	5^-			
		159.221 *3*	17.7 *13*	136.6967	5^+	E2	0.467 *7*	α(K)=0.306 *4*; α(L)=0.1251 *18*; α(M)=0.0288 *4* α(N)=0.00643 *9*; α(O)=0.000899 *13*; α(P)=2.478×10^{-5} *35*
		166.2407 *12*	18.7 *13*	129.6795	4^-	E1	0.0718 *10*	α(K)=0.0608 *9*; α(L)=0.00863 *12*; α(M)=0.001855 *26* α(N)=0.000420 *6*; α(O)=6.43×10^{-5} *9*; α(P)=5.43×10^{-6} *8*
		195.0622 *11*	100 *8*	100.8612	4^+	M1	0.282 *4*	α(K)=0.2387 *33*; α(L)=0.0338 *5*; α(M)=0.00729 *10* α(N)=0.001670 *23*; α(O)=0.000265 *4*; α(P)=2.63×10^{-5} *4*

From ENSDF

$^{154}_{63}Eu_{91}$-15

Adopted Levels, Gammas (continued)

γ(^{154}Eu) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[‡]	α[#]	Comments
295.9225	(4)$^+$	195.9681 *21*	45 *4*	99.9484	3$^+$	M1	0.278 *4*	α(K)=0.2357 *33*; α(L)=0.0333 *5*; α(M)=0.00720 *10* α(N)=0.001649 *23*; α(O)=0.000262 *4*; α(P)=2.60×10^{-5} *4*
		215.280 *5*	11.6 *23*	80.6560	4$^-$	E1	0.0361 *5*	α(K)=0.0306 *4*; α(L)=0.00427 *6*; α(M)=0.000918 *13* α(N)=0.0002083 *29*; α(O)=3.22×10^{-5} *5*; α(P)=2.82×10^{-6} *4*
		295.915[@] *10*	6.5[@] *10*	0.0	3$^-$			Mult.: ce data are consistent with E1 assignment for this component and with M1(+E2) for component from 364.0 level.
296.66		65.97 *5*	100	230.8810	4$^-$			
299.8081	(6)$^-$	119.0643 *10*	100	180.7439	5$^-$	(M1)	1.122 *16*	α(K)=0.949 *13*; α(L)=0.1355 *19*; α(M)=0.0293 *4* α(N)=0.00670 *9*; α(O)=0.001063 *15*; α(P)=0.0001050 *15*
309.9953	3$^+$	74.7195 *14*	7.5 *8*	235.2787	4$^-$	[E1]	0.621 *9*	α(K)=0.519 *7*; α(L)=0.0807 *11*; α(M)=0.01741 *24* α(N)=0.00390 *5*; α(O)=0.000577 *8*; α(P)=4.15×10^{-5} *6*
		79.1129 *8*	6.5 *4*	230.8810	4$^-$	[E1]	0.533 *7*	α(K)=0.446 *6*; α(L)=0.0687 *10*; α(M)=0.01481 *21* α(N)=0.00332 *5*; α(O)=0.000493 *7*; α(P)=3.60×10^{-5} *5*
		124.944 *3*	10.4 *8*	185.0509	2$^+$	M1	0.978 *14*	α(K)=0.828 *12*; α(L)=0.1181 *17*; α(M)=0.0255 *4* α(N)=0.00584 *8*; α(O)=0.000927 *13*; α(P)=9.15×10^{-5} *13*
		129.1878 *15*	22.9 *19*	180.8092	2$^-$	E1	0.1419 *20*	α(K)=0.1198 *17*; α(L)=0.01735 *24*; α(M)=0.00373 *5* α(N)=0.000843 *12*; α(O)=0.0001279 *18*; α(P)=1.036×10^{-5} *15*
		136.3954 *18*	6.2 *13*	173.6022	3$^-$	[E1]	0.1225 *17*	α(K)=0.1035 *14*; α(L)=0.01492 *21*; α(M)=0.00321 *4* α(N)=0.000725 *10*; α(O)=0.0001103 *15*; α(P)=9.02×10^{-6} *13*
		175.221 *7*	2.9 *4*	134.7814	1$^+$	E2	0.336 *5*	α(K)=0.2284 *32*; α(L)=0.0838 *12*; α(M)=0.01925 *27* α(N)=0.00430 *6*; α(O)=0.000605 *8*; α(P)=1.894×10^{-5} *27*
		182.5631 *14*	100 *8*	127.4301	4$^+$	M1+E2	0.315 *23*	α(K)=0.24 *4*; α(L)=0.056 *15*; α(M)=0.012 *4* α(N)=0.0028 *8*; α(O)=0.00042 *10*; α(P)=2.4×10^{-5} *7*
		187.4366 *20*	92 *8*	122.5582	2$^-$	E1	0.0521 *7*	α(K)=0.0442 *6*; α(L)=0.00622 *9*; α(M)=0.001336 *19* α(N)=0.000303 *4*; α(O)=4.65×10^{-5} *7*; α(P)=4.00×10^{-6} *6*
		210.048 *4*	46 *4*	99.9484	3$^+$	M1	0.2299 *32*	α(K)=0.1949 *27*; α(L)=0.0275 *4*; α(M)=0.00594 *8* α(N)=0.001361 *19*; α(O)=0.0002161 *30*; α(P)=2.146×10^{-5} *30*
		309.975 *7*	67 *3*	0.0	3$^-$	E1	0.01411 *20*	α(K)=0.01201 *17*; α(L)=0.001645 *23*; α(M)=0.000353 *5* α(N)=8.03×10^{-5} *11*; α(O)=1.250×10^{-5} *18*; α(P)=1.143×10^{-6} *16*
311.3	(9$^-$)	166.0		145.3	8$^-$			
312.2856	(5)$^-$	182.6041 *18*	100 *13*	129.6795	4$^-$	M1+E2	0.315 *23*	α(K)=0.24 *4*; α(L)=0.056 *15*; α(M)=0.012 *4* α(N)=0.0028 *8*; α(O)=0.00041 *10*; α(P)=2.4×10^{-5} *7*
		211.424 *3*	20 *3*	100.8612	4$^+$	E1	0.0378 *5*	α(K)=0.0321 *4*; α(L)=0.00449 *6*; α(M)=0.000964 *13* α(N)=0.0002186 *31*; α(O)=3.37×10^{-5} *5*; α(P)=2.95×10^{-6} *4*
315.3133	(1)$^-$	130.2596 *14*	24.2 *15*	185.0509	2$^+$			
		134.500 *4*	19.6 *12*	180.8092	2$^-$			
		192.744 *5*	15.8 *19*	122.5582	2$^-$	M1	0.291 *4*	α(K)=0.2467 *35*; α(L)=0.0349 *5*; α(M)=0.00754 *11* α(N)=0.001726 *24*; α(O)=0.000274 *4*; α(P)=2.72×10^{-5} *4*

From ENSDF

$^{154}_{63}Eu_{91}$-16

Adopted Levels, Gammas (continued)

γ(^{154}Eu) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[‡]	α[#]	Comments
315.3133	(1)$^-$	232.474 *7*	15 *3*	82.8200	1$^-$	M1	0.1744 *24*	α(K)=0.1479 *21*; α(L)=0.02083 *29*; α(M)=0.00450 *6* α(N)=0.001030 *14*; α(O)=0.0001635 *23*; α(P)=1.626×10^{-5} *23*
		243.411 *3*	100 *7*	71.9118	1$^+$	E1	0.0262 *4*	α(K)=0.02223 *31*; α(L)=0.00308 *4*; α(M)=0.000662 *9* α(N)=0.0001503 *21*; α(O)=2.327×10^{-5} *33*; α(P)=2.071×10^{-6} *29*
		247.131 *7*	69 *6*	68.1702	2$^+$	E1	0.02514 *35*	α(K)=0.02138 *30*; α(L)=0.00296 *4*; α(M)=0.000636 *9* α(N)=0.0001444 *20*; α(O)=2.237×10^{-5} *31*; α(P)=1.994×10^{-6} *28*
319.200	(3)$^+$	36.4011[@] *5*	12.8[@] *13*	282.8087	(2)$^+$	(M1+E2)	8.×10^1 *8*	α(L)=6; α(M)=15 *14* α(N)=3.2 *30*; α(O)=0.4 *4*; α(P)=0.0020 *13* α: α(M1)=5.46 and α(E2)=156.
		191.768[@] *7*	1.5[@] *4*	127.4301	4$^+$	(M1)	0.295 *4*	α(K)=0.2501 *35*; α(L)=0.0354 *5*; α(M)=0.00764 *11* α(N)=0.001751 *25*; α(O)=0.000278 *4*; α(P)=2.76×10^{-5} *4*
		238.560 *4*	13.3 *20*	80.6560	4$^-$	E1	0.0276 *4*	α(K)=0.02342 *33*; α(L)=0.00325 *5*; α(M)=0.000698 *10* α(N)=0.0001585 *22*; α(O)=2.453×10^{-5} *34*; α(P)=2.177×10^{-6} *30*
		319.218 *3*	100 *5*	0.0	3$^-$	E1	0.01311 *18*	α(K)=0.01117 *16*; α(L)=0.001526 *21*; α(M)=0.000328 *5* α(N)=7.45×10^{-5} *10*; α(O)=1.161×10^{-5} *16*; α(P)=1.065×10^{-6} *15*
326.8726	3$^+$,4$^+$	134.5788 *14*	12.6 *6*	192.2939	(5)$^+$	E2	0.838 *12*	α(K)=0.506 *7*; α(L)=0.257 *4*; α(M)=0.0597 *8* α(N)=0.01328 *19*; α(O)=0.001836 *26*; α(P)=3.94×10^{-5} *6*
		153.268 *4*	3.6 *8*	173.6022	3$^-$			
		190.190[@] *7*	18.6[@] *14*	136.6967	5$^+$			
		197.197 *4*	7.4 *8*	129.6795	4$^-$	E1	0.0455 *6*	α(K)=0.0386 *5*; α(L)=0.00542 *8*; α(M)=0.001164 *16* α(N)=0.000264 *4*; α(O)=4.06×10^{-5} *6*; α(P)=3.52×10^{-6} *5*
		226.0080 *14*	100 *8*	100.8612	4$^+$	M1	0.1883 *26*	α(K)=0.1596 *22*; α(L)=0.02250 *32*; α(M)=0.00486 *7* α(N)=0.001113 *16*; α(O)=0.0001767 *25*; α(P)=1.756×10^{-5} *25*
		226.917 *10*	6.8 *8*	99.9484	3$^+$	M1	0.1863 *26*	α(K)=0.1579 *22*; α(L)=0.02226 *31*; α(M)=0.00480 *7* α(N)=0.001100 *15*; α(O)=0.0001747 *24*; α(P)=1.737×10^{-5} *24*
		326.87 *3*	2.0 *6*	0.0	3$^-$			
328.0177	(4)$^-$	18.070 *16*	10.6 *21*	309.9953	3$^+$			Mult.: ce data consistent with E1 or M1; level scheme requires Δπ=yes.
		88.7289 *4*	23.9 *12*	239.2889	3$^-$	M1	2.60 *4*	α(K)=2.200 *31*; α(L)=0.315 *4*; α(M)=0.0681 *10* α(N)=0.01560 *22*; α(O)=0.002473 *35*; α(P)=0.0002437 *34*
		124.2013 *17*	5.7 *6*	203.8168	(4)$^+$			
		152.5344 *13*	36.4 *24*	175.4817	5$^-$	E2	0.541 *8*	α(K)=0.348 *5*; α(L)=0.1501 *21*; α(M)=0.0346 *5* α(N)=0.00772 *11*; α(O)=0.001076 *15*; α(P)=2.79×10^{-5} *4*
		227.153 *5*	100 *7*	100.8612	4$^+$	E1	0.0313 *4*	α(K)=0.0266 *4*; α(L)=0.00370 *5*; α(M)=0.000795 *11* α(N)=0.0001805 *25*; α(O)=2.79×10^{-5} *4*; α(P)=2.462×10^{-6} *34*
		247.359 *4*	10.0 *9*	80.6560	4$^-$	M1,E2	0.127 *20*	α(K)=0.102 *23*; α(L)=0.0194 *18*; α(M)=0.0043 *5* α(N)=0.00097 *11*; α(O)=0.000147 *9*; α(P)=1.04×10^{-5} *33*
		328.009 *12*	5.5 *8*	0.0	3$^-$	M1	0.0694 *10*	α(K)=0.0590 *8*; α(L)=0.00822 *12*; α(M)=0.001773 *25* α(N)=0.000406 *6*; α(O)=6.45×10^{-5} *9*; α(P)=6.45×10^{-6} *9*

From ENSDF

$^{154}_{63}Eu_{91}$-17

Adopted Levels, Gammas (continued)

γ(^{154}Eu) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[‡]	α[#]	Comments
332.324	$(5)^+$	36.4011[@] *5*	128[@] *13*	295.9225	$(4)^+$	(M1+E2)	$8.\times10^{1}$ *8*	α(L)=6; α(M)=15 *14* α(N)=3.2 *30*; α(O)=0.4 *4*; α(P)=0.0020 *13* α: α(M1)=5.46 and α(E2)=156.
		101.441 *4*	11.8 *22*	230.8810	4^-			
		128.4995 *23*	25 *3*	203.8168	$(4)^+$			
		195.624 *6*	100 *12*	136.6967	5^+	E2	0.2318 *32*	α(K)=0.1631 *23*; α(L)=0.0534 *7*; α(M)=0.01221 *17* α(N)=0.00273 *4*; α(O)=0.000387 *5*; α(P)=1.388×10^{-5} *19*
		204.8942 *27*	62 *8*	127.4301	4^+	E2	0.1986 *28*	α(K)=0.1416 *20*; α(L)=0.0443 *6*; α(M)=0.01011 *14* α(N)=0.002262 *32*; α(O)=0.000322 *5*; α(P)=1.218×10^{-5} *17*
		231.471 *4*	73 *8*	100.8612	4^+	E2	0.1328 *19*	α(K)=0.0976 *14*; α(L)=0.0274 *4*; α(M)=0.00622 *9* α(N)=0.001394 *20*; α(O)=0.0002004 *28*; α(P)=8.63×10^{-6} *12*
334.8346	$(1)^+$	149.775 *3*	7.0 *11*	185.0509	2^+	M1,E2	0.582 *10*	α(K)=0.43 *6*; α(L)=0.12 *5*; α(M)=0.026 *11* α(N)=0.0059 *24*; α(O)=8.6×10^{-4} *30*; α(P)=4.2×10^{-5} *13*
		172.4045 *19*	13.3 *21*	162.4299	1^-	E1	0.0651 *9*	α(K)=0.0552 *8*; α(L)=0.00781 *11*; α(M)=0.001679 *24* α(N)=0.000380 *5*; α(O)=5.83×10^{-5} *8*; α(P)=4.95×10^{-6} *7*
		234.8826 *26*	29.8 *24*	99.9484	3^+	E2	0.1267 *18*	α(K)=0.0934 *13*; α(L)=0.0259 *4*; α(M)=0.00587 *8* α(N)=0.001316 *18*; α(O)=0.0001895 *27*; α(P)=8.28×10^{-6} *12*
		252.0198 *15*	100 *8*	82.8200	1^-	E1	0.02390 *33*	α(K)=0.02032 *28*; α(L)=0.00281 *4*; α(M)=0.000604 *8* α(N)=0.0001371 *19*; α(O)=2.126×10^{-5} *30*; α(P)=1.899×10^{-6} *27*
		262.917 *9*	35 *3*	71.9118	1^+	M1,E2	0.107 *19*	α(K)=0.086 *20*; α(L)=0.0159 *10*; α(M)=0.00351 *30* α(N)=0.00080 *6*; α(O)=0.000120 *4*; α(P)=8.8×10^{-6} *28*
		266.667 *6*	14.0 *11*	68.1702	2^+	M1	0.1204 *17*	α(K)=0.1022 *14*; α(L)=0.01434 *20*; α(M)=0.00309 *4* α(N)=0.000709 *10*; α(O)=0.0001125 *16*; α(P)=1.122×10^{-5} *16*
335.7621	3^+	57.2141 *17*	21 *3*	278.5480	2^+	M1	9.25 *13*	α(K)=7.81 *11*; α(L)=1.132 *16*; α(M)=0.2446 *34* α(N)=0.0560 *8*; α(O)=0.00887 *12*; α(P)=0.000871 *12*
		83.9338 *12*	7.7 *9*	251.8253	3^+			
		104.8804 *22*	13.1 *14*	230.8810	4^-			
		150.7070 *26*	4.9 *11*	185.0509	2^+	M1	0.577 *8*	α(K)=0.488 *7*; α(L)=0.0694 *10*; α(M)=0.01500 *21* α(N)=0.00344 *5*; α(O)=0.000545 *8*; α(P)=5.39×10^{-5} *8*
		154.9532 *10*	57 *5*	180.8092	2^-	E1	0.0868 *12*	α(K)=0.0734 *10*; α(L)=0.01047 *15*; α(M)=0.002252 *32* α(N)=0.000509 *7*; α(O)=7.79×10^{-5} *11*; α(P)=6.50×10^{-6} *9*
		162.159 *4*	8.6 *9*	173.6022	3^-	E1	0.0768 *11*	α(K)=0.0650 *9*; α(L)=0.00924 *13*; α(M)=0.001987 *28* α(N)=0.000450 *6*; α(O)=6.88×10^{-5} *10*; α(P)=5.79×10^{-6} *8*
		208.352 *15*	12.3 *20*	127.4301	4^+	M1	0.2351 *33*	α(K)=0.1992 *28*; α(L)=0.0281 *4*; α(M)=0.00608 *9* α(N)=0.001392 *19*; α(O)=0.0002210 *31*; α(P)=2.194×10^{-5} *31*
		213.2067 *24*	57 *6*	122.5582	2^-	E1	0.0370 *5*	α(K)=0.0314 *4*; α(L)=0.00439 *6*; α(M)=0.000943 *13* α(N)=0.0002138 *30*; α(O)=3.30×10^{-5} *5*; α(P)=2.89×10^{-6} *4*
		235.823 *6*	100 *11*	99.9484	3^+	M1	0.1678 *23*	α(K)=0.1423 *20*; α(L)=0.02003 *28*; α(M)=0.00432 *6* α(N)=0.000990 *14*; α(O)=0.0001572 *22*; α(P)=1.564×10^{-5} *22*

From ENSDF

$^{154}_{63}Eu_{91}$-18

Adopted Levels, Gammas (continued)

γ(^{154}Eu) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[‡]	α[#]	Comments
335.7621	3+	267.589 *9*	40.0 *23*	68.1702	2+	M1	0.1193 *17*	α(K)=0.1012 *14*; α(L)=0.01421 *20*; α(M)=0.00306 *4* α(N)=0.000702 *10*; α(O)=0.0001115 *16*; α(P)=1.111×10^{-5} *16*
338.0996	4+	145.808 *5*	23 *10*	192.2939	(5)+	E2,M1	0.633 *9*	α(K)=0.47 *7*; α(L)=0.13 *5*; α(M)=0.029 *13* α(N)=0.0066 *28*; α(O)=9.5×10^{-4} *35*; α(P)=4.5×10^{-5} *14*
		162.608 *7*	2.5 *6*	175.4817	5−			
		164.4971 *15*	43 *3*	173.6022	3−	E1	0.0739 *10*	α(K)=0.0626 *9*; α(L)=0.00888 *12*; α(M)=0.001910 *27* α(N)=0.000432 *6*; α(O)=6.62×10^{-5} *9*; α(P)=5.58×10^{-6} *8*
		201.393 *5*	11.0 *23*	136.6967	5+			
		210.684 *12*	5.0 *23*	127.4301	4+	M1	0.2281 *32*	α(K)=0.1933 *27*; α(L)=0.0273 *4*; α(M)=0.00589 *8* α(N)=0.001350 *19*; α(O)=0.0002143 *30*; α(P)=2.128×10^{-5} *30*
		237.233 *7*	100 *17*	100.8612	4+	M1	0.1651 *23*	α(K)=0.1400 *20*; α(L)=0.01971 *28*; α(M)=0.00425 *6* α(N)=0.000974 *14*; α(O)=0.0001547 *22*; α(P)=1.539×10^{-5} *22*
342.1315	2−	90.3116 *24*	12.4 *9*	251.8253	3+			
		128.0598 *17*	21.2 *12*	214.0746	3−	(E2)	0.998 *14*	α(K)=0.585 *8*; α(L)=0.320 *4*; α(M)=0.0743 *10* α(N)=0.01651 *23*; α(O)=0.002276 *32*; α(P)=4.51×10^{-5} *6*
		161.3212 *9*	42 *3*	180.8092	2−	M1	0.477 *7*	α(K)=0.404 *6*; α(L)=0.0573 *8*; α(M)=0.01239 *17* α(N)=0.00284 *4*; α(O)=0.000450 *6*; α(P)=4.46×10^{-5} *6*
		168.5278 *9*	45 *3*	173.6022	3−	M1	0.422 *6*	α(K)=0.357 *5*; α(L)=0.0507 *7*; α(M)=0.01096 *15* α(N)=0.002510 *35*; α(O)=0.000398 *6*; α(P)=3.95×10^{-5} *6*
		179.701 *8*	5.8 *12*	162.4299	1−	M1,E2	0.331 *23*	α(K)=0.26 *4*; α(L)=0.059 *17*; α(M)=0.013 *4* α(N)=0.0030 *9*; α(O)=0.00044 *11*; α(P)=2.5×10^{-5} *8*
		207.354 *3*	100 *9*	134.7814	1+	E1	0.0398 *6*	α(K)=0.0338 *5*; α(L)=0.00473 *7*; α(M)=0.001016 *14* α(N)=0.0002304 *32*; α(O)=3.55×10^{-5} *5*; α(P)=3.10×10^{-6} *4*
		219.574[@] *8*	4.5[@] *15*	122.5582	2−			
		242.1894 *19*	70 *5*	99.9484	3+	E1	0.0265 *4*	α(K)=0.02253 *32*; α(L)=0.00312 *4*; α(M)=0.000671 *9* α(N)=0.0001523 *21*; α(O)=2.358×10^{-5} *33*; α(P)=2.097×10^{-6} *29*
		270.222 *5*	100 *6*	71.9118	1+	E1	0.01997 *28*	α(K)=0.01699 *24*; α(L)=0.002342 *33*; α(M)=0.000503 *7* α(N)=0.0001143 *16*; α(O)=1.774×10^{-5} *25*; α(P)=1.598×10^{-6} *22*
344.0		181.6		162.4299	1−			
349.8207	2+	67.0127 *6*	38 *3*	282.8087	(2)+	M1	5.86 *8*	α(K)=4.95 *7*; α(L)=0.713 *10*; α(M)=0.1541 *22* α(N)=0.0353 *5*; α(O)=0.00559 *8*; α(P)=0.000549 *8*
		176.212 *5*	61 *6*	173.6022	3−	E1	0.0614 *9*	α(K)=0.0521 *7*; α(L)=0.00736 *10*; α(M)=0.001581 *22* α(N)=0.000358 *5*; α(O)=5.50×10^{-5} *8*; α(P)=4.68×10^{-6} *7*
		227.277[@] *12*	52[@] *5*	122.5582	2−	(E1)	0.0313 *4*	α(K)=0.0266 *4*; α(L)=0.00370 *5*; α(M)=0.000794 *11* α(N)=0.0001802 *25*; α(O)=2.79×10^{-5} *4*; α(P)=2.458×10^{-6} *34*
		267.0000 *25*	100 *15*	82.8200	1−	E1	0.02060 *29*	α(K)=0.01752 *25*; α(L)=0.002417 *34*; α(M)=0.000519 *7* α(N)=0.0001179 *17*; α(O)=1.830×10^{-5} *26*; α(P)=1.646×10^{-6} *23*

