Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 170, 1 (2020)	16-Aug-2020

Q(β^-)=−1569 *4*; S(n)=6246.95 *13*; S(p)=7283.3 *7*; Q(α)=1828.3 *7* 2017Wa10

Theoretical and model calculations that may be of interest include: configurations, level energies, reaction cross sections (1972Lo25,1974Tu04,1976Lo02,1976Re06,1979Ka11,1979Ka16,1995Dz02) and log*ft*'s (1979Mi17).

The level energies in the J=1/2 rotational bands are often very distorted and the band assignments require theoretical calculation of the energies.

^{153}Gd Levels

Cross Reference (XREF) Flags

A	^{153}Gd IT decay (3.5 μs)	E	^{152}Sm(α,3nγ)	I	^{154}Gd(d,t)
B	^{153}Gd IT decay (76.0 μs)	F	^{152}Gd(n,γ) E=th	J	^{154}Gd(^{3}He,α)
C	^{153}Tb ε decay	G	^{152}Gd(d,p)	K	^{155}Gd(p,t)
D	^{150}Sm(α,nγ)	H	^{154}Gd(p,dγ)		

E(level)[†]	J$^\pi$[‡#]	$T_{1/2}$	XREF	Comments
0.0[@]	3/2$^-$	240.4 d *10*	ABCDEFGHIJK	%ε=100 μ=0.38 *8* J$^\pi$: From L=0 in (p,t) on 3/2$^-$ target. J$^\pi$: Levels up to 19/2$^-$ at 1216 keV are assigned to this band in (n,γ) 1996SpZZ, but the 9/2$^-$, 13/2$^-$, and 17/2$^-$ level are assigned to the 5/2$^-$ band in the (α,3nγ) study. $T_{1/2}$: From Limitation of Relative Statistical Weight, LRSW, analysis of the average of 236 d *3* (1950He18), 242 d *1* (1963Ho15), 241.6 d *2* and 240.9 d *6* (1972Em01), 226.7 d *21* (1989Po21), and 239.47 d *7* (1992Un01). In this LRSW analysis the uncertainty of the 1992Un01 value is increased from 0.07 to 0.185 so its relative weight is reduced from 88% to 50%. The two most precise values, 241.6 *2* and 239.47 *7* are very inconsistent, and the reduced-χ^2 for the average of the six values is 30.0 with the original uncertainties and 21.8 after the one uncertainty is increased. The Adopted value from the final weighted average is 240.44 with uncertainties of 0.13 internal and 0.61 external; the adopted uncertainty is 1.0, so that it includes the most precise value, namely, 239.47. Other measurements are 239.63 d *4* (1982HoZJ, replaced by 1992Un01), 240.9 d *6* (1970LyZZ, assumed to be same data as 1972Em01), and those without uncertainties 200 d (1958An34) and 225 d (1949Ke01). $T_{1/2}$: The omission of the very low value of 1989Po21 would not make a significant change. With the modified uncertainty for 1992Un01, the weighted average would be 240.49 with a reduced-χ^2 of 16.6. μ: From 2014StZZ compilation based data of 1985Al21 (by static nuclear orientation with gamma detection); other: 0.40 *8* by low-temperature nuclear orientation (1985Va08).
41.5568[@] *4*	5/2$^-$	4.08 ns *6*	ABCDEFG IJK	J$^\pi$: From M1+E2 γ to 3/2$^-$ level and band assignment. $T_{1/2}$: From γce(t) and ce-ce(t) in ε decay (1969An19,1970VaZO,1982Al24).
93.3429[@] *6*	7/2$^-$	0.45 ns *8*	ABCDEFG IJK	J$^\pi$: From E2 γ to 3/2$^-$ level, M1+E2 γ to 5/2$^-$, and band assignment. $T_{1/2}$: From γce(t) and ce-ce(t) in ε decay (1982Al24).
95.1737[a] *8*	9/2$^+$	3.5 μs *4*	ABCDEF	%IT=100 $T_{1/2}$: From γ(t) in ^{153}Gd IT decay (1979Ka16). J$^\pi$: From population by E2 γ from 5/2$^+$ level at 183 keV and by γ from

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Adopted Levels, Gammas (continued)

^{153}Gd Levels (continued)

E(level)[†]	Jπ[‡#]	$T_{1/2}$	XREF	Comments
				(13/2+) level at 134 keV. %IT: From lack of observed or expected ε decay.
109.7563[b] *7*	(5/2)−	0.243 ns *14*	CDEFGHI K	μ=+0.40 *15* Jπ: From M1+E2 γ's to 3/2− and 5/2− levels and band assignment. $T_{1/2}$: From γce(t) and ce-ce(t) in ε decay (1982Al24). μ: From 2014StZZ compilation based on g-factor=+0.16 *6* (1977VaZJ) (by integral perturbed angular correlation and time dependent perturbed angular correlation).
129.1636[d] *6*	3/2−	2.52 ns *9*	CD F HI K	μ=+0.37 *7* (1977Ba63) Jπ: From L=0 in (p,t) on 3/2− target and M1 γ's to 3/2− and 5/2− levels. $T_{1/2}$: From γce(t) and ce-ce(t) in ε decay (1982Al24, 1970VaZO, and 1969An19). μ: From 2014StZZ compilation based on data of 1977Ba63 (by integral perturbed angular correlation); other: +0.33 *12* from g-factor= +0.22 *8* (by perturbed angular correlation, 1977VaZJ).
138.40[a] *17*	(13/2+)		DE G IJ	XREF: D(134.7). Jπ: From band assignment.
168.4 *6*	(9/2−)		B	Jπ: From γ to 5/2− and γ from (11/2−), 76.0 μs isomer.
171.188[e] *4*	(11/2−)	76.0 μs *14*	B DEF IJ	%IT=100 Jπ: Isomeric character favors 11/2− assignment and γ's to 7/2− and 9/2+ levels. $T_{1/2}$: From γ(t) in ^{153}Gd IT decay. %IT: From lack of observed or expected ε decay.
183.4700[g] *7*	5/2+	0.76 ns *12*	CD FG I	$T_{1/2}$: From γce(t) and ce-ce(t) in ε decay (1982Al24). Jπ: From E1 γ's to 3/2− and 7/2− levels.
212.0082[h] *7*	3/2+		CD FGHIJK	XREF: G(217)J(217)K(216). Jπ: From E1 γ's to 3/2− and 5/2− levels and γγ(θ) indicates J=3/2.
215.9930[c] *10*	7/2−		CDEF H	Jπ: From γ-ray anisotropy of the 739-keV E1 transition from the 5/2+ 955 level (1983Pr07).
219.4428[b] *11*	9/2−		CDEF H	Jπ: From E2 γ to 5/2− level and M1 γ to 7/2− level.
249.5542[d] *11*	5/2−		C EF IJ	Jπ: From M1 γ's to 3/2− and 5/2− levels and γγ(θ) indicates J=5/2.
290.3597[g] *10*	7/2+		C F	Jπ: From E1 γ 5/2− level and M1+E2 to 9/2+. This requires γ to 3/2− gs be M2.
303.5433 *8*	5/2+		CD F HIJ	Jπ: From E1 γ's to 3/2− and 7/2− levels.
315.1995[i] *14*	1/2−		C FGHI	Jπ: From M1 γ to 3/2− level and L=1 in (d,t) allow 1/2− or 3/2−, and γ(θ) for 629.7 γ from 945 level rules out 3/2.
316.0271 *8*	(3/2)+		C F	Jπ: From E1 γ's to 3/2− and (5/2)− levels. γγ(θ) indicates indicates J=5/2 which is less likely from γ from 1/2−. Band assignment (1996SpZZ) assumes 3/2+.
322.3 *3*			K	
327.8529[j] *12*	1/2+		C FGHIJK	Jπ: From L=0 in (d,t).
333.1684[@] *17*	(9/2)−		DEF H	Jπ: From E2 γ's to 5/2−, 7/2−, and (9/2−) levels and band assignment. Jπ: Assigned to 5/2[523] band in (n,γ) and 3/2[521] in (α,3nγ).
336.3?	(1/2,3/2)+		F	Jπ: From primary γ in (n,γ).
361.6512[i] *10*	3/2−		C FGHI K	Jπ: From E1 γ to 5/2+ level and M1 transition to 3/2− level, indicate J^{π}=3/2− or 5/2− and L=1 in (d,t) indicates J^{π}=1/2− or 3/2−.
363.449[f] *11*	(13/2−)		DEF H	Jπ: From band structure and M1 γ to (11/2−).
364.70[a] *20*	(17/2+)		E	Jπ: From E2 γ to (13/2+) level.
368.6677 *14*	(5/2−)		C F J	Jπ: From M1 γ's to 3/2− and 7/2− states which conflicts with 7/2− for band assignment and with J^{π}=3/2− from L=0 in (^{3}He,α). May be two or more levels.

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Adopted Levels, Gammas (continued)

^{153}Gd Levels (continued)

E(level)[†]	Jπ[‡#]	XREF	Comments
377.8[&] *8*	(11/2$^+$)	E	Jπ: From γ′s to 9/2$^+$ and 13/2$^+$ levels and band assignment.
395.1461[h] *12*	7/2$^+$	DEF HIJ	Jπ: From E1 γ to 5/2$^-$ level and γ′s to 3/2$^+$ and 9/2$^-$.
412.8950[j] *11*	3/2$^+$	C F HIJK	XREF: J(417). Jπ: From E1 γ to 5/2$^-$ level and M1 γ to 1/2$^+$.
429.3 *5*		K	
429.7[@] *3*	11/2$^{(-)}$	E	Jπ: From stretched (E2) γ′s to 7/2$^-$ level; band assignment from (α,3nγ).
436.2716[k] *15*	1/2$^-$	C FGHIJ	Jπ: From M1 γ to 3/2$^-$ level and γγ(θ) indicates J=1/2.
442.1914[j] *10*	5/2$^+$	C F HI	Jπ: From E1 γ′s to 3/2$^-$ and 7/2$^-$ levels.
448.5199[k] *13*	5/2$^-$	C F K	Jπ: From M1 γ′s to 3/2$^-$ and 7/2$^-$ levels.
482.9366 *14*	1/2$^+$	C F I	Jπ: From L=0 in (d,t).
490.61 *14*	(5/2$^+$,7/2$^+$)	C	Jπ: From (E2) γ to 3/2$^+$ level and γ to 9/2$^+$.
504.1715 *9*	5/2$^+$	C Fg I	XREF: g(507). E(level): The γ data are from (n,γ). A level at 504.04 is reported in ε decay, but it has reported γ′s at 285, 410, 462, and 504 keV which are not considered here. Jπ: From L=2 in (d,t) and (^{3}He,α) and M1 γ′s to 3/2$^+$ and 7/2$^+$.
508.6645[l] *25*	3/2$^-$	C Fg K	XREF: g(507). Jπ: From L=0 in (p,t) on 3/2$^-$ target and M1 γ′s to 3/2$^-$ and 5/2$^-$.
514.75[c] *24*	11/2$^-$	DE	Jπ: From E2 γ to 7/2$^-$ level, E1 to 9/2$^+$, and band assignment.
530.4604[k] *19*	3/2$^-$	CD FG I K	Jπ: From L=0 in (p,t) on 3/2$^-$ target and M1 γ′s to 3/2$^-$ and 5/2$^-$ levels.
548.7650[l] *18*	5/2$^-$	C Fg i k	Jπ: From M1 γ′s to 3/2$^-$ and 7/2$^-$ levels.
551.093[i] *19*	(5/2$^-$)	D Fg i k	E(level): Since the 247 and 421 γ′s are reported in (α,nγ) and the 335 γ is reported in (n,γ), there may be two levels here. Jπ: (3/2$^-$,5/2,7/2$^-$) from γ′s to 3/2$^-$ and 7/2$^-$ levels; (5/2$^-$,7/2$^-$) from γ from (9/2$^-$) level; band assignment assumes 5/2$^-$.
563.95[b] *10*	13/2$^-$	DE	Jπ: From E2 γ to 9/2$^-$ level and band assignment. In (n,γ) assigned to gs band.
575.19[e] *9*	(15/2$^-$)	DE	Jπ: From M1 γ to (13/2$^-$) level, E2 to (11/2$^-$), and band assignment.
579.126[i] *3*	(7/2)$^-$	FGHIJK	XREF: G(575)J(575). Jπ: From E1 γ′s to 5/2$^+$ and 9/2$^+$ levels.
607.203[m] *3*	5/2$^-$	C FG I K	Jπ: From M1 γ′s to 3/2$^-$ and 7/2$^-$ levels.
614.70[&] *21*	(15/2$^+$)	DE	Jπ: From (M1+E2) γ to (17/2$^+$) level and expected spin sequence.
632.46[n] *16*	(13/2$^+$)	E i	Jπ: From E2 γ to 9/2$^+$ level and band assignment.
636.308[o] *12*	7/2$^-$	C Fg ijk	The evaluator has reassigned the γ′s reported in ε decay from the one 636-keV level to two 636-keV levels. Jπ: From M1 γ to 7/2$^-$ level and band assignment.
636.449[j] *3*	(7/2)$^+$	Fg ijk	Jπ: From E1 γ to 9/2$^-$ level and band assignment.
649.019 *10*		FG I K	Jπ: 7/2$^+$,9/2$^+$,11/2$^+$ from M1 γ to 9/2$^+$ level. However relatively intense γ′s to 3/2$^-$ and 7/2$^-$, as well as γ from (13/2$^-$) make all values unlikely, therefore even a tentative assignment is difficult to make. Possibly doublet.
664.3263[p] *17*	(1/2,3/2)$^-$	F K	Jπ: From M1 γ to 3/2$^-$ level and γ to 1/2$^+$; band assignment assumes 1/2$^-$.
674.4[h] *3*	11/2$^+$	DE g k	XREF: g(678). Jπ: From E2 γ to 7/2$^+$ and D(+Q) γ to 9/2$^-$. Jπ: Assigned 11/2,3/2[402] in (α,3nγ) and 9/2,1/2[521] in (n,γ).
676.725[t] *13*	(1/2,3/2,5/2)$^+$	Fg k	XREF: g(678). Jπ: From M1,E2 γ to (3/2,5/2)$^+$ level and γ to 3/2$^-$; band assignment assumes 1/2$^+$.
677.1 *3*	$^+$	C g k	XREF: g(678). Jπ: From E2 γ to 7/2$^+$ level.
683.9572[q] *18*	3/2$^-$	F I K	Jπ: From M1 γ to 3/2$^-$ level, E1 to 5/2$^+$, and γ to 1/2$^+$.
708.9637[t] *23*	3/2$^+$	C F	Jπ: From M1 γ′s to 1/2$^+$ and 5/2$^+$ levels.
715.807[@] *11*	(13/2)$^-$	DEF	Jπ: From E2 to (9/2)$^-$ and (M1+E2) to 11/2$^-$. Also, assigned as 9/2$^-$ level in 7/2$^-$[503] + 5/2$^-$[512] band, so may be two levels.

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Adopted Levels, Gammas (continued)

^{153}Gd Levels (continued)

E(level)[†]	Jπ[‡#]	XREF	Comments
720.347[k] 3	7/2⁻	C FgH	Jπ: From M1 γ's to 5/2⁻ and 7/2⁻ levels. Band assignment assumes 7/2⁻.
727.802 4	(3/2,5/2,7/2)⁻	F	Jπ: From M1,E2 γ's to 3/2⁻ and 7/2⁻ levels.
727.87[a] 21	(21/2⁺)	DE g	Jπ: From E2 γ to (17/2⁺) level and band assignment.
729.208[p] 3	(1/2⁻,3/2⁻)	F	Jπ: From M1,E2 γ's to 1/2⁻ and 5/2⁻ levels and feeding by primary feeding in (n,γ); band assignment assumes 3/2⁻.
731.627[r] 11	5/2⁺,7/2⁺	C FG	XREF: G(736). Jπ: From E1 γ's to 5/2⁻ and 7/2⁻ levels.
754.4?	(1/2,3/2)⁺	F	Jπ: From primary γ feeding in (n,γ).
769.054[q] 5	(5/2,7/2)⁻	D Fg i	Jπ: L=3 in (d,t) and (^{3}He,α); band assignment assumes 5/2⁻.
775.123[t] 8	(3/2,5/2⁺)	C Fg iJ	Jπ: From γ's to 1/2⁺, 3/2⁻, 5/2⁺, 5/2⁻ levels. Also assigned as 5/2⁺ in 1/2[411] band.
782.6734[r] 19	3/2⁺	C F	Jπ: From E1 γ's to 3/2⁻ and 5/2⁻ levels and γ to 1/2⁻.
791.016 4	(3/2⁺)	F	Jπ: From γ to 5/2⁻ level and primary γ in (n,γ).
804.95[f] 14	(17/2⁻)	DE	Jπ: From E2 γ to (13/2⁻) level, M1 γ to (15/2⁻), and band assignment.
812.643[p] 7	(5/2⁻)	D F	Jπ: From γ's to 3/2⁻ and 9/2⁻ levels and band assignment.
821.306[r] 8	5/2⁺	CD F	Jπ: From E1 γ's to 5/2⁻ and 7/2⁻ levels and primary γ in (n,γ).
847.826[m] 10	5/2⁻,7/2⁻	C F	Jπ: From M1 γ to 5/2⁻ level and E1 γ to 7/2⁺.
851.7[@] 4	15/2⁻	E	Jπ: From E2 to 11/2⁻ level and D γ to (13/2⁺); band assignment from (α,3nγ).
857.613 7	3/2⁻	C FG IJ	E(level): In ε decay 12 γ's depopulate this level and in (n,γ) only 4 γ's depopulate it, and only 2 γ's are common between the two sets. So, there may be two levels here. Jπ: From γγ(θ) (1978Wa14) and M1 γ's to 1/2⁻ and 5/2⁻ levels.
865.611 5	3/2⁺	C F	Jπ: From γγ(θ) (1978Wa14) and E1 transitions to 3/2⁻ and 5/2⁻ levels.
873.39[n] 19	(17/2⁺)	E	Jπ: From (M1+E2) γ to (17/2⁺) level and E2 to (13/2⁺).
876 3		G	
885.910 15	3/2⁻	Fg IJ	XREF: g(889)J(889). Jπ: From L=1 in (d,t) and (^{3}He,α) and M1 γ to 5/2⁻ level.
887.8[i] 10	(9/2⁻)	D g	XREF: g(889). Jπ: From γ to 5/2⁻ level and band assignment, but also assigned to 7/2[514].
894.615[r] 6	(1/2,3/2,5/2)⁺	F	Jπ: From M1 γ to 3/2⁺ level; band assignment assumes 1/2⁺.
898.8[c] 4	(15/2⁻)	DE	Jπ: From (E2) γ to 11/2⁻ level and D,Q ΔJ=1 γ to (13/2⁺).
903.506 5	(3/2⁻,5/2,7/2⁻)	FG I	Jπ: From γ's to 3/2⁻ and 7/2⁻ levels.
932.191 12	(5/2)⁻	F IJ	Jπ: From (M1) γ to 3/2⁻ level, E2 to 1/2⁻, and γ to (9/2)⁻.
937.374 5	(5/2⁺)	C F	Jπ: From E1 γ's to 3/2⁻ and 7/2⁻ levels. Assigned 7/2⁺ in (n,γ) which implies M2 to γ to gs instead of reported E1.
945.252 6	3/2⁺	C FGH	E(level): There are major differences in the Iγ of the depopulating γ's between the ε decay and (n,γ); the Iγ from the ε decay have been scaled to give Iγ(835)=81 for inclusion here. Jπ: From γγ(θ) (1978Wa14) and E1 γ's 3/2⁻ and 5/2⁻ levels.
955.452 13	5/2⁺	C Fg	XREF: g(960). Jπ: From γγ(θ) (1978Wa14) and E1 γ's 3/2⁻ and 7/2⁻ levels.
962.035 8	(1/2,3/2,5/2)⁻	Fg	XREF: g(960). Jπ: From M1 γ to 3/2⁻ level.
976.61[&] 21	(19/2⁺)	DE	Jπ: From (M1+E2) γ's to (17/2⁺) and (21/2⁺) levels.
990.155 13	(3/2⁺)	C FG IJ	XREF: G(994)I(986)J(987). E(level): In ε decay, 5 γ's depopulate this level and in (n,γ) 5 γ's depopulate it, but only 2 γ's are common between the two sets; and the relative intensities for these two differ by a factor of over 4. Jπ: From E1 γ to 3/2⁻ level and γ to 5/2⁺.
1009.52[b] 13	(17/2⁻)	DE	Jπ: From E2 to (13/2⁻) level and band assignment; assigned to gs band in (n,γ).
1014.74 4	5/2⁺	C	Jπ: From E1 γ's to 3/2⁻ and 7/2⁻ levels.
1015.24 3	(1/2,3/2)⁺	F	Jπ: From E1 γ to 3/2⁻ level.
1025.500 9	(5/2⁻)	F	Jπ: From γ's to 3/2⁺, 3/2⁻, and (5/2⁻) levels.