From ENSDF

$^{154}_{63}Eu_{91}$-19

Adopted Levels, Gammas (continued)

γ(^{154}Eu) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[‡]	α[#]	Comments
349.8207	2^+	277.892 *14*	100 *7*	71.9118	1^+	M1	0.1079 *15*	α(K)=0.0915 *13*; α(L)=0.01283 *18*; α(M)=0.00277 *4* α(N)=0.000634 *9*; α(O)=0.0001007 *14*; α(P)=1.004×10^{-5} *14*
356		275		80.6560	4^-			
356.1031	$(6)^-$	83.2520 *10*	76 *3*	272.8512	5^-	M1	3.13 *4*	α(K)=2.64 *4*; α(L)=0.379 *5*; α(M)=0.0820 *11* α(N)=0.01876 *26*; α(O)=0.00297 *4*; α(P)=0.000293 *4*
		163.808 *5*	100 *7*	192.2939	$(5)^+$	E1	0.0747 *10*	α(K)=0.0633 *9*; α(L)=0.00899 *13*; α(M)=0.001932 *27* α(N)=0.000437 *6*; α(O)=6.70×10^{-5} *9*; α(P)=5.64×10^{-6} *8*
362.5962	$(1)^-$	27.754 *13*	40 *20*	334.8346	$(1)^+$			Mult.: ce data consistent with E1 or M1; level scheme requires Δπ=yes.
		181.7863 *27*	100 *7*	180.8092	2^-	M1	0.342 *5*	α(K)=0.290 *4*; α(L)=0.0411 *6*; α(M)=0.00887 *12* α(N)=0.002031 *28*; α(O)=0.000322 *5*; α(P)=3.20×10^{-5} *4*
		227.787 *10*	12.0 *16*	134.7814	1^+	E1	0.0311 *4*	α(K)=0.0264 *4*; α(L)=0.00368 *5*; α(M)=0.000789 *11* α(N)=0.0001792 *25*; α(O)=2.77×10^{-5} *4*; α(P)=2.444×10^{-6} *34*
		240.0420 *25*	32.4 *24*	122.5582	2^-	M1,E2	0.139 *21*	α(K)=0.112 *24*; α(L)=0.0214 *24*; α(M)=0.0048 *6* α(N)=0.00108 *13*; α(O)=0.000162 *13*; α(P)=1.1×10^{-5} *4*
		279.780 *6*	12.0 *16*	82.8200	1^-	M1	0.1059 *15*	α(K)=0.0899 *13*; α(L)=0.01259 *18*; α(M)=0.00272 *4* α(N)=0.000622 *9*; α(O)=9.89×10^{-5} *14*; α(P)=9.86×10^{-6} *14*
		294.445 *12*	3.2 *6*	68.1702	2^+			
363.9665	$(5)^-$	108.762[@] *12*	1.8[@] *8*	255.2096	$(5)^+$	[E1]	0.2261 *32*	α(K)=0.1904 *27*; α(L)=0.0281 *4*; α(M)=0.00604 *8* α(N)=0.001361 *19*; α(O)=0.0002052 *29*; α(P)=1.608×10^{-5} *23*
		128.689 *6*	0.78 *26*	235.2787	4^-	[M1,E2]	0.94 *4*	α(K)=0.67 *9*; α(L)=0.21 *10*; α(M)=0.048 *25* α(N)=0.011 *5*; α(O)=0.0015 *7*; α(P)=6.4×10^{-5} *20*
		160.142 *3*	3.4 *4*	203.8168	$(4)^+$	E1	0.0794 *11*	α(K)=0.0672 *9*; α(L)=0.00957 *13*; α(M)=0.002057 *29* α(N)=0.000465 *7*; α(O)=7.12×10^{-5} *10*; α(P)=5.98×10^{-6} *8*
		167.850 *5*	1.9 *5*	196.1211	$(6)^+$			Mult.: ce data consistent with M1 or E2, but J^π's require E1. So, γ may have two placements.
		188.484 *3*	2.9 *4*	175.4817	5^-	M1,E2	0.286 *24*	α(K)=0.22 *4*; α(L)=0.050 *12*; α(M)=0.0111 *31* α(N)=0.0025 *7*; α(O)=0.00037 *8*; α(P)=2.2×10^{-5} *7*
		227.277[@] *12*	11.0[@] *12*	136.6967	5^+	(E1)	0.0313 *4*	α(K)=0.0266 *4*; α(L)=0.00370 *5*; α(M)=0.000794 *11* α(N)=0.0001802 *25*; α(O)=2.79×10^{-5} *4*; α(P)=2.458×10^{-6} *34*
		263.1135 *28*	100 *6*	100.8612	4^+	E1	0.02139 *30*	α(K)=0.01819 *25*; α(L)=0.002511 *35*; α(M)=0.000539 *8* α(N)=0.0001225 *17*; α(O)=1.901×10^{-5} *27*; α(P)=1.707×10^{-6} *24*
364.0549	$(4)^+$	82.370 *6*	9 *3*	281.6791	$(3)^+$			
		171.7576[@] *24*	25[@] *3*	192.2939	$(5)^+$	(M1)	0.400 *6*	α(K)=0.339 *5*; α(L)=0.0481 *7*; α(M)=0.01039 *15* α(N)=0.002380 *33*; α(O)=0.000378 *5*; α(P)=3.74×10^{-5} *5*
		190.452 *10*	30 *3*	173.6022	3^-	E1	0.0499 *7*	α(K)=0.0423 *6*; α(L)=0.00595 *8*; α(M)=0.001279 *18* α(N)=0.000290 *4*; α(O)=4.46×10^{-5} *6*; α(P)=3.84×10^{-6} *5* Additional information 7. I_γ: 1987Ba52 indicate possible double placement, but other placement not given.

From ENSDF

$^{154}_{63}Eu_{91}$-20

Adopted Levels, Gammas (continued)

γ(^{154}Eu) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[‡]	α[#]	Comments
364.0549	$(4)^+$	236.625 *4*	100 *7*	127.4301	4^+	M1,E2	0.145 *21*	α(K)=0.116 *25*; α(L)=0.0225 *27*; α(M)=0.0050 *7* α(N)=0.00113 *15*; α(O)=0.000170 *14*; α(P)=1.2×10^{-5} *4*
		263.213 *8*	19 *3*	100.8612	4^+	M1	0.1247 *17*	α(K)=0.1058 *15*; α(L)=0.01485 *21*; α(M)=0.00320 *4* α(N)=0.000734 *10*; α(O)=0.0001166 *16*; α(P)=1.162×10^{-5} *16*
		295.915[@] *10*	11.1[@] *17*	68.1702	2^+	(E2)	0.0607 *9*	α(K)=0.0468 *7*; α(L)=0.01088 *15*; α(M)=0.002446 *34* α(N)=0.000550 *8*; α(O)=8.06×10^{-5} *11*; α(P)=4.34×10^{-6} *6* Mult.: ce data are consistent with (E2) for this component and E1 assignment for component from 295 level.
367	(8^-)	73		294.0	(7^-)			
		90[&]		276.7	(7^+)			
371.8996	2^+	93.347 *5*	9.1 *19*	278.5480	2^+	M1	2.248 *31*	α(K)=1.901 *27*; α(L)=0.272 *4*; α(M)=0.0589 *8* α(N)=0.01348 *19*; α(O)=0.002136 *30*; α(P)=0.0002105 *29*
		122.484 *8*	5.9 *19*	249.4186	$(1)^+$			
		157.8246 *10*	100 *7*	214.0746	3^-	E1	0.0826 *12*	α(K)=0.0699 *10*; α(L)=0.00996 *14*; α(M)=0.002141 *30* α(N)=0.000484 *7*; α(O)=7.41×10^{-5} *10*; α(P)=6.21×10^{-6} *9*
		191.087 *3*	37 *4*	180.8092	2^-	E1	0.0495 *7*	α(K)=0.0420 *6*; α(L)=0.00590 *8*; α(M)=0.001268 *18* α(N)=0.000287 *4*; α(O)=4.42×10^{-5} *6*; α(P)=3.81×10^{-6} *5*
		209.468 *3*	59 *7*	162.4299	1^-	E1	0.0388 *5*	α(K)=0.0329 *5*; α(L)=0.00460 *6*; α(M)=0.000989 *14* α(N)=0.0002242 *31*; α(O)=3.46×10^{-5} *5*; α(P)=3.02×10^{-6} *4*
		249.341 *6*	48 *4*	122.5582	2^-	E1	0.02457 *34*	α(K)=0.02089 *29*; α(L)=0.00289 *4*; α(M)=0.000621 *9* α(N)=0.0001410 *20*; α(O)=2.186×10^{-5} *31*; α(P)=1.950×10^{-6} *27*
		271.963 *4*	27.4 *27*	99.9484	3^+	M1	0.1143 *16*	α(K)=0.0969 *14*; α(L)=0.01360 *19*; α(M)=0.00293 *4* α(N)=0.000672 *9*; α(O)=0.0001067 *15*; α(P)=1.064×10^{-5} *15*
		289.084[@] *3*	123[@] *9*	82.8200	1^-	E1	0.01682 *24*	α(K)=0.01432 *20*; α(L)=0.001967 *28*; α(M)=0.000422 *6* α(N)=9.60×10^{-5} *13*; α(O)=1.492×10^{-5} *21*; α(P)=1.354×10^{-6} *19*
		303.721 *7*	62 *4*	68.1702	2^+	M1	0.0851 *12*	α(K)=0.0723 *10*; α(L)=0.01010 *14*; α(M)=0.002178 *30* α(N)=0.000499 *7*; α(O)=7.93×10^{-5} *11*; α(P)=7.91×10^{-6} *11*
375.9		156.5		219.48				
		275.0		100.8612	4^+			
376.8	(8^+)	82.8		294.0	(7^-)			
		100.2		276.7	(7^+)			
378.7268	$(5)^-$	99.3475 *12*	100 *5*	279.3791	4^-	M1	1.880 *26*	α(K)=1.590 *22*; α(L)=0.2276 *32*; α(M)=0.0492 *7* α(N)=0.01126 *16*; α(O)=0.001785 *25*; α(P)=0.0001760 *25*
		203.259 *6*	18 *4*	175.4817	5^-			
		205.122 *3*	24 *4*	173.6022	3^-	E2	0.1979 *28*	α(K)=0.1411 *20*; α(L)=0.0441 *6*; α(M)=0.01007 *14* α(N)=0.002252 *32*; α(O)=0.000321 *4*; α(P)=1.214×10^{-5} *17*
390.4267	2^-	176.346 *4*	20 *3*	214.0746	3^-	M1,E2	0.351 *22*	α(K)=0.27 *5*; α(L)=0.063 *18*; α(M)=0.014 *5* α(N)=0.0032 *10*; α(O)=4.7×10^{-4} *12*; α(P)=2.7×10^{-5} *8*
		216.823 *4*	49 *4*	173.6022	3^-	M1,E2	0.188 *23*	α(K)=0.149 *30*; α(L)=0.030 *5*; α(M)=0.0068 *13* α(N)=0.00153 *28*; α(O)=0.000228 *30*; α(P)=1.5×10^{-5} *5*

From ENSDF

$^{154}_{63}Eu_{91}$-21

Adopted Levels, Gammas (continued)

γ(^{154}Eu) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[‡]	α[#]	Comments
390.4267	2⁻	227.9955 *19*	100 *7*	162.4299	1⁻	M1	0.1839 *26*	α(K)=0.1559 *22*; α(L)=0.02197 *31*; α(M)=0.00474 *7* α(N)=0.001086 *15*; α(O)=0.0001725 *24*; α(P)=1.715×10^{-5} *24*
		290.480 *5*	32.6 *19*	99.9484	3⁺	E1	0.01661 *23*	α(K)=0.01414 *20*; α(L)=0.001942 *27*; α(M)=0.000417 *6* α(N)=9.48×10^{-5} *13*; α(O)=1.474×10^{-5} *21*; α(P)=1.338×10^{-6} *19*
		307.617 *10*	12.6 *11*	82.8200	1⁻	M1	0.0823 *12*	α(K)=0.0699 *10*; α(L)=0.00976 *14*; α(M)=0.002105 *29* α(N)=0.000482 *7*; α(O)=7.66×10^{-5} *11*; α(P)=7.65×10^{-6} *11*
		318.532 *6*	91 *6*	71.9118	1⁺	E1	0.01318 *18*	α(K)=0.01123 *16*; α(L)=0.001535 *21*; α(M)=0.000329 *5* α(N)=7.49×10^{-5} *10*; α(O)=1.167×10^{-5} *16*; α(P)=1.070×10^{-6} *15*
390.4489	4⁺	71.2398 *14*	16.4 *24*	319.200	(3)⁺			
		108.762[@] *12*	7[@] *3*	281.6791	(3)⁺			
		209.702 *4*	27 *3*	180.7439	5⁻	E1	0.0387 *5*	α(K)=0.0328 *5*; α(L)=0.00459 *6*; α(M)=0.000986 *14* α(N)=0.0002235 *31*; α(O)=3.45×10^{-5} *5*; α(P)=3.01×10^{-6} *4*
		309.782 *8*	82 *6*	80.6560	4⁻	E1	0.01413 *20*	α(K)=0.01203 *17*; α(L)=0.001647 *23*; α(M)=0.000354 *5* α(N)=8.04×10^{-5} *11*; α(O)=1.252×10^{-5} *18*; α(P)=1.145×10^{-6} *16*
		390.463 *7*	100 *5*	0.0	3⁻	E1	0.00801 *11*	α(K)=0.00684 *10*; α(L)=0.000925 *13*; α(M)=0.0001984 *28* α(N)=4.52×10^{-5} *6*; α(O)=7.07×10^{-6} *10*; α(P)=6.61×10^{-7} *9*
400		207		192.2939	(5)⁺			
401		105		295.9225	(4)⁺			
401.091	(3)⁺	216.041 *3*	83 *8*	185.0509	2⁺	M1	0.2129 *30*	α(K)=0.1805 *25*; α(L)=0.0255 *4*; α(M)=0.00550 *8* α(N)=0.001259 *18*; α(O)=0.0002000 *28*; α(P)=1.987×10^{-5} *28*
		227.479 *9*	10 *4*	173.6022	3⁻			
		278.513 *9*	73 *4*	122.5582	2⁻	E1	0.01849 *26*	α(K)=0.01573 *22*; α(L)=0.002166 *30*; α(M)=0.000465 *7* α(N)=0.0001057 *15*; α(O)=1.642×10^{-5} *23*; α(P)=1.484×10^{-6} *21*
		300.231[@] *4*	76[@] *5*	100.8612	4⁺	(M1)	0.0878 *12*	α(K)=0.0745 *10*; α(L)=0.01042 *15*; α(M)=0.002247 *31* α(N)=0.000515 *7*; α(O)=8.18×10^{-5} *11*; α(P)=8.16×10^{-6} *11*
		332.915 *5*	100 *5*	68.1702	2⁺	M1	0.0668 *9*	α(K)=0.0567 *8*; α(L)=0.00791 *11*; α(M)=0.001704 *24* α(N)=0.000390 *5*; α(O)=6.20×10^{-5} *9*; α(P)=6.20×10^{-6} *9*
402.7890	(1)⁺	217.7323 *26*	67 *5*	185.0509	2⁺	E2	0.1624 *23*	α(K)=0.1176 *16*; α(L)=0.0348 *5*; α(M)=0.00792 *11* α(N)=0.001774 *25*; α(O)=0.000254 *4*; α(P)=1.025×10^{-5} *14*
		221.971[@] *5*	182[@] *36*	180.8092	2⁻	(E1)	0.0333 *5*	α(K)=0.0283 *4*; α(L)=0.00394 *6*; α(M)=0.000846 *12* α(N)=0.0001919 *27*; α(O)=2.97×10^{-5} *4*; α(P)=2.61×10^{-6} *4*
		268.011 *4*	100 *7*	134.7814	1⁺	M1	0.1188 *17*	α(K)=0.1008 *14*; α(L)=0.01415 *20*; α(M)=0.00305 *4* α(N)=0.000699 *10*; α(O)=0.0001110 *16*; α(P)=1.106×10^{-5} *15*
		330.877 *13*	53 *5*	71.9118	1⁺	M1	0.0679 *10*	α(K)=0.0576 *8*; α(L)=0.00804 *11*; α(M)=0.001732 *24* α(N)=0.000397 *6*; α(O)=6.31×10^{-5} *9*; α(P)=6.30×10^{-6} *9*
		334.621 *8*	34 *4*	68.1702	2⁺	M1	0.0659 *9*	α(K)=0.0560 *8*; α(L)=0.00780 *11*; α(M)=0.001681 *24* α(N)=0.000385 *5*; α(O)=6.12×10^{-5} *9*; α(P)=6.12×10^{-6} *9*

From ENSDF

$^{154}_{63}Eu_{91}$-22

Adopted Levels, Gammas (continued)

γ(^{154}Eu) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[‡]	α[#]	Comments
403.5175	(4)$^+$	67.7564 *9*	100 *10*	335.7621	3$^+$			Mult.: Reported as M1 or E1, but no supporting data given.
		71.1924 *27*	22 *8*	332.324	(5)$^+$			
		93.5235 *20*	82 *4*	309.9953	3$^+$	M1	2.236 *31*	α(K)=1.891 *26*; α(L)=0.271 *4*; α(M)=0.0585 *8* α(N)=0.01340 *19*; α(O)=0.002125 *30*; α(P)=0.0002094 *29*
		107.601 *4*	22 *3*	295.9225	(4)$^+$			
		151.684 *4*	24 *4*	251.8253	3$^+$	M1,E2	0.559 *11*	α(K)=0.42 *6*; α(L)=0.11 *4*; α(M)=0.025 *10* α(N)=0.0056 *23*; α(O)=8.2×10^{-4} *28*; α(P)=4.1×10^{-5} *12*
		302.665 *12*	95 *9*	100.8612	4$^+$	E2	0.0566 *8*	α(K)=0.0438 *6*; α(L)=0.01003 *14*; α(M)=0.002253 *32* α(N)=0.000507 *7*; α(O)=7.44×10^{-5} *10*; α(P)=4.08×10^{-6} *6*
		322.862 *21*	13 *4*	80.6560	4$^-$			
		403.43 *4*	16 *5*	0.0	3$^-$			
407.0338	(3)$^-$	171.7576[@] *24*	64[@] *6*	235.2787	4$^-$	(M1)	0.400 *6*	α(K)=0.339 *5*; α(L)=0.0481 *7*; α(M)=0.01039 *15* α(N)=0.002380 *33*; α(O)=0.000378 *5*; α(P)=3.74×10^{-5} *5*
		176.147 *6*	68 *6*	230.8810	4$^-$	M1	0.373 *5*	α(K)=0.316 *4*; α(L)=0.0448 *6*; α(M)=0.00968 *14* α(N)=0.002218 *31*; α(O)=0.000352 *5*; α(P)=3.49×10^{-5} *5*
		192.947 *4*	43 *11*	214.0746	3$^-$	M1	0.290 *4*	α(K)=0.2459 *34*; α(L)=0.0348 *5*; α(M)=0.00752 *11* α(N)=0.001721 *24*; α(O)=0.000273 *4*; α(P)=2.71×10^{-5} *4*
		221.971[@] *5*	213[@] *43*	185.0509	2$^+$	(E1)	0.0333 *5*	α(K)=0.0283 *4*; α(L)=0.00394 *6*; α(M)=0.000846 *12* α(N)=0.0001919 *27*; α(O)=2.97×10^{-5} *4*; α(P)=2.61×10^{-6} *4*
		233.436 *4*	100 *9*	173.6022	3$^-$	M1	0.1725 *24*	α(K)=0.1462 *20*; α(L)=0.02060 *29*; α(M)=0.00445 *6* α(N)=0.001018 *14*; α(O)=0.0001617 *23*; α(P)=1.608×10^{-5} *23*
		277.364 *10*	47 *4*	129.6795	4$^-$	M1	0.1084 *15*	α(K)=0.0920 *13*; α(L)=0.01289 *18*; α(M)=0.00278 *4* α(N)=0.000637 *9*; α(O)=0.0001012 *14*; α(P)=1.009×10^{-5} *14*
		279.607[@] *6*	57[@] *6*	127.4301	4$^+$	(E1)	0.01830 *26*	α(K)=0.01558 *22*; α(L)=0.002144 *30*; α(M)=0.000460 *6* α(N)=0.0001046 *15*; α(O)=1.625×10^{-5} *23*; α(P)=1.469×10^{-6} *21*
		326.387 *9*	16 *3*	80.6560	4$^-$			
		338.873 *14*	24 *4*	68.1702	2$^+$			
410.0748	(1)$^-$	60.2610 *27*	100 *12*	349.8207	2$^+$			
		225.024 *6*	26 *4*	185.0509	2$^+$			
		229.262 *4*	67 *5*	180.8092	2$^-$	E2	0.1371 *19*	α(K)=0.1005 *14*; α(L)=0.0284 *4*; α(M)=0.00646 *9* α(N)=0.001447 *20*; α(O)=0.0002079 *29*; α(P)=8.86×10^{-6} *12*
		247.636 *4*	59 *5*	162.4299	1$^-$	M1	0.1470 *21*	α(K)=0.1247 *17*; α(L)=0.01753 *25*; α(M)=0.00378 *5* α(N)=0.000867 *12*; α(O)=0.0001376 *19*; α(P)=1.370×10^{-5} *19*
411.8891	4$^+$	156.668 *5*	12.8 *23*	255.2096	(5)$^+$	E2,M1	0.505 *14*	α(K)=0.38 *6*; α(L)=0.10 *4*; α(M)=0.022 *9* α(N)=0.0050 *19*; α(O)=7.3×10^{-4} *24*; α(P)=3.7×10^{-5} *11*
		208.076 *5*	26 *4*	203.8168	(4)$^+$	M1	0.2360 *33*	α(K)=0.2000 *28*; α(L)=0.0282 *4*; α(M)=0.00610 *9* α(N)=0.001397 *20*; α(O)=0.0002218 *31*; α(P)=2.202×10^{-5} *31*
		219.574[@] *8*	11[@] *4*	192.2939	(5)$^+$			

From ENSDF

$^{154}_{63}Eu_{91}$-23

Adopted Levels, Gammas (continued)

γ(^{154}Eu) (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ	E_f	J_f^π	Mult. [‡]	α [#]	Comments
411.8891	4^+	275.194 *3*	100 *5*	136.6967	5^+	M1	0.1107 *15*	α(K)=0.0939 *13*; α(L)=0.01317 *18*; α(M)=0.00284 *4* α(N)=0.000651 *9*; α(O)=0.0001034 *14*; α(P)=1.031×10^{-5} *14*
		311.025 *7*	38 *3*	100.8612	4^+	M1	0.0799 *11*	α(K)=0.0678 *9*; α(L)=0.00948 *13*; α(M)=0.002044 *29* α(N)=0.000468 *7*; α(O)=7.44×10^{-5} *10*; α(P)=7.43×10^{-6} *10*
		311.922 *10*	11.3 *11*	99.9484	3^+	M1	0.0793 *11*	α(K)=0.0673 *9*; α(L)=0.00941 *13*; α(M)=0.002028 *28* α(N)=0.000465 *7*; α(O)=7.38×10^{-5} *10*; α(P)=7.37×10^{-6} *10* I_γ: 1987Ba52 indicate possible double placement, but other placement not given.
414.698	$(0)^-$	331.888 *7*	100 *11*	82.8200	1^-	M1	0.0673 *9*	α(K)=0.0572 *8*; α(L)=0.00797 *11*; α(M)=0.001718 *24* α(N)=0.000394 *6*; α(O)=6.26×10^{-5} *9*; α(P)=6.25×10^{-6} *9*
		342.782 *13*	100 *33*	71.9118	1^+			Mult.: ce data consistent with E1 or E2; level scheme requires Δπ=yes.
415.6551	$(5)^+$	83.3302 *17*	17.6 *12*	332.324	$(5)^+$	M1	3.12 *4*	α(K)=2.64 *4*; α(L)=0.378 *5*; α(M)=0.0817 *11* α(N)=0.01871 *26*; α(O)=0.00297 *4*; α(P)=0.000292 *4*
		119.746 *9*	3.5 *12*	295.9225	$(4)^+$			
		180.3782 *14*	100 *8*	235.2787	4^-	E1	0.0577 *8*	α(K)=0.0489 *7*; α(L)=0.00690 *10*; α(M)=0.001483 *21* α(N)=0.000336 *5*; α(O)=5.16×10^{-5} *7*; α(P)=4.41×10^{-6} *6*
		184.7728 *13*	71 *5*	230.8810	4^-	E1	0.0541 *8*	α(K)=0.0459 *6*; α(L)=0.00646 *9*; α(M)=0.001389 *19* α(N)=0.000315 *4*; α(O)=4.84×10^{-5} *7*; α(P)=4.15×10^{-6} *6*
		278.954 *5*	39 *3*	136.6967	5^+	M1	0.1068 *15*	α(K)=0.0906 *13*; α(L)=0.01270 *18*; α(M)=0.00274 *4* α(N)=0.000627 *9*; α(O)=9.96×10^{-5} *14*; α(P)=9.94×10^{-6} *14*
		288.221 *10*	10.0 *15*	127.4301	4^+			
		314.805 *13*	14.1 *10*	100.8612	4^+	M1	0.0774 *11*	α(K)=0.0657 *9*; α(L)=0.00918 *13*; α(M)=0.001979 *28* α(N)=0.000453 *6*; α(O)=7.20×10^{-5} *10*; α(P)=7.19×10^{-6} *10*
419.6903	2^-	136.8791 *16*	56 *3*	282.8087	$(2)^+$	E1	0.1213 *17*	α(K)=0.1025 *14*; α(L)=0.01477 *21*; α(M)=0.00318 *4* α(N)=0.000718 *10*; α(O)=0.0001092 *15*; α(P)=8.93×10^{-6} *13*
		140.660 *3*	17.9 *21*	279.0377	$(0)^-$	E2	0.718 *10*	α(K)=0.444 *6*; α(L)=0.2125 *30*; α(M)=0.0492 *7* α(N)=0.01095 *15*; α(O)=0.001518 *21*; α(P)=3.49×10^{-5} *5*
		141.141 *4*	8 *3*	278.5480	2^+			
		238.8803 *22*	68 *6*	180.8092	2^-	M1	0.1620 *23*	α(K)=0.1374 *19*; α(L)=0.01934 *27*; α(M)=0.00417 *6* α(N)=0.000956 *13*; α(O)=0.0001518 *21*; α(P)=1.511×10^{-5} *21*
		257.256 *9*	100 *7*	162.4299	1^-	M1	0.1327 *19*	α(K)=0.1125 *16*; α(L)=0.01581 *22*; α(M)=0.00341 *5* α(N)=0.000781 *11*; α(O)=0.0001241 *17*; α(P)=1.236×10^{-5} *17*
		297.127 *4*	50 *3*	122.5582	2^-	M1	0.0902 *13*	α(K)=0.0766 *11*; α(L)=0.01071 *15*; α(M)=0.002310 *32* α(N)=0.000529 *7*; α(O)=8.41×10^{-5} *12*; α(P)=8.39×10^{-6} *12*
		319.732 *10*	48 *5*	99.9484	3^+	(E1)	0.01306 *18*	α(K)=0.01112 *16*; α(L)=0.001520 *21*; α(M)=0.000326 *5* α(N)=7.42×10^{-5} *10*; α(O)=1.156×10^{-5} *16*; α(P)=1.061×10^{-6} *15*
		336.882 *5*	10.3 *8*	82.8200	1^-	M1	0.0647 *9*	α(K)=0.0550 *8*; α(L)=0.00766 *11*; α(M)=0.001651 *23* α(N)=0.000378 *5*; α(O)=6.01×10^{-5} *8*; α(P)=6.01×10^{-6} *8*

From ENSDF

$^{154}_{63}Eu_{91}$-24

Adopted Levels, Gammas (continued)

γ(^{154}Eu) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[‡]	α[#]	Comments
419.6903	2^-	347.780 *5*	96 *5*	71.9118	1^+	E1	0.01061 *15*	α(K)=0.00904 *13*; α(L)=0.001231 *17*; α(M)=0.000264 *4* α(N)=6.01×10^{-5} *8*; α(O)=9.38×10^{-6} *13*; α(P)=8.68×10^{-7} *12*
425.472	$(1)^+$	240.409 *9*	38 *4*	185.0509	2^+	E2	0.1174 *16*	α(K)=0.0870 *12*; α(L)=0.02365 *33*; α(M)=0.00536 *8* α(N)=0.001203 *17*; α(O)=0.0001734 *24*; α(P)=7.75×10^{-6} *11*
		302.938 *11*	100 *8*	122.5582	2^-	E1	0.01494 *21*	α(K)=0.01273 *18*; α(L)=0.001744 *24*; α(M)=0.000374 *5* α(N)=8.51×10^{-5} *12*; α(O)=1.325×10^{-5} *19*; α(P)=1.208×10^{-6} *17*
		325.470 *20*	19 *6*	99.9484	3^+			
		353.564 *8*	52 *4*	71.9118	1^+	M1	0.0570 *8*	α(K)=0.0484 *7*; α(L)=0.00674 *9*; α(M)=0.001453 *20* α(N)=0.000333 *5*; α(O)=5.29×10^{-5} *7*; α(P)=5.29×10^{-6} *7*
		357.279 *19*	15 *3*	68.1702	2^+	(M1)	0.0555 *8*	α(K)=0.0471 *7*; α(L)=0.00656 *9*; α(M)=0.001413 *20* α(N)=0.000324 *5*; α(O)=5.14×10^{-5} *7*; α(P)=5.15×10^{-6} *7*
425.7890	$(4)^-$	106.569 *5*	4.2 *9*	319.200	$(3)^+$			
		113.5012 *25*	4.7 *19*	312.2856	$(5)^-$			
		221.971[@] *5*	72[@] *14*	203.8168	$(4)^+$	(E1)	0.0333 *5*	α(K)=0.0283 *4*; α(L)=0.00394 *6*; α(M)=0.000846 *12* α(N)=0.0001919 *27*; α(O)=2.97×10^{-5} *4*; α(P)=2.61×10^{-6} *4*
		250.293 *6*	71 *5*	175.4817	5^-	M1	0.1428 *20*	α(K)=0.1211 *17*; α(L)=0.01703 *24*; α(M)=0.00367 *5* α(N)=0.000842 *12*; α(O)=0.0001337 *19*; α(P)=1.331×10^{-5} *19*
		289.084[@] *3*	128[@] *9*	136.6967	5^+	E1	0.01682 *24*	α(K)=0.01432 *20*; α(L)=0.001967 *28*; α(M)=0.000422 *6* α(N)=9.60×10^{-5} *13*; α(O)=1.492×10^{-5} *21*; α(P)=1.354×10^{-6} *19*
		296.087 *7*	100 *5*	129.6795	4^-	M1	0.0911 *13*	α(K)=0.0773 *11*; α(L)=0.01081 *15*; α(M)=0.002332 *33* α(N)=0.000534 *7*; α(O)=8.49×10^{-5} *12*; α(P)=8.47×10^{-6} *12*
		345.130 *23*	5.6 *19*	80.6560	4^-	(M1)	0.0608 *9*	α(K)=0.0516 *7*; α(L)=0.00718 *10*; α(M)=0.001549 *22* α(N)=0.000355 *5*; α(O)=5.64×10^{-5} *8*; α(P)=5.64×10^{-6} *8*
428.1890	$(5)^-$	95.8643 *15*	30 *4*	332.324	$(5)^+$			
		172.9777 *25*	71 *5*	255.2096	$(5)^+$	E1	0.0645 *9*	α(K)=0.0547 *8*; α(L)=0.00774 *11*; α(M)=0.001664 *23* α(N)=0.000377 *5*; α(O)=5.78×10^{-5} *8*; α(P)=4.91×10^{-6} *7*
		252.713 *4*	88 *6*	175.4817	5^-	M1	0.1392 *19*	α(K)=0.1180 *17*; α(L)=0.01659 *23*; α(M)=0.00358 *5* α(N)=0.000820 *11*; α(O)=0.0001302 *18*; α(P)=1.297×10^{-5} *18*
		291.478 *5*	30.1 *24*	136.6967	5^+			
		298.521 *10*	54 *4*	129.6795	4^-	E2	0.0591 *8*	α(K)=0.0456 *6*; α(L)=0.01054 *15*; α(M)=0.002369 *33* α(N)=0.000533 *7*; α(O)=7.82×10^{-5} *11*; α(P)=4.23×10^{-6} *6*
		300.768 *14*	7.2 *12*	127.4301	4^+			
		327.325 *6*	100 *5*	100.8612	4^+	E1	0.01232 *17*	α(K)=0.01049 *15*; α(L)=0.001433 *20*; α(M)=0.000307 *4* α(N)=6.99×10^{-5} *10*; α(O)=1.090×10^{-5} *15*; α(P)=1.003×10^{-6} *14*
428.7117	$(4)^+$	135.902 *4*	3.6 *5*	292.8200	$(6)^+$			
		173.502 *11*	3.4 *11*	255.2096	$(5)^+$			
		232.595[@] *11*	5.2[@] *9*	196.1211	$(6)^+$			
		236.368 *25*	5.0 *9*	192.2939	$(5)^+$			

From ENSDF

$^{154}_{63}Eu_{91}$-25

Adopted Levels, Gammas (continued)

γ(^{154}Eu) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[‡]	α[#]	Comments
428.7117	(4)$^+$	253.212 *6*	9.1 *16*	175.4817	5$^-$	E1	0.02361 *33*	α(K)=0.02008 *28*; α(L)=0.00278 *4*; α(M)=0.000596 *8* α(N)=0.0001354 *19*; α(O)=2.100×10^{-5} *29*; α(P)=1.877×10^{-6} *26*
		299.0314 *21*	100 *7*	129.6795	4$^-$	E1	0.01544 *22*	α(K)=0.01315 *18*; α(L)=0.001803 *25*; α(M)=0.000387 *5* α(N)=8.80×10^{-5} *12*; α(O)=1.369×10^{-5} *19*; α(P)=1.247×10^{-6} *17*
		301.278 *5*	12.7 *14*	127.4301	4$^+$	M1	0.0870 *12*	α(K)=0.0738 *10*; α(L)=0.01032 *14*; α(M)=0.002226 *31* α(N)=0.000510 *7*; α(O)=8.10×10^{-5} *11*; α(P)=8.09×10^{-6} *11*
		327.835 *6*	16.1 *9*	100.8612	4$^+$	M1	0.0695 *10*	α(K)=0.0591 *8*; α(L)=0.00824 *12*; α(M)=0.001776 *25* α(N)=0.000407 *6*; α(O)=6.46×10^{-5} *9*; α(P)=6.46×10^{-6} *9*
429.9187	(3)$^-$	151.3771 *16*	34 *3*	278.5480	2$^+$			Mult.: ce data suggests E2, but J^π's require E1.
		194.648 *6*	13.8 *21*	235.2787	4$^-$	M1,E2	0.260 *24*	α(K)=0.20 *4*; α(L)=0.044 *10*; α(M)=0.0099 *26* α(N)=0.0022 *6*; α(O)=0.00033 *6*; α(P)=2.0×10^{-5} *6*
		199.033[@] *4*	46[@] *5*	230.8810	4$^-$	(M1,E2)	0.243 *24*	α(K)=0.19 *4*; α(L)=0.041 *9*; α(M)=0.0091 *22* α(N)=0.0021 *5*; α(O)=0.00031 *6*; α(P)=1.9×10^{-5} *6*
		215.838 *4*	54 *8*	214.0746	3$^-$	M1	0.2135 *30*	α(K)=0.1809 *25*; α(L)=0.0255 *4*; α(M)=0.00551 *8* α(N)=0.001263 *18*; α(O)=0.0002005 *28*; α(P)=1.992×10^{-5} *28*
		249.094 *8*	100 *8*	180.8092	2$^-$	M1	0.1447 *20*	α(K)=0.1227 *17*; α(L)=0.01725 *24*; α(M)=0.00372 *5* α(N)=0.000853 *12*; α(O)=0.0001354 *19*; α(P)=1.348×10^{-5} *19*
		300.231[@] *4*	86[@] *6*	129.6795	4$^-$	(M1)	0.0878 *12*	α(K)=0.0745 *10*; α(L)=0.01042 *15*; α(M)=0.002247 *31* α(N)=0.000515 *7*; α(O)=8.18×10^{-5} *11*; α(P)=8.16×10^{-6} *11*
		302.489 *27*	4.8 *14*	127.4301	4$^+$			
		307.348 *8*	100 *6*	122.5582	2$^-$	M1	0.0825 *12*	α(K)=0.0700 *10*; α(L)=0.00978 *14*; α(M)=0.002110 *30* α(N)=0.000483 *7*; α(O)=7.68×10^{-5} *11*; α(P)=7.67×10^{-6} *11*
		329.956 *17*	17.9 *21*	99.9484	3$^+$			Mult.: ce data consistent with E2 or E1; level scheme requires Δπ=yes.
		347.112 *8*	11.0 *14*	82.8200	1$^-$	E2	0.0374 *5*	α(K)=0.0295 *4*; α(L)=0.00619 *9*; α(M)=0.001383 *19* α(N)=0.000312 *4*; α(O)=4.63×10^{-5} *6*; α(P)=2.81×10^{-6} *4*
		361.752 *3*	100 *5*	68.1702	2$^+$	E1	0.00963 *13*	α(K)=0.00822 *12*; α(L)=0.001116 *16*; α(M)=0.0002394 *34* α(N)=5.45×10^{-5} *8*; α(O)=8.51×10^{-6} *12*; α(P)=7.90×10^{-7} *11*
		429.85 *3*	7.6 *14*	0.0	3$^-$			
435.940	(1,2)$^-$	250.8871 *28*	25.0 *25*	185.0509	2$^+$			
		255.136 *4*	10.8 *17*	180.8092	2$^-$	M1	0.1356 *19*	α(K)=0.1150 *16*; α(L)=0.01617 *23*; α(M)=0.00349 *5* α(N)=0.000799 *11*; α(O)=0.0001269 *18*; α(P)=1.264×10^{-5} *18*
		301.176 *5*	55 *5*	134.7814	1$^+$	E1	0.01516 *21*	α(K)=0.01291 *18*; α(L)=0.001770 *25*; α(M)=0.000380 *5* α(N)=8.64×10^{-5} *12*; α(O)=1.345×10^{-5} *19*; α(P)=1.226×10^{-6} *17*
		364.018 *5*	72 *4*	71.9118	1$^+$			Mult.: ce data consistent with E2 or E1; level scheme requires Δπ=yes.
		367.772 *4*	100 *6*	68.1702	2$^+$	E1	0.00926 *13*	α(K)=0.00789 *11*; α(L)=0.001071 *15*; α(M)=0.0002298 *32* α(N)=5.23×10^{-5} *7*; α(O)=8.17×10^{-6} *11*; α(P)=7.60×10^{-7} *11*
		435.973 *22*	13 *3*	0.0	3$^-$			

From ENSDF

$^{154}_{63}Eu_{91}$-26

Adopted Levels, Gammas (continued)

γ(^{154}Eu) (continued)