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Adopted Levels, Gammas (continued)

^{153}Gd Levels (continued)

E(level)[†]	Jπ[‡#]	XREF	Comments
1035.177 *16*	5/2+	C Fg ij	Jπ: From γγ(θ) (1978Wa14) and E1 γ's to 3/2− and 5/2− levels.
1035.7[h] *4*	15/2+	E	Jπ: From E2 γ to 11/2+ level and band assignment.
1037.1? *11*		D g ij	Jπ: Assigned 11/2,1/2[521] in (n,γ) where 674 level is the 9/2− member of this band. With alternative assignment of 674 level, this assignment will have to change.
1040.47[s] *3*	(1/2,3/2,5/2)−	F	Jπ: From M1 γ to 3/2− level and γ to (3/2,5/2)+; band assignment assumes 1/2−.
1044.59 *12*	(3/2,5/2,7/2)+	C	Jπ: From E1 γ to 5/2− level.
1051.11[e] *20*	(19/2−)	DE	Jπ: From (M1+E2) γ to (17/2−) level and band assignment.
1054.723[s] *8*	3/2−	FG	XREF: G(1052). Jπ: From M1 γ's to 1/2− and 5/2− levels.
1066.599 *13*	3/2+	C F	Jπ: From E1 γ's to 3/2− and 5/2− levels.
1082 *2*		G IJ	
1101.659 *7*	3/2+	C Fg I	XREF: g(1099)I(1096). E(level): There are very large differences between the Iγ values from ε decay and (n,γ); the (n,γ) values have been scaled to give Iγ(991)=100 for inclusion here. Jπ: From γγ(θ) (1978Wa14) and E1 γ's to 1/2− and 5/2− levels.
1102.765 *11*	(3/2,5/2,7/2)−	Fg	XREF: g(1099). Jπ: From E1 γ's to 5/2+ levels.
1118.34 *4*	(3/2−,5/2)	Fg ijk	XREF: g(1115)j(1113). Jπ: From M1,E2 γ to 5/2− level and γ's to 3/2+ and 7/2−.
1118.49 *4*	3/2+	C gHijk	XREF: g(1115)j(1113). Jπ: From E1 γ to 3/2− level and γ's to 1/2− and 5/2−.
1124.227 *23*	(3/2,5/2)−	F	Jπ: From M1 γ to 3/2− level and γ to 7/2−.
1131.663 *14*	5/2+	C F	Jπ: From E1 γ to 5/2− level and γ's to 3/2− and 9/2+.
1139.0?	(1/2,3/2)+	FG	XREF: G(1143). Jπ: From primary γ feeding in (n,γ).
1140.7[@] *4*	17/2−	E	Jπ: From E2 γ to 13/2− level and band assignment.
1152.81 *6*	(5/2+)	GHIj	Jπ: From L=2 in in (d,pγ) and similarity of γ-decay paths with those of known 5/2+ state in ^{155}Gd with configuration=ν5/2[402]. Configuration=ν5/2[402] (2014Ro25, (p,dγ) dataset).
1157.42 *3*	(5/2)−	F j	Jπ: From M1,E2 γ to 3/2− level, γ to (7/2)+, L=2,3 in (^{3}He,α), and feeding by primary γ in (n,γ).
1163.71? *12*	(3/2)+	F	Jπ: From γ's to 5/2− and 5/2+ and feeding by primary γ in (n,γ).
1172.620 *7*	(1/2,3/2,5/2)−	FG	Jπ: From M1,E2 γ to 5/2− level and γ's to 3/2+ levels.
1180.75 *3*	5/2+	C F	Jπ: From E1 γ's to 3/2− and 5/2− levels and γ to 7/2−.
1194 *5*		G	
1194.81[a] *23*	(25/2+)	DE	Jπ: From E2 γ (21/2+) level and band assignment.
1199.04 *6*	(7/2)+	C F	Jπ: (7/2,9/2)+ from E1 γ's to 7/2− and 9/2− levels. 9/2+ less likely from γ to 5/2−; also γ to 3/2− is question marked as certain placement.
1208.19[n] *21*	(21/2+)	E	Jπ: From (M1+E2) γ to (19/2+) level and E2 to (17/2+).
1220.80 *25*	(3/2,5/2,7/2)	F	Jπ: From γ's to 5/2+ and (5/2)− levels.
1235 *5*		G	
1247.515 *14*	(3/2,5/2,7/2)+	Fg i	XREF: g(1251)i(1250). Jπ: From E2 γ to 5/2+ and γ to 5/2−.
1252.146 *13*	(1/2,3/2)−	Fg i	XREF: i(1250). Jπ: From γ to 5/2− level and feeding by primary γ in (n,γ).
1268.202 *13*	3/2−	F	Jπ: From E1 γ to 5/2+ level and feeding by primary γ in (n,γ).
1272.72 *4*	5/2+	C F	Jπ: From E1 γ's to 3/2− and 5/2− levels and γ to 7/2−.
1280 *2*		I	
1293.89 *21*	(1/2,3/2)	FG IJ	XREF: I(1298). Jπ: From feeding by primary γ in (n,γ).
1312.30[f] *20*	(21/2−)	E	Jπ: From (M1+E2) γ to (19/2−) level and E2 γ to (17/2−).
1314.57 *25*	(1/2,3/2)	F	Jπ: From γ to (3/2,5/2)+ level and feeding by primary γ in (n,γ).
1318.2 *11*	(19/2−)	D	Jπ: From γ to (15/2)− level. Assigned as 19/2,3/2[521] in (n,γ), but different assignments to this band are made in (α,3nγ) and the latter are adopted here.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{153}Gd Levels (continued)

E(level)[†]	Jπ[‡#]	XREF	Comments
1328.320 *13*	5/2+	C F	E(level): All of the depopulating γ′s are reported in ε decay, except that at 619 keV; only 4 γ′s are reported in (n,γ) and these Iγ have been scaled to give Iγ(1012)=39. Jπ: From γγ(θ) (1978Wa14), E1 γ to 3/2−, and γ to 9/2+.
1330.6?	(1/2,3/2)	F	Jπ: From feeding by primary γ in (n,γ).
1337.97 *8*	1/2−,3/2−	FG	Jπ: From M1,E2 γ′s to 3/2− levels and feeding by primary γ in (n,γ).
1339.4[u] *4*	(17/2−)	E	Jπ: From (M1+E2) γ to (15/2−) level and (E2) γ to (13/2−).
1353.52 *5*	(3/2)−	F	Jπ: From M1 γ to 5/2− level and feeding by primary γ in (n,γ).
1357.0[c] *5*	19/2−	E	Jπ: From E2 γ to 15/2− level and band assignment.
1363.58 *6*	(1/2,3/2)−	FG IJ	Jπ: From γ to 3/2+ level and feeding by primary γ in (n,γ).
1384.54 *11*	(1/2,3/2)	Fg I	XREF: g(1384)I(1380). Jπ: From feeding by primary γ in (n,γ).
1387.46 *3*	(3/2,5/2,7/2)	C g I	XREF: g(1384)I(1389). Jπ: γ′s to 3/2+, 5/2−, and 7/2− levels, but the assigned multipolarities conflict. The most intense γ is E1 to 5/2+ which gives 3/2−,5/2−,7/2−; but weaker M1 γ to 3/2+ and E1 γ to 7/2− give 5/2+.
1401.28 *5*	(3/2)+	C FG I	Jπ: From E1 γ to 3/2− and 5/2− levels and γ to 1/2−.
1422.939 *20*	(3/2,5/2)−	C FG	Jπ: From E1 γ to 5/2+ level and γ to 1/2−.
1426.53 *16*	(1/2,3/2)	C F	Jπ: From feeding by primary γ in (n,γ). The M1 γ at 1210 to 7/2− level conflicts with assignment.
1436.52[&] *24*	(23/2+)	E	Jπ: From (M1+E2) γ to 25/2+ level and E2 γ to (19/2+).
1450.33 *13*	(1/2,3/2)−	Fg i	XREF: g(1448)i(1455). Jπ: From E2 γ to (5/2)−, γ to 3/2−, and feeding by primary γ in (n,γ).
1452.43 *12*	(3/2,5/2)+	C g i	XREF: g(1448)i(1455). Jπ: E1 γ′s to 3/2− and 5/2−.
1462.02	(1/2,3/2)	F	Jπ: From feeding by primary γ in (n,γ).
1462.9[h] *5*	19/2+	E	Jπ: From E2 γ to 15/2+ level and D γ to (17/2−).
1471.8 *10*		D	Jπ: 2006He06 previously assigned (11/2−) from L=5 in (d,t) and (^{3}He,α), in conflict with γ to 5/2+, and suggested the possible existence of a second level, found by 2014Ro25 in (p,dγ) (see next 1474 level).
1474.18 *17*	(11/2−)	gHIJ	XREF: g(1482). Jπ: From L=5 in (d,t) and (^{3}He,α) with 9/2− less likely from γ to (13/2+). Configuration=ν9/2[514] (2014Ro25, (p,dγ) dataset).
1484.9 *4*	(1/2,3/2)	Fg	XREF: g(1482). Jπ: From feeding by primary γ in (n,γ).
1496 *5*		G	
1503.0 *3*	(1/2,3/2)	F	Jπ: From feeding by primary γ in (n,γ).
1503.17[b] *25*	(21/2−)	E	Jπ: From E2 γ to (17/2−) level and D(+Q) γ to (19/2+).
1509 *2*	(7/2+)	G IJ	Jπ: From L=(4) in (d,t) and (^{3}He,α).
1509.48 *13*	(5/2−)	H	L: 2014Ro25 rule out L=0,1,4 by angular distribution data. L=3 is suggested by χ^2 minimization procedure that together with γ′s to 3/2+ and 7/2− determine (5/2−) (not adopted by 2014Ro25). Previous assignment of L=4 is not supported by measured deuteron angular distribution of 2014Ro25 and is assumed to the previous 1509 level.
1519.3[v] *4*	(21/2−)	E	Jπ: From E2 γ to (17/2−) and D,Q ΔJ=0 γ to (21/2+) level and .
1531 *5*		G J	
1548 *5*		G	
1563 *5*		G J	
1574.0[u] *3*	(19/2−)	E	Jπ: From (M1+E2) γ to (17/2−) level and (E2) γ to (15/2−).
1584 *5*		G	
1586.76[e] *23*	(23/2−)	E	Jπ: From (M1+E2) γ to (21/2−) level and E2 to (19/2−).
1597 *5*		G	
1615 *5*		G	
1628.04[n] *24*	(25/2+)	E	Jπ: From E2 γ to (21/2+) level and band structure.
1631 *5*		G	

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Adopted Levels, Gammas (continued)

^{153}Gd Levels (continued)

E(level)[†]	J$^{\pi}$[‡#]	XREF	Comments
1655 *5*		G	
1669 *5*		G	
1686 *5*		G	
1701 *5*		G	
1703.0?[@] *11*	(21/2$^-$)	E	J$^{\pi}$: From band assignment.
1721.70 *12*	(1/2,3/2)$^+$	FG	J$^{\pi}$: From γ's to 3/2$^+$ and 3/2$^-$ levels and feeding by primary γ in (n,γ).
1738 *5*		G	
1745.2[a] *3*	(29/2$^+$)	E	J$^{\pi}$: From E2 γ to (25/2$^+$) level and band structure.
1755 *5*		G	
1772 *5*		G	
1818.9[u] *4*	(21/2$^-$)	E	
1873.2[f] *3*	(25/2$^-$)	E	
1891.3[c] *7*	23/2$^-$	E	
1901.9[v] *3*	25/2$^-$	E	
1944.0[h] *7*	(23/2$^+$)	E	
1979.4[&] *3*	(27/2$^+$)	E	
2038.5[b] *4*	25/2$^-$	E	
2073.2[u] *6*	(23/2$^-$)	E	
2102.3 *3*	(27/2$^-$)	E	
2131.5[n] *3*	(29/2$^+$)	E	
2170.0[e] *3*	27/2$^-$	E	
2330.6[u] *7*	(25/2$^-$)	E	
2360.5[v] *4*	29/2$^-$	E	
2361.8[a] *4*	33/2$^+$	E	
2458.6[c] *9*	27/2$^-$	E	
2463.2[h] *9*	27/2$^+$	E	
2476.0[f] *4*	29/2$^-$	E	
2580.0[b] *5*	29/2$^-$	E	
2595.1[&] *4*	(31/2$^+$)	E	
2716.7[n] *4*	(33/2$^+$)	E	
2789.7[e] *5*	31/2$^-$	E	
2883.9[v] *5*	33/2$^-$	E	
3018.2[h] *13*	(31/2$^+$)	E	
3030.2[a] *6*	37/2$^+$	E	
3049.6[c] *13*	(31/2$^-$)	E	
3109.4[f] *6*	(33/2$^-$)	E	
3125.4[b] *6*	(33/2$^-$)	E	
3158.8 *11*	(33/2$^-$)	E	
3275.6[&] *11*	(35/2$^+$)	E	
3367.7[n] *7*	(37/2$^+$)	E	
3427.0[e] *9*	(35/2$^-$)	E	
3470.2[v] *7*	(37/2$^-$)	E	
3742.8[a] *12*	(41/2$^+$)	E	
4044.0[n] *12*	(41/2$^+$)	E	
4123.2[v] *12*	(41/2$^-$)	E	
4497.8[a] *16*	(45/2$^+$)	E	
4732.0[n] *16*	(45/2$^+$)	E	
4840.2[v] *16*	(45/2$^-$)	E	
5296.8[a] *19*	(49/2$^+$)	E	
5456.0[n] *19*	(49/2$^+$)	E	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{153}Gd Levels (continued)

E(level)[†]	J$^{\pi}$[‡#]	XREF	Comments
6143.8[a] *21*	(53/2$^+$)	E	
6230.0[n] *21*	(53/2$^+$)	E	
(6247.07 *4*)	1/2$^+$	F	E(level): From the least-squares fit on γ ray energies. J$^{\pi}$: From s-wave capture in J$^{\pi}$=0$^+$ state.
7033.8[a] *24*	(57/2$^+$)	E	

[†] From least-squares fits to γ-ray energies.

[‡] For levels above 1800 keV, the assignments are from the γ decay patterns, the γ multipolarities, and the expected band structure, so specific arguments are not given.

[#] Extensive band assignments are given in the ^{152}Gd(n,γ) data (1996SpZZ) and the (α,3nγ) data (2002Br52). There are several low-spin bands that are only reported in the (n,γ) work and several higher spin bands reported only in the (α,3nγ) work. Nilsson assignments are used to designate the bands in the (n,γ) study, but they are not used in the (α,3nγ) study. The levels assigned to the 1/2[660] and 11/2[505] bands in the two studies agree very well, whereas those for the 3/2[521] and 5/2[523] bands are conflicting. These conflicts are noted.

[@] Band(A): 3/2[521] band.

[&] Band(B): 1/2[660] band, α=−1/2. The band is strongly Coriolis-coupled with 3/2[651] and 5/2[642], all from $i_{13/2}$ orbital.

[a] Band(b): 1/2[660] band, α=+1/2. The band is strongly Coriolis-coupled with 3/2[651] and 5/2[642], all from $i_{13/2}$ orbital.

[b] Band(C): 5/2[523] band; α=+1/2.

[c] Band(c): 5/2[523] band; α=−1/2.

[d] Band(D): 3/2[532] band.

[e] Band(E): 11/2[505] band; α=−1/2.

[f] Band(e): 11/2[505] band; α=+1/2.

[g] Band(F): 3/2[651] band.

[h] Band(G): 3/2[402] band.

[i] Band(H): 1/2[530] band.

[j] Band(I): 1/2[400] band.

[k] Band(J): 1/2[521] band.

[l] Band(K): β-vibrational band based on 3/2[521] g.s.

[m] Band(L): 7/2[503] + 5/2[512] band.

[n] Band(M): band based on 13/2$^+$ level; α=+1/2.

[o] Band(N): 7/2[514] band.

[p] Band(O): 1/2[510] band.

[q] Band(P): 3/2[512] band.

[r] Seq.(S): 1/2[651] band.

[s] Seq.(T): 1/2[541] band.

[t] Seq.(U): 1/2[411] band.

[u] Band(Q): band based on 17/2$^-$ level.

[v] Band(R): band based on 21/2$^-$ level. 2002Br52 propose a 3-quasiparticle configuration=(ν3/2[521],α=+1/2) (ν3/2[651],α=+1/2)(ν3/2[651],α=−1/2).

Adopted Levels, Gammas (continued)

γ(^{153}Gd)

The adopted γ-ray intensities are generally the average of the values from the ^{152}Gd(n,γ) and ^{153}Tb ε+β+ decay data where one or both of these populate the parent level. Conflicts are noted.

There are several levels that have quite different sets of depopulating γ′s from ^{153}Tb ε decay and ^{152}Gd(n,γ). Both sets are generally included here with notes as to where the γ is observed.

The unplaced γ′s are not given here, see ^{153}Dy ε decay and ^{150}Sm(α,nγ).

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	δ[&b]	α[a]	Comments
41.5568	5/2$^-$	41.5565 *5*	100	0.0	3/2$^-$	M1+E2	0.255 *8*	9.2 *4*	α(L)=7.2 *3*; α(M)=1.64 *6* α(N)=0.369 *14*; α(O)=0.0513 *18*; α(P)=0.001557 *23* B(M1)(W.u.)=0.00693 *30*; B(E2)(W.u.)=138 *10* δ: From 0.261 *6* (1982Al24 in ^{153}Tb ε decay) and 0.246 *12* (1996SpZZ in ^{152}Gd(n,γ)); other: 0.26 *1* (1962Ha24).
93.3429	7/2$^-$	51.7842 *7*	100 *7*	41.5568	5/2$^-$	M1+E2	0.160 *10*	13.83 *21*	α(K)=11.00 *16*; α(L)=2.21 *8*; α(M)=0.492 *18* α(N)=0.112 *4*; α(O)=0.0165 *5*; α(P)=0.000842 *12* B(M1)(W.u.)=0.022 *+5−4*; B(E2)(W.u.)=109 *+43−29* δ: From 0.160 *7* (n,γ) and 0.18 *1* (ε decay); other: 0.155 *10* (1982Al24).
		93.3442 *11*	25.3 *10*	0.0	3/2$^-$	E2		3.24	α(K)=1.385 *20*; α(L)=1.434 *20*; α(M)=0.338 *5* α(N)=0.0754 *11*; α(O)=0.00986 *14*; α(P)=6.80×10^{-5} *10* B(E2)(W.u.)=58 *+21−14* I_γ: From ^{152}Gd(n,γ); other: 26.0 *20* from ^{153}Tb ε decay. E_γ: From level energies.
95.1737	9/2$^+$	(1.8307 *14*)		93.3429	7/2$^-$				
		53.60[d] *2*		41.5568	5/2$^-$	M2		213	α(K)=143.8 *21*; α(L)=52.8 *8*; α(M)=12.54 *18* α(N)=2.90 *4*; α(O)=0.431 *6*; α(P)=0.0232 *4*
109.7563	(5/2)$^-$	16.4	0.10	93.3429	7/2$^-$	[M1]		64.0	α(L)=50.2 *7*; α(M)=10.92 *16* α(N)=2.51 *4*; α(O)=0.388 *6*; α(P)=0.0257 *4* B(M1)(W.u.)=0.0068 *+15−14* E_γ: From level energies, Eγ=16.4134 *12*.
		68.1995 *13*	5.5 *2*	41.5568	5/2$^-$	M1+E2	0.13 *3*	6.15 *10*	α(K)=5.08 *8*; α(L)=0.84 *5*; α(M)=0.184 *12* α(N)=0.042 *3*; α(O)=0.0064 *4*; α(P)=0.000379 *6* B(M1)(W.u.)=0.0051 *+8−7*; B(E2)(W.u.)=10 *+7−5* δ: From 0.101 *10* (1996SpZZ from (n,γ)) and 0.187 *17* (1982Al24); other: 0.23 (1975Vy01 from ε decay).
		109.7601 *14*	100 *4*	0.0	3/2$^-$	M1+E2	0.10 *7*	1.545	α(K)=1.299 *20*; α(L)=0.193 *10*; α(M)=0.0420 *23* α(N)=0.0097 *5*; α(O)=0.00149 *7*; α(P)=9.66×10^{-5} *17* B(M1)(W.u.)=0.0226 *22*; B(E2)(W.u.)=10 *+21−9* δ: From analysis of 1973Sa45 which gives λ=−11 *+12−8*; others: δ=0.058 *3* (1982Al24), −0.25 *+12−17* (1983Pr07).
129.1636	3/2$^-$	19.38 *3*	0.09 *2*	109.7563	(5/2)$^-$	M1+E2	1.4 *+4−3*	2.6×10^3 *5*	α(L)=2.0×10^3 *4*; α(M)=4.7×10^2 *8* α(N)=104 *18*; α(O)=13.3 *23*; α(P)=0.0094 *11* B(M1)(W.u.)=5.1×10^{-5} *+41−25*; B(E2)(W.u.)=1.4×10^2 *+8−6* δ: From 1982Al24.