E_i(level)	J_i^π	E_γ †	I_γ	E_f	J_f^π	Mult.‡	α#	Comments
438.1	7^-	138.2		299.8081	$(6)^-$			
451.0074	2^+	265.961 *5*	64 *6*	185.0509	2^+	M1	0.1213 *17*	α(K)=0.1029 *14*; α(L)=0.01444 *20*; α(M)=0.00312 *4* α(N)=0.0007137 *99*; α(O)=0.0001134 *16*; α(P)=1.130×10^{-5} *16*
		288.586 *6*	47 *6*	162.4299	1^-			
		316.224 *10*	94 *8*	134.7814	1^+	M1	0.0765 *11*	α(K)=0.0649 *9*; α(L)=0.00907 *13*; α(M)=0.001955 *27* α(N)=0.000448 *6*; α(O)=7.12×10^{-5} *10*; α(P)=7.11×10^{-6} *10*
		328.459 *6*	66 *5*	122.5582	2^-			Mult.: ce data consistent with M1, but the J^π require E1.
		351.060 *18*	100 *6*	99.9484	3^+	M1	0.0581 *8*	α(K)=0.0494 *7*; α(L)=0.00687 *10*; α(M)=0.001480 *21* α(N)=0.000339 *5*; α(O)=5.39×10^{-5} *8*; α(P)=5.39×10^{-6} *8*
		451.00 *3*	26 *9*	0.0	3^-			
451.356	2^-	101.523 *4*	7.9 *12*	349.8207	2^+			
		141.367 *7*	18 *10*	309.9953	3^+			
		169.647 *14*	3.8 *10*	281.6791	$(3)^+$			
		199.503 *5*	18 *4*	251.8253	3^+	E1	0.0441 *6*	α(K)=0.0374 *5*; α(L)=0.00525 *7*; α(M)=0.001128 *16* α(N)=0.000256 *4*; α(O)=3.94×10^{-5} *6*; α(P)=3.42×10^{-6} *5*
		277.781 *11*	100 *7*	173.6022	3^-	M1	0.1080 *15*	α(K)=0.0916 *13*; α(L)=0.01284 *18*; α(M)=0.00277 *4* α(N)=0.000634 *9*; α(O)=0.0001008 *14*; α(P)=1.005×10^{-5} *14*
		316.576 *5*	99 *5*	134.7814	1^+	E1	0.01338 *19*	α(K)=0.01140 *16*; α(L)=0.001559 *22*; α(M)=0.000335 *5* α(N)=7.61×10^{-5} *11*; α(O)=1.185×10^{-5} *17*; α(P)=1.086×10^{-6} *15*
		368.528 *3*	53 *3*	82.8200	1^-	M1	0.0512 *7*	α(K)=0.0435 *6*; α(L)=0.00604 *8*; α(M)=0.001302 *18* α(N)=0.000298 *4*; α(O)=4.74×10^{-5} *7*; α(P)=4.75×10^{-6} *7*
		379.442 *7*	50 *4*	71.9118	1^+			
454		373		80.6560	4^-			
467.5320	$(4)^-$	129.426 *3*	6.8 *10*	338.0996	4^+			
		215.699 *6*	15 *3*	251.8253	3^+			Mult.: ce data consistent with E2, but the J^π require E1.
		286.639 *29*	2.4 *7*	180.8092	2^-			
		292.067 *8*	9.3 *10*	175.4817	5^-	M1,E2	0.079 *16*	α(K)=0.064 *16*; α(L)=0.01131 *19*; α(M)=0.00249 *8* α(N)=0.000566 *14*; α(O)=8.63×10^{-5} *21*; α(P)=6.6×10^{-6} *21*
		293.903 *11*	4.4 *7*	173.6022	3^-			
		337.846 *6*	100 *5*	129.6795	4^-	M1	0.0643 *9*	α(K)=0.0546 *8*; α(L)=0.00760 *11*; α(M)=0.001639 *23* α(N)=0.000375 *5*; α(O)=5.97×10^{-5} *8*; α(P)=5.97×10^{-6} *8*
471.1510	$(3)^-$	191.768@ *7*	8.8@ *25*	279.3791	4^-	(M1)	0.295 *4*	α(K)=0.2501 *35*; α(L)=0.0354 *5*; α(M)=0.00764 *11* α(N)=0.001751 *25*; α(O)=0.000278 *4*; α(P)=2.76×10^{-5} *4*
		198.309 *4*	94 *7*	272.8512	5^-	E2	0.2215 *31*	α(K)=0.1565 *22*; α(L)=0.0505 *7*; α(M)=0.01155 *16* α(N)=0.00258 *4*; α(O)=0.000367 *5*; α(P)=1.336×10^{-5} *19*
		219.318 *3*	100 *38*	251.8253	3^+	E1	0.0343 *5*	α(K)=0.0292 *4*; α(L)=0.00407 *6*; α(M)=0.000874 *12* α(N)=0.0001982 *28*; α(O)=3.06×10^{-5} *4*; α(P)=2.69×10^{-6} *4*
		240.278 *5*	11.2 *13*	230.8810	4^-	M1	0.1595 *22*	α(K)=0.1352 *19*; α(L)=0.01903 *27*; α(M)=0.00411 *6* α(N)=0.000941 *13*; α(O)=0.0001494 *21*; α(P)=1.487×10^{-5} *21*

From ENSDF

Adopted Levels, Gammas (continued)

γ(^{154}Eu) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[‡]	α[#]	Comments
471.1510	(3)$^-$	343.65 *3*	9 *3*	127.4301	4$^+$			
		371.217 *19*	10.0 *13*	99.9484	3$^+$			
471.8890	4$^-$	145.011 *7*	25 *4*	326.8726	3$^+$,4$^+$	E1	0.1038 *15*	α(K)=0.0878 *12*; α(L)=0.01258 *18*; α(M)=0.00271 *4* α(N)=0.000612 *9*; α(O)=9.33×10^{-5} *13*; α(P)=7.71×10^{-6} *11*
		190.190[@] *7*	53[@] *4*	281.6791	(3)$^+$			
		199.033[@] *4*	38[@] *4*	272.8512	5$^-$	(M1)	0.267 *4*	α(K)=0.2258 *32*; α(L)=0.0319 *4*; α(M)=0.00690 *10* α(N)=0.001579 *22*; α(O)=0.0002507 *35*; α(P)=2.489×10^{-5} *35*
		232.595[@] *11*	13.1[@] *23*	239.2889	3$^-$	(M1)	0.1742 *24*	α(K)=0.1477 *21*; α(L)=0.02080 *29*; α(M)=0.00449 *6* α(N)=0.001028 *14*; α(O)=0.0001633 *23*; α(P)=1.624×10^{-5} *23*
		279.607[@] *6*	23.4[@] *22*	192.2939	(5)$^+$	(E1)	0.01830 *26*	α(K)=0.01558 *22*; α(L)=0.002144 *30*; α(M)=0.000460 *6* α(N)=0.0001046 *15*; α(O)=1.625×10^{-5} *23*; α(P)=1.469×10^{-6} *21*
		342.217 *6*	100 *7*	129.6795	4$^-$	M1	0.0621 *9*	α(K)=0.0528 *7*; α(L)=0.00735 *10*; α(M)=0.001584 *22* α(N)=0.000363 *5*; α(O)=5.77×10^{-5} *8*; α(P)=5.77×10^{-6} *8*
		371.940 *12*	17 *6*	99.9484	3$^+$			
		391.21 *4*	12.6 *14*	80.6560	4$^-$			
		471.897 *9*	58 *3*	0.0	3$^-$	M1	0.0270 *4*	α(K)=0.02301 *32*; α(L)=0.00317 *4*; α(M)=0.000682 *10* α(N)=0.0001563 *22*; α(O)=2.487×10^{-5} *35*; α(P)=2.501×10^{-6} *35*
475		118.5		356.1031	(6)$^-$			
479.142	3$^-$	265.082 *14*	2.0 *5*	214.0746	3$^-$			
		294.100 *7*	17.9 *13*	185.0509	2$^+$	E1	0.01610 *23*	α(K)=0.01371 *19*; α(L)=0.001881 *26*; α(M)=0.000404 *6* α(N)=9.18×10^{-5} *13*; α(O)=1.428×10^{-5} *20*; α(P)=1.299×10^{-6} *18*
		298.342 *12*	3.6 *7*	180.8092	2$^-$			
		305.532 *11*	4.2 *5*	173.6022	3$^-$			
		351.711 *10*	20.8 *13*	127.4301	4$^+$			Mult.: ce data consistent with E1 or E2; level scheme requires Δπ=yes.
		379.183 *4*	100 *5*	99.9484	3$^+$	E1	0.00860 *12*	α(K)=0.00733 *10*; α(L)=0.000994 *14*; α(M)=0.0002132 *30* α(N)=4.85×10^{-5} *7*; α(O)=7.59×10^{-6} *11*; α(P)=7.08×10^{-7} *10*
		410.973 *4*	37 *3*	68.1702	2$^+$	E1	0.00709 *10*	α(K)=0.00606 *8*; α(L)=0.000817 *11*; α(M)=0.0001752 *25* α(N)=3.99×10^{-5} *6*; α(O)=6.25×10^{-6} *9*; α(P)=5.87×10^{-7} *8*
480.4	(5$^+$)	299.6		180.7439	5$^-$			
		399.6		80.6560	4$^-$			
484.6	(10$^-$)	173.3		311.3	(9$^-$)			
485.1826	4$^-$	143.050 *5*	5.8 *19*	342.1315	2$^-$			
		149.435 *11*	8.4 *19*	335.7621	3$^+$			
		152.8546 *15*	32 *4*	332.324	(5)$^+$	E1	0.0900 *13*	α(K)=0.0762 *11*; α(L)=0.01088 *15*; α(M)=0.002339 *33* α(N)=0.000529 *7*; α(O)=8.08×10^{-5} *11*; α(P)=6.73×10^{-6} *9* I_γ: 1987Ba52 indicate possible double placement, but other placement not given.
		158.312 *3*	9.0 *19*	326.8726	3$^+$,4$^+$	E1	0.0819 *11*	α(K)=0.0693 *10*; α(L)=0.00987 *14*; α(M)=0.002123 *30*

From ENSDF

Adopted Levels, Gammas (continued)

γ(^{154}Eu) (continued)

E_i(level)	J_i^π	E_γ †	I_γ	E_f	J_f^π	Mult. ‡	α #	Comments
								α(N)=0.000480 *7*; α(O)=7.35×10^{-5} *10*; α(P)=6.16×10^{-6} *9* I_γ: 1987Ba52 indicate possible double placement, but other placement not given.
485.1826	4$^-$	189.255 *3*	16.8 *19*	295.9225	(4)$^+$			
		203.506 *4*	100 *7*	281.6791	(3)$^+$	E1	0.0418 *6*	α(K)=0.0355 *5*; α(L)=0.00497 *7*; α(M)=0.001069 *15* α(N)=0.0002423 *34*; α(O)=3.73×10^{-5} *5*; α(P)=3.25×10^{-6} *5*
		205.800 *8*	13 *3*	279.3791	4$^-$	E2	0.1957 *27*	α(K)=0.1397 *20*; α(L)=0.0435 *6*; α(M)=0.00993 *14* α(N)=0.002223 *31*; α(O)=0.000317 *4*; α(P)=1.203×10^{-5} *17*
		254.285 *6*	13 *3*	230.8810	4$^-$			
		304.378 *20*	6.5 *10*	180.8092	2$^-$			Mult.: ce data suggest M1, but J^π require E2.
		348.423 *24*	2.6 *6*	136.6967	5$^+$			
		355.514 *8*	52 *3*	129.6795	4$^-$	M1	0.0562 *8*	α(K)=0.0478 *7*; α(L)=0.00664 *9*; α(M)=0.001432 *20* α(N)=0.000328 *5*; α(O)=5.21×10^{-5} *7*; α(P)=5.22×10^{-6} *7*
486.3840	(3)$^+$	70.7286 *22*	30 *10*	415.6551	(5)$^+$			
		136.5631 *24*	20 *3*	349.8207	2$^+$			
		167.1729 *18*	42 *5*	319.200	(3)$^+$	M1	0.432 *6*	α(K)=0.366 *5*; α(L)=0.0519 *7*; α(M)=0.01121 *16* α(N)=0.00257 *4*; α(O)=0.000407 *6*; α(P)=4.04×10^{-5} *6*
		282.542 *10*	82 *13*	203.8168	(4)$^+$	M1	0.1032 *14*	α(K)=0.0875 *12*; α(L)=0.01227 *17*; α(M)=0.00265 *4* α(N)=0.000606 *8*; α(O)=9.63×10^{-5} *13*; α(P)=9.60×10^{-6} *13*
		358.956 *15*	19 *4*	127.4301	4$^+$	M1	0.0548 *8*	α(K)=0.0466 *7*; α(L)=0.00647 *9*; α(M)=0.001395 *20* α(N)=0.000320 *4*; α(O)=5.08×10^{-5} *7*; α(P)=5.09×10^{-6} *7*
		385.536 *5*	100 *5*	100.8612	4$^+$	M1	0.0455 *6*	α(K)=0.0387 *5*; α(L)=0.00536 *8*; α(M)=0.001156 *16* α(N)=0.000265 *4*; α(O)=4.21×10^{-5} *6*; α(P)=4.22×10^{-6} *6*
		486.391 *5*	65 *4*	0.0	3$^-$	E1	0.00480 *7*	α(K)=0.00410 *6*; α(L)=0.000549 *8*; α(M)=0.0001177 *16* α(N)=2.68×10^{-5} *4*; α(O)=4.21×10^{-6} *6*; α(P)=4.02×10^{-7} *6*
494	(9$^+$)	117		376.8	(8$^+$)			
495.3		115.9		378.7268	(5)$^-$			
505.1400	3$^-$	185.920 *5*	9.7 *14*	319.200	(3)$^+$			
		225.730 *20*	12 *3*	279.3791	4$^-$			
		269.843 *13*	31 *3*	235.2787	4$^-$	M1	0.1167 *16*	α(K)=0.0990 *14*; α(L)=0.01389 *19*; α(M)=0.00300 *4* α(N)=0.000686 *10*; α(O)=0.0001090 *15*; α(P)=1.086×10^{-5} *15*
		274.250 *9*	24 *5*	230.8810	4$^-$	M1	0.1117 *16*	α(K)=0.0948 *13*; α(L)=0.01329 *19*; α(M)=0.00287 *4* α(N)=0.000657 *9*; α(O)=0.0001043 *15*; α(P)=1.040×10^{-5} *15*
		291.067 *11*	24.3 *21*	214.0746	3$^-$	M1	0.0953 *13*	α(K)=0.0809 *11*; α(L)=0.01132 *16*; α(M)=0.002442 *34* α(N)=0.000559 *8*; α(O)=8.89×10^{-5} *12*; α(P)=8.87×10^{-6} *12*
		320.086 *5*	100 *7*	185.0509	2$^+$	E1	0.01302 *18*	α(K)=0.01109 *16*; α(L)=0.001516 *21*; α(M)=0.000325 *5* α(N)=7.40×10^{-5} *10*; α(O)=1.153×10^{-5} *16*; α(P)=1.058×10^{-6} *15*
		324.331 *6*	34.7 *21*	180.8092	2$^-$	M1	0.0715 *10*	α(K)=0.0608 *9*; α(L)=0.00847 *12*; α(M)=0.001827 *26* α(N)=0.000419 *6*; α(O)=6.65×10^{-5} *9*; α(P)=6.65×10^{-6} *9*

From ENSDF

$^{154}_{63}Eu_{91}$-29

Adopted Levels, Gammas (continued)

γ(^{154}Eu) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[‡]	α[#]	Comments
505.1400	3⁻	331.540 *6*	14.6 *14*	173.6022	3⁻	M1	0.0675 *9*	α(K)=0.0573 *8*; α(L)=0.00799 *11*; α(M)=0.001723 *24* α(N)=0.000395 *6*; α(O)=6.27×10^{-5} *9*; α(P)=6.27×10^{-6} *9*
		405.231 *14*	10.4 *14*	99.9484	3⁺			
		424.517 *18*	15 *3*	80.6560	4⁻			
		436.96 *3*	17 *4*	68.1702	2⁺			
513.271	(4)⁻	109.752 *6*	14 *5*	403.5175	(4)⁺			
		217.348 *16*	11 *4*	295.9225	(4)⁺			
		299.191 *10*	100 *7*	214.0746	3⁻	E2	0.0587 *8*	α(K)=0.0453 *6*; α(L)=0.01046 *15*; α(M)=0.002350 *33* α(N)=0.000529 *7*; α(O)=7.75×10^{-5} *11*; α(P)=4.21×10^{-6} *6*
		339.675 *7*	46 *4*	173.6022	3⁻	M1	0.0633 *9*	α(K)=0.0538 *8*; α(L)=0.00749 *10*; α(M)=0.001616 *23* α(N)=0.000370 *5*; α(O)=5.88×10^{-5} *8*; α(P)=5.88×10^{-6} *8*
		413.311 *12*	99 *6*	99.9484	3⁺	E1	0.00700 *10*	α(K)=0.00597 *8*; α(L)=0.000806 *11*; α(M)=0.0001729 *24* α(N)=3.94×10^{-5} *6*; α(O)=6.17×10^{-6} *9*; α(P)=5.80×10^{-7} *8*
515.9284	3⁻	219.991 *6*	12 *3*	295.9225	(4)⁺			
		234.2504 *24*	65 *5*	281.6791	(3)⁺			Mult.: ce data consistent with E2 or E1; level scheme requires Δπ=yes.
		301.853[@] *8*	23.6[@] *20*	214.0746	3⁻	(M1)	0.0865 *12*	α(K)=0.0734 *10*; α(L)=0.01027 *14*; α(M)=0.002214 *31* α(N)=0.000507 *7*; α(O)=8.06×10^{-5} *11*; α(P)=8.05×10^{-6} *11*
		340.459 *9*	18.2 *20*	175.4817	5⁻			
		386.244 *10*	65 *3*	129.6795	4⁻	M1	0.0453 *6*	α(K)=0.0385 *5*; α(L)=0.00534 *7*; α(M)=0.001150 *16* α(N)=0.000263 *4*; α(O)=4.19×10^{-5} *6*; α(P)=4.20×10^{-6} *6*
		388.505 *4*	59 *3*	127.4301	4⁺	E1	0.00811 *11*	α(K)=0.00692 *10*; α(L)=0.000937 *13*; α(M)=0.0002009 *28* α(N)=4.57×10^{-5} *6*; α(O)=7.15×10^{-6} *10*; α(P)=6.69×10^{-7} *9*
		415.019 *27*	12.8 *14*	100.8612	4⁺			
		447.747 *5*	100 *5*	68.1702	2⁺	E1	0.00580 *8*	α(K)=0.00496 *7*; α(L)=0.000666 *9*; α(M)=0.0001428 *20* α(N)=3.25×10^{-5} *5*; α(O)=5.10×10^{-6} *7*; α(P)=4.83×10^{-7} *7*
521.0540	3⁺	171.224 *10*	9.5 *12*	349.8207	2⁺	M1	0.404 *6*	α(K)=0.342 *5*; α(L)=0.0485 *7*; α(M)=0.01048 *15* α(N)=0.002401 *34*; α(O)=0.000381 *5*; α(P)=3.78×10^{-5} *5*
		182.9529 *24*	20.1 *24*	338.0996	4⁺			Mult.: ce data suggest E1, but J^π require M1,E2.
		285.752 *11*	3.0 *9*	235.2787	4⁻			
		290.150 *9*	10.7 *12*	230.8810	4⁻			
		307.001 *16*	14.8 *12*	214.0746	3⁻			Mult.: ce data consistent with M1, but the J^π require E1.
		335.997 *4*	27.8 *18*	185.0509	2⁺	M1	0.0652 *9*	α(K)=0.0554 *8*; α(L)=0.00771 *11*; α(M)=0.001663 *23* α(N)=0.000381 *5*; α(O)=6.05×10^{-5} *8*; α(P)=6.05×10^{-6} *8*
		340.216 *20*	5.9 *18*	180.8092	2⁻			
		393.645 *9*	18.3 *12*	127.4301	4⁺	M1,E2	0.034 *9*	α(K)=0.029 *8*; α(L)=0.0046 *5*; α(M)=0.00100 *10* α(N)=0.000227 *24*; α(O)=3.5×10^{-5} *5*; α(P)=3.0×10^{-6} *10*
		452.889 *5*	100 *5*	68.1702	2⁺	M1	0.0300 *4*	α(K)=0.0256 *4*; α(L)=0.00353 *5*; α(M)=0.000759 *11* α(N)=0.0001739 *24*; α(O)=2.77×10^{-5} *4*; α(P)=2.78×10^{-6} *4*
532.7393	3⁻,4⁻	125.712 *8*	2.8 *11*	407.0338	(3)⁻			

From ENSDF

$^{154}_{63}Eu_{91}$-30

Adopted Levels, Gammas (continued)

γ(^{154}Eu) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[‡]	α[#]	Comments
532.7393	3⁻,4⁻	154.016 *4*	30 *3*	378.7268	(5)⁻	E2	0.524 *7*	α(K)=0.338 *5*; α(L)=0.1440 *20*; α(M)=0.0332 *5* α(N)=0.00741 *10*; α(O)=0.001033 *14*; α(P)=2.72×10^{-5} *4*
		196.972 *3*	44 *3*	335.7621	3⁺	E1	0.0456 *6*	α(K)=0.0387 *5*; α(L)=0.00543 *8*; α(M)=0.001167 *16* α(N)=0.000265 *4*; α(O)=4.07×10^{-5} *6*; α(P)=3.53×10^{-6} *5*
		259.8867 *23*	100 *9*	272.8512	5⁻	E2	0.0914 *13*	α(K)=0.0688 *10*; α(L)=0.01758 *25*; α(M)=0.00397 *6* α(N)=0.000892 *12*; α(O)=0.0001294 *18*; α(P)=6.23×10^{-6} *9*
		297.466 *3*	42 *3*	235.2787	4⁻	M1	0.0900 *13*	α(K)=0.0764 *11*; α(L)=0.01068 *15*; α(M)=0.002303 *32* α(N)=0.000528 *7*; α(O)=8.38×10^{-5} *12*; α(P)=8.37×10^{-6} *12*
		301.853[@] *8*	19.9[@] *17*	230.8810	4⁻	(M1)	0.0865 *12*	α(K)=0.0734 *10*; α(L)=0.01027 *14*; α(M)=0.002214 *31* α(N)=0.000507 *7*; α(O)=8.06×10^{-5} *11*; α(P)=8.05×10^{-6} *11*
		359.141 *7*	43 *3*	173.6022	3⁻	M1	0.0547 *8*	α(K)=0.0465 *7*; α(L)=0.00647 *9*; α(M)=0.001394 *20* α(N)=0.000319 *4*; α(O)=5.07×10^{-5} *7*; α(P)=5.08×10^{-6} *7*
		532.69 *3*	12 *3*	0.0	3⁻			
545.949	2⁻	365.115 *11*	100 *8*	180.8092	2⁻	M1	0.0524 *7*	α(K)=0.0445 *6*; α(L)=0.00619 *9*; α(M)=0.001334 *19* α(N)=0.000306 *4*; α(O)=4.86×10^{-5} *7*; α(P)=4.86×10^{-6} *7*
		372.348 *4*	70 *4*	173.6022	3⁻	M1	0.0498 *7*	α(K)=0.0423 *6*; α(L)=0.00588 *8*; α(M)=0.001267 *18* α(N)=0.000290 *4*; α(O)=4.61×10^{-5} *6*; α(P)=4.62×10^{-6} *6*
		383.543 *6*	44 *3*	162.4299	1⁻	M1	0.0461 *6*	α(K)=0.0392 *5*; α(L)=0.00544 *8*; α(M)=0.001172 *16* α(N)=0.000268 *4*; α(O)=4.27×10^{-5} *6*; α(P)=4.28×10^{-6} *6*
		411.181 *6*	60 *5*	134.7814	1⁺	E1	0.00709 *10*	α(K)=0.00605 *8*; α(L)=0.000816 *11*; α(M)=0.0001750 *25* α(N)=3.99×10^{-5} *6*; α(O)=6.24×10^{-6} *9*; α(P)=5.87×10^{-7} *8*
		445.991 *8*	35.9 *17*	99.9484	3⁺			
		545.82 *5*	23 *3*	0.0	3⁻			
549.587	(1)⁻	134.907 *10*	9 *4*	414.698	(0)⁻			
		199.784 *10*	24 *4*	349.8207	2⁺			
		207.451 *4*	100 *12*	342.1315	2⁻	E2	0.1906 *27*	α(K)=0.1363 *19*; α(L)=0.0422 *6*; α(M)=0.00962 *13* α(N)=0.002152 *30*; α(O)=0.000307 *4*; α(P)=1.176×10^{-5} *16*
		270.540 *9*	50 *4*	279.0377	(0)⁻	M1	0.1159 *16*	α(K)=0.0983 *14*; α(L)=0.01379 *19*; α(M)=0.00297 *4* α(N)=0.000681 *10*; α(O)=0.0001082 *15*; α(P)=1.079×10^{-5} *15*
551.3139	(4,5)⁻	83.799 *12*	26 *9*	467.5320	(4)⁻			
		223.301 *3*	100 *17*	328.0177	(4)⁻	M1,E2	0.172 *23*	α(K)=0.137 *28*; α(L)=0.027 *4*; α(M)=0.0061 *11* α(N)=0.00138 *23*; α(O)=0.000206 *24*; α(P)=1.4×10^{-5} *4*
		316.016[@] *8*	112[@] *6*	235.2787	4⁻	(M1)	0.0766 *11*	α(K)=0.0651 *9*; α(L)=0.00908 *13*; α(M)=0.001958 *27* α(N)=0.000449 *6*; α(O)=7.13×10^{-5} *10*; α(P)=7.12×10^{-6} *10*
		375.827 *4*	82 *5*	175.4817	5⁻	M1	0.0486 *7*	α(K)=0.0413 *6*; α(L)=0.00574 *8*; α(M)=0.001236 *17* α(N)=0.000283 *4*; α(O)=4.50×10^{-5} *6*; α(P)=4.51×10^{-6} *6*
		421.656 *14*	32 *6*	129.6795	4⁻	M1	0.0361 *5*	α(K)=0.0307 *4*; α(L)=0.00424 *6*; α(M)=0.000914 *13* α(N)=0.0002094 *29*; α(O)=3.33×10^{-5} *5*; α(P)=3.34×10^{-6} *5*