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	δ[&b]	α[a]	Comments
129.1636	3/2⁻	35.822 *3*	0.03	93.3429	7/2⁻	[E2]		185	α(L)=142.5 *20*; α(M)=33.6 *5* α(N)=7.46 *11*; α(O)=0.952 *14*; α(P)=0.000460 *7* B(E2)(W.u.)=3.3 *+8−7*
		87.6080 *7*	100 *5*	41.5568	5/2⁻	M1+E2	0.03 *2*	2.95	α(K)=2.48 *4*; α(L)=0.361 *6*; α(M)=0.0785 *13* α(N)=0.0181 *3*; α(O)=0.00280 *5*; α(P)=0.000185 *3* B(M1)(W.u.)=0.00183 *+42−36*; B(E2)(W.u.)=0.11 *+27−10* δ: From 0.032 (1975Vy01), 0.045 *+18−13* (1982Al24), and −0.026 (1975Al09). A γ of 87.55 keV depopulates the 303 level and may influence these values.
		129.1638 *10*	38 *3*	0.0	3/2⁻	M1		0.971	B(M1)(W.u.)=2.2×10^{-4} *+7−5* α(K)=0.820 *12*; α(L)=0.1180 *17*; α(M)=0.0256 *4* α(N)=0.00590 *9*; α(O)=0.000916 *13*; α(P)=6.11×10^{-5} *9* I_γ: From 41.9 *21* from ε decay and 35.5 *10* from (n,γ). δ: From γ(θ), 1983Pr07 gives δ=+0.06 *9*. From Ice data, δ=0.057 *2* (1982Al24) or δ=0.00 with λ=−11 *+12−9* (1973Sa45).
168.4	(9/2⁻)	75.07	100 *75*	93.3429	7/2⁻				
		126.85	18 *10*	41.5568	5/2⁻				
171.188	(11/2⁻)	(2.8)		168.4	(9/2⁻)				
		76.015 *4*	100	95.1737	9/2⁺	[E1]		0.609	α(K)=0.507 *7*; α(L)=0.0799 *12*; α(M)=0.01734 *25* α(N)=0.00390 *6*; α(O)=0.000563 *8*; α(P)=2.73×10^{-5} *4* B(E1)(W.u.)=2.8×10^{-9} *+6−5*
		77.9	≈12	93.3429	7/2⁻	[E2]		6.42	B(E2)(W.u.)≈0.0026 α(K)=2.11 *3*; α(L)=3.33 *5*; α(M)=0.787 *11* α(N)=0.1752 *25*; α(O)=0.0227 *4*; α(P)=0.0001041 *15*
183.4700	5/2⁺	54.3076 *8*	10.2 *5*	129.1636	3/2⁻	E1		1.463	B(E1)(W.u.)=4.0×10^{-5} *+12−8* α(K)=1.200 *17*; α(L)=0.206 *3*; α(M)=0.0448 *7* α(N)=0.01002 *14*; α(O)=0.001412 *20*; α(P)=6.22×10^{-5} *9*
		88.2962 *6*	45.9 *13*	95.1737	9/2⁺	E2		3.99	B(E2)(W.u.)=2.6×10^{2} *+6−5* α(K)=1.588 *23*; α(L)=1.85 *3*; α(M)=0.438 *7* α(N)=0.0976 *14*; α(O)=0.01272 *18*; α(P)=7.78×10^{-5} *11*
		90.1304 *13*	32.2 *10*	93.3429	7/2⁻	E1		0.386	α(K)=0.323 *5*; α(L)=0.0495 *7*; α(M)=0.01073 *15* α(N)=0.00242 *4*; α(O)=0.000353 *5*; α(P)=1.780×10^{-5} *25* B(E1)(W.u.)=2.8×10^{-5} *+8−5* δ: From γ(θ), δ=0.05 *6* (1983Pr07).
		141.914 *3*	100 *3*	41.5568	5/2⁻	E1		0.1136	B(E1)(W.u.)=2.2×10^{-5} *+6−4* α(K)=0.0959 *14*; α(L)=0.01394 *20*; α(M)=0.00302 *5* α(N)=0.000685 *10*; α(O)=0.0001017 *15*; α(P)=5.62×10^{-6} *8* δ: From γ(θ), δ=0.06 *6* (1983Pr07).
		183.467 *6*	82 *5*	0.0	3/2⁻	E1		0.0571	B(E1)(W.u.)=8.3×10^{-6} *+24−17* α(K)=0.0483 *7*; α(L)=0.00688 *10*; α(M)=0.001489 *21*

$^{153}_{64}Gd_{89}$-10

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	δ[&b]	α[a]	Comments
									α(N)=0.000339 *5*; α(O)=5.08×10^{-5} *8*; α(P)=2.93×10^{-6} *4* δ: From γ(θ), δ=−0.032 *24* (1983Pr07); δ=0.0 is assumed for the α calculation.
212.0082	3/2$^+$	82.8446 *12*	25 *3*	129.1636	3/2$^-$	E1		0.484	α(K)=0.404 *6*; α(L)=0.0627 *9*; α(M)=0.01360 *19* α(N)=0.00307 *5*; α(O)=0.000444 *7*; α(P)=2.20×10^{-5} *3*
		102.2564 *13*	22.1 *10*	109.7563	(5/2)$^-$	E1		0.275	α(K)=0.231 *4*; α(L)=0.0347 *5*; α(M)=0.00753 *11* α(N)=0.001702 *24*; α(O)=0.000249 *4*; α(P)=1.294×10^{-5} *19* δ: From γ(θ), δ=−0.004 *9* (1983Pr07) and −0.04 *2* (1978Wa14).
		170.4511 *16*	21.9 *12*	41.5568	5/2$^-$	E1		0.0695	α(K)=0.0587 *9*; α(L)=0.00842 *12*; α(M)=0.00182 *3* α(N)=0.000414 *6*; α(O)=6.19×10^{-5} *9*; α(P)=3.53×10^{-6} *5* δ: From γ(θ), δ=−0.008 *9* (1983Pr07) and −0.02 *1* (1978Wa14).
		212.0040 *14*	100 *5*	0.0	3/2$^-$	E1		0.0389	α(K)=0.0330 *5*; α(L)=0.00466 *7*; α(M)=0.001007 *14* α(N)=0.000229 *4*; α(O)=3.46×10^{-5} *5*; α(P)=2.03×10^{-6} *3* δ: From γ(θ), δ=−0.01 *1* (1978Wa14).
215.9930	7/2$^-$	86.827 *5*	0.65 *19*	129.1636	3/2$^-$				
		106.2350 *17*	3.61 *19*	109.7563	(5/2)$^-$	E2		2.02	α(K)=0.988 *14*; α(L)=0.794 *12*; α(M)=0.187 *3* α(N)=0.0417 *6*; α(O)=0.00549 *8*; α(P)=4.93×10^{-5} *7*
		122.651 *5*	1.20 *9*	93.3429	7/2$^-$				
		174.436 *4*	100 *3*	41.5568	5/2$^-$	(M1)		0.418	α(K)=0.353 *5*; α(L)=0.0506 *7*; α(M)=0.01099 *16* α(N)=0.00253 *4*; α(O)=0.000392 *6*; α(P)=2.63×10^{-5} *4* Mult.: Data include 174.38 γ from 303 level. δ: From γ(θ), δ=0.00 *3* (1978Wa14), data may include 174.38 γ from 303 level.
		215.9948 *16*	8.1 *3*	0.0	3/2$^-$	E2		0.1720	α(K)=0.1225 *18*; α(L)=0.0384 *6*; α(M)=0.00883 *13* α(N)=0.00199 *3*; α(O)=0.000274 *4*; α(P)=7.16×10^{-6} *10*
219.4428	9/2$^-$	126.0999 *12*	100 *3*	93.3429	7/2$^-$	M1		1.039	α(K)=0.878 *13*; α(L)=0.1264 *18*; α(M)=0.0275 *4* α(N)=0.00632 *9*; α(O)=0.000980 *14*; α(P)=6.54×10^{-5} *10* Mult.: γ of 126.16 keV from 442 level assigned M1,E2 and may include this line.
		177.893 *3*	15.5 *17*	41.5568	5/2$^-$	E2		0.329	α(K)=0.220 *3*; α(L)=0.0844 *12*; α(M)=0.0195 *3* α(N)=0.00439 *7*; α(O)=0.000597 *9*; α(P)=1.232×10^{-5} *18* I_γ: From (n,γ); others: 41 *12* (α,nγ) and 30 *9* (α,3nγ).
249.5542	5/2$^-$	66.17 *5*	1.27 *19*	183.4700	5/2$^+$				
		120.388 *5*	0.50 *4*	129.1636	3/2$^-$	M1		1.185	α(K)=1.001 *14*; α(L)=0.1442 *21*; α(M)=0.0313 *5* α(N)=0.00721 *10*; α(O)=0.001119 *16*; α(P)=7.46×10^{-5} *11*
		139.8024 *18*	6.7 *10*	109.7563	(5/2)$^-$	M1+E2	−0.13 *10*	0.776	α(K)=0.653 *12*; α(L)=0.097 *5*; α(M)=0.0211 *12* α(N)=0.0048 *3*; α(O)=0.00075 *4*; α(P)=4.84×10^{-5} *11* δ: Data are discrepant; δ=+0.40 *3* (1996SpZZ) and −0.13 *10* (1983Pr07 from γ(θ)). Evaluator assumes latter data is less likely to involve a doublet.
		156.209 *3*	0.41 *4*	93.3429	7/2$^-$				
		207.994 *5*	25.3 *8*	41.5568	5/2$^-$	M1+E2	−0.008 *9*	0.257	α(K)=0.218 *3*; α(L)=0.0310 *5*; α(M)=0.00674 *10*

$^{153}_{64}Gd_{89}$-11

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	δ[&b]	α[a]	Comments
									α(N)=0.001551 *22*; α(O)=0.000241 *4*; α(P)=1.615×10^{-5} *23* δ: From 1983Pr07 and excluding the larger value (+2.8).
249.5542	5/2$^-$	249.546 *3*	100 *5*	0.0	3/2$^-$	M1+E2	−0.33 *4*	0.1518 *24*	α(K)=0.1274 *22*; α(L)=0.0191 *3*; α(M)=0.00417 *7* α(N)=0.000959 *14*; α(O)=0.0001472 *21*; α(P)=9.33×10^{-6} *18* δ: From Ice, δ=0.33 *4* (1996SpZZ), but γ is also placed from 290 level.
290.3597	7/2$^+$	106.890 *3*	6.8 *10*	183.4700	5/2$^+$	E2(+M1)		1.82 *16*	α(K)=1.19 *22*; α(L)=0.49 *29*; α(M)=0.113 *69* α(N)=0.025 *16*; α(O)=0.0035 *19*; α(P)=7.7×10^{-5} *29*
		195.182 *4*	100 *5*	95.1737	9/2$^+$	M1+E2	−0.22 *6*	0.303	α(K)=0.255 *5*; α(L)=0.0380 *8*; α(M)=0.00828 *19* α(N)=0.00190 *4*; α(O)=0.000293 *6*; α(P)=1.88×10^{-5} *4* δ: From γ(θ) (1983Pr07).
		197.014 *2*	10.4 *20*	93.3429	7/2$^-$	E1		0.0472	α(K)=0.0400 *6*; α(L)=0.00568 *8*; α(M)=0.001227 *18* α(N)=0.000279 *4*; α(O)=4.20×10^{-5} *6*; α(P)=2.44×10^{-6} *4*
		248.802 *5*	39.0 *19*	41.5568	5/2$^-$	E1		0.0257	α(K)=0.0218 *3*; α(L)=0.00305 *5*; α(M)=0.000658 *10* α(N)=0.0001501 *21*; α(O)=2.27×10^{-5} *4*; α(P)=1.363×10^{-6} *19*
		290.365 *6*	2.0 *3*	0.0	3/2$^-$				
303.5433	5/2$^+$	87.551 *2*	15.3 *22*	215.9930	7/2$^-$				
		91.5361 *10*	26.0 *20*	212.0082	3/2$^+$	M1+E2	0.67 *6*	2.87 *6*	α(K)=1.96 *4*; α(L)=0.70 *5*; α(M)=0.162 *12* α(N)=0.037 *3*; α(O)=0.0050 *4*; α(P)=0.000135 *4* δ: From Ice (1996SpZZ); other: from γ(θ), δ=0.46 *+50−13* (1983Pr07) excluding the larger value from the latter reference.
		120.073 *3*	2.44 *22*	183.4700	5/2$^+$	M1		1.194	α(K)=1.009 *15*; α(L)=0.1453 *21*; α(M)=0.0316 *5* α(N)=0.00727 *11*; α(O)=0.001127 *16*; α(P)=7.52×10^{-5} *11*
		174.385 *2*	100 *5*	129.1636	3/2$^-$	(E1)		0.0653	α(K)=0.0553 *8*; α(L)=0.00791 *11*; α(M)=0.001710 *24* α(N)=0.000389 *6*; α(O)=5.82×10^{-5} *9*; α(P)=3.33×10^{-6} *5*
		193.782 *3*	39 *3*	109.7563	(5/2)$^-$	E1		0.0494	α(K)=0.0418 *6*; α(L)=0.00594 *9*; α(M)=0.001283 *18* α(N)=0.000292 *4*; α(O)=4.39×10^{-5} *7*; α(P)=2.55×10^{-6} *4* δ: From γ(θ), δ=0.00 *5* (1983Pr07).
		210.1945 *13*	93 *9*	93.3429	7/2$^-$	E1		0.0398	α(K)=0.0337 *5*; α(L)=0.00477 *7*; α(M)=0.001030 *15* α(N)=0.000235 *4*; α(O)=3.53×10^{-5} *5*; α(P)=2.08×10^{-6} *3* I_γ: From (n,γ); other: 183 *17* in ε decay. δ: From γ(θ), δ=−0.02 *3* (1983Pr07).
		261.996 *6*	64 *6*	41.5568	5/2$^-$	(E1)		0.0225	α(K)=0.0191 *3*; α(L)=0.00266 *4*; α(M)=0.000575 *8* α(N)=0.0001312 *19*; α(O)=1.99×10^{-5} *3*; α(P)=1.200×10^{-6} *17* δ: From γ(θ), δ=−0.03 *3* (1983Pr07) and 0.01 *5* (1978Wa14).
		303.548 *7*	85 *4*	0.0	3/2$^-$	E1		0.01547	α(K)=0.01315 *19*; α(L)=0.00182 *3*; α(M)=0.000393 *6* α(N)=8.98×10^{-5} *13*; α(O)=1.364×10^{-5} *19*; α(P)=8.38×10^{-7} *12* I_γ: From (n,γ); other: 124 *6* in ε decay and 18 *5* in (α,nγ). δ: From γ(θ), δ=0.003 *23* (1983Pr07) and 0.01 *2* (1978Wa14).
315.1995	1/2$^-$	186.035 *4*	8.0 *12*	129.1636	3/2$^-$	M1,E2		0.32 *4*	α(K)=0.24 *6*; α(L)=0.056 *14*; α(M)=0.0127 *36* α(N)=0.00288 *77*; α(O)=0.00041 *9*; α(P)=1.64×10^{-5} *56*
		205.437 *4*	2.1 *3*	109.7563	(5/2)$^-$	E2		0.203	α(K)=0.1426 *20*; α(L)=0.0469 *7*; α(M)=0.01080 *16* α(N)=0.00243 *4*; α(O)=0.000334 *5*; α(P)=8.24×10^{-6} *12*
		273.644 *6*	4.4 *3*	41.5568	5/2$^-$	E2		0.0802	α(K)=0.0603 *9*; α(L)=0.01546 *22*; α(M)=0.00352 *5*

$^{153}_{64}Gd_{89}$-12

Adopted Levels, Gammas (continued)

$\gamma(^{153}Gd)$ (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	δ[&b]	α[a]	Comments
									α(N)=0.000794 *12*; α(O)=0.0001120 *16*; α(P)=3.71×10^{-6} *6*

$^{153}_{64}Gd_{89}$-13

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	δ[&b]	α[a]	Comments
									I_γ: From ^{152}Gd(n,γ); other: 9.6 *15* in ε decay. Mult.: There is a γ of 273.49 from 368 level which may interfere with data on which this assignment is based.
315.1995	1/2$^-$	315.199 *10*	100 *7*	0.0	3/2$^-$	M1		0.0838	α(K)=0.0711 *10*; α(L)=0.01002 *14*; α(M)=0.00217 *3* α(N)=0.000500 *7*; α(O)=7.77×10^{-5} *11*; α(P)=5.24×10^{-6} *8*
316.0271	(3/2)$^+$	132.5586 *8*	34.3 *10*	183.4700	5/2$^+$	M1+E2	−0.53 *6*	0.904	α(K)=0.711 *14*; α(L)=0.151 *8*; α(M)=0.0338 *19* α(N)=0.0077 *4*; α(O)=0.00112 *5*; α(P)=5.04×10^{-5} *14* δ: Value from Ice (1996SpZZ) and sign from 1983Pr07 which give −4.4<δ<−0.01.
		186.857 *5*	32.8 *20*	129.1636	3/2$^-$	E1		0.0544	α(K)=0.0460 *7*; α(L)=0.00655 *10*; α(M)=0.001416 *20* α(N)=0.000322 *5*; α(O)=4.84×10^{-5} *7*; α(P)=2.79×10^{-6} *4* δ: From γ(θ), δ=−0.09 *22* (1983Pr07).
		206.2667 *14*	46.8 *20*	109.7563	(5/2)$^-$	E1		0.0418	α(K)=0.0355 *5*; α(L)=0.00502 *7*; α(M)=0.001084 *16* α(N)=0.000247 *4*; α(O)=3.72×10^{-5} *6*; α(P)=2.18×10^{-6} *3*
		274.480 *8*	15.0 *10*	41.5568	5/2$^-$				
		316.026 *3*	100 *2*	0.0	3/2$^-$	E1		0.01399	α(K)=0.01190 *17*; α(L)=0.001643 *23*; α(M)=0.000355 *5* α(N)=8.10×10^{-5} *12*; α(O)=1.233×10^{-5} *18*; α(P)=7.60×10^{-7} *11* δ: From γ(θ), δ=−0.04 *28* (1983Pr07).
327.8529	1/2$^+$	144.390 *5*	5.65 *19*	183.4700	5/2$^+$	E2		0.676	α(K)=0.412 *6*; α(L)=0.204 *3*; α(M)=0.0476 *7* α(N)=0.01067 *15*; α(O)=0.001429 *20*; α(P)=2.19×10^{-5} *3*
		198.688 *2*	36 *5*	129.1636	3/2$^-$	E1		0.0462	α(K)=0.0391 *6*; α(L)=0.00555 *8*; α(M)=0.001199 *17* α(N)=0.000273 *4*; α(O)=4.10×10^{-5} *6*; α(P)=2.39×10^{-6} *4*
		327.844 *10*	100.0 *20*	0.0	3/2$^-$	E1		0.01277	α(K)=0.01086 *16*; α(L)=0.001498 *21*; α(M)=0.000323 *5* α(N)=7.39×10^{-5} *11*; α(O)=1.125×10^{-5} *16*; α(P)=6.96×10^{-7} *10*
333.1684	(9/2)$^-$	113.728 *3*	8.7 *10*	219.4428	9/2$^-$	E2		1.575	α(K)=0.819 *12*; α(L)=0.584 *9*; α(M)=0.1372 *20* α(N)=0.0307 *5*; α(O)=0.00405 *6*; α(P)=4.14×10^{-5} *6*
		239.822 *2*	100 *8*	93.3429	7/2$^-$	M1		0.1744	α(K)=0.1477 *21*; α(L)=0.0210 *3*; α(M)=0.00455 *7* α(N)=0.001048 *15*; α(O)=0.0001628 *23*; α(P)=1.094×10^{-5} *16* Mult.: M1,E2 γ from (n,γ); D γ from (α,3nγ) excludes E2.
		291.619 *4*	82 *3*	41.5568	5/2$^-$	E2		0.0658	α(K)=0.0500 *7*; α(L)=0.01223 *18*; α(M)=0.00277 *4* α(N)=0.000627 *9*; α(O)=8.89×10^{-5} *13*; α(P)=3.11×10^{-6} *5*
361.6512	3/2$^-$	112.0957 *16*	3.05 *13*	249.5542	5/2$^-$				
		178.1840 *13*	42.4 *13*	183.4700	5/2$^+$	E1		0.0617	α(K)=0.0522 *8*; α(L)=0.00746 *11*; α(M)=0.001612 *23* α(N)=0.000367 *6*; α(O)=5.49×10^{-5} *8*; α(P)=3.15×10^{-6} *5* I_γ: From (n,γ); other: 35 *4* in ε decay.
		232.486 *11*	2.4 *5*	129.1636	3/2$^-$				
		251.900 *8*	0.86 *7*	109.7563	(5/2)$^-$	M1		0.1527	α(K)=0.1293 *19*; α(L)=0.0183 *3*; α(M)=0.00398 *6* α(N)=0.000917 *13*; α(O)=0.0001424 *20*; α(P)=9.57×10^{-6} *14*
		268.300 *8*	3.91 *13*	93.3429	7/2$^-$	E2		0.0854	α(K)=0.0640 *9*; α(L)=0.01664 *24*; α(M)=0.00379 *6* α(N)=0.000855 *12*; α(O)=0.0001204 *17*; α(P)=3.92×10^{-6} *6*

$^{153}_{64}Gd_{89}$-14

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	δ[&b]	α[a]	Comments
361.6512	3/2⁻	320.089 *4*	100 *2*	41.5568	5/2⁻	M1+E2	−0.13 *+12−14*	0.0800 *20*	α(K)=0.0677 *18*; α(L)=0.00960 *15*; α(M)=0.00208 *3* α(N)=0.000479 *7*; α(O)=7.44×10^{-5} *12*; α(P)=4.99×10^{-6} *16* δ: From γ(θ) (1983Pr07), but note there is a 319.95 γ out of 636 level.
		361.629 *9*	76 *4*	0.0	3/2⁻	M1+E2	0.20 *4*	0.0574 *9*	α(K)=0.0486 *8*; α(L)=0.00690 *10*; α(M)=0.001498 *22* α(N)=0.000345 *5*; α(O)=5.35×10^{-5} *8*; α(P)=3.57×10^{-6} *6* δ: From 1978Wa14 if large value is excluded; other: +0.098 < δ < 2.7.
363.449	(13/2⁻)	192.260 *10*	100	171.188	(11/2⁻)	M1+E2	−0.35 *+22−30*	0.312 *14*	α(K)=0.260 *19*; α(L)=0.041 *5*; α(M)=0.0090 *11* α(N)=0.00207 *24*; α(O)=0.00031 *3*; α(P)=1.90×10^{-5} *20* δ: From (α,3nγ).
364.70	(17/2⁺)	226.5 *10*	100	138.40	(13/2⁺)	E2		0.147 *3*	α(K)=0.1062 *21*; α(L)=0.0319 *8*; α(M)=0.00730 *17* α(N)=0.00164 *4*; α(O)=0.000228 *5*; α(P)=6.27×10^{-6} *12*
368.6677	(5/2⁻)	119.109 *5*	3.8 *3*	249.5542	5/2⁻				
		149.237 *6*	2.2 *3*	219.4428	9/2⁻				
		152.674 *3*	5.7 *3*	215.9930	7/2⁻	E2		0.557	α(K)=0.349 *5*; α(L)=0.1607 *23*; α(M)=0.0374 *6* α(N)=0.00838 *12*; α(O)=0.001128 *16*; α(P)=1.88×10^{-5} *3* I_γ: From (n,γ); other: 13.7 *22* in ε decay.
		185.193 *6*	1.6 *3*	183.4700	5/2⁺				
		239.531 *14*	9 *3*	129.1636	3/2⁻				I_γ: From ^{152}Gd(n,γ); other: 24 *5* in ε decay. Mult.: Assigned M1,E2 from data for doublet peak.
		258.70 *10*	≈6.6	109.7563	(5/2)⁻	(M1)		0.1421	α(K)=0.1203 *17*; α(L)=0.01707 *24*; α(M)=0.00370 *6* α(N)=0.000852 *12*; α(O)=0.0001324 *19*; α(P)=8.91×10^{-6} *13* E_γ: Not reported in (n,γ). Mult.: γ is also placed from 442 and 548 levels, so mult may not apply here.
		273.496 *7*	14.2 *19*	95.1737	9/2⁺				
		275.324 *4*	100.0 *19*	93.3429	7/2⁻	M1(+E2)	−0.3 *3*	0.117 *8*	α(K)=0.098 *8*; α(L)=0.01447 *24*; α(M)=0.00315 *8* α(N)=0.000724 *15*; α(O)=0.0001116 *17*; α(P)=7.2×10^{-6} *8*
		327.100 *6*	85 *3*	41.5568	5/2⁻	M1		0.0760	α(K)=0.0644 *9*; α(L)=0.00907 *13*; α(M)=0.00197 *3* α(N)=0.000453 *7*; α(O)=7.04×10^{-5} *10*; α(P)=4.75×10^{-6} *7* δ: From γ(θ), δ=−0.01 *7* (1983Pr07) excluding the larger values.
		368.695 *8*	40.8 *16*	0.0	3/2⁻				I_γ: From (n,γ); other: 21.8 *12* in ε decay. Mult.: Measurements suggest E2+M1, but J^π's require

$^{153}_{64}Gd_{89}$-15

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ †‡#	I_γ	E_f	J_f^π	Mult.@	δ&b	α[a]	Comments
									E2. δ: From γ(θ), δ=+0.04 *14* or −0.27 *+22−43* or −3.9 *+15−51* (1983Pr07); J^π's require E2.
377.8	(11/2$^+$)	239	100	138.40	(13/2$^+$)	(M1,E2)		0.15 *3*	α(K)=0.12 *3*; α(L)=0.0235 *24*; α(M)=0.0053 *7* α(N)=0.00120 *14*; α(O)=0.000175 *11*; α(P)=8.2×10^{-6} *29*
		283	<85	95.1737	9/2$^+$	(M1,E2)		0.092 *20*	α(K)=0.075 *20*; α(L)=0.01352 *24*; α(M)=0.00300 *11* α(N)=0.000684 *19*; α(O)=0.000101 *3*; α(P)=5.2×10^{-6} *18*
395.1461	7/2$^+$	91.601 *2*	14.4 *20*	303.5433	5/2$^+$	E2		3.48	α(K)=1.452 *21*; α(L)=1.564 *22*; α(M)=0.369 *6* α(N)=0.0823 *12*; α(O)=0.01075 *15*; α(P)=7.12×10^{-5} *10*
		145.590 *7*	18.3 *13*	249.5542	5/2$^-$	D			
		175.704 *2*	24.2 *6*	219.4428	9/2$^-$	D			
		183.136 *2*	34.6 *20*	212.0082	3/2$^+$	E2		0.299	α(K)=0.202 *3*; α(L)=0.0749 *11*; α(M)=0.01732 *25* α(N)=0.00389 *6*; α(O)=0.000530 *8*; α(P)=1.136×10^{-5} *16*
		285.394 *3*	86 *3*	109.7563	(5/2)$^-$	E1		0.0181	α(K)=0.01535 *22*; α(L)=0.00213 *3*; α(M)=0.000460 *7* α(N)=0.0001051 *15*; α(O)=1.595×10^{-5} *23*; α(P)=9.73×10^{-7} *14*
		299.968 *16*	12 *3*	95.1737	9/2$^+$				
		301.813 *6*	34.0 *20*	93.3429	7/2$^-$	D,Q			
		353.59 *3*	100 *18*	41.5568	5/2$^-$	D			E_γ: Not reported in ε decay. Mult.: From Ice, assigned E1 or E2 (1996SpZZ).
412.8950	3/2$^+$	85.0414 *9*	5.2 *3*	327.8529	1/2$^+$	M1+E2	0.33 *4*	3.34 *6*	α(K)=2.61 *5*; α(L)=0.57 *5*; α(M)=0.128 *10* α(N)=0.0291 *22*; α(O)=0.0042 *3*; α(P)=0.000191 *4* δ: From Ice (1996SpZZ).
		96.878 *4*	2.19 *21*	316.0271	(3/2)$^+$	M1		2.20	α(K)=1.86 *3*; α(L)=0.269 *4*; α(M)=0.0585 *9* α(N)=0.01345 *19*; α(O)=0.00209 *3*; α(P)=0.0001389 *20*
		97.704 *5*	1.77 *21*	315.1995	1/2$^-$				
		197.05[d] *10*	78 *5*	215.9930	7/2$^-$				E_γ: Not reported in (n,γ), so with reported Iγ, placement is doubtful.
		200.886 *4*	3.2 *4*	212.0082	3/2$^+$	M1,E2		0.25 *4*	α(K)=0.20 *5*; α(L)=0.043 *9*; α(M)=0.0096 *23* α(N)=0.0022 *5*; α(O)=0.00032 *5*; α(P)=1.33×10^{-5} *45*
		229.425 *3*	20.4 *19*	183.4700	5/2$^+$	M1		0.197	α(K)=0.1665 *24*; α(L)=0.0237 *4*; α(M)=0.00514 *8* α(N)=0.001184 *17*; α(O)=0.000184 *3*; α(P)=1.234×10^{-5} *18*
		283.739 *4*	11.2 *5*	129.1636	3/2$^-$				
		303.15 *2*	42 *3*	109.7563	(5/2)$^-$	E1		0.01552	α(K)=0.01319 *19*; α(L)=0.00183 *3*; α(M)=0.000394 *6* α(N)=9.01×10^{-5} *13*; α(O)=1.369×10^{-5} *20*; α(P)=8.41×10^{-7} *12*
		371.330 *8*	100 *3*	41.5568	5/2$^-$	E1		0.00942	α(K)=0.00802 *12*; α(L)=0.001099 *16*; α(M)=0.000237 *4* α(N)=5.42×10^{-5} *8*; α(O)=8.28×10^{-6} *12*; α(P)=5.19×10^{-7} *8* δ: From γ(θ), δ=0.00 *7* (1983Pr07).
		413.0 *4*	9 *5*	0.0	3/2$^-$				E_γ: Not reported in (n,γ).
429.7	11/2$^{(-)}$	97 *1*	5.1 *13*	333.1684	(9/2)$^-$				
		291.7 *5*	14.1 *16*	138.40	(13/2$^+$)			0.0171	α(K)=0.01453 *22*; α(L)=0.00201 *3*; α(M)=0.000435 *7*

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	α[a]	Comments
								α(N)=9.94×10^{-5} *15*; α(O)=1.509×10^{-5} *23*; α(P)=9.23×10^{-7} *14*
429.7	11/2$^{(-)}$	335 *1*	39 *13*	95.1737	9/2$^+$		0.01211 *20*	α(K)=0.01030 *17*; α(L)=0.001419 *23*; α(M)=0.000306 *5*
								α(N)=7.00×10^{-5} *12*; α(O)=1.066×10^{-5} *17*; α(P)=6.62×10^{-7} *11*
		337 *1*	100 *12*	93.3429	7/2$^-$	(E2)	0.0423 *7*	α(K)=0.0330 *6*; α(L)=0.00730 *13*; α(M)=0.00165 *3*
								α(N)=0.000373 *7*; α(O)=5.35×10^{-5} *10*; α(P)=2.10×10^{-6} *4*
436.2716	1/2$^-$	120.2433 *18*	0.41 *5*	316.0271	(3/2)$^+$			
		121.071 *7*	0.36 *10*	315.1995	1/2$^-$			
		186.85 *3*	<35	249.5542	5/2$^-$			I$_\gamma$: Not reported in (n,γ).
		224.263 *4*	0.72 *15*	212.0082	3/2$^+$			I$_\gamma$: From (n,γ); other: 3.2 *21* in ε decay.
		326.523 *13*	1.8 *3*	109.7563	(5/2)$^-$			
		394.733 *17*	0.62 *10*	41.5568	5/2$^-$			
		436.266 *5*	100 *4*	0.0	3/2$^-$	M1	0.0359	α(K)=0.0304 *5*; α(L)=0.00425 *6*; α(M)=0.000920 *13*
								α(N)=0.000212 *3*; α(O)=3.29×10^{-5} *5*; α(P)=2.23×10^{-6} *4*
442.1914	5/2$^+$	80.5411 *18*	2.9 *8*	361.6512	3/2$^-$			
		114.343 *4*	1.4 *4*	327.8529	1/2$^+$			
		126.1625 *17*	25.9 *8*	316.0271	(3/2)$^+$	M1,E2	1.06 *3*	α(K)=0.74 *14*; α(L)=0.25 *12*; α(M)=0.057 *30*
								α(N)=0.0128 *65*; α(O)=0.00177 *80*; α(P)=4.8×10^{-5} *17*
								I$_\gamma$: From (n,γ); other: 63 *3* in ε decay.
		138.656 *4*	1.66 *21*	303.5433	5/2$^+$			
		151.8307 *17*	58.6 *17*	290.3597	7/2$^+$	M1,E2	0.59 *3*	α(K)=0.44 *9*; α(L)=0.120 *45*; α(M)=0.027 *11*
								α(N)=0.0062 *25*; α(O)=8.7×10^{-4} *29*; α(P)=2.89×10^{-5} *99*
		192.642 *4*	3.11 *21*	249.5542	5/2$^-$			I$_\gamma$: From (n,γ); other: 12 *3* in ε decay.
		226.196 *7*	8.5 *4*	215.9930	7/2$^-$	E1	0.0329	α(K)=0.0279 *4*; α(L)=0.00392 *6*; α(M)=0.000847 *12*
								α(N)=0.000193 *3*; α(O)=2.91×10^{-5} *4*; α(P)=1.727×10^{-6} *25*
								I$_\gamma$: From (n,γ); other: 27 *4* in ε decay.
		230.182 *3*	5.38 *21*	212.0082	3/2$^+$	M1,E2	0.17 *3*	α(K)=0.13 *4*; α(L)=0.027 *4*; α(M)=0.0060 *9*
								α(N)=0.00136 *19*; α(O)=0.000198 *17*; α(P)=9.1×10^{-6} *32*
		258.720 *4*	23.4 *14*	183.4700	5/2$^+$	M1	0.1421	α(K)=0.1203 *17*; α(L)=0.01706 *24*; α(M)=0.00370 *6*
								α(N)=0.000852 *12*; α(O)=0.0001324 *19*; α(P)=8.90×10^{-6} *13*
		312.99 *5*	1.2 *4*	129.1636	3/2$^-$			
		332.436 *5*	40.6 *21*	109.7563	(5/2)$^-$	E1	0.01234	α(K)=0.01050 *15*; α(L)=0.001446 *21*; α(M)=0.000312 *5*
								α(N)=7.13×10^{-5} *10*; α(O)=1.086×10^{-5} *16*; α(P)=6.74×10^{-7} *10*
								I$_\gamma$: From (n,γ); other: 81 *15* in ε decay.
		348.829 *9*	32.1 *10*	93.3429	7/2$^-$			
		400.627 *4*	81 *6*	41.5568	5/2$^-$	E1	0.00786	α(K)=0.00670 *10*; α(L)=0.000914 *13*; α(M)=0.000197 *3*
								α(N)=4.51×10^{-5} *7*; α(O)=6.89×10^{-6} *10*; α(P)=4.35×10^{-7} *6*
		442.191 *5*	100 *3*	0.0	3/2$^-$	E1	0.00624	α(K)=0.00532 *8*; α(L)=0.000722 *11*; α(M)=0.0001556 *22*
								α(N)=3.56×10^{-5} *5*; α(O)=5.46×10^{-6} *8*; α(P)=3.48×10^{-7} *5*
								Mult.: Assigned E1 and E2 in different references. For this placement, J^π's require E1.
448.5199	5/2$^-$	133.320 *2*	1.42 *18*	315.1995	1/2$^-$	E2	0.894	α(K)=0.521 *8*; α(L)=0.289 *4*; α(M)=0.0675 *10*
								α(N)=0.01511 *22*; α(O)=0.00201 *3*; α(P)=2.72×10^{-5} *4*

$^{153}_{64}Gd_{89}$-17

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	δ[&b]	α[a]	Comments
448.5199	5/2⁻	158.160 *2*	3.01 *18*	290.3597	7/2⁺				
		198.960 *4*	5.3 *12*	249.5542	5/2⁻	M1		0.290	α(K)=0.246 *4*; α(L)=0.0351 *5*; α(M)=0.00762 *11* α(N)=0.001753 *25*; α(O)=0.000272 *4*; α(P)=1.82×10^{-5} *3* I_γ: From (n,γ); other: 10.7 *23* in ε decay. E_γ: Not reported in (n,γ).
		232.70 *25*	12 *4*	215.9930	7/2⁻				
		265.057 *5*	5.7 *4*	183.4700	5/2⁺				
		319.349 *7*	15.0 *7*	129.1636	3/2⁻	M1,E2		0.065 *16*	α(K)=0.054 *16*; α(L)=0.0092 *5*; α(M)=0.00205 *6* α(N)=0.000467 *18*; α(O)=7.0×10^{-5} *6*; α(P)=3.7×10^{-6} *14*
		338.754 *9*	5.5 *4*	109.7563	(5/2)⁻	M1,E2		0.055 *14*	α(K)=0.046 *14*; α(L)=0.0077 *6*; α(M)=0.00170 *9* α(N)=0.000389 *24*; α(O)=5.8×10^{-5} *6*; α(P)=3.2×10^{-6} *12*
		355.183 *5*	100 *2*	93.3429	7/2⁻	M1(+E2)	+0.02 *13*	0.0612 *11*	α(K)=0.0519 *9*; α(L)=0.00729 *11*; α(M)=0.001580 *23* α(N)=0.000364 *6*; α(O)=5.65×10^{-5} *9*; α(P)=3.82×10^{-6} *7* δ: From 1983Pr07; other: −0.03 *6* (1978Wa14).
		406.966 *4*	41 *6*	41.5568	5/2⁻	M1		0.0429	α(K)=0.0364 *5*; α(L)=0.00509 *8*; α(M)=0.001103 *16* α(N)=0.000254 *4*; α(O)=3.95×10^{-5} *6*; α(P)=2.67×10^{-6} *4*
		448.514 *6*	87 *3*	0.0	3/2⁻	M1+E2	+0.27 *15*	0.0324 *13*	α(K)=0.0274 *12*; α(L)=0.00388 *11*; α(M)=0.000841 *22* α(N)=0.000193 *6*; α(O)=3.00×10^{-5} *9*; α(P)=2.01×10^{-6} *10* I_γ: From (n,γ); other: 53 *8* in ε decay. δ: From 1983Pr07; other: 0.22 *5* (1978Wa14).
482.9366	1/2⁺	121.280 *6*	11.5 *5*	361.6512	3/2⁻	E1		0.1736	α(K)=0.1461 *21*; α(L)=0.0216 *3*; α(M)=0.00467 *7* α(N)=0.001058 *15*; α(O)=0.0001562 *22*; α(P)=8.39×10^{-6} *12*
		155.084 *6*	0.60 *12*	327.8529	1/2⁺				
		166.908 *3*	100 *3*	316.0271	(3/2)⁺	E2,M1		0.44 *4*	α(K)=0.33 *7*; α(L)=0.084 *27*; α(M)=0.0190 *66* α(N)=0.0043 *15*; α(O)=6.1×10^{-4} *17*; α(P)=2.22×10^{-5} *76* Mult.: Data of 1996SpZZ gives mult=M1, but J^π's require E2 or M1+E2.
		167.7345 *17*	9.4 *4*	315.1995	1/2⁻				
		270.931 *14*	1.20 *12*	212.0082	3/2⁺				
		299.480 *12*	46.3 *10*	183.4700	5/2⁺	E2		0.0606	α(K)=0.0463 *7*; α(L)=0.01110 *16*; α(M)=0.00252 *4* α(N)=0.000569 *8*; α(O)=8.08×10^{-5} *12*; α(P)=2.89×10^{-6} *4* I_γ: From (n,γ); other: 278 *38* in ε decay.
		353.756 *19*	53 *6*	129.1636	3/2⁻	E1		0.01060	α(K)=0.00902 *13*; α(L)=0.001239 *18*; α(M)=0.000267 *4* α(N)=6.11×10^{-5} *9*; α(O)=9.32×10^{-6} *13*; α(P)=5.82×10^{-7} *9*
		482.942 *7*	30.1 *16*	0.0	3/2⁻	E1		0.00510	α(K)=0.00435 *6*; α(L)=0.000588 *9*; α(M)=0.0001266 *18* α(N)=2.90×10^{-5} *4*; α(O)=4.45×10^{-6} *7*; α(P)=2.86×10^{-7} *4* I_γ: From (n,γ); other: 120 *25* in ε decay.