From ENSDF

$^{154}_{63}Eu_{91}$-31

Adopted Levels, Gammas (continued)

γ(^{154}Eu) (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ	E_f	J_f^π	Mult.[‡]	α[#]	Comments
553.734	(5)$^-$	221.414 *4*	40 *5*	332.324	(5)$^+$			Mult.: ce data consistent with E2 or E1; level scheme requires Δπ=yes.
		257.807 *5*	100 *7*	295.9225	(4)$^+$	E1	0.02254 *32*	α(K)=0.01917 *27*; α(L)=0.00265 *4*; α(M)=0.000569 *8* α(N)=0.0001292 *18*; α(O)=2.004×10^{-5} *28*; α(P)=1.795×10^{-6} *25*
		378.245 *12*	21 *3*	175.4817	5$^-$	M1	0.0478 *7*	α(K)=0.0406 *6*; α(L)=0.00564 *8*; α(M)=0.001215 *17* α(N)=0.000278 *4*; α(O)=4.43×10^{-5} *6*; α(P)=4.43×10^{-6} *6*
555.3030	(3,4)$^-$	148.2680[@] *21*	11.9[@] *14*	407.0338	(3)$^-$	(E2)	0.597 *8*	α(K)=0.379 *5*; α(L)=0.1694 *24*; α(M)=0.0391 *5* α(N)=0.00872 *12*; α(O)=0.001213 *17*; α(P)=3.02×10^{-5} *4*
		316.016[@] *8*	51[@] *3*	239.2889	3$^-$	(M1)	0.0766 *11*	α(K)=0.0651 *9*; α(L)=0.00908 *13*; α(M)=0.001958 *27* α(N)=0.000449 *6*; α(O)=7.13×10^{-5} *10*; α(P)=7.12×10^{-6} *10*
		374.576 *16*	10 *3*	180.7439	5$^-$			
		381.703 *8*	62 *3*	173.6022	3$^-$	M1	0.0467 *7*	α(K)=0.0397 *6*; α(L)=0.00551 *8*; α(M)=0.001187 *17* α(N)=0.000272 *4*; α(O)=4.32×10^{-5} *6*; α(P)=4.33×10^{-6} *6*
		427.845 *18*	15 *3*	127.4301	4$^+$			
		432.728 *12*	100 *15*	122.5582	2$^-$	E2	0.01981 *28*	α(K)=0.01599 *22*; α(L)=0.00299 *4*; α(M)=0.000662 *9* α(N)=0.0001496 *21*; α(O)=2.255×10^{-5} *32*; α(P)=1.569×10^{-6} *22*
566		385		180.7439	5$^-$			
572.469	4$^-$	156.826[@] *3*	136[@] *9*	415.6551	(5)$^+$	(E1)	0.0840 *12*	α(K)=0.0711 *10*; α(L)=0.01013 *14*; α(M)=0.002179 *31* α(N)=0.000493 *7*; α(O)=7.54×10^{-5} *11*; α(P)=6.31×10^{-6} *9* Mult.: ce data consistent with E1; the J^π require E1 for this γ and E2 for γ from 279 level.
		230.357 *10*	24 *4*	342.1315	2$^-$			
		240.138 *3*	52 *6*	332.324	(5)$^+$			
		262.50 *4*	13 *4*	309.9953	3$^+$			
		293.054 *17*	12 *3*	279.3791	4$^-$			
		358.38 *3*	30 *10*	214.0746	3$^-$	M1,E2	0.045 *11*	α(K)=0.037 *10*; α(L)=0.0060 *5*; α(M)=0.00132 *8* α(N)=0.000300 *21*; α(O)=4.6×10^{-5} *5*; α(P)=3.8×10^{-6} *13*
		396.996 *4*	100 *6*	175.4817	5$^-$	M1	0.0422 *6*	α(K)=0.0358 *5*; α(L)=0.00497 *7*; α(M)=0.001070 *15* α(N)=0.0002452 *34*; α(O)=3.90×10^{-5} *5*; α(P)=3.91×10^{-6} *5*
		398.868 *5*	82 *4*	173.6022	3$^-$	E2	0.02493 *35*	α(K)=0.01996 *28*; α(L)=0.00388 *5*; α(M)=0.000863 *12* α(N)=0.0001949 *27*; α(O)=2.92×10^{-5} *4*; α(P)=1.939×10^{-6} *27*
		435.765 *20*	37 *6*	136.6967	5$^+$			
		472.553 *15*	34 *3*	99.9484	3$^+$			
584.3902	3$^-$	112.495 *5*	16 *4*	471.8890	4$^-$			
		133.3853 *19*	11 *4*	451.0074	2$^+$			
		370.305 *10*	16.9 *16*	214.0746	3$^-$	M1	0.0505 *7*	α(K)=0.0429 *6*; α(L)=0.00596 *8*; α(M)=0.001285 *18* α(N)=0.000294 *4*; α(O)=4.68×10^{-5} *7*; α(P)=4.69×10^{-6} *7*
		403.629 *9*	34 *3*	180.7439	5$^-$			
		454.65 *3*	16 *6*	129.6795	4$^-$			
		456.992 *15*	98 *9*	127.4301	4$^+$			

From ENSDF

$^{154}_{63}Eu_{91}$-32

Adopted Levels, Gammas (continued)

γ(^{154}Eu) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.[‡]	α[#]	Comments
584.3902	3⁻	483.56 *3*	21 *7*	100.8612	4⁺			
		516.209 *6*	100 *5*	68.1702	2⁺	E1	0.00420 *6*	α(K)=0.00359 *5*; α(L)=0.000479 *7*; α(M)=0.0001026 *14* α(N)=2.340×10^{-5} *33*; α(O)=3.68×10^{-6} *5*; α(P)=3.52×10^{-7} *5*
589.3	(6⁺)	289.4		299.8081	(6)⁻			
593.142	3⁻	266.251 *8*	10.2 *16*	326.8726	3⁺,4⁺			
		379.066 *6*	100 *10*	214.0746	3⁻	E2	0.0289 *4*	α(K)=0.02298 *32*; α(L)=0.00460 *6*; α(M)=0.001023 *14* α(N)=0.0002309 *32*; α(O)=3.45×10^{-5} *5*; α(P)=2.217×10^{-6} *31*
		412.312 *11*	25 *4*	180.8092	2⁻	(E2)	0.02269 *32*	α(K)=0.01822 *26*; α(L)=0.00349 *5*; α(M)=0.000774 *11* α(N)=0.0001749 *24*; α(O)=2.63×10^{-5} *4*; α(P)=1.778×10^{-6} *25*
		465.727 *11*	61 *3*	127.4301	4⁺			
		524.964 *8*	46 *3*	68.1702	2⁺			
593.3	(8⁻)	155.2		438.1	7⁻			
593.7260	4⁻	229.771 *5*	49 *4*	363.9665	(5)⁻	M1	0.1800 *25*	α(K)=0.1526 *21*; α(L)=0.02151 *30*; α(M)=0.00464 *6* α(N)=0.001063 *15*; α(O)=0.0001688 *24*; α(P)=1.679×10^{-5} *24*
		401.407 *22*	11.6 *25*	192.2939	(5)⁺			
		412.95 *4*	16.5 *25*	180.7439	5⁻	M1	0.0381 *5*	α(K)=0.0324 *5*; α(L)=0.00448 *6*; α(M)=0.000965 *14* α(N)=0.0002211 *31*; α(O)=3.52×10^{-5} *5*; α(P)=3.53×10^{-6} *5*
		418.274 *10*	65 *3*	175.4817	5⁻	E2	0.02179 *31*	α(K)=0.01753 *25*; α(L)=0.00333 *5*; α(M)=0.000738 *10* α(N)=0.0001669 *23*; α(O)=2.509×10^{-5} *35*; α(P)=1.713×10^{-6} *24*
		420.096 *20*	100 *5*	173.6022	3⁻	M1	0.0364 *5*	α(K)=0.0310 *4*; α(L)=0.00429 *6*; α(M)=0.000923 *13* α(N)=0.0002114 *30*; α(O)=3.36×10^{-5} *5*; α(P)=3.37×10^{-6} *5*
599.633	(2)⁻	148.2680[@] *21*	26[@] *3*	451.356	2⁻	(E2)	0.597 *8*	α(K)=0.379 *5*; α(L)=0.1694 *24*; α(M)=0.0391 *5* α(N)=0.00872 *12*; α(O)=0.001213 *17*; α(P)=3.02×10^{-5} *4*
		289.628 *5*	41 *5*	309.9953	3⁺			Mult.: ce data consistent with E2 or E1; level scheme requires Δπ=yes.
		320.47 *6*	24 *5*	279.0377	(0)⁻			
		350.208 *5*	55 *4*	249.4186	(1)⁺			Mult.: ce data consistent with E2 or E1; level scheme requires Δπ=yes.
		360.39 *5*	30 *11*	239.2889	3⁻			
		364.377 *10*	33 *6*	235.2787	4⁻			Mult.: M1 mult in (n,γ) is inconsistent with the proposed J^π values, which require mult=E2.
		499.714 *20*	55 *5*	99.9484	3⁺			
		516.818 *13*	100 *8*	82.8200	1⁻	M1	0.02147 *30*	α(K)=0.01827 *26*; α(L)=0.002509 *35*; α(M)=0.000540 *8* α(N)=0.0001237 *17*; α(O)=1.968×10^{-5} *28*; α(P)=1.982×10^{-6} *28*
702		402		299.8081	(6)⁻			
722	(7⁺)	422		299.8081	(6)⁻			
765.8	(9⁻)	172.5		593.3	(8⁻)			
952	(10⁻)	187		765.8	(9⁻)			

[†] Most values are from the (n,γ) study of 1987Ba52; other sets of values are given by 1977St14 and by Shera, as quoted in 1968Gr32.
[‡] From 1987Ba52, unless otherwise noted. The results of 1987Ba52 are assumed to replace those of 1978PrZY and 1977St14. Many of the assignments of 1977St14

From ENSDF

$^{154}_{63}Eu_{91}$-33

Adopted Levels, Gammas (continued)

$\gamma(^{154}Eu)$ (continued)

appear to differ from those of 1987Ba52, but this may result from the inability to resolve closely spaced peaks in the study of 1977St14. 1976Ch08, in IT decay, contribute some results.

Additional information 8.

@ Multiply placed with undivided intensity.

& Placement of transition in the level scheme is uncertain.