$^{153}_{64}Gd_{89}$-18

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ †‡#	I_γ	E_f	J_f^π	Mult.@	δ&b	α[a]	Comments
490.61	(5/2$^+$,7/2$^+$)	241.6[d] *4*	52 *25*	249.5542	5/2$^-$				
		278.65 *15*	100	212.0082	3/2$^+$	(E2)		0.0758	α(K)=0.0572 *8*; α(L)=0.01446 *21*; α(M)=0.00329 *5* α(N)=0.000742 *11*; α(O)=0.0001048 *15*; α(P)=3.53×10^{-6} *5*
		395.06 *40*	53 *16*	95.1737	9/2$^+$				
504.1715	5/2$^+$	91.2774 *13*	39.3 *19*	412.8950	3/2$^+$	M1		2.62	α(K)=2.21 *3*; α(L)=0.319 *5*; α(M)=0.0694 *10* α(N)=0.01598 *23*; α(O)=0.00248 *4*; α(P)=0.0001649 *23*
		135.505 *2*	4.7 *5*	368.6677	(5/2$^-$)				
		188.1451 *17*	28.4 *10*	316.0271	(3/2)$^+$				
		200.624 *2*	11.8 *5*	303.5433	5/2$^+$	M1,E2		0.25 *4*	α(K)=0.20 *5*; α(L)=0.043 *9*; α(M)=0.0097 *23* α(N)=0.0022 *5*; α(O)=0.00032 *5*; α(P)=1.33×10^{-5} *46*
		213.8106 *17*	100 *9*	290.3597	7/2$^+$	M1		0.238	α(K)=0.202 *3*; α(L)=0.0288 *4*; α(M)=0.00624 *9* α(N)=0.001437 *21*; α(O)=0.000223 *4*; α(P)=1.497×10^{-5} *21*
		292.164 *3*	81.0 *14*	212.0082	3/2$^+$	M1		0.1026	α(K)=0.0869 *13*; α(L)=0.01228 *18*; α(M)=0.00266 *4* α(N)=0.000613 *9*; α(O)=9.53×10^{-5} *14*; α(P)=6.42×10^{-6} *9*
		320.698 *7*	57.4 *24*	183.4700	5/2$^+$	M1		0.0801	α(K)=0.0679 *10*; α(L)=0.00956 *14*; α(M)=0.00207 *3* α(N)=0.000477 *7*; α(O)=7.42×10^{-5} *11*; α(P)=5.01×10^{-6} *7*
		394.419 *4*	35.5 *10*	109.7563	(5/2)$^-$	E1		0.00816	α(K)=0.00695 *10*; α(L)=0.000949 *14*; α(M)=0.000205 *3* α(N)=4.68×10^{-5} *7*; α(O)=7.16×10^{-6} *10*; α(P)=4.51×10^{-7} *7*
		410.846 *9*	48 *4*	93.3429	7/2$^-$				Mult.: Assigned M1 in 1975Vy01 and E1 in 1974Pe16; E1 agrees with J^π's.
		504.174 *17*	54 *7*	0.0	3/2$^-$				
508.6645	3/2$^-$	147.013 *5*	1.30 *15*	361.6512	3/2$^-$	M1		0.674	α(K)=0.570 *8*; α(L)=0.0818 *12*; α(M)=0.01777 *25* α(N)=0.00409 *6*; α(O)=0.000635 *9*; α(P)=4.24×10^{-5} *6* I_γ: From (n,γ); other: 5.6 *15* in ε decay.
		292.8 *3*	7.4 *8*	215.9930	7/2$^-$				E_γ: Not reported in (n,γ).
		325.189 *4*	18.1 *5*	183.4700	5/2$^+$	E1		0.01303	α(K)=0.01108 *16*; α(L)=0.001529 *22*; α(M)=0.000330 *5* α(N)=7.54×10^{-5} *11*; α(O)=1.148×10^{-5} *16*; α(P)=7.10×10^{-7} *10* I_γ: From (n,γ); other: 11.3 *14* in ε decay.
		379.46 *3*	2.52 *15*	129.1636	3/2$^-$	M1(+E2)	1.13	0.0394	α(K)=0.0324 *5*; α(L)=0.00542 *8*; α(M)=0.001195 *17* α(N)=0.000273 *4*; α(O)=4.10×10^{-5} *6*; α(P)=2.27×10^{-6} *4* I_γ: From (n,γ); other: 5.8 *14* in ε decay.
		467.100 *10*	100 *3*	41.5568	5/2$^-$	(E2+M1)	0.97	0.0236	α(K)=0.0197 *3*; α(L)=0.00305 *5*; α(M)=0.000667 *10* α(N)=0.0001527 *22*; α(O)=2.32×10^{-5} *4*; α(P)=1.401×10^{-6} *20* Mult.,δ: Data may have contributions from two γ's.
		508.663 *8*	35.8 *21*	0.0	3/2$^-$	M1		0.0242	α(K)=0.0206 *3*; α(L)=0.00285 *4*; α(M)=0.000618 *9* α(N)=0.0001423 *20*; α(O)=2.21×10^{-5} *3*; α(P)=1.505×10^{-6} *21* I_γ: From (n,γ); other: 75 *3* in ε decay.
514.75	11/2$^-$	295.3 *5*	40 *7*	219.4428	9/2$^-$	(M1+E2)		0.081 *19*	α(K)=0.066 *19*; α(L)=0.01181 *22*; α(M)=0.00262 *5* α(N)=0.000597 *10*; α(O)=8.9×10^{-5} *4*; α(P)=4.6×10^{-6} *17*

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	δ[&b]	α[a]	Comments
514.75	11/2$^-$	298.6 *5*	100 *13*	215.9930	7/2$^-$	E2		0.0611	α(K)=0.0467 *7*; α(L)=0.01122 *18*; α(M)=0.00254 *4* α(N)=0.000575 *9*; α(O)=8.17×10^{-5} *13*; α(P)=2.92×10^{-6} *5*
		419.6 *5*	40 *7*	95.1737	9/2$^+$				
		422.0 *5*	40 *7*	93.3429	7/2$^-$				
530.4604	3/2$^-$	88.30 *2*	<364	442.1914	5/2$^+$				E$_\gamma$: Not reported in (n,γ).
		168.810 *4*	0.76 *11*	361.6512	3/2$^-$				
		202.605 *11*	0.87 *11*	327.8529	1/2$^+$				
		214.435 *4*	1.74 *11*	316.0271	(3/2)$^+$				
		215.267 *10*	0.76 *11*	315.1995	1/2$^-$				
		280.916 *12*	9.6 *5*	249.5542	5/2$^-$				
		314.3	21	215.9930	7/2$^-$				E$_\gamma$: Not reported in (n,γ).
		420.700 *5*	15.1 *6*	109.7563	(5/2)$^-$	M1(+E2)		0.0308 *86*	α(K)=0.0256 *78*; α(L)=0.0041 *6*; α(M)=0.00089 *12* α(N)=0.00020 *3*; α(O)=3.1×10^{-5} *6*; α(P)=1.81×10^{-6} *64* I$_\gamma$: From (n,γ); other: 48 *8* in ε decay.
		435.28 *1*	2.5 *8*	95.1737	9/2$^+$				Mult.: Placement probably incorrect since J^π's require mult=E3.
		488.915 *7*	48.6 *24*	41.5568	5/2$^-$	M1		0.0268	α(K)=0.0227 *4*; α(L)=0.00316 *5*; α(M)=0.000684 *10* α(N)=0.0001575 *22*; α(O)=2.45×10^{-5} *4*; α(P)=1.665×10^{-6} *24* I$_\gamma$: From (n,γ); other: 74 *11* in ε decay.
		530.453 *8*	100 *3*	0.0	3/2$^-$	M1		0.0218	α(K)=0.0185 *3*; α(L)=0.00256 *4*; α(M)=0.000555 *8* α(N)=0.0001277 *18*; α(O)=1.99×10^{-5} *3*; α(P)=1.352×10^{-6} *19*
548.7650	5/2$^-$	232.743 *6*	1.44 *16*	316.0271	(3/2)$^+$				
		233.561 *6*	1.28 *16*	315.1995	1/2$^-$				
		258.399 *9*	9.0 *6*	290.3597	7/2$^+$				
		299.24 *2*	7.7 *21*	249.5542	5/2$^-$				
		332.75 *2*	20.8 *19*	215.9930	7/2$^-$				
		365.28 *2*	3.0 *5*	183.4700	5/2$^+$				I$_\gamma$: From (n,γ); other: 0.20 *10* in ε decay.
		418.9 *6*	<4.1	129.1636	3/2$^-$				E$_\gamma$: Not reported in (n,γ).
		439.003 *11*	5.3 *10*	109.7563	(5/2)$^-$				
		455.415 *4*	100 *2*	93.3429	7/2$^-$	M1(+E2)	−0.12 +*20*−*26*	0.0319 *17*	α(K)=0.0271 *15*; α(L)=0.00378 *14*; α(M)=0.00082 *3* α(N)=0.000189 *7*; α(O)=2.93×10^{-5} *12*; α(P)=1.98×10^{-6} *12* I$_\gamma$: Value may be for multiplet γ. δ: Value is for doubly placed γ.
		507.216 *7*	33.0 *16*	41.5568	5/2$^-$	M1(+E2+E0)		0.0189 *55*	α(K)=0.0158 *49*; α(L)=0.0024 *5*; α(M)=0.00053 *10* α(N)=0.000121 *23*; α(O)=1.8×10^{-5} *4*; α(P)=1.13×10^{-6} *39* I$_\gamma$: From (n,γ); other: 48 *7* in ε decay.

$^{153}_{64}Gd_{89}$-20

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	δ[&b]	α[a]	Comments
548.7650	5/2⁻	548.770 *15*	6.6 *5*	0.0	3/2⁻	M1(+E2)		0.0155 *46*	α(K)=0.0130 *40*; α(L)=0.0019 *4*; α(M)=0.00043 *9* α(N)=9.8×10^{-5} *20*; α(O)=1.5×10^{-5} *4*; α(P)=9.2×10^{-7} *32* I_γ: From (n,γ); other: 33 *8* in ε decay.
551.093	(5/2⁻)	247.4	100 *16*	303.5433	5/2⁺				
		335.18 *8*		215.9930	7/2⁻				I_γ: See comment on 551 level.
		421.8	26 *13*	129.1636	3/2⁻				
563.95	13/2⁻	135 *1*	<7	429.7	11/2$^{(-)}$	D			
		344.4 *1*	100 *7*	219.4428	9/2⁻	E2		0.0397	α(K)=0.0310 *5*; α(L)=0.00677 *10*; α(M)=0.001525 *22* α(N)=0.000346 *5*; α(O)=4.97×10^{-5} *7*; α(P)=1.98×10^{-6} *3*
		426.1 *5*	8.1 *14*	138.40	(13/2⁺)	D,Q			
575.19	(15/2⁻)	211.7 *1*	100 *8*	363.449	(13/2⁻)	(M1+E2)	−0.24 *+18−34*	0.242 *13*	α(K)=0.203 *16*; α(L)=0.0302 *25*; α(M)=0.0066 *7* α(N)=0.00151 *14*; α(O)=0.000233 *14*; α(P)=1.50×10^{-5} *16* δ: From (α,3nγ).
		404.2 *2*	24.3 *16*	171.188	(11/2⁻)	E2		0.0249	α(K)=0.0199 *3*; α(L)=0.00396 *6*; α(M)=0.000885 *13* α(N)=0.000201 *3*; α(O)=2.93×10^{-5} *5*; α(P)=1.302×10^{-6} *19*
579.126	(7/2)⁻	136.935 *6*	1.6 *3*	442.1914	5/2⁺				
		395.652 *5*	20.1 *6*	183.4700	5/2⁺	E1		0.00810	α(K)=0.00690 *10*; α(L)=0.000942 *14*; α(M)=0.000203 *3* α(N)=4.65×10^{-5} *7*; α(O)=7.10×10^{-6} *10*; α(P)=4.48×10^{-7} *7*
		469.403 *17*	5.5 *6*	109.7563	(5/2)⁻	M1		0.0297	α(K)=0.0252 *4*; α(L)=0.00351 *5*; α(M)=0.000760 *11* α(N)=0.0001750 *25*; α(O)=2.72×10^{-5} *4*; α(P)=1.85×10^{-6} *3*
		483.956 *7*	100 *5*	95.1737	9/2⁺	E1		0.00507	α(K)=0.00433 *6*; α(L)=0.000585 *9*; α(M)=0.0001260 *18* α(N)=2.89×10^{-5} *4*; α(O)=4.43×10^{-6} *7*; α(P)=2.84×10^{-7} *4*
		485.82 *12*	5.2 *16*	93.3429	7/2⁻				
		537.582 *16*	8.1 *10*	41.5568	5/2⁻	M1		0.0210	α(K)=0.0179 *3*; α(L)=0.00248 *4*; α(M)=0.000536 *8* α(N)=0.0001234 *18*; α(O)=1.92×10^{-5} *3*; α(P)=1.307×10^{-6} *19*
607.203	5/2⁻	165.014 *4*	2.1 *3*	442.1914	5/2⁺				
		291.74[d] *3*		316.0271	(3/2)⁺				E_γ: In ε decay, this is strongest γ from this level with Iγ=104 *5* relative to 513 γ, but not placed here in (n,γ), so placement probably not correct.
		357.649 *8*	18.9 *12*	249.5542	5/2⁻	M1		0.0601	α(K)=0.0510 *8*; α(L)=0.00716 *10*; α(M)=0.001551 *22* α(N)=0.000357 *5*; α(O)=5.55×10^{-5} *8*; α(P)=3.75×10^{-6} *6*
		387.72 *6*	5.7 *15*	219.4428	9/2⁻				Mult.: Measurements suggest (M1), but J^π's require (E2).

$^{153}_{64}Gd_{89}$-21

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	δ[&b]	α[a]	Comments
607.203	5/2⁻	513.856 *11*	100 *3*	93.3429	7/2⁻	M1		0.0236	α(K)=0.0200 *3*; α(L)=0.00278 *4*; α(M)=0.000602 *9* α(N)=0.0001386 *20*; α(O)=2.16×10^{-5} *3*; α(P)=1.466×10^{-6} *21*
		565.637 *6*	77.5 *24*	41.5568	5/2⁻	M1+E2		0.0143 *42*	α(K)=0.0120 *37*; α(L)=0.0018 *4*; α(M)=0.00039 *8* α(N)=9.0×10^{-5} *19*; α(O)=1.4×10^{-5} *4*; α(P)=8.6×10^{-7} *30* I_γ: From (n,γ); other: 50 *4* in ε decay.
		607.27 *11*	37 *3*	0.0	3/2⁻	M1		0.01549	α(K)=0.01318 *19*; α(L)=0.00182 *3*; α(M)=0.000393 *6* α(N)=9.05×10^{-5} *13*; α(O)=1.409×10^{-5} *20*; α(P)=9.60×10^{-7} *14* I_γ: From (n,γ); other: 47 *5* in ε decay.
614.70	(15/2⁺)	249.9 *2*	100 *7*	364.70	(17/2⁺)	(M1+E2)		0.132 *25*	α(K)=0.106 *27*; α(L)=0.0203 *16*; α(M)=0.0045 *5* α(N)=0.00103 *10*; α(O)=0.000151 *6*; α(P)=7.3×10^{-6} *25*
		476.4 *2*	99 *8*	138.40	(13/2⁺)	(M1+E2)		0.0222 *64*	α(K)=0.0186 *58*; α(L)=0.0029 *6*; α(M)=0.00063 *11* α(N)=0.000144 *25*; α(O)=2.2×10^{-5} *5*; α(P)=1.32×10^{-6} *47*
632.46	(13/2⁺)	493.9 *2*	82 *6*	138.40	(13/2⁺)	(M1+E2)		0.0203 *59*	α(K)=0.0169 *53*; α(L)=0.0026 *5*; α(M)=0.00057 *10* α(N)=0.000130 *24*; α(O)=2.0×10^{-5} *4*; α(P)=1.20×10^{-6} *42*
		537.6 *2*	100 *8*	95.1737	9/2⁺	E2		0.01155	α(K)=0.00945 *14*; α(L)=0.001643 *23*; α(M)=0.000364 *6* α(N)=8.29×10^{-5} *12*; α(O)=1.232×10^{-5} *18*; α(P)=6.38×10^{-7} *9*
636.308	7/2⁻	320.00[d] *3*		315.1995	1/2⁻				I_γ: 149 *22* from Iγ(320)/Iγ(636) ratio in ε decay, but not reported in (n,γ), so may not be correct placement. Also, γ would have M3 multipolarity for Adopted J^π's.
		332.75 *2*	100 *9*	303.5433	5/2⁺				E_γ: Not reported in ε decay.
		346.31 *15*		290.3597	7/2⁺				I_γ: 31.8 *18* from Iγ(346)/Iγ(636) ratio in ε decay, but not reported in (n,γ), so may not be correct placement.
		381.0 *3*							I_γ: 6.2 *15* from Iγ(381)/Iγ(636) in ε decay, but not reported in (n,γ).
		420.31 *2*	15 *8*	215.9930	7/2⁻	M1+E2	0.67	0.0342	α(K)=0.0287 *4*; α(L)=0.00431 *6*; α(M)=0.000941 *14* α(N)=0.000216 *3*; α(O)=3.31×10^{-5} *5*; α(P)=2.06×10^{-6} *3*
		526.62 *10*	18 *7*	109.7563	(5/2)⁻				
		636.36 *2*	40 *4*	0.0	3/2⁻	E2		0.00759	α(K)=0.00628 *9*; α(L)=0.001025 *15*; α(M)=0.000225 *4* α(N)=5.15×10^{-5} *8*; α(O)=7.73×10^{-6} *11*; α(P)=4.29×10^{-7} *6*
636.449	(7/2)⁺	223.553 *3*	72 *2*	412.8950	3/2⁺				
		267.78 *4*	14 *5*	368.6677	(5/2⁻)				I_γ: 74 *17* from Iγ(267)/Iγ(223)=1.03 in ε decay. Mult.: Assigned M1, but J^π's require E1.
		332.891 *19*	74 *16*	303.5433	5/2⁺				E_γ: Not reported in ε decay.
		417.06 *8*	65 *9*	219.4428	9/2⁻	E1		0.00715	α(K)=0.00609 *9*; α(L)=0.000830 *12*; α(M)=0.000179 *3* α(N)=4.09×10^{-5} *6*; α(O)=6.26×10^{-6} *9*; α(P)=3.97×10^{-7} *6*
		526.62 *10*	53 *21*	109.7563	(5/2)⁻				
		541.297 *16*	100 *9*	95.1737	9/2⁺				I_γ: From (n,γ); other: 29 *8* in ε decay.
649.019		433.04 *4*	39 *12*	215.9930	7/2⁻				
		477.92 *5*	24 *7*	171.188	(11/2⁻)				
		553.82 *4*	37 *10*	95.1737	9/2⁺	M1		0.0195	α(K)=0.01660 *24*; α(L)=0.00230 *4*; α(M)=0.000497 *7* α(N)=0.0001144 *16*; α(O)=1.780×10^{-5} *25*; α(P)=1.212×10^{-6} *17*
		555.684 *17*	66 *7*	93.3429	7/2⁻				

$^{153}_{64}Gd_{89}$-22

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	α[a]	Comments
649.019		649.07 *6*	100 *17*	0.0	3/2$^-$			E_γ: This γ populates 3/2$^-$ gs which suggests level is 7/2$^-$ or γ is misplaced.
664.3263	(1/2,3/2)$^-$	133.868 *4*	1.02 *15*	530.4604	3/2$^-$			
		155.668 *5*	0.73 *15*	508.6645	3/2$^-$			
		181.389 *2*	5.7 *3*	482.9366	1/2$^+$			
		228.049 *5*	1.17 *15*	436.2716	1/2$^-$			
		302.674 *3*	35.9 *10*	361.6512	3/2$^-$	M1	0.0934	α(K)=0.0791 *11*; α(L)=0.01117 *16*; α(M)=0.00242 *4* α(N)=0.000558 *8*; α(O)=8.66×10^{-5} *13*; α(P)=5.84×10^{-6} *9*
		348.307 *11*	8.0 *4*	316.0271	(3/2)$^+$			
		622.751 *18*	4.7 *4*	41.5568	5/2$^-$			
		664.339 *9*	100.0 *20*	0.0	3/2$^-$	M1,E2	0.0096 *28*	α(K)=0.0081 *25*; α(L)=0.0012 *3*; α(M)=0.00026 *6* α(N)=5.9×10^{-5} *14*; α(O)=9.1×10^{-6} *22*; α(P)=5.8×10^{-7} *19*
674.4	11/2$^+$	279.4 *5*	100 *6*	395.1461	7/2$^+$	E2	0.0752 *12*	α(K)=0.0568 *9*; α(L)=0.01431 *23*; α(M)=0.00325 *5* α(N)=0.000735 *12*; α(O)=0.0001038 *16*; α(P)=3.50×10^{-6} *6*
		341.5 *5*	39 *6*	333.1684	(9/2)$^-$	D(+Q)		
		455 *1*	33 *11*	219.4428	9/2$^-$			
676.725	(1/2,3/2,5/2)$^+$	315.077 *13*	100 *15*	361.6512	3/2$^-$			
		360.64 *5*	2.9 *5*	316.0271	(3/2)$^+$	M1,E2	0.047 *12*	α(K)=0.039 *12*; α(L)=0.0064 *7*; α(M)=0.00141 *11* α(N)=0.00032 *3*; α(O)=4.8×10^{-5} *6*; α(P)=2.71×10^{-6} *96*
677.1	$^+$	386.7 *3*	100	290.3597	7/2$^+$	E2	0.0283	α(K)=0.0224 *4*; α(L)=0.00457 *7*; α(M)=0.001025 *15* α(N)=0.000233 *4*; α(O)=3.38×10^{-5} *5*; α(P)=1.460×10^{-6} *21*
683.9572	3/2$^-$	135.195 *4*	0.58 *12*	548.7650	5/2$^-$			
		179.788 *3*	1.40 *12*	504.1715	5/2$^+$			
		201.017 *5*	2.7 *5*	482.9366	1/2$^+$			
		235.438 *3*	2.22 *23*	448.5199	5/2$^-$	M1,E2	0.16 *3*	α(K)=0.12 *3*; α(L)=0.025 *3*; α(M)=0.0055 *8* α(N)=0.00126 *16*; α(O)=0.000184 *13*; α(P)=8.6×10^{-6} *30*
		241.750 *7*	2.6 *4*	442.1914	5/2$^+$			
		500.483 *6*	100.0 *21*	183.4700	5/2$^+$	E1	0.00470	α(K)=0.00401 *6*; α(L)=0.000541 *8*; α(M)=0.0001166 *17* α(N)=2.67×10^{-5} *4*; α(O)=4.10×10^{-6} *6*; α(P)=2.64×10^{-7} *4*
		574.212 *11*	4.33 *23*	109.7563	(5/2)$^-$	M1	0.01782	α(K)=0.01516 *22*; α(L)=0.00209 *3*; α(M)=0.000453 *7* α(N)=0.0001043 *15*; α(O)=1.624×10^{-5} *23*; α(P)=1.106×10^{-6} *16*
		683.95 *5*	6.2 *5*	0.0	3/2$^-$	M1	0.01152	α(K)=0.00981 *14*; α(L)=0.001347 *19*; α(M)=0.000291 *4* α(N)=6.70×10^{-5} *10*; α(O)=1.044×10^{-5} *15*; α(P)=7.13×10^{-7} *10*
708.9637	3/2$^+$	204.790 *8*	4.4 *6*	504.1715	5/2$^+$	M1,E2	0.24 *4*	α(K)=0.19 *5*; α(L)=0.040 *8*; α(M)=0.0090 *20* α(N)=0.0020 *5*; α(O)=0.00029 *5*; α(P)=1.26×10^{-5} *43*
		226.028 *4*	15.0 *6*	482.9366	1/2$^+$	M1	0.205	α(K)=0.1734 *25*; α(L)=0.0247 *4*; α(M)=0.00536 *8* α(N)=0.001233 *18*; α(O)=0.000191 *3*; α(P)=1.286×10^{-5} *18* I_γ: From (n,γ); other: 37 *5* from ε decay.
		260.444 *10*	2.6 *3*	448.5199	5/2$^-$			
		266.767 *4*	38 *3*	442.1914	5/2$^+$	M1	0.1308	α(K)=0.1108 *16*; α(L)=0.01570 *22*; α(M)=0.00341 *5* α(N)=0.000784 *11*; α(O)=0.0001218 *17*; α(P)=8.20×10^{-6} *12*
		272.693 *8*	8.2 *12*	436.2716	1/2$^-$			

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	α[a]	Comments
708.9637	3/2$^+$	386.7 *3*	28 *7*	322.3				E_γ: Not reported in (n,γ).
		392.948 *9*	29 *4*	316.0271	(3/2)$^+$	M1	0.0470	α(K)=0.0399 *6*; α(L)=0.00558 *8*; α(M)=0.001210 *17* α(N)=0.000278 *4*; α(O)=4.33×10^{-5} *6*; α(P)=2.93×10^{-6} *5* I_γ: From (n,γ); other: 60 *14* from ε decay which may correspond to 392.9+393.7.
		393.788 *13*	11.1 *18*	315.1995	1/2$^-$			
		405.430 *11*	14.4 *6*	303.5433	5/2$^+$			
		419.0	14	290.3597	7/2$^+$			E_γ: Not reported in (n,γ).
		459.422 *18*	11.1 *6*	249.5542	5/2$^-$	E1	0.00571	α(K)=0.00487 *7*; α(L)=0.000660 *10*; α(M)=0.0001422 *20* α(N)=3.26×10^{-5} *5*; α(O)=4.99×10^{-6} *7*; α(P)=3.19×10^{-7} *5*
		493.4[d]	9.2	215.9930	7/2$^-$			E_γ: Not reported in (n,γ).
		525.67[d] *5*	92 *9*	183.4700	5/2$^+$			I_γ: Not reported in (n,γ) which suggests this placement is not correct.
		579.79 *2*	100 *3*	129.1636	3/2$^-$	E1	0.00340	α(K)=0.00291 *4*; α(L)=0.000389 *6*; α(M)=8.37×10^{-5} *12* α(N)=1.92×10^{-5} *3*; α(O)=2.95×10^{-6} *5*; α(P)=1.92×10^{-7} *3*
		599.25 *3*	36.1 *15*	109.7563	(5/2)$^-$			
		667.2 *3*	29 *4*	41.5568	5/2$^-$	E1	0.00252	α(K)=0.00216 *3*; α(L)=0.000287 *4*; α(M)=6.17×10^{-5} *9* α(N)=1.416×10^{-5} *20*; α(O)=2.18×10^{-6} *3*; α(P)=1.437×10^{-7} *21*
715.807	(13/2)$^-$	66.789 *3*	38 *15*	649.019				E_γ: Not reported in (n,γ). E_γ: From (n,γ) only.
		267.36 *6*	54 *15*	448.5199	5/2$^-$			E_γ: From (n,γ) only.
		286.5 *5*	35 *5*	429.7	11/2$^{(-)}$	(M1+E2)	0.089 *20*	α(K)=0.072 *20*; α(L)=0.01300 *21*; α(M)=0.00289 *9* α(N)=0.000658 *16*; α(O)=9.8×10^{-5} *4*; α(P)=5.0×10^{-6} *18* E_γ: From (α,3nγ) only.
		382.63 *2*	100 *15*	333.1684	(9/2)$^-$	E2	0.0292	α(K)=0.0231 *4*; α(L)=0.00474 *7*; α(M)=0.001063 *15* α(N)=0.000241 *4*; α(O)=3.49×10^{-5} *5*; α(P)=1.501×10^{-6} *21*
		577.8 *5*	45 *10*	138.40	(13/2$^+$)		0.00343	α(K)=0.00293 *5*; α(L)=0.000392 *6*; α(M)=8.44×10^{-5} *12* α(N)=1.93×10^{-5} *3*; α(O)=2.98×10^{-6} *5*; α(P)=1.94×10^{-7} *3* E_γ: From (α,3nγ) only.
720.347	7/2$^-$	141.224 *5*	4.4 *12*	579.126	(7/2)$^-$			
		171.586 *5*	3.1 *6*	548.7650	5/2$^-$			
		271.824 *6*	19.9 *6*	448.5199	5/2$^-$	M1	0.1244	α(K)=0.1054 *15*; α(L)=0.01492 *21*; α(M)=0.00324 *5* α(N)=0.000745 *11*; α(O)=0.0001158 *17*; α(P)=7.79×10^{-6} *11*
		278.10 *3*	4.4 *12*	442.1914	5/2$^+$			I_γ: From (n,γ); other: from ε decay 22 from Iγ(278)/Iγ(504)=0.44 (note 678 γ not reported).
		351.650 *14*	14.9 *19*	368.6677	(5/2$^-$)			
		470.7 *2*	8.7 *15*	249.5542	5/2$^-$			E_γ: Not reported in (n,γ).
		504.39 *2*	49 *9*	215.9930	7/2$^-$	M1	0.0247	α(K)=0.0210 *3*; α(L)=0.00292 *4*; α(M)=0.000631 *9* α(N)=0.0001454 *21*; α(O)=2.26×10^{-5} *4*; α(P)=1.537×10^{-6} *22*
		536.85 *2*	11.2 *12*	183.4700	5/2$^+$			
		591.21 *3*	33 *3*	129.1636	3/2$^-$			
		610.616 *16*	35.4 *19*	109.7563	(5/2)$^-$			I_γ: From (n,γ); other: from ε decay 6 *4* from Iγ(610)/Iγ(504)=0.11 *9* (note 678 γ not reported).

$^{153}_{64}Gd_{89}$-24

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	δ[&b]	α[a]	Comments
720.347	7/2⁻	678.790 *10*	100 *5*	41.5568	5/2⁻	M1,E2		0.0091 *27*	α(K)=0.0077 *23*; α(L)=0.0011 *3*; α(M)=0.00024 *6* α(N)=5.6×10^{-5} *13*; α(O)=8.6×10^{-6} *21*; α(P)=5.5×10^{-7} *18*
		720.29 *17*	15 *7*	0.0	3/2⁻				
727.802	(3/2,5/2,7/2)⁻	197.344 *4*	23.8 *15*	530.4604	3/2⁻	M1,E2		0.26 *4*	α(K)=0.21 *5*; α(L)=0.046 *10*; α(M)=0.0103 *25* α(N)=0.0023 *6*; α(O)=0.00034 *6*; α(P)=1.39×10^{-5} *48*
		412.57 *4*	100 *23*	315.1995	1/2⁻				
		634.37 *6*	34 *5*	93.3429	7/2⁻	M1,E2		0.0108 *32*	α(K)=0.0091 *28*; α(L)=0.0013 *3*; α(M)=0.00029 *7* α(N)=6.6×10^{-5} *15*; α(O)=1.02×10^{-5} *25*; α(P)=6.5×10^{-7} *22*
		727.819 *16*	72 *4*	0.0	3/2⁻				
727.87	(21/2⁺)	363.2 *2*	100	364.70	(17/2⁺)	E2		0.0339	α(K)=0.0267 *4*; α(L)=0.00565 *8*; α(M)=0.001269 *18* α(N)=0.000288 *4*; α(O)=4.15×10^{-5} *6*; α(P)=1.722×10^{-6} *25*
729.208	(1/2⁻,3/2⁻)	225.037 *10*	6.1 *5*	504.1715	5/2⁺				
		246.268 *5*	13.2 *9*	482.9366	1/2⁺				Mult.: Measurements suggest E2, but $J^{\pi\prime}$s require (E1).
		280.71 *2*	20.2 *14*	448.5199	5/2⁻				
		292.938 *7*	5.6 *5*	436.2716	1/2⁻	M1,E2		0.083 *19*	α(K)=0.068 *19*; α(L)=0.01211 *19*; α(M)=0.00269 *6* α(N)=0.000613 *10*; α(O)=9.1×10^{-5} *4*; α(P)=4.7×10^{-6} *17*
		367.573 *15*	24 *5*	361.6512	3/2⁻	M1,E2		0.044 *12*	α(K)=0.037 *11*; α(L)=0.0060 *7*; α(M)=0.00133 *12* α(N)=0.00030 *3*; α(O)=4.6×10^{-5} *6*; α(P)=2.58×10^{-6} *92*
		413.174 *9*	100 *3*	316.0271	(3/2)⁺				
		479.664 *7*	50.2 *24*	249.5542	5/2⁻	M1,E2		0.0218 *63*	α(K)=0.0183 *57*; α(L)=0.0028 *5*; α(M)=0.00062 *11* α(N)=0.000141 *25*; α(O)=2.1×10^{-5} *5*; α(P)=1.30×10^{-6} *46*
		517.24 *3*	14.6 *14*	212.0082	3/2⁺				Mult.: Measurements suggest M1,E2, but $J^{\pi\prime}$s require E1.
		600.037 *7*	64.8 *19*	129.1636	3/2⁻				
		729.182 *12*	72 *3*	0.0	3/2⁻				
731.627	5/2⁺,7/2⁺	318.85 *10*	25.2 *23*	412.8950	3/2⁺				E_γ: Not reported in (n,γ).
		362.80 *10*	16.6 *25*	368.6677	(5/2⁻)				
		482.14 *2*	28 *6*	249.5542	5/2⁻	E1		0.00512	α(K)=0.00436 *7*; α(L)=0.000590 *9*; α(M)=0.0001271 *18* α(N)=2.91×10^{-5} *4*; α(O)=4.47×10^{-6} *7*; α(P)=2.87×10^{-7} *4*
		515.7 *2*	14 *3*	215.9930	7/2⁻				E_γ: Not reported in (n,γ).
		548.116 *15*	68 *6*	183.4700	5/2⁺	M1		0.0200	α(K)=0.01703 *24*; α(L)=0.00236 *4*; α(M)=0.000510 *8* α(N)=0.0001174 *17*; α(O)=1.83×10^{-5} *3*; α(P)=1.244×10^{-6} *18* I_γ: From (n,γ); other: 40 *10* in ε decay.
		621.98 *20*	7.8 *14*	109.7563	(5/2)⁻				E_γ: Not reported in (n,γ).
		638.36 *9*	21 *3*	93.3429	7/2⁻	E1		0.00277	α(K)=0.00237 *4*; α(L)=0.000315 *5*; α(M)=6.79×10^{-5} *10* α(N)=1.556×10^{-5} *22*; α(O)=2.40×10^{-6} *4*; α(P)=1.573×10^{-7} *22* I_γ: From (n,γ); other: 44.0 *22* in ε decay.
		690.07 *3*	100 *4*	41.5568	5/2⁻	E1+M2	−0.017 *50*	0.00236 *13*	α(K)=0.00202 *11*; α(L)=0.000268 *17*; α(M)=5.8×10^{-5} *4* α(N)=1.32×10^{-5} *9*; α(O)=2.04×10^{-6} *13*; α(P)=1.35×10^{-7} *9*
		731.6[d] *8*	6 *5*	0.0	3/2⁻				E_γ: Not reported in (n,γ).

$^{153}_{64}Gd_{89}$-25

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	δ[&b]	α[a]	Comments
769.054	(5/2,7/2)$^-$	238.595 *4*	100 *9*	530.4604	3/2$^-$	M1,E2		0.15 *3*	α(K)=0.12 *3*; α(L)=0.0236 *24*; α(M)=0.0053 *7* α(N)=0.00120 *14*; α(O)=0.000176 *12*; α(P)=8.3×10^{-6} *29*
		549.58 *2*	71 *9*	219.4428	9/2$^-$				Mult.: M1 from α(K)exp=0.033 *5* in (n,γ) but value is anomalously high.
775.123	(3/2,5/2$^+$)	291.74 *3*	54 *3*	482.9366	1/2$^+$				E_γ: Not reported in (n,γ).
		406.48 *2*	6 *3*	368.6677	(5/2$^-$)				
		525.595 *12*	100 *6*	249.5542	5/2$^-$				Mult.: ce data imply M1,E2 but J^π's require E1.
		591.40 *10*	20 *4*	183.4700	5/2$^+$				E_γ: Not reported in (n,γ).
		733.62 *2*	28 *3*	41.5568	5/2$^-$				I_γ: From ε decay; other: 65 *3* from (n,γ).
									Mult.: Assigned E1 in ε decay and M1,E2 in (n,γ).
		775.169 *19*	50.5 *24*	0.0	3/2$^-$				I_γ: From (n,γ); other: 20 *10* from ε decay.
									Mult.: Assigned E1 in ε decay and E2 in (n,γ).
782.6734	3/2$^+$	118.355 *9*	8.7 *19*	664.3263	(1/2,3/2)$^-$				
		233.906 *2*	29.5 *24*	548.7650	5/2$^-$	E1		0.0301	α(K)=0.0255 *4*; α(L)=0.00359 *5*; α(M)=0.000775 *11* α(N)=0.0001766 *25*; α(O)=2.67×10^{-5} *4*; α(P)=1.589×10^{-6} *23*
		278.503 *3*	34.3 *5*	504.1715	5/2$^+$	M1,E2		0.096 *21*	α(K)=0.078 *21*; α(L)=0.0142 *4*; α(M)=0.00316 *14* α(N)=0.00072 *3*; α(O)=0.0001067 *23*; α(P)=5.4×10^{-6} *19* I_γ: From (n,γ); other: 3.49 *24* in ε decay.
		299.747 *17*	32.8 *14*	482.9366	1/2$^+$	M1		0.0958	α(K)=0.0812 *12*; α(L)=0.01146 *16*; α(M)=0.00249 *4* α(N)=0.000572 *8*; α(O)=8.89×10^{-5} *13*; α(P)=5.99×10^{-6} *9* I_γ: From (n,γ); other: 10 *5* in ε decay.
		334.21 *2*	17.4 *10*	448.5199	5/2$^-$				
		340.476 *5*	100 *5*	442.1914	5/2$^+$	M1+E2	−0.24 *8*	0.0669 *14*	α(K)=0.0566 *13*; α(L)=0.00809 *13*; α(M)=0.00176 *3* α(N)=0.000404 *6*; α(O)=6.26×10^{-5} *10*; α(P)=4.15×10^{-6} *11*
		346.28 *4*	25.1 *11*	436.2716	1/2$^-$				E_γ: Not reported in (n,γ).
		454.82 *3*	14 *3*	327.8529	1/2$^+$	M1+E2	−0.12 *+20−26*	0.0320 *17*	α(K)=0.0272 *15*; α(L)=0.00380 *14*; α(M)=0.00082 *3* α(N)=0.000189 *7*; α(O)=2.94×10^{-5} *12*; α(P)=1.99×10^{-6} *12* δ: Value is for doubly placed γ.
		466.73 *3*	67 *7*	316.0271	(3/2)$^+$				I_γ: From (n,γ); other: 35 *9* in ε decay.
		467.497 *13*	67 *6*	315.1995	1/2$^-$				I_γ: From (n,γ); other: 138 *27* in ε decay.
									Mult.: Assigned E2+M1, but J^π's require E1.
		533.13 *3*	40.6 *14*	249.5542	5/2$^-$	E1		0.00408	α(K)=0.00349 *5*; α(L)=0.000469 *7*; α(M)=0.0001010 *15* α(N)=2.31×10^{-5} *4*; α(O)=3.56×10^{-6} *5*; α(P)=2.30×10^{-7} *4*
		599.25 *3*	59.4 *24*	183.4700	5/2$^+$				I_γ: From (n,γ); other: 12 *7* in ε decay.

$^{153}_{64}Gd_{89}$-26

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	δ[&b]	α[a]	Comments
782.6734	3/2+	653.25 *4*	58 *2*	129.1636	3/2−	E1		0.00264	α(K)=0.00226 *4*; α(L)=0.000300 *5*; α(M)=6.46×10^{-5} *9* α(N)=1.481×10^{-5} *21*; α(O)=2.28×10^{-6} *4*; α(P)=1.500×10^{-7} *21* E_γ: Not reported in (n,γ).
		673.50 *10*	12	109.7563	(5/2)−	(E1)		0.00248	α(K)=0.00212 *3*; α(L)=0.000281 *4*; α(M)=6.05×10^{-5} *9* α(N)=1.388×10^{-5} *20*; α(O)=2.14×10^{-6} *3*; α(P)=1.410×10^{-7} *20* E_γ: Not reported in (n,γ).
		782.0 *8*	5 *5*	0.0	3/2−				E_γ: Not reported in (n,γ).
791.016	(3/2+)	70.6698 *18*	100 *13*	720.347	7/2−				
		749.41 *2*	60 *3*	41.5568	5/2−				
804.95	(17/2−)	229.8 *2*	100.0 *6*	575.19	(15/2−)	(M1+E2)	−0.34 *+18−30*	0.190 *11*	α(K)=0.159 *13*; α(L)=0.0243 *13*; α(M)=0.0053 *4* α(N)=0.00122 *8*; α(O)=0.000186 *7*; α(P)=1.16×10^{-5} *12* δ: From (α,3nγ).
		441.5 *2*	54 *3*	363.449	(13/2−)	E2		0.0195	α(K)=0.01568 *22*; α(L)=0.00298 *5*; α(M)=0.000665 *10* α(N)=0.0001511 *22*; α(O)=2.21×10^{-5} *4*; α(P)=1.038×10^{-6} *15*
812.643	(5/2−)	282.182 *8*	25 *3*	530.4604	3/2−				
		496.66 *7*	100 *38*	316.0271	(3/2)+				
		593.230 *18*	73 *7*	219.4428	9/2−				
821.306	5/2+	338.27 *6*	22 *5*	482.9366	1/2+				
		571.757 *14*	40 *3*	249.5542	5/2−				I_γ: From (n,γ); other: 74 *14* from ε decay. Mult.: Assigned M1, but J^π's require E1.
		605.34 *4*	28 *8*	215.9930	7/2−				I_γ: From (n,γ); other: 40 *11* from ε decay.
		609.44 *8*	30 *6*	212.0082	3/2+				
		638.31 *10*	100 *5*	183.4700	5/2+				I_γ: Not reported in (n,γ), so large Iγ is doubtful.
		711.543 *13*	100 *5*	109.7563	(5/2)−	E1		0.00221	α(K)=0.00189 *3*; α(L)=0.000251 *4*; α(M)=5.39×10^{-5} *8* α(N)=1.236×10^{-5} *18*; α(O)=1.91×10^{-6} *3*; α(P)=1.261×10^{-7} *18*
		728.10 *7*	53 *18*	93.3429	7/2−	E1		0.00211	α(K)=0.00180 *3*; α(L)=0.000239 *4*; α(M)=5.14×10^{-5} *8* α(N)=1.179×10^{-5} *17*; α(O)=1.82×10^{-6} *3*; α(P)=1.204×10^{-7} *17* δ: δ(M2/E1)=0.07 *35*.
		779.86 *5*	65 *4*	41.5568	5/2−	(E1)		0.00184	α(K)=0.001572 *22*; α(L)=0.000208 *3*; α(M)=4.46×10^{-5} *7* α(N)=1.023×10^{-5} *15*; α(O)=1.581×10^{-6} *23*; α(P)=1.051×10^{-7} *15*
		821.50 *25*	34 *5*	0.0	3/2−				E_γ: Not reported in (n,γ).
847.826	5/2−,7/2−	398.4 *4*	22 *5*	448.5199	5/2−				E_γ: Not reported in (n,γ).
		405.3 *4*	45 *9*	442.1914	5/2+				E_γ: Not reported in (n,γ). Mult.: Assigned M1, but J^π's require E1.
		479.159 *17*	9.7 *14*	368.6677	(5/2−)				I_γ: From (n,γ); other: 34 *4* in ε decay. Mult.: Assigned E1, but J^π's require M1,E2.