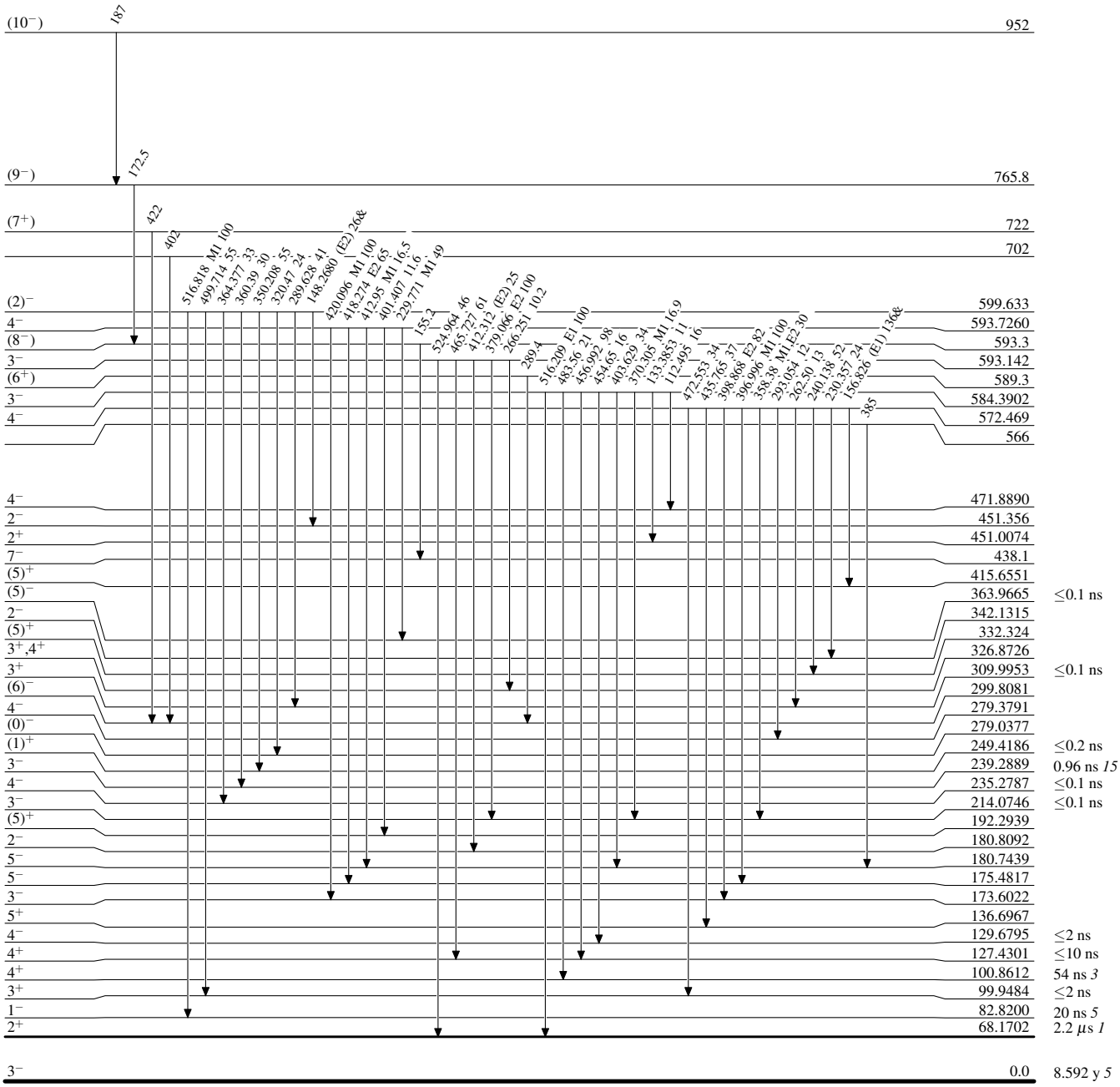
From ENSDF

$^{154}_{63}Eu_{91}$-34

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

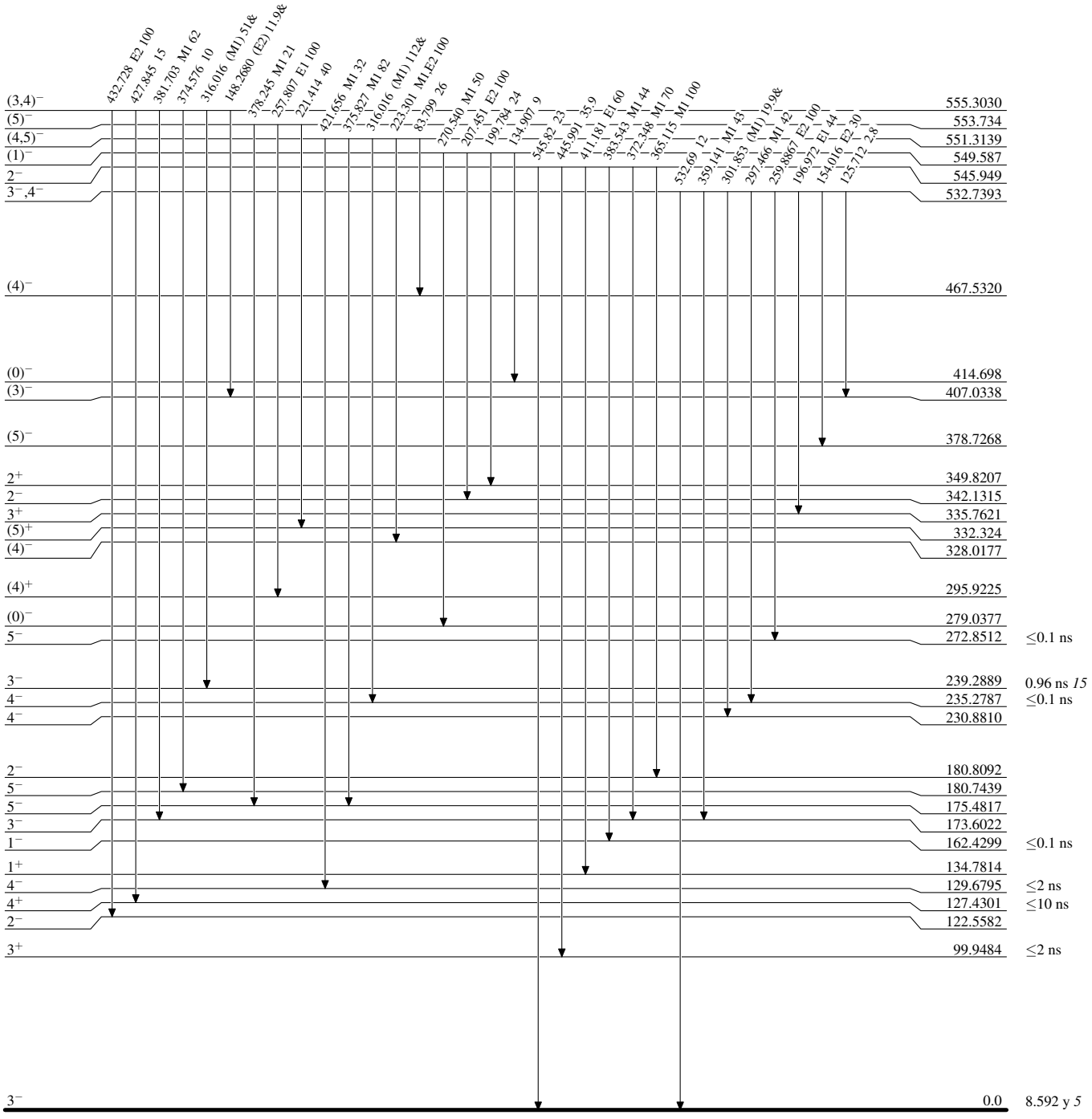


$^{154}_{63}Eu_{91}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

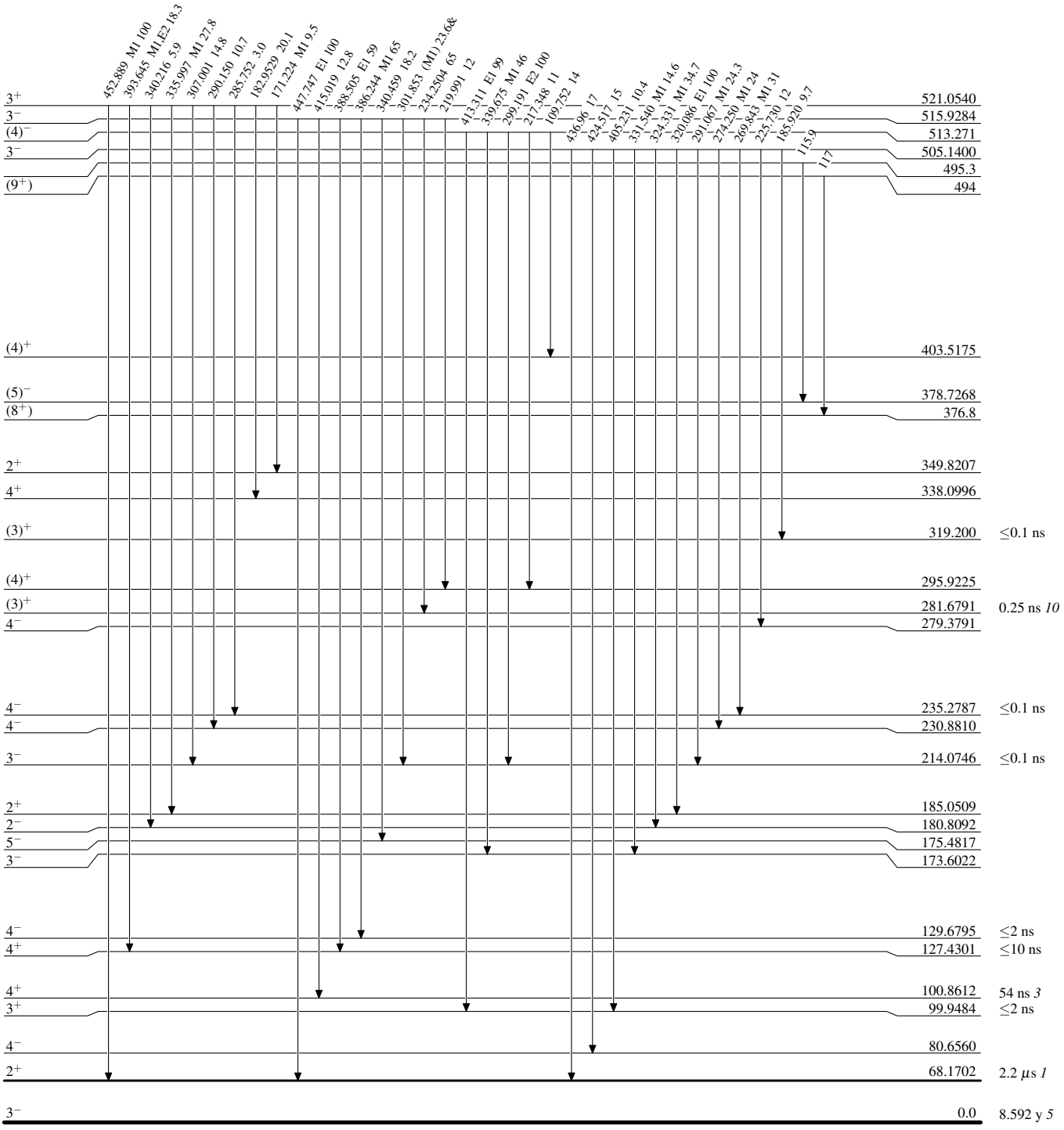


$^{154}_{63}Eu_{91}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

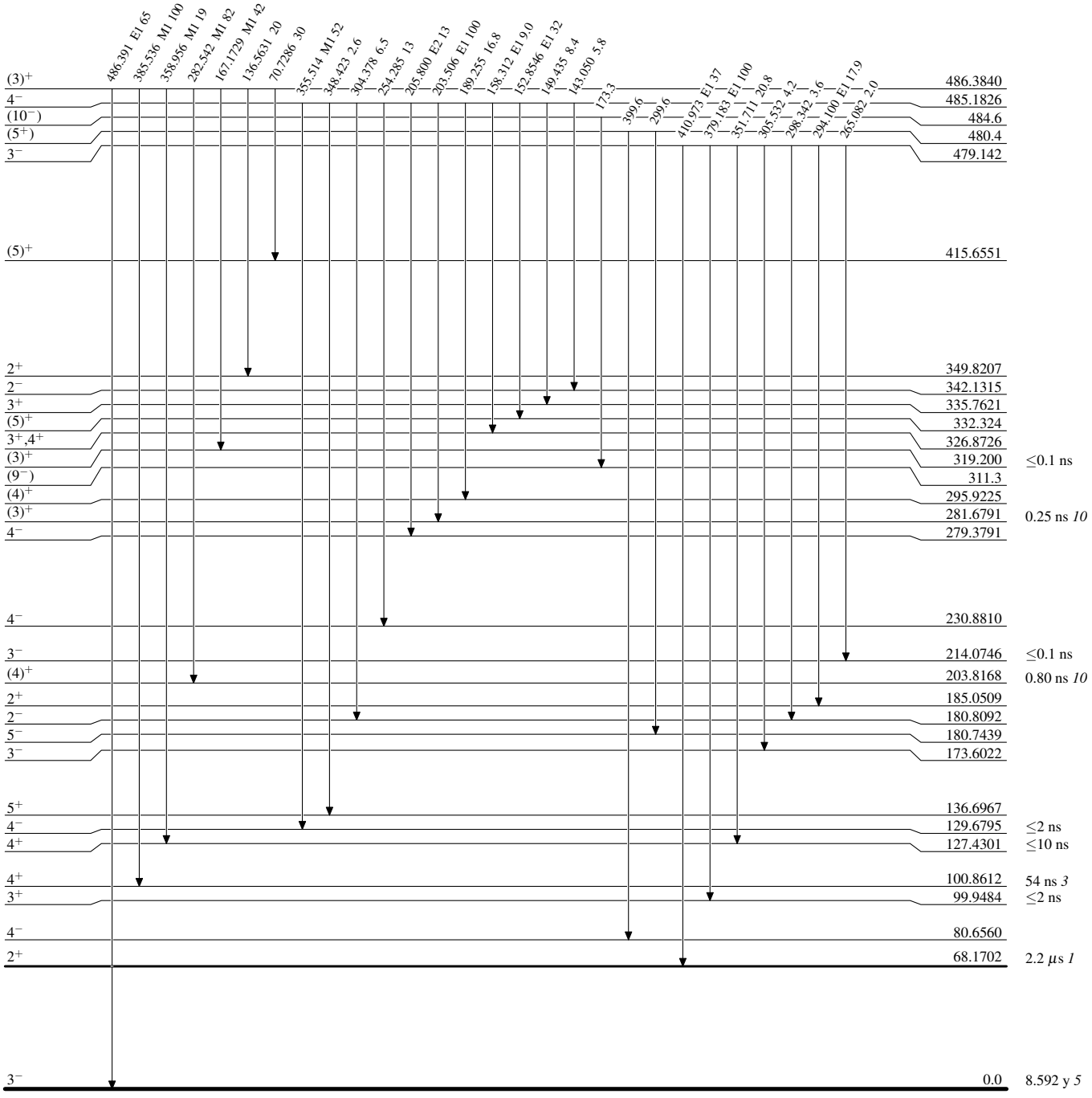


$^{154}_{63}Eu_{91}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

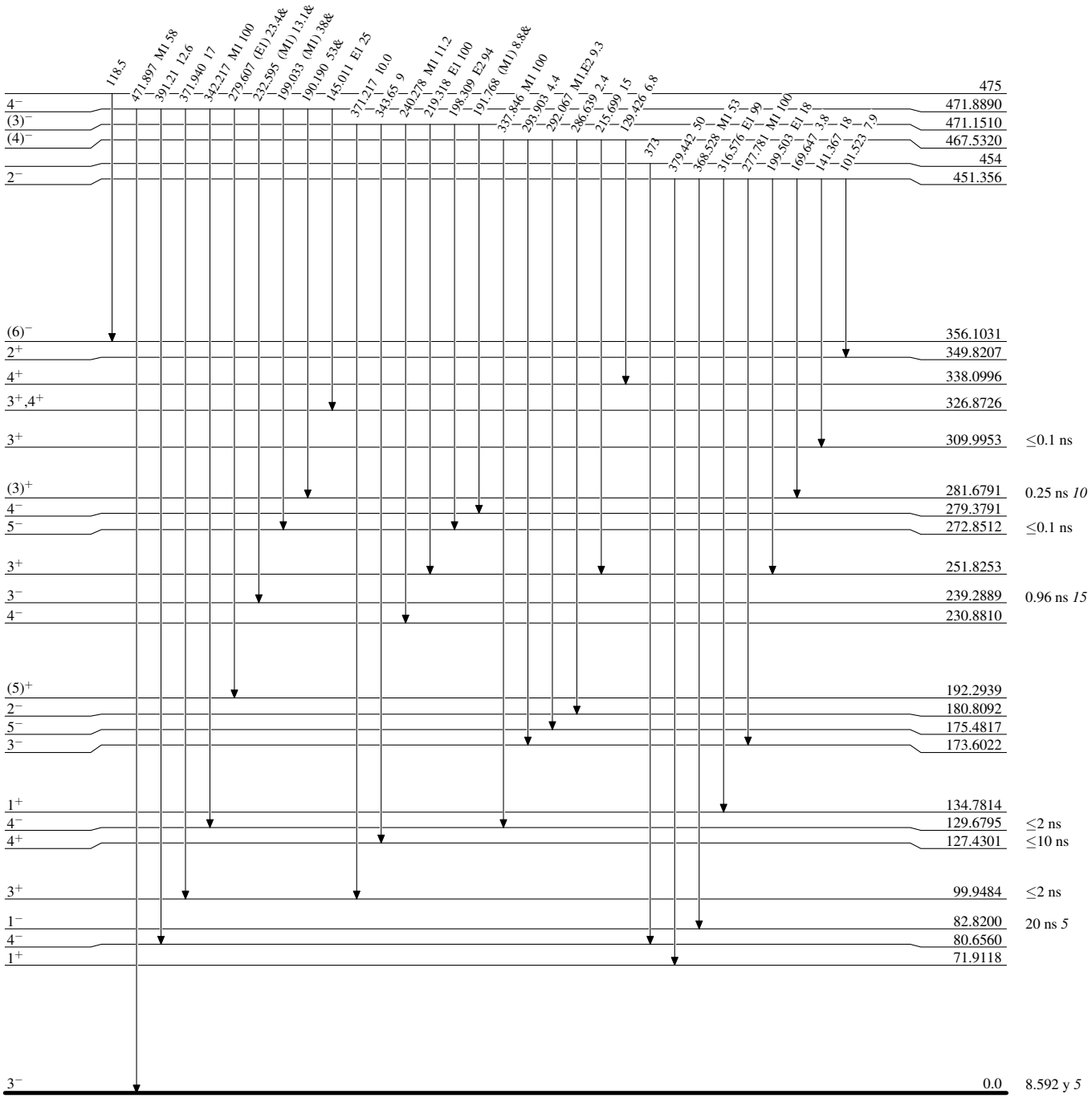


$^{154}_{63}Eu_{91}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

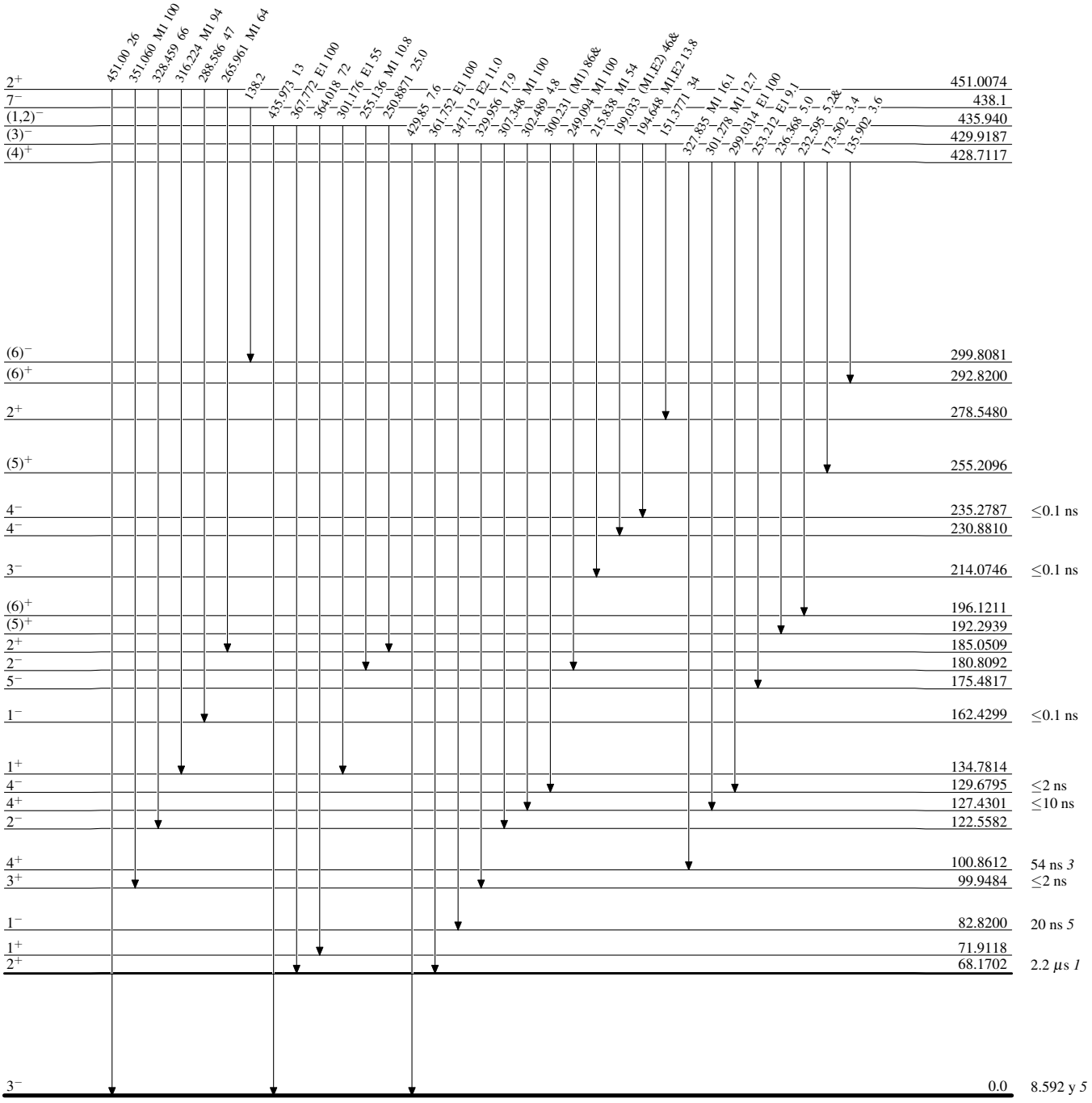


$^{154}_{63}Eu_{91}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

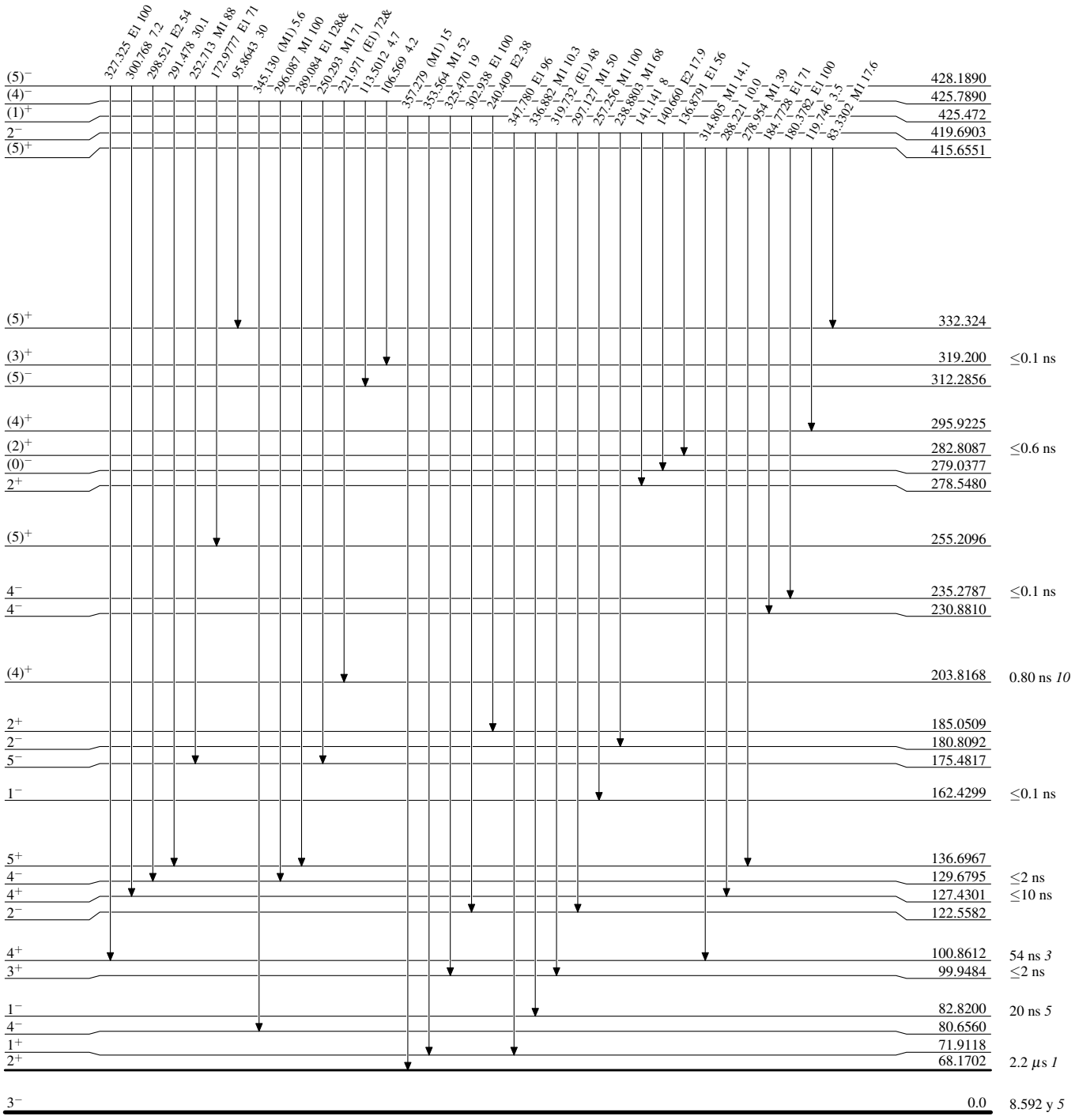