$^{153}_{64}Gd_{89}$-27

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	δ[&b]	α[a]	Comments
847.826	5/2⁻,7/2⁻	557.43 *3*	100 *34*	290.3597	7/2⁺	E1		0.00370	α(K)=0.00316 *5*; α(L)=0.000424 *6*; α(M)=9.14×10⁻⁵ *13* α(N)=2.09×10⁻⁵ *3*; α(O)=3.22×10⁻⁶ *5*; α(P)=2.09×10⁻⁷ *3*
		598.27 *2*	26.9 *11*	249.5542	5/2⁻	M1(+E2)	−0.02 *23*	0.0161 *5*	α(K)=0.0137 *5*; α(L)=0.00189 *5*; α(M)=0.000408 *10* α(N)=9.40×10⁻⁵ *24*; α(O)=1.46×10⁻⁵ *4*; α(P)=1.00×10⁻⁶ *4* I_γ: From (n,γ); other: 159 *46* in ε decay.
		718.68 *2*	17 *3*	129.1636	3/2⁻	E2		0.00569	α(K)=0.00474 *7*; α(L)=0.000744 *11*; α(M)=0.0001631 *23* α(N)=3.73×10⁻⁵ *6*; α(O)=5.63×10⁻⁶ *8*; α(P)=3.26×10⁻⁷ *5* I_γ: From (n,γ); other: 74 *5* in ε decay.
		738.09 *14*	6.3 *14*	109.7563	(5/2)⁻				
		754.3	31	93.3429	7/2⁻				E_γ: Not reported in (n,γ).
851.7	15/2⁻	422.1 *5*	100 *7*	429.7	11/2(⁻)	E2		0.0221	α(K)=0.0177 *3*; α(L)=0.00344 *5*; α(M)=0.000768 *12* α(N)=0.000175 *3*; α(O)=2.55×10⁻⁵ *4*; α(P)=1.164×10⁻⁶ *17*
		713.2 *5*	93 *10*	138.40	(13/2⁺)	D			
857.613	3/2⁻	327.19 *3*	110 *24*	530.4604	3/2⁻	M1		0.0759	α(K)=0.0644 *9*; α(L)=0.00907 *13*; α(M)=0.00197 *3* α(N)=0.000453 *7*; α(O)=7.03×10⁻⁵ *10*; α(P)=4.75×10⁻⁶ *7* E_γ: Not reported in (n,γ). E_γ: Not reported in ε decay.
		409.064 *10*	9.5 *10*	448.5199	5/2⁻				
		421.324 *19*	4.5 *10*	436.2716	1/2⁻	M1		0.0392	α(K)=0.0333 *5*; α(L)=0.00465 *7*; α(M)=0.001007 *15* α(N)=0.000232 *4*; α(O)=3.61×10⁻⁵ *5*; α(P)=2.44×10⁻⁶ *4* E_γ: Not reported in ε decay. E_γ: Not reported in (n,γ).
		488.90[c] *8*	≤47[c]	368.6677	(5/2⁻)				
		496.61[c] *5*	≤131[c]	361.6512	3/2⁻	M1		0.0257	α(K)=0.0219 *3*; α(L)=0.00304 *5*; α(M)=0.000657 *10* α(N)=0.0001513 *22*; α(O)=2.35×10⁻⁵ *4*; α(P)=1.600×10⁻⁶ *23* E_γ: Not reported in (n,γ).
		530.43 *4*	55 *3*	327.8529	1/2⁺				E_γ: Not reported in (n,γ). Mult.: Assigned M1, but J^π's require E1.
		541.36 *5*	45 *5*	316.0271	(3/2)⁺				E_γ: Not reported in (n,γ). Mult.: Assigned M1+E2, but J^π's require E1.
		542.5 *5*	10 *3*	315.1995	1/2⁻				E_γ: Not reported in (n,γ).
		554.3 *6*	6 *5*	303.5433	5/2⁺				E_γ: Not reported in (n,γ).
		607.5 *2*	14.4 *15*	249.5542	5/2⁻	M1		0.01548	α(K)=0.01316 *19*; α(L)=0.00182 *3*; α(M)=0.000393 *6* α(N)=9.04×10⁻⁵ *13*; α(O)=1.407×10⁻⁵ *20*; α(P)=9.60×10⁻⁷ *14* E_γ: Not reported in (n,γ).
		728.2	19 *5*	129.1636	3/2⁻				E_γ: Not reported in (n,γ).
		748.0 *5*	6.1 *15*	109.7563	(5/2)⁻				E_γ: Not reported in (n,γ).
		816.063 *17*	100 *10*	41.5568	5/2⁻	E2+M1	1.36	0.00539	α(K)=0.00455 *7*; α(L)=0.000656 *10*; α(M)=0.0001426 *20* α(N)=3.27×10⁻⁵ *5*; α(O)=5.03×10⁻⁶ *7*; α(P)=3.22×10⁻⁷ *5*

$^{153}_{64}Gd_{89}$-28

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	α[a]	Comments
857.613	3/2⁻	857.566 *12*	90 *5*	0.0	3/2⁻	M1	0.00662	α(K)=0.00564 *8*; α(L)=0.000769 *11*; α(M)=0.0001661 *24* α(N)=3.82×10^{-5} *6*; α(O)=5.96×10^{-6} *9*; α(P)=4.09×10^{-7} *6*
865.611	3/2⁺	156.642 *7*	1.7 *3*	708.9637	3/2⁺			E_γ: Not reported in ε decay.
		382.63 *2*	4.4 *7*	482.9366	1/2⁺			E_γ: Not reported in ε decay.
		417.27 *20*	24 *8*	448.5199	5/2⁻			E_γ: Not reported in (n,γ).
		423.424 *9*	8.0 *15*	442.1914	5/2⁺	M1,E2	0.0303 *85*	α(K)=0.0252 *77*; α(L)=0.0040 *6*; α(M)=0.00088 *12* α(N)=0.00020 *3*; α(O)=3.0×10^{-5} *6*; α(P)=1.78×10^{-6} *63*
		549.4 *2*	13.6 *26*	316.0271	(3/2)⁺			E_γ: Not reported in (n,γ).
		616.2 *4*	9 *5*	249.5542	5/2⁻			E_γ: Not reported in (n,γ).
		682.30 *5*	18.6 *20*	183.4700	5/2⁺			E_γ: Not reported in (n,γ).
		736.44 *2*	60 *5*	129.1636	3/2⁻	E1	0.00206	α(K)=0.001764 *25*; α(L)=0.000233 *4*; α(M)=5.02×10^{-5} *7* α(N)=1.151×10^{-5} *17*; α(O)=1.777×10^{-6} *25*; α(P)=1.177×10^{-7} *17* δ: δ(M2/E1)=−0.05 *15*.
		755.88 *2*	72 *5*	109.7563	(5/2)⁻	E1	0.00195	α(K)=0.001673 *24*; α(L)=0.000221 *3*; α(M)=4.76×10^{-5} *7* α(N)=1.091×10^{-5} *16*; α(O)=1.685×10^{-6} *24*; α(P)=1.118×10^{-7} *16* δ: δ(M2/E1)=+0.16 *+40−30*.
		824.1 *3*	12 *5*	41.5568	5/2⁻			E_γ: Not reported in (n,γ).
		865.62 *3*	100 *5*	0.0	3/2⁻	E1	1.50×10^{-3}	α(K)=0.001281 *18*; α(L)=0.0001683 *24*; α(M)=3.62×10^{-5} *5* α(N)=8.30×10^{-6} *12*; α(O)=1.284×10^{-6} *18*; α(P)=8.59×10^{-8} *12* δ: δ(M2/E1)=−0.01 *6*.
873.39	(17/2⁺)	241.1 *2*	34.9 *23*	632.46	(13/2⁺)	E2	0.1202	α(K)=0.0880 *13*; α(L)=0.0250 *4*; α(M)=0.00571 *9* α(N)=0.001288 *19*; α(O)=0.000180 *3*; α(P)=5.27×10^{-6} *8*
		258.7 *5*	10.5 *12*	614.70	(15/2⁺)	(M1+E2)	0.119 *24*	α(K)=0.096 *25*; α(L)=0.0181 *11*; α(M)=0.0040 *4* α(N)=0.00092 *7*; α(O)=0.000135 *4*; α(P)=6.6×10^{-6} *23*
		508.8 *2*	67 *5*	364.70	(17/2⁺)	(M1+E2)	0.0188 *55*	α(K)=0.0157 *49*; α(L)=0.0024 *5*; α(M)=0.00052 *10* α(N)=0.000120 *23*; α(O)=1.8×10^{-5} *4*; α(P)=1.12×10^{-6} *39* Mult.: ΔJ=0 γ in (α,3nγ).
		734.9 *2*	100 *5*	138.40	(13/2⁺)	E2	0.00541	α(K)=0.00451 *7*; α(L)=0.000703 *10*; α(M)=0.0001539 *22* α(N)=3.52×10^{-5} *5*; α(O)=5.33×10^{-6} *8*; α(P)=3.10×10^{-7} *5*
885.910	3/2⁻	844.30 *8*	19 *3*	41.5568	5/2⁻	M1	0.00688	α(K)=0.00586 *9*; α(L)=0.000799 *12*; α(M)=0.0001726 *25* α(N)=3.97×10^{-5} *6*; α(O)=6.19×10^{-6} *9*; α(P)=4.25×10^{-7} *6*
		885.910 *15*	100 *5*	0.0	3/2⁻			
887.8	(9/2⁻)	336.7	100	551.093	(5/2⁻)			
894.615	(1/2,3/2,5/2)⁺	111.941 *5*	100 *11*	782.6734	3/2⁺	M1	1.458	α(K)=1.232 *18*; α(L)=0.1776 *25*; α(M)=0.0386 *6* α(N)=0.00888 *13*; α(O)=0.001377 *20*; α(P)=9.18×10^{-5} *13*
		481.85 *7*	12 *5*	412.8950	3/2⁺			
898.8	(15/2⁻)	334.0		563.95	13/2⁻			
		384.5 *5*	29 *5*	514.75	11/2⁻	(E2)	0.0288	α(K)=0.0228 *4*; α(L)=0.00466 *7*; α(M)=0.001045 *16*

$^{153}_{64}Gd_{89}$-29

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	α[a]	Comments
								α(N)=0.000237 *4*; α(O)=3.44×10^{-5} *5*; α(P)=1.482×10^{-6} *22*
898.8	(15/2$^-$)	760.2 *5*	100 *24*	138.40	(13/2$^+$)	D,Q		
903.506	(3/2$^-$,5/2,7/2$^-$)	175.704 *2*	25.3 *7*	727.802	(3/2,5/2,7/2)$^-$			
		810.22 *17*	21 *7*	93.3429	7/2$^-$			
		861.90 *5*	45 *9*	41.5568	5/2$^-$			
		903.70 *15*	100 *20*	0.0	3/2$^-$			
932.191	(5/2)$^-$	381.101 *15*	17 *3*	551.093	(5/2$^-$)	M1	0.0509	α(K)=0.0432 *6*; α(L)=0.00605 *9*; α(M)=0.001311 *19* α(N)=0.000302 *5*; α(O)=4.69×10^{-5} *7*; α(P)=3.18×10^{-6} *5*
		495.86 *3*	34 *3*	436.2716	1/2$^-$	E2	0.01426	α(K)=0.01159 *17*; α(L)=0.00209 *3*; α(M)=0.000463 *7* α(N)=0.0001054 *15*; α(O)=1.558×10^{-5} *22*; α(P)=7.77×10^{-7} *11* Mult.: ce data imply M1,E2 but J^π's requires E2.
		570.560 *14*	45.5 *21*	361.6512	3/2$^-$			
		598.96 *4*	68 *4*	333.1684	(9/2)$^-$			
		682.65 *5*	22 *3*	249.5542	5/2$^-$			
		720.29 *17*	17 *8*	212.0082	3/2$^+$			
		932.15 *4*	100 *6*	0.0	3/2$^-$	(M1)	0.00541	α(K)=0.00461 *7*; α(L)=0.000627 *9*; α(M)=0.0001354 *19* α(N)=3.12×10^{-5} *5*; α(O)=4.86×10^{-6} *7*; α(P)=3.34×10^{-7} *5*
937.374	(5/2$^+$)	154.698 *4*	2.5 *7*	782.6734	3/2$^+$			E$_\gamma$: Not reported in ε decay.
		488.90[c] *8*	≤78[c]	448.5199	5/2$^-$			E$_\gamma$: Not reported in (n,γ).
		646.5 *3*	15 *5*	290.3597	7/2$^+$			E$_\gamma$: Not reported in (n,γ).
		718.50 *10*	35.4 *24*	219.4428	9/2$^-$			E$_\gamma$: Not reported in (n,γ).
		721.36 *9*	15 *4*	215.9930	7/2$^-$	E1	0.00215	α(K)=0.00184 *3*; α(L)=0.000244 *4*; α(M)=5.24×10^{-5} *8* α(N)=1.202×10^{-5} *17*; α(O)=1.85×10^{-6} *3*; α(P)=1.227×10^{-7} *18* I$_\gamma$: From (n,γ); other: 73 *3* from ε decay. δ: δ(M2/E1)=0.05 *5*.
		754.00 *5*	27 *10*	183.4700	5/2$^+$			E$_\gamma$: Not reported in (n,γ).
		827.62 *7*	18 *3*	109.7563	(5/2)$^-$	E1	1.63×10^{-3}	α(K)=0.001398 *20*; α(L)=0.000184 *3*; α(M)=3.95×10^{-5} *6* α(N)=9.08×10^{-6} *13*; α(O)=1.403×10^{-6} *20*; α(P)=9.36×10^{-8} *14* I$_\gamma$: From (n,γ); other: 102 *15* from ε decay. δ: δ(M2/E1)=0.1 *1*.
		842.35 *10*	24.2 *20*	95.1737	9/2$^+$	E2	0.00398	α(K)=0.00334 *5*; α(L)=0.000502 *7*; α(M)=0.0001095 *16* α(N)=2.51×10^{-5} *4*; α(O)=3.81×10^{-6} *6*; α(P)=2.30×10^{-7} *4*
		895.85 *20*	21 *4*	41.5568	5/2$^-$	E1	1.40×10^{-3}	E$_\gamma$: Not reported in (n,γ). α(K)=0.001199 *17*; α(L)=0.0001573 *22*;

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	δ[&b]	α[a]	Comments
									α(M)=3.38×10^{-5} *5* α(N)=7.76×10^{-6} *11*; α(O)=1.200×10^{-6} *17*; α(P)=8.04×10^{-8} *12* E_γ: Not reported in (n,γ).
937.374	(5/2$^+$)	937.43 *3*	100 *5*	0.0	3/2$^-$	E1		1.28×10^{-3}	α(K)=0.001100 *16*; α(L)=0.0001440 *21*; α(M)=3.09×10^{-5} *5* α(N)=7.10×10^{-6} *10*; α(O)=1.099×10^{-6} *16*; α(P)=7.38×10^{-8} *11*
945.252	3/2$^+$	217.470 *9*	1.6 *3*	727.802	(3/2,5/2,7/2)$^-$				E_γ: Not reported in ε decay.
		436.31 *2*	34 *4*	508.6645	3/2$^-$				E_γ: Not reported in (n,γ).
		441.3 *3*	2.7 *10*	504.1715	5/2$^+$				E_γ: Not reported in (n,γ).
		496.61[c] *5*	≤22[c]	448.5199	5/2$^-$				
		503.116 *13*	21.1 *19*	442.1914	5/2$^+$	M1,E2		0.0193 *56*	α(K)=0.0162 *50*; α(L)=0.0025 *5*; α(M)=0.00054 *10* α(N)=0.000124 *23*; α(O)=1.9×10^{-5} *4*; α(P)=1.15×10^{-6} *40* I_γ: From (n,γ); other: 4.4 *7* from ε decay.
		617.46 *3*	11.2 *9*	327.8529	1/2$^+$	M1+E2	0.94	0.01172	α(K)=0.00988 *14*; α(L)=0.001447 *21*; α(M)=0.000315 *5* α(N)=7.23×10^{-5} *11*; α(O)=1.110×10^{-5} *16*; α(P)=7.05×10^{-7} *10* I_γ: From (n,γ); other: 1.8 *3* in ε decay.
		629.248 *16*	11.5 *9*	316.0271	(3/2)$^+$	M1+E2	−3.1 *4*	0.00840 *21*	α(K)=0.00698 *18*; α(L)=0.001113 *23*; α(M)=0.000244 *5* α(N)=5.59×10^{-5} *11*; α(O)=8.43×10^{-6} *18*; α(P)=4.81×10^{-7} *14*
		630.057 *13*	15.8 *9*	315.1995	1/2$^-$				E_γ: 629γ in ^{153}Tb ε decay probably is 629+630.
		641.7 *2*	1.2 *2*	303.5433	5/2$^+$				E_γ: Not reported in (n,γ).
		696.3 *3*	1.7 *10*	249.5542	5/2$^-$				E_γ: Not reported in (n,γ).
		761.86 *3*	100 *5*	183.4700	5/2$^+$	M1		0.00884	α(K)=0.00752 *11*; α(L)=0.001030 *15*; α(M)=0.000222 *4* α(N)=5.12×10^{-5} *8*; α(O)=7.98×10^{-6} *12*; α(P)=5.46×10^{-7} *8* I_γ: From (n,γ); other: 6.4 *5* in ε decay.
		816.00 *4*	4.4	129.1636	3/2$^-$	E1		1.68×10^{-3}	α(K)=0.001437 *21*; α(L)=0.000189 *3*; α(M)=4.07×10^{-5} *6* α(N)=9.34×10^{-6} *13*; α(O)=1.443×10^{-6} *21*; α(P)=9.62×10^{-8} *14* E_γ: Not reported in (n,γ).
		835.48 *5*	81 *4*	109.7563	(5/2)$^-$	E1		1.60×10^{-3}	α(K)=0.001373 *20*; α(L)=0.000181 *3*;

$^{153}_{64}Gd_{89}$-31

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	δ[&b]	α[a]	Comments
									α(M)=3.88×10^{-5} *6* α(N)=8.91×10^{-6} *13*; α(O)=1.377×10^{-6} *20*; α(P)=9.19×10^{-8} *13* δ: δ(M2/E1)=0.14 *29*.
945.252	3/2$^+$	903.62 *3*	46.8 *18*	41.5568	5/2$^-$	E1		1.38×10^{-3}	α(K)=0.001179 *17*; α(L)=0.0001547 *22*; α(M)=3.32×10^{-5} *5* α(N)=7.63×10^{-6} *11*; α(O)=1.180×10^{-6} *17*; α(P)=7.91×10^{-8} *11* E$_\gamma$: Not reported in (n,γ). δ: δ(M2/E1)=−0.03 *8*.
		945.22 *3*	60 *3*	0.0	3/2$^-$	E1		1.26×10^{-3}	α(K)=0.001083 *16*; α(L)=0.0001417 *20*; α(M)=3.04×10^{-5} *5* α(N)=6.99×10^{-6} *10*; α(O)=1.082×10^{-6} *16*; α(P)=7.27×10^{-8} *11*
955.452	5/2$^+$	451.6 *2*	5 *3*	504.1715	5/2$^+$	M1		0.0328	α(K)=0.0279 *4*; α(L)=0.00388 *6*; α(M)=0.000841 *12* α(N)=0.000194 *3*; α(O)=3.01×10^{-5} *5*; α(P)=2.04×10^{-6} *3* E$_\gamma$: Not reported in (n,γ).
		513.8 *2*	19 *8*	442.1914	5/2$^+$				E$_\gamma$: Not reported in (n,γ).
		665.3	9	290.3597	7/2$^+$				E$_\gamma$: Not reported in (n,γ).
		705.95 *15*	9.8 *11*	249.5542	5/2$^-$				E$_\gamma$: Not reported in (n,γ).
		735.81 *11*	9 *3*	219.4428	9/2$^-$				E$_\gamma$: Not reported in ε decay.
		739.456 *15*	73 *13*	215.9930	7/2$^-$	E1		0.00204	α(K)=0.001749 *25*; α(L)=0.000231 *4*; α(M)=4.98×10^{-5} *7* α(N)=1.141×10^{-5} *16*; α(O)=1.762×10^{-6} *25*; α(P)=1.168×10^{-7} *17* δ: δ(M2/E1)=−0.012 *+24−33*.
		771.97 *4*	4.8 *8*	183.4700	5/2$^+$	M1		0.00856	α(K)=0.00729 *11*; α(L)=0.000996 *14*; α(M)=0.000215 *3* α(N)=4.96×10^{-5} *7*; α(O)=7.72×10^{-6} *11*; α(P)=5.29×10^{-7} *8* I$_\gamma$: From ε decay; other: 55 *3* from (n,γ).
		826.26 *8*	19 *4*	129.1636	3/2$^-$	E1		1.64×10^{-3}	α(K)=0.001403 *20*; α(L)=0.000185 *3*; α(M)=3.97×10^{-5} *6* α(N)=9.11×10^{-6} *13*; α(O)=1.408×10^{-6} *20*; α(P)=9.39×10^{-8} *14*
		845.70 *3*	100 *4*	109.7563	(5/2)$^-$	E1(+M2)	−0.04 *+27−20*	0.00159 *87*	α(K)=0.00136 *73*; α(L)=1.8×10^{-4} *11*; α(M)=3.9×10^{-5} *24* α(N)=8.9×10^{-6} *55*; α(O)=1.37×10^{-6} *86*; α(P)=9.2×10^{-8} *57*
		955.5 *2*	6.4 *13*	0.0	3/2$^-$	E1		1.24×10^{-3}	E$_\gamma$: Not reported in (n,γ). α(K)=0.001061 *15*; α(L)=0.0001388 *20*;