$^{154}_{63}Eu_{91}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

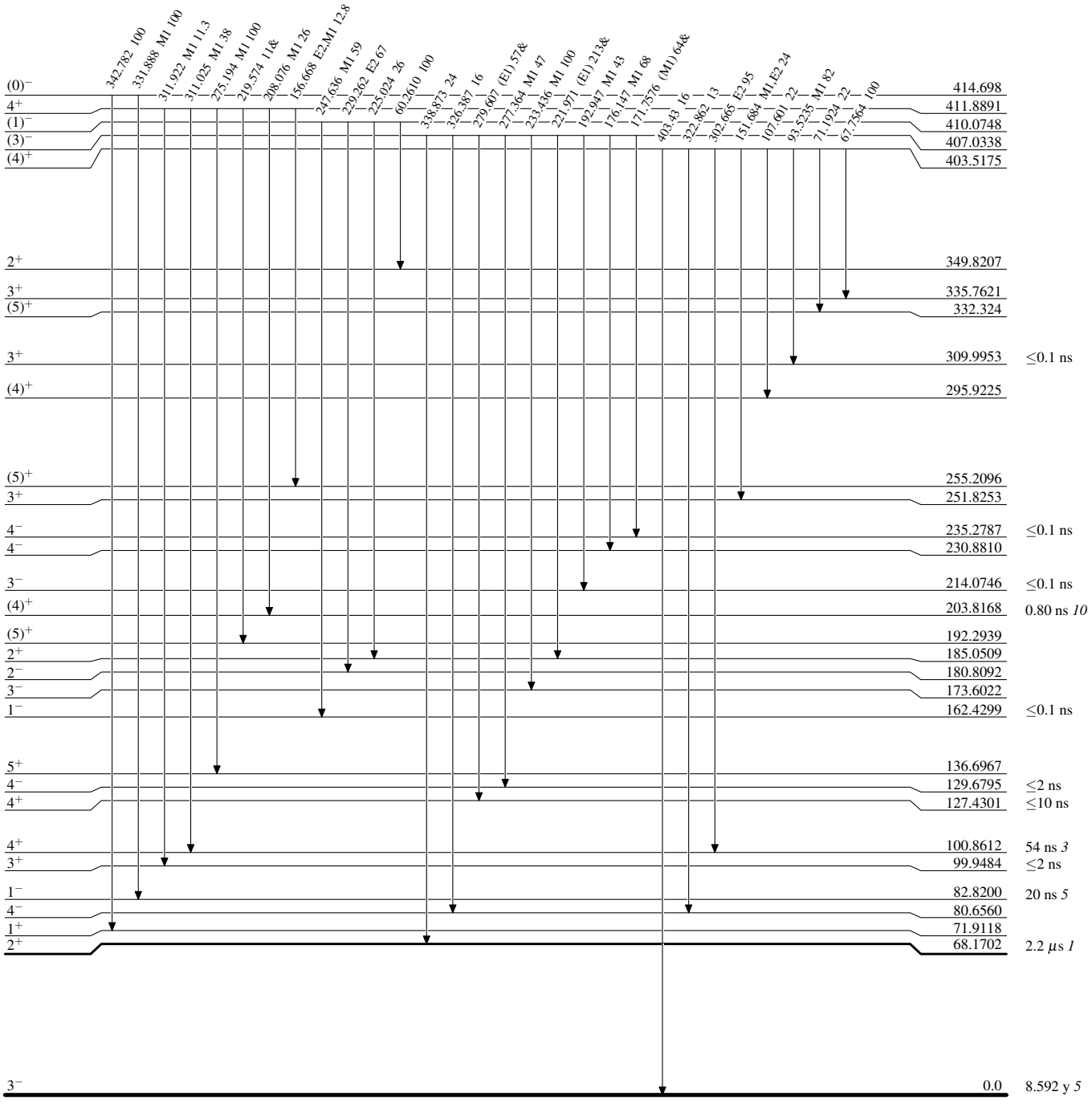


$^{154}_{63}Eu_{91}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

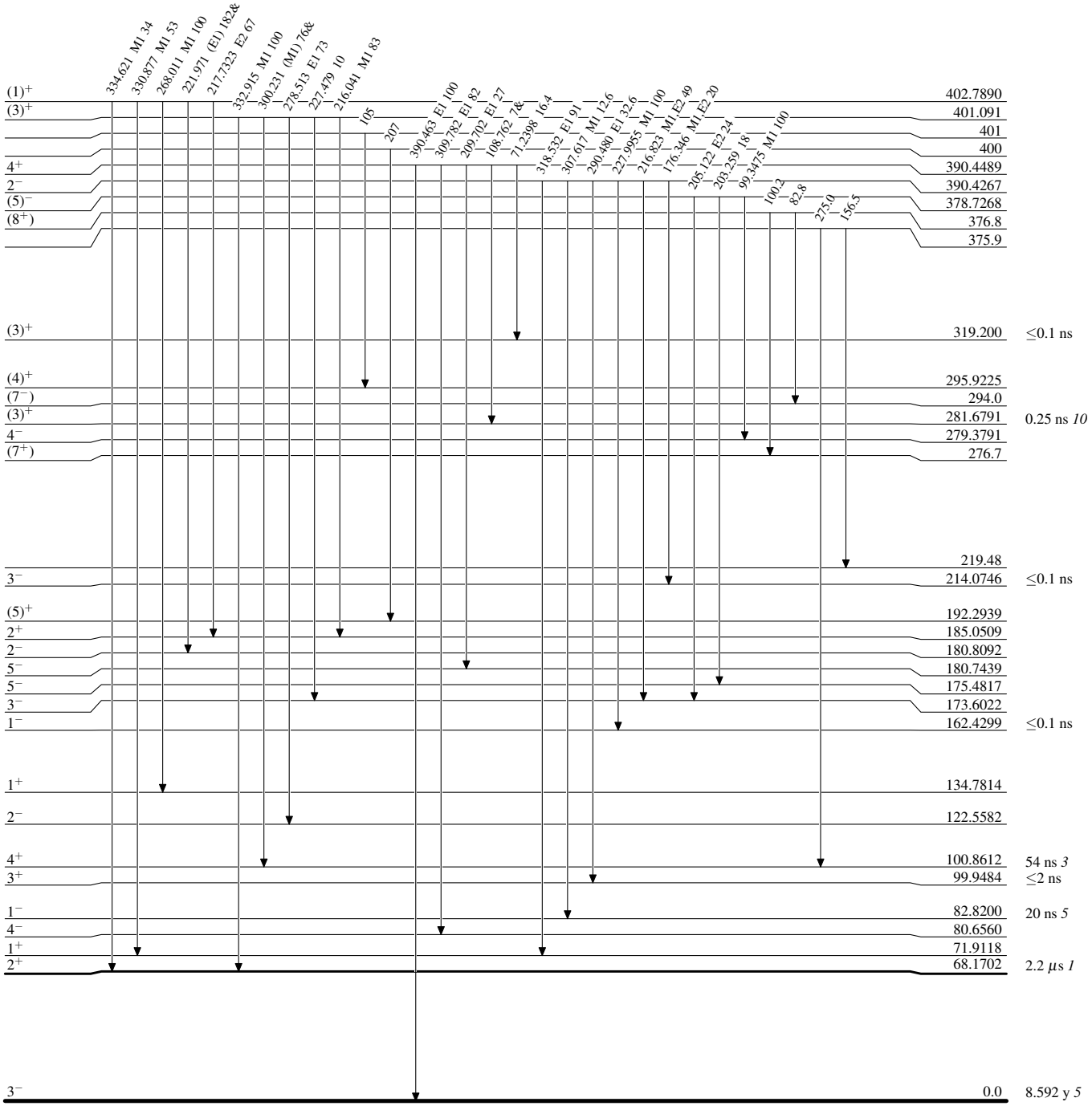


$^{154}_{63}Eu_{91}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



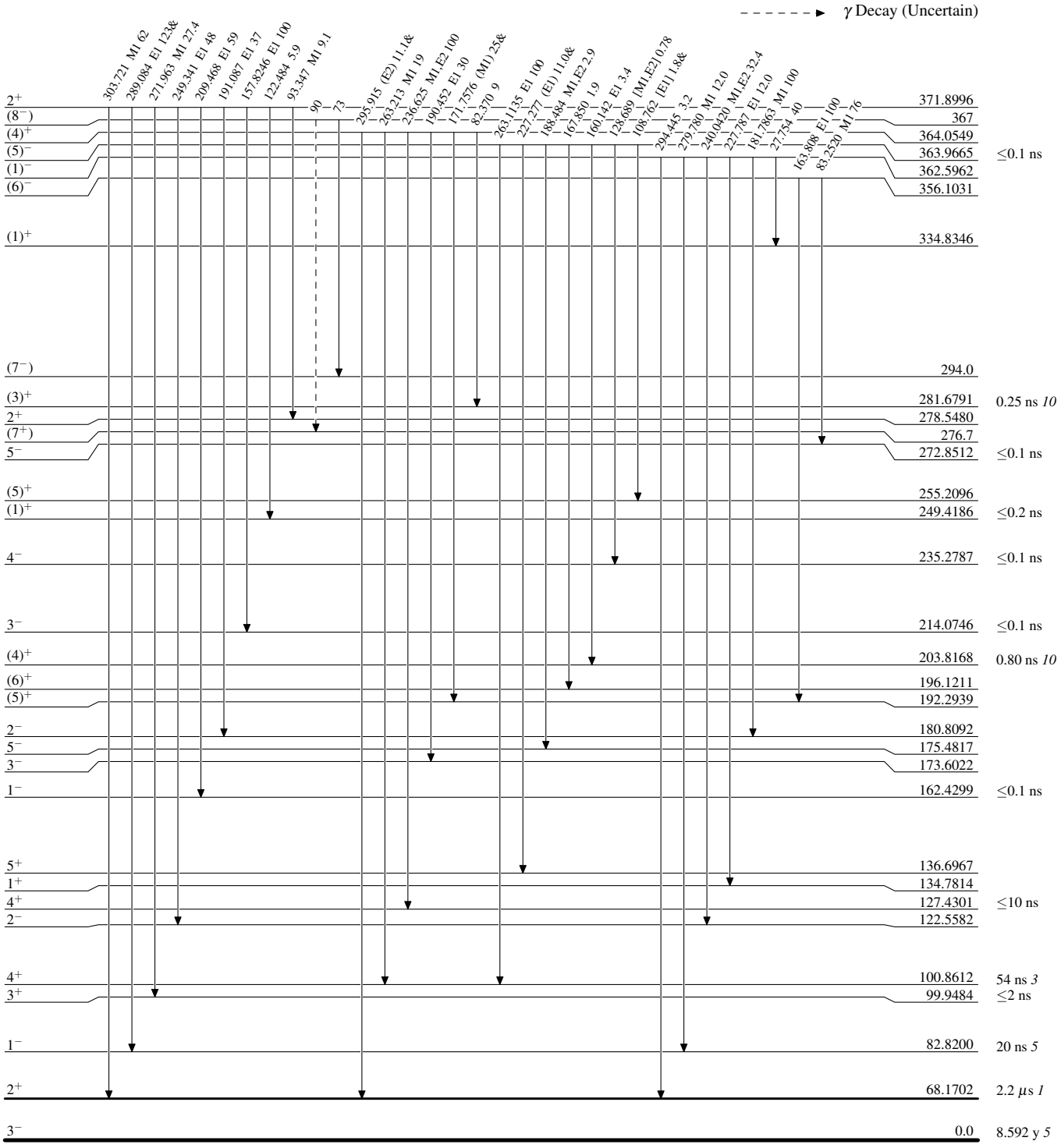
$^{154}_{63}Eu_{91}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

Legend

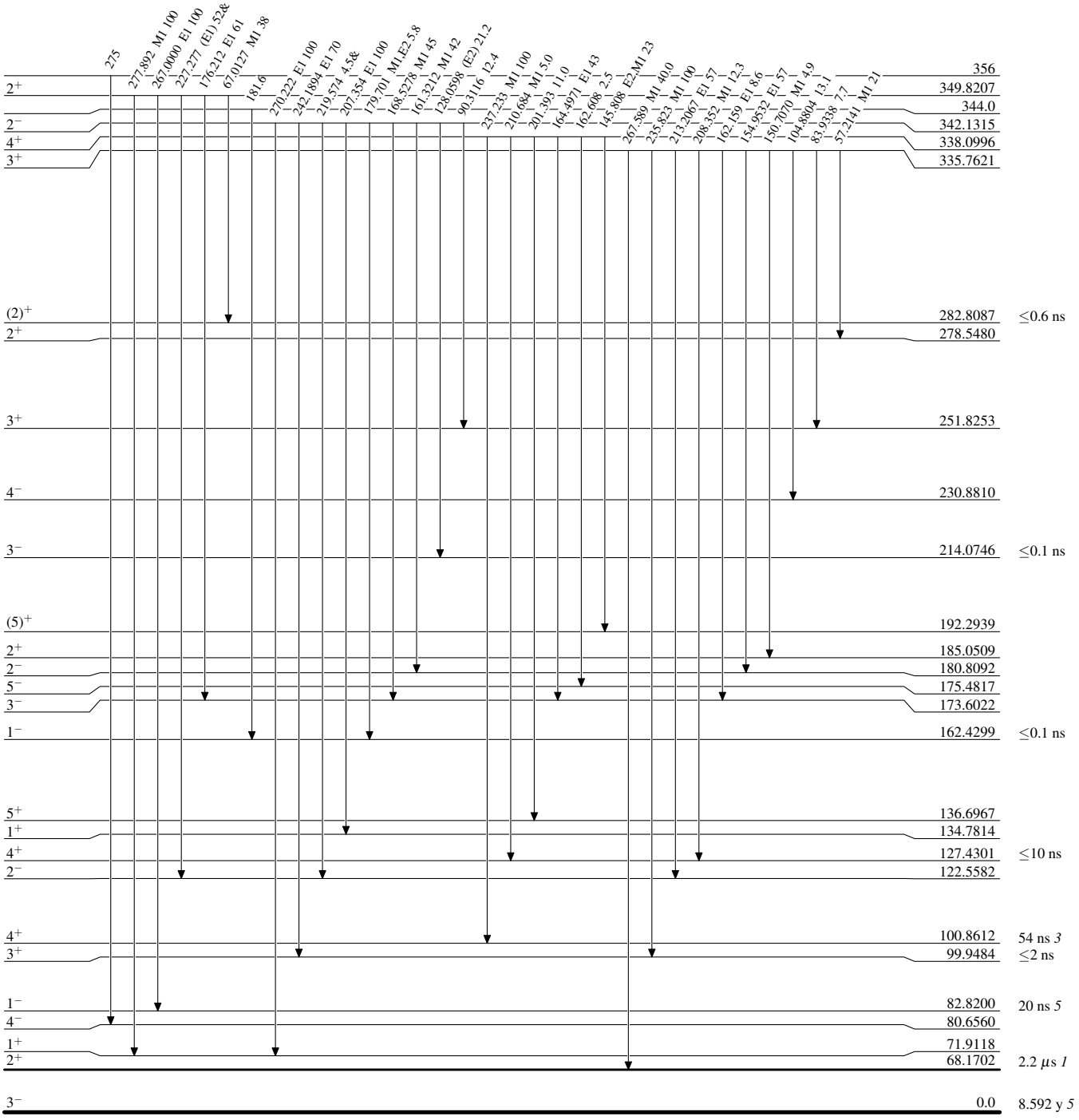


$^{154}_{63}Eu_{91}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

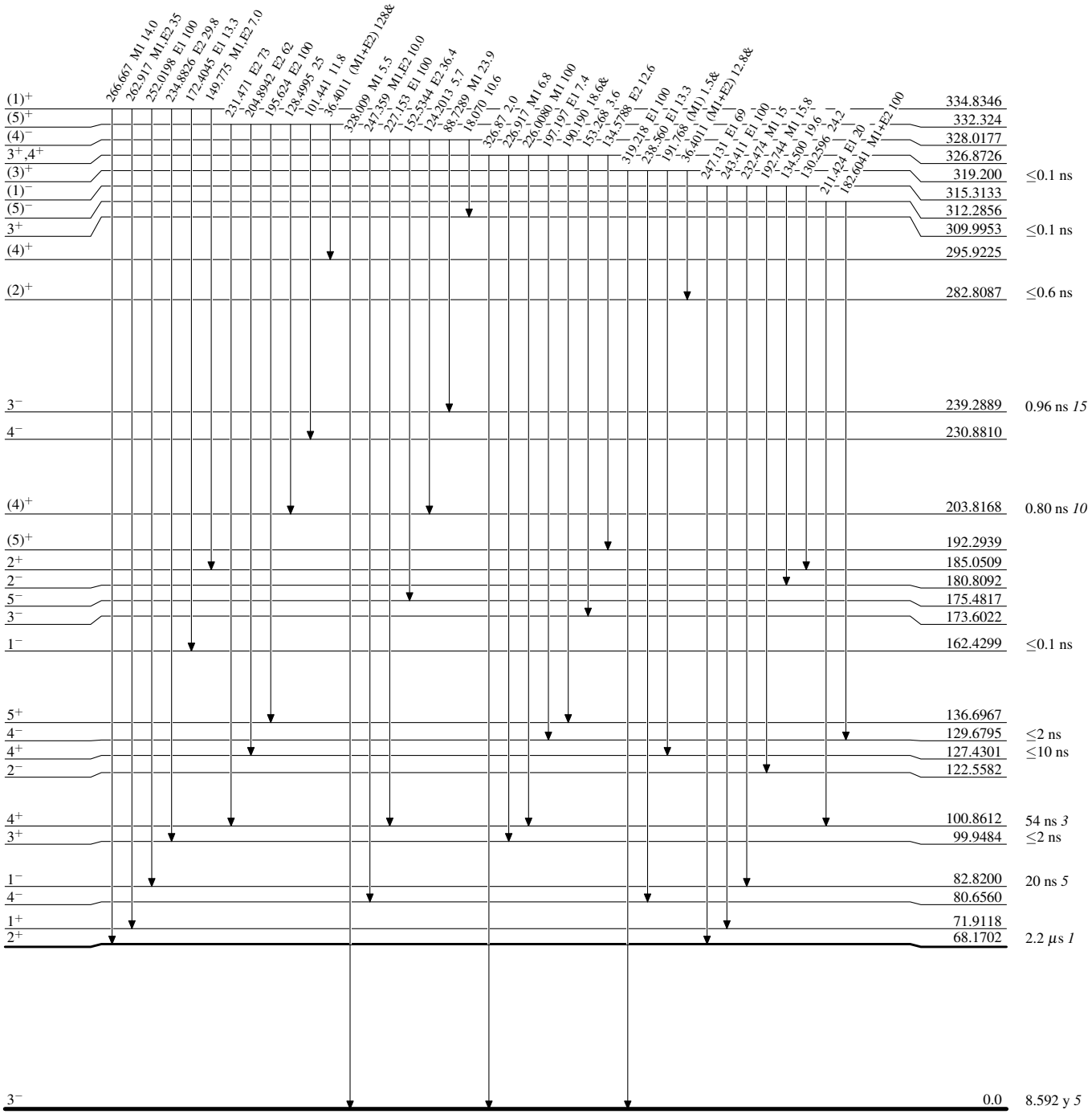


$^{154}_{63}Eu_{91}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



$^{154}_{63}Eu_{91}$

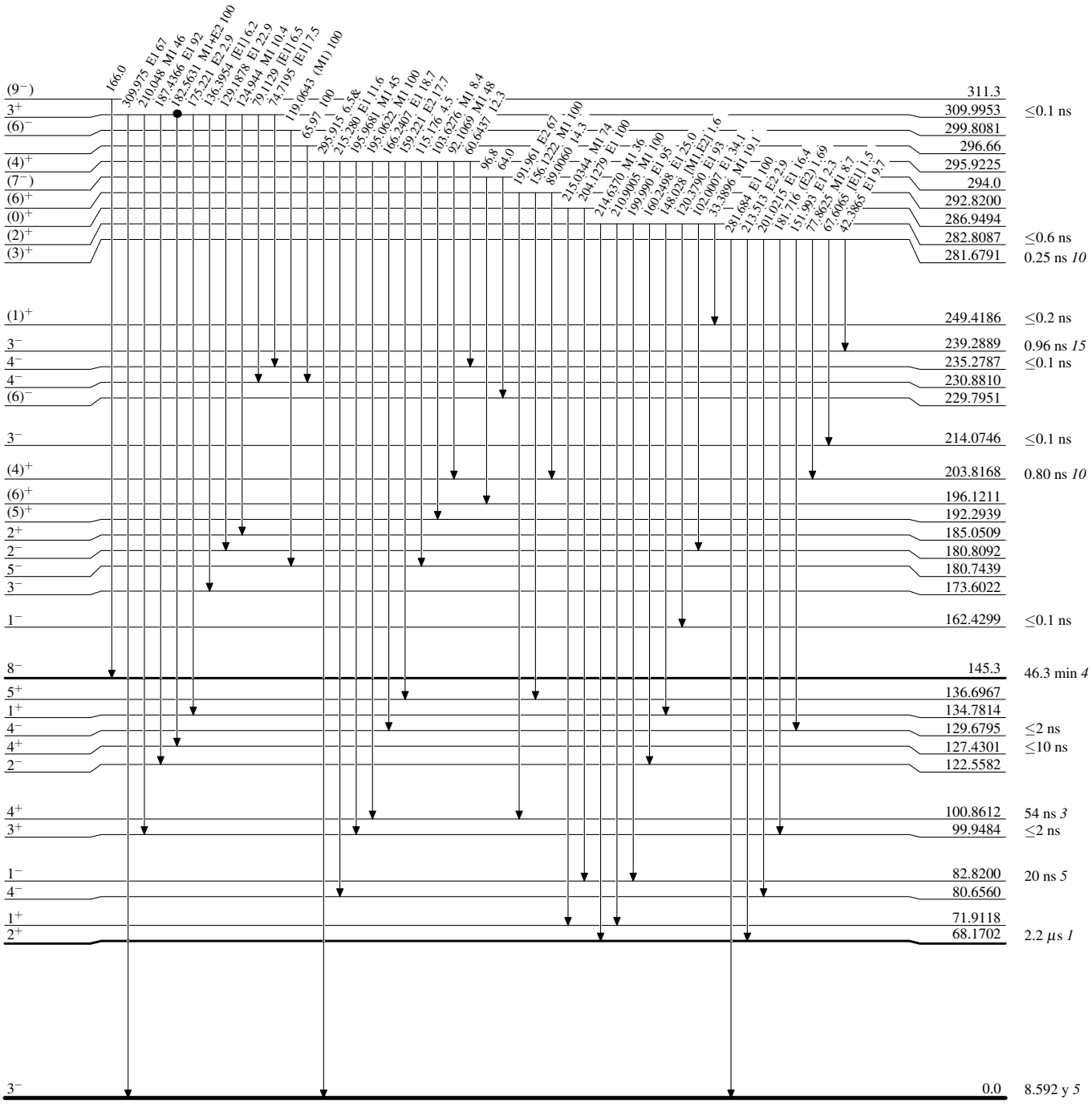
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

● Coincidence

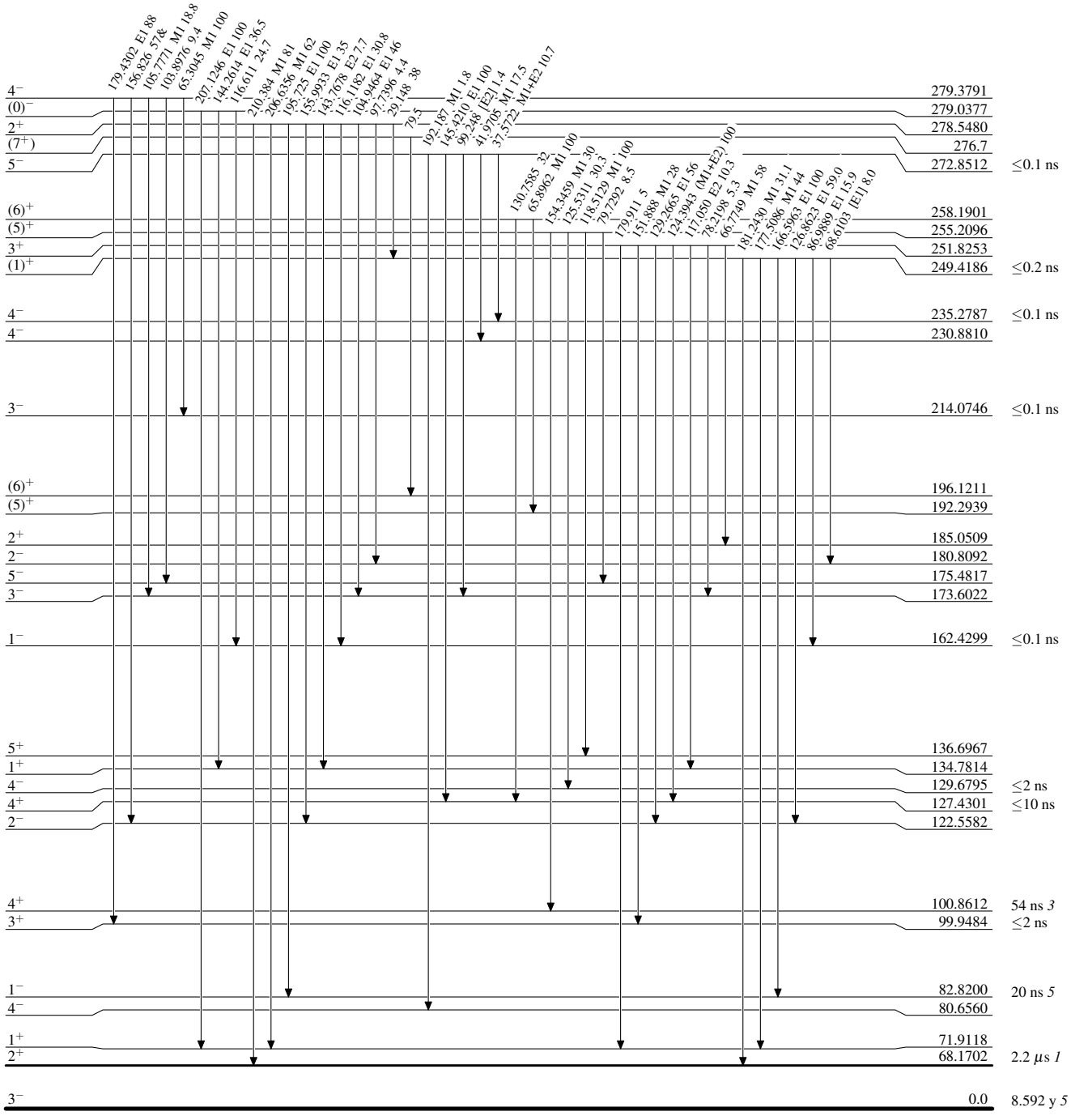


$^{154}_{63}Eu_{91}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

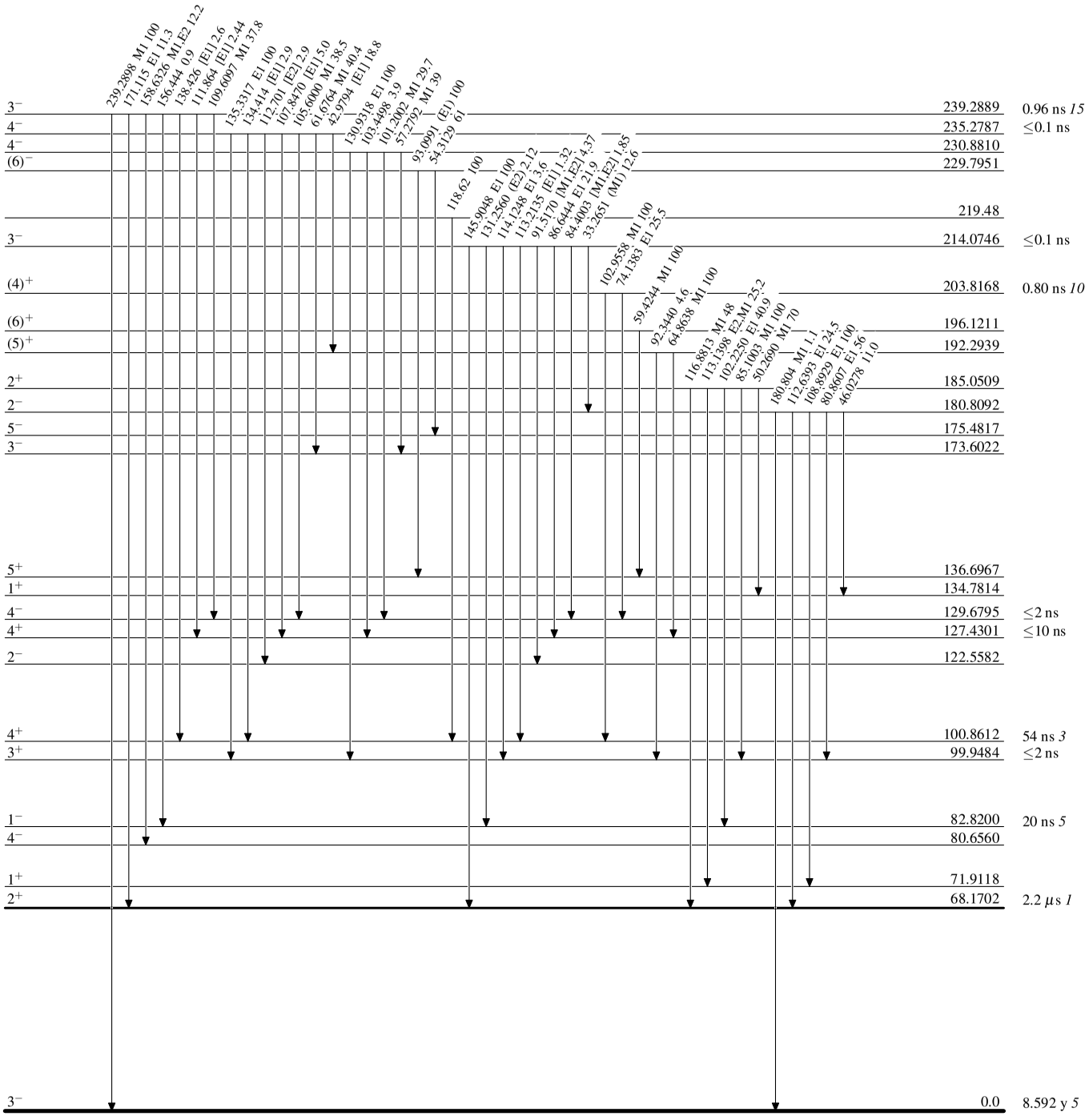


$^{154}_{63}Eu_{91}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



$^{154}_{63}Eu_{91}$

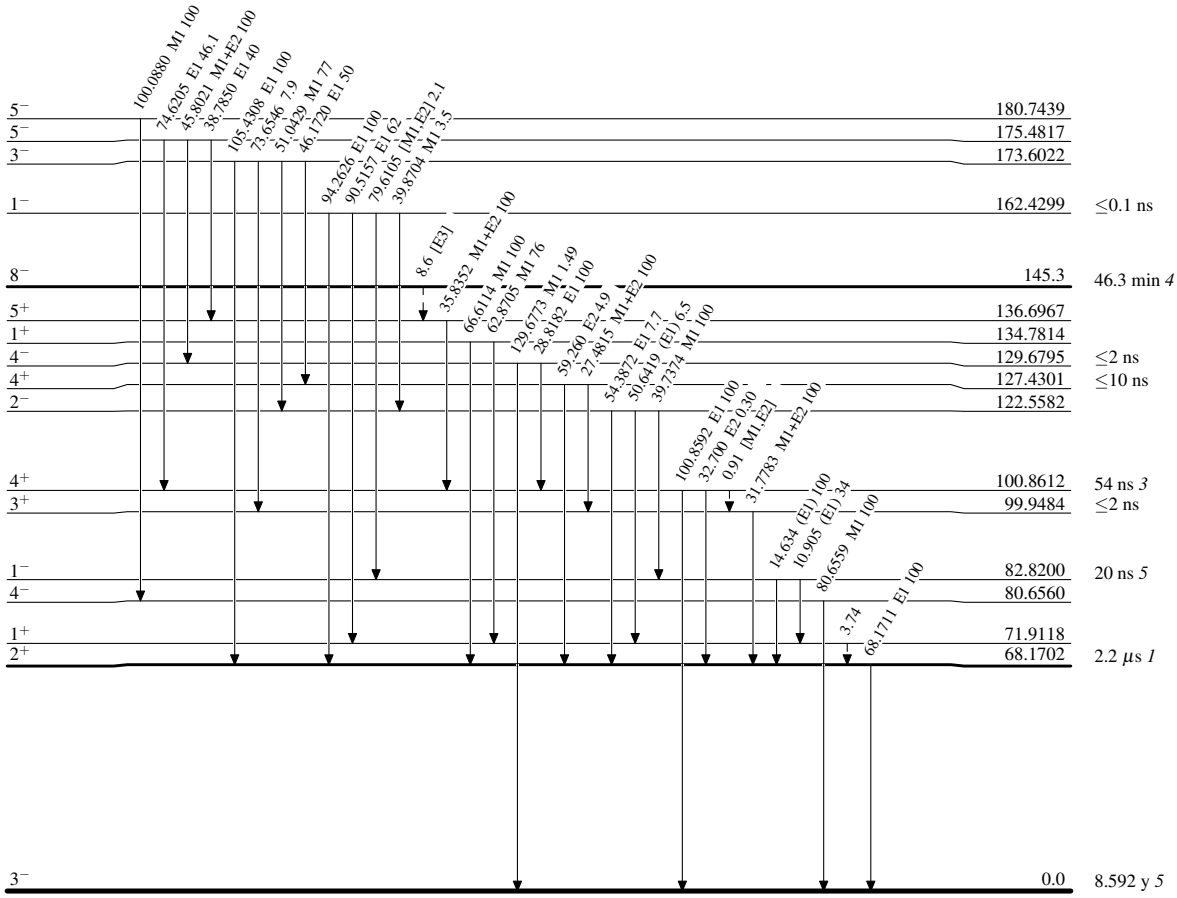
Adopted Levels, Gammas

Legend

Level Scheme (continued)

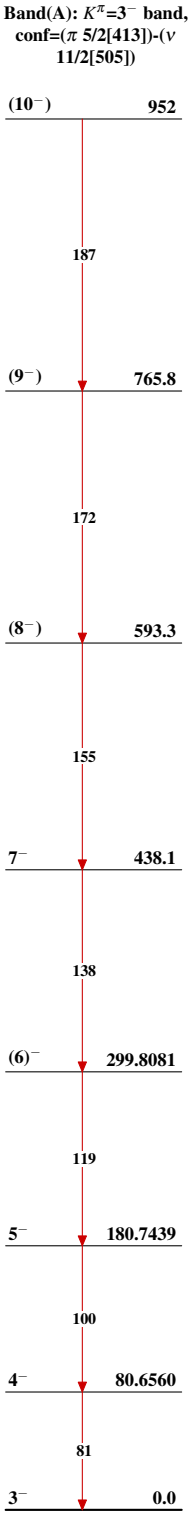
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

γ Decay (Uncertain)



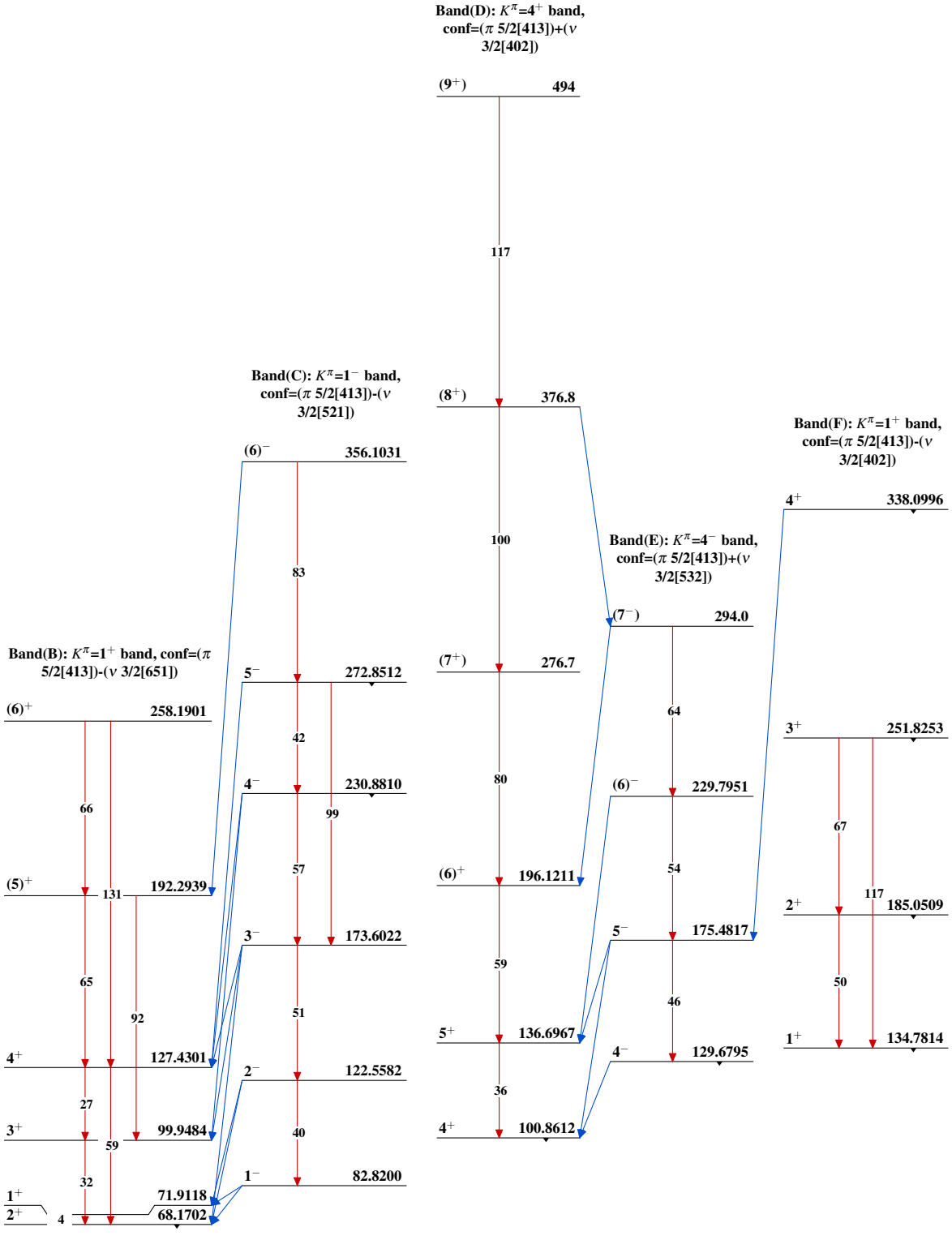
$^{154}_{63}Eu_{91}$

Adopted Levels, Gammas



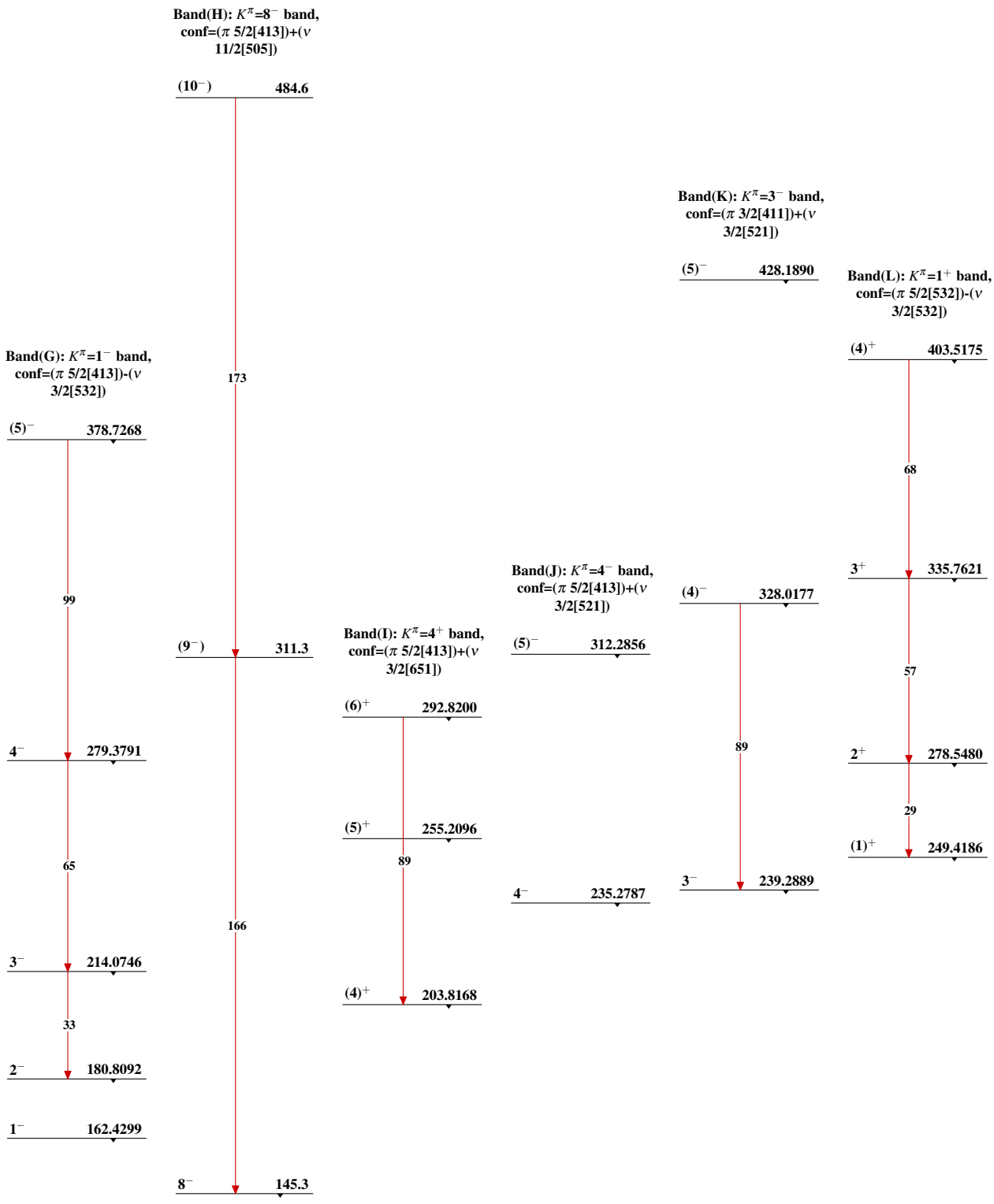
$^{154}_{63}Eu_{91}$

Adopted Levels, Gammas (continued)

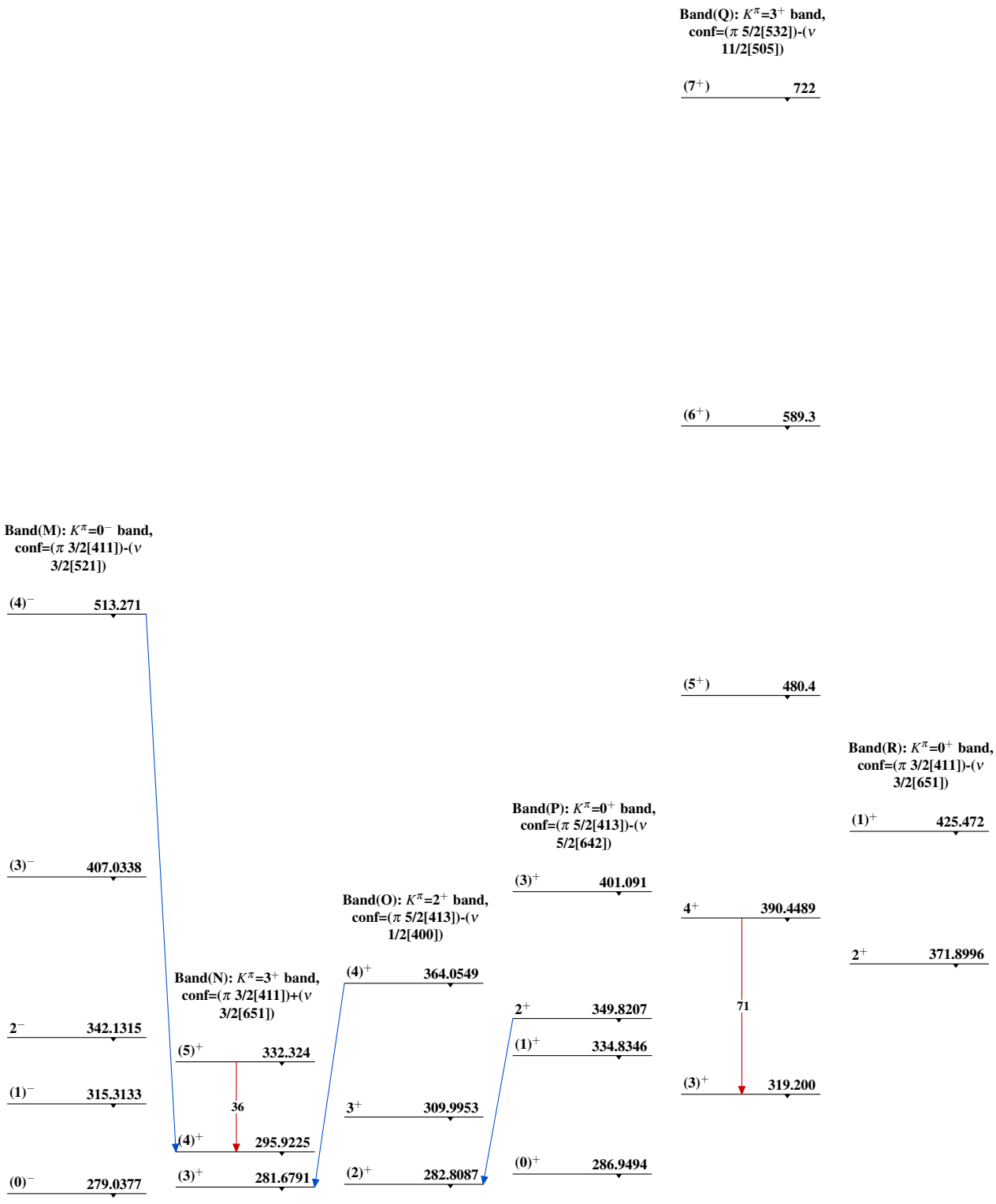


$^{154}_{63}Eu_{91}$

Adopted Levels, Gammas (continued)



Adopted Levels, Gammas (continued)



$^{154}_{63}Eu_{91}$

Adopted Levels, Gammas (continued)

Band(W): Proposed $K^{\pi}=1^{-}$ band, conf=(π 5/2[532])-(ν3/2[651])

$(2)^{-}$ 599.633

Band(S): $K^{\pi}=1^{-}$ band, conf=(π 5/2[532])-(ν 3/2[402])

$(5)^{-}$ 553.734

$(1)^{-}$ 549.587

Band(T): $K^{\pi}=1^{+}$ band, on conf=(π 5/2[532])-(ν 3/2[521])

3^{+} 521.0540

Band(V): $K^{\pi}=2^{-}$ band, conf=(π 5/2[413])-(ν 1/2[530])

4^{-} 485.1826

Band(U): $K^{\pi}=0^{-}$ band, conf=(π 5/2[413])-(ν 5/2[523])

3^{-} 479.142

$(3)^{-}$ 471.1510

2^{+} 451.0074

2^{-} 451.356

$(3)^{-}$ 429.9187

2^{-} 419.6903

$(0)^{-}$ 414.698

$(1)^{-}$ 410.0748

$(1)^{+}$ 402.7890

2^{-} 390.4267

$(1)^{-}$ 362.5962

$^{154}_{63}Eu_{91}$