$^{153}_{64}Gd_{89}$-32

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	α[a]	Comments
								α(M)=2.98×10^{-5} *5* α(N)=6.84×10^{-6} *10*; α(O)=1.059×10^{-6} *15*; α(P)=7.12×10^{-8} *10* E_γ: Not reported in (n,γ).
962.035	(1/2,3/2,5/2)$^-$	431.562 *17*	55 *3*	530.4604	3/2$^-$			
		453.384 *16*	42 *4*	508.6645	3/2$^-$	M1	0.0325	α(K)=0.0276 *4*; α(L)=0.00384 *6*; α(M)=0.000832 *12* α(N)=0.000192 *3*; α(O)=2.98×10^{-5} *5*; α(P)=2.02×10^{-6} *3* Mult.: Assigned (M1), but J^π's require E1.
		646.022 *15*	55 *4*	316.0271	(3/2)$^+$			
		646.85 *3*	57 *5*	315.1995	1/2$^-$			
		712.46 *7*	19 *4*	249.5542	5/2$^-$			
		832.82 *3*	100 *25*	129.1636	3/2$^-$			
976.61	(19/2$^+$)	248.8 *2*	43 *3*	727.87	(21/2$^+$)	(M1+E2)	0.133 *25*	α(K)=0.107 *27*; α(L)=0.0206 *16*; α(M)=0.0046 *5* α(N)=0.00104 *10*; α(O)=0.000153 *7*; α(P)=7.4×10^{-6} *26*
		361.9 *2*	50 *3*	614.70	(15/2$^+$)		0.0343	α(K)=0.0270 *4*; α(L)=0.00571 *8*; α(M)=0.001284 *19* α(N)=0.000291 *5*; α(O)=4.20×10^{-5} *6*; α(P)=1.739×10^{-6} *25*
		611.9 *2*	100 *6*	364.70	(17/2$^+$)	(M1+E2)	0.0118 *35*	α(K)=0.0099 *31*; α(L)=0.0015 *4*; α(M)=0.00032 *7* α(N)=7.3×10^{-5} *16*; α(O)=1.1×10^{-5} *3*; α(P)=7.1×10^{-7} *24*
990.155	(3/2$^+$)	541.610 *16*	15.5 *15*	448.5199	5/2$^-$			E_γ: Not reported in ε decay.
		621.48 *4*	8.1 *15*	368.6677	(5/2$^-$)			E_γ: Not reported in ε decay.
		740.59 *4*	100 *11*	249.5542	5/2$^-$			I_γ: From ε decay; other: 24 *5* from (n,γ) for normalization on 860 γ.
		778.16 *7*	17.3 *15*	212.0082	3/2$^+$			E_γ: Not reported in ε decay.
		806.7 *4*	10.4 *25*	183.4700	5/2$^+$			E_γ: Not reported in (n,γ).
		861.00 *3*	83 *9*	129.1636	3/2$^-$	E1	1.51×10^{-3}	α(K)=0.001294 *19*; α(L)=0.0001701 *24*; α(M)=3.65×10^{-5} *6* α(N)=8.39×10^{-6} *12*; α(O)=1.297×10^{-6} *19*; α(P)=8.68×10^{-8} *13*
		880.69 *6*	52 *3*	109.7563	(5/2)$^-$			E_γ: Not reported in (n,γ).
		990.3 *2*	31 *7*	0.0	3/2$^-$			E_γ: Not reported in (n,γ).
1009.52	(17/2$^-$)	445.5 *1*	100 *7*	563.95	13/2$^-$	E2	0.0190	α(K)=0.01531 *22*; α(L)=0.00290 *4*; α(M)=0.000646 *9* α(N)=0.0001469 *21*; α(O)=2.15×10^{-5} *3*; α(P)=1.015×10^{-6} *15*
		645.7 *5*	27 *4*	364.70	(17/2$^+$)		0.00270	α(K)=0.00231 *4*; α(L)=0.000308 *5*; α(M)=6.62×10^{-5} *10* α(N)=1.518×10^{-5} *22*; α(O)=2.34×10^{-6} *4*; α(P)=1.537×10^{-7} *22*
1014.74	5/2$^+$	484.00 *6*	77 *16*	530.4604	3/2$^-$	E1	0.00507	α(K)=0.00433 *6*; α(L)=0.000585 *9*; α(M)=0.0001260 *18* α(N)=2.88×10^{-5} *4*; α(O)=4.43×10^{-6} *7*; α(P)=2.84×10^{-7} *4*
		566.2 *3*	45 *12*	448.5199	5/2$^-$			
		646.5 *3*	24 *9*	368.6677	(5/2$^-$)			
		698.6 *4*	28 *16*	316.0271	(3/2)$^+$			
		765.1 *3*	24 *12*	249.5542	5/2$^-$			

$^{153}_{64}Gd_{89}$-33

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	α[a]	Comments
1014.74	5/2$^+$	798.85 *10*	100 *4*	215.9930	7/2$^-$	E1	1.75×10^{-3}	α(K)=0.001499 *21*; α(L)=0.000198 *3*; α(M)=4.25×10^{-5} *6* α(N)=9.75×10^{-6} *14*; α(O)=1.506×10^{-6} *21*; α(P)=1.003×10^{-7} *14* δ: δ(M2/E1)=0.06 *9*.
		885.68 *6*	42 *6*	129.1636	3/2$^-$			
		1014.95 *8*	100 *3*	0.0	3/2$^-$	E1	1.10×10^{-3}	α(K)=0.000948 *14*; α(L)=0.0001236 *18*; α(M)=2.65×10^{-5} *4* α(N)=6.09×10^{-6} *9*; α(O)=9.44×10^{-7} *14*; α(P)=6.37×10^{-8} *9* δ: δ(M2/E1)=0.05 *6*.
1015.24	(1/2,3/2)$^+$	484.81 *4*	16 *3*	530.4604	3/2$^-$			
		803.17 *4*	33 *4*	212.0082	3/2$^+$			
		1015.37 *10*	100 *29*	0.0	3/2$^-$	E1	1.10×10^{-3}	α(K)=0.000947 *14*; α(L)=0.0001235 *18*; α(M)=2.65×10^{-5} *4* α(N)=6.09×10^{-6} *9*; α(O)=9.44×10^{-7} *14*; α(P)=6.36×10^{-8} *9*
1025.500	(5/2$^-$)	212.861 *7*	10.7 *16*	812.643	(5/2$^-$)			
		242.80 *2*	5 *4*	782.6734	3/2$^+$			
		494.84 *9*	76 *22*	530.4604	3/2$^-$			
		983.7 *3*	100 *35*	41.5568	5/2$^-$			
1035.177	5/2$^+$	504.6 *2*	24 *12*	530.4604	3/2$^-$			Mult.: Assigned M1, but J^π's require E1.
		525.6 *6*	9.1 *13*	508.6645	3/2$^-$			
		586.5 *5*	5.1 *10*	448.5199	5/2$^-$	E1	0.00332	α(K)=0.00283 *4*; α(L)=0.000379 *6*; α(M)=8.16×10^{-5} *12* α(N)=1.87×10^{-5} *3*; α(O)=2.88×10^{-6} *4*; α(P)=1.88×10^{-7} *3*
		666.2 *2*	24 *7*	368.6677	(5/2$^-$)			
		673.50 *10*	15 *4*	361.6512	3/2$^-$	E1	0.00248	α(K)=0.00212 *3*; α(L)=0.000281 *4*; α(M)=6.05×10^{-5} *9* α(N)=1.388×10^{-5} *20*; α(O)=2.14×10^{-6} *3*; α(P)=1.410×10^{-7} *20*
		718.50 *10*	10.1 *7*	316.0271	(3/2)$^+$			
		745.5 *5*	4.2 *28*	290.3597	7/2$^+$			
		785.64 *2*	46 *3*	249.5542	5/2$^-$	E1	0.00181	α(K)=0.001549 *22*; α(L)=0.000204 *3*; α(M)=4.39×10^{-5} *7* α(N)=1.008×10^{-5} *15*; α(O)=1.558×10^{-6} *22*; α(P)=1.036×10^{-7} *15*
		819.2 *3*	2.8 *10*	215.9930	7/2$^-$			
		905.95 *6*	100 *3*	129.1636	3/2$^-$	E1	1.37×10^{-3}	α(K)=0.001174 *17*; α(L)=0.0001539 *22*; α(M)=3.31×10^{-5} *5* α(N)=7.59×10^{-6} *11*; α(O)=1.174×10^{-6} *17*; α(P)=7.87×10^{-8} *11* δ: δ(M2/E1)=0.03 *9*.
		925.46 *3*	26.6 *10*	109.7563	(5/2)$^-$	E1	1.31×10^{-3}	α(K)=0.001127 *16*; α(L)=0.0001476 *21*; α(M)=3.17×10^{-5} *5* α(N)=7.28×10^{-6} *11*; α(O)=1.127×10^{-6} *16*; α(P)=7.56×10^{-8} *11* δ: δ(M2/E1)=0.02 *3*.
		1035.4 *4*	3.5 *21*	0.0	3/2$^-$			
1035.7	15/2$^+$	320 *1*	<25	715.807	(13/2)$^-$		0.01356 *22*	α(K)=0.01153 *19*; α(L)=0.00159 *3*; α(M)=0.000344 *6* α(N)=7.85×10^{-5} *13*; α(O)=1.195×10^{-5} *20*; α(P)=7.38×10^{-7} *12*
		361.8 *5*	100 *10*	674.4	11/2$^+$	E2	0.0343	α(K)=0.0270 *4*; α(L)=0.00572 *9*; α(M)=0.001286 *19* α(N)=0.000292 *5*; α(O)=4.21×10^{-5} *7*; α(P)=1.74×10^{-6} *3*

$^{153}_{64}Gd_{89}$-34

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ †‡#	I_γ	E_f	J_f^π	Mult. @	δ &b	α a	Comments
1035.7	15/2$^+$	471 *1*	25 *5*	563.95	13/2$^-$			0.00539	α(K)=0.00460 *7*; α(L)=0.000623 *10*; α(M)=0.0001342 *20* α(N)=3.07×10^{-5} *5*; α(O)=4.71×10^{-6} *7*; α(P)=3.02×10^{-7} *5*
1037.1?		362.7 c	100 c	674.4	11/2$^+$				
1040.47	(1/2,3/2,5/2)$^-$	724.46 *4*	17.6 *24*	316.0271	(3/2)$^+$				
		911.31 *5*	26 *3*	129.1636	3/2$^-$	M1		0.00572	α(K)=0.00487 *7*; α(L)=0.000663 *10*; α(M)=0.0001431 *20* α(N)=3.29×10^{-5} *5*; α(O)=5.13×10^{-6} *8*; α(P)=3.53×10^{-7} *5*
		1040.45 *5*	100 *11*	0.0	3/2$^-$	M1,E2		0.0033 *9*	α(K)=0.0028 *7*; α(L)=0.00039 *9*; α(M)=8.5×10^{-5} *19* α(N)=2.0×10^{-5} *5*; α(O)=3.0×10^{-6} *7*; α(P)=2.02×10^{-7} *54*
1044.59	(3/2,5/2,7/2)$^+$	728.6 *2*	46 *11*	316.0271	(3/2)$^+$				
		740.8 *2*	100 *11*	303.5433	5/2$^+$				
		795.3 *2*	44 *3*	249.5542	5/2$^-$	E1		1.77×10^{-3}	α(K)=0.001512 *22*; α(L)=0.000199 *3*; α(M)=4.29×10^{-5} *6* α(N)=9.83×10^{-6} *14*; α(O)=1.520×10^{-6} *22*; α(P)=1.011×10^{-7} *15*
		1044.2 *5*	11 *4*	0.0	3/2$^-$				
1051.11	(19/2$^-$)	246.0 *3*	39 *11*	804.95	(17/2$^-$)	(M1+E2)	−0.31 +*22*−*44*	0.158 *14*	α(K)=0.133 *15*; α(L)=0.0199 *10*; α(M)=0.0043 *3* α(N)=0.00100 *6*; α(O)=0.000153 *5*; α(P)=9.8×10^{-6} *15* I_γ: From (α,nγ); other: 133 *8* from (α,3nγ). δ: From (α,3nγ).
		476.0 *3*	100 *7*	575.19	(15/2$^-$)	E2		0.01590	α(K)=0.01288 *19*; α(L)=0.00236 *4*; α(M)=0.000525 *8* α(N)=0.0001195 *17*; α(O)=1.760×10^{-5} *25*; α(P)=8.59×10^{-7} *13*
1054.723	3/2$^-$	505.930 *19*	24 *3*	548.7650	5/2$^-$	M1		0.0245	α(K)=0.0209 *3*; α(L)=0.00289 *4*; α(M)=0.000627 *9* α(N)=0.0001442 *21*; α(O)=2.24×10^{-5} *4*; α(P)=1.526×10^{-6} *22*
		524.44 *8*	5.8 *24*	530.4604	3/2$^-$				
		546.082 *14*	11.0 *9*	508.6645	3/2$^-$				

$^{153}_{64}Gd_{89}$-35

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	δ[&b]	α[a]	Comments
1054.723	3/2⁻	550.52 *4*	5.8 *12*	504.1715	5/2⁺				
		618.50 *3*	8.8 *9*	436.2716	1/2⁻	M1		0.01480	α(K)=0.01259 *18*; α(L)=0.001735 *25*; α(M)=0.000375 *6* α(N)=8.64×10^{-5} *12*; α(O)=1.345×10^{-5} *19*; α(P)=9.17×10^{-7} *13*
		641.61 *14*	6.1 *21*	412.8950	3/2⁺				
		727.07 *9*	6.1 *12*	327.8529	1/2⁺				
		738.679 *11*	45.4 *21*	316.0271	(3/2)⁺				
		871.28 *3*	100 *7*	183.4700	5/2⁺	E1		1.48×10^{-3}	α(K)=0.001265 *18*; α(L)=0.0001661 *24*; α(M)=3.57×10^{-5} *5* α(N)=8.19×10^{-6} *12*; α(O)=1.267×10^{-6} *18*; α(P)=8.48×10^{-8} *12*
		1054.65 *4*	52 *12*	0.0	3/2⁻	M1		0.00403	α(K)=0.00343 *5*; α(L)=0.000465 *7*; α(M)=0.0001003 *14* α(N)=2.31×10^{-5} *4*; α(O)=3.60×10^{-6} *5*; α(P)=2.48×10^{-7} *4*
1066.599	3/2⁺	346.31 *2*	38 *3*	720.347	7/2⁻				Eγ: Not reported in ε decay.
		557.26 *6*	48.5 *20*	508.6645	3/2⁻	E1		0.00371	α(K)=0.00317 *5*; α(L)=0.000425 *6*; α(M)=9.14×10^{-5} *13* α(N)=2.10×10^{-5} *3*; α(O)=3.22×10^{-6} *5*; α(P)=2.09×10^{-7} *3* Eγ: Not reported in (n,γ).
		704.0 *6*	8 *4*	361.6512	3/2⁻	E1		0.00226	α(K)=0.00193 *3*; α(L)=0.000256 *4*; α(M)=5.51×10^{-5} *8* α(N)=1.264×10^{-5} *18*; α(O)=1.95×10^{-6} *3*; α(P)=1.289×10^{-7} *19* Eγ: Not reported in (n,γ).
		817.05 *7*	15 *4*	249.5542	5/2⁻				Eγ: Not reported in ε decay.
		883.18 *11*	33 *4*	183.4700	5/2⁺				Eγ: From (n,γ); other: 882.45 *10* from ε decay. Mult.: Assigned (E1), but J^π's require M1,E2.
		937.41 *3*	100 *4*	129.1636	3/2⁻	E1		1.28×10^{-3}	α(K)=0.001100 *16*; α(L)=0.0001440 *21*; α(M)=3.09×10^{-5} *5* α(N)=7.10×10^{-6} *10*; α(O)=1.099×10^{-6} *16*; α(P)=7.38×10^{-8} *11* δ: δ(M2/E1)=−0.01 *12*.
		956.60 *15*	29 *4*	109.7563	(5/2)⁻	E1		1.23×10^{-3}	α(K)=0.001059 *15*; α(L)=0.0001385 *20*; α(M)=2.97×10^{-5} *5* α(N)=6.83×10^{-6} *10*; α(O)=1.057×10^{-6} *15*; α(P)=7.11×10^{-8} *10*
		1024.62 *10*	9.0 *17*	41.5568	5/2⁻	(E1)		1.09×10^{-3}	α(K)=0.000931 *13*; α(L)=0.0001214 *17*; α(M)=2.61×10^{-5} *4* α(N)=5.99×10^{-6} *9*; α(O)=9.28×10^{-7} *13*; α(P)=6.26×10^{-8} *9*
		1066.65 *20*	31 *3*	0.0	3/2⁻				
1101.659	3/2⁺	280.364 *9*	12.4 *17*	821.306	5/2⁺				Eγ: Not reported in ε decay.
		494.35 *5*	6.0 *5*	607.203	5/2⁻	E1		0.00483	α(K)=0.00413 *6*; α(L)=0.000557 *8*; α(M)=0.0001200 *17* α(N)=2.75×10^{-5} *4*; α(O)=4.22×10^{-6} *6*; α(P)=2.71×10^{-7} *4* Eγ: Not reported in (n,γ).
		552.83 *4*	11.1 *12*	548.7650	5/2⁻	E1		0.00377	α(K)=0.00322 *5*; α(L)=0.000432 *6*; α(M)=9.31×10^{-5} *13* α(N)=2.13×10^{-5} *3*; α(O)=3.28×10^{-6} *5*; α(P)=2.13×10^{-7} *3* δ: δ(M2/E1)=0.01 *20*.
		653.25 *4*	14.5 *4*	448.5199	5/2⁻	E1		0.00264	α(K)=0.00226 *4*; α(L)=0.000300 *5*; α(M)=6.46×10^{-5} *9* α(N)=1.481×10^{-5} *21*; α(O)=2.28×10^{-6} *4*; α(P)=1.500×10^{-7} *21* Eγ: Not reported in (n,γ).
		665.34 *4*	29 *3*	436.2716	1/2⁻	E1		0.00254	α(K)=0.00217 *3*; α(L)=0.000289 *4*; α(M)=6.21×10^{-5} *9*

$^{153}_{64}Gd_{89}$-36

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	δ[&b]	α[a]	Comments
									α(N)=1.424×10^{-5} *20*; α(O)=2.20×10^{-6} *3*; α(P)=1.445×10^{-7} *21*
1101.659	3/2$^+$	785.64 *2*	5.8	316.0271	(3/2)$^+$	M1(+E2)	0.09 *+51−11*	0.0082 *10*	I$_\gamma$: From ε decay; other: 59 *4* from (n,γ). α(K)=0.0070 *8*; α(L)=0.00095 *10*; α(M)=0.000206 *20* α(N)=4.7×10^{-5} *5*; α(O)=7.4×10^{-6} *8*; α(P)=5.0×10^{-7} *7*
		852.00 *3*	25.7 *12*	249.5542	5/2$^-$	E1		1.54×10^{-3}	I$_\gamma$: From ε decay; other: 43 *3* from (n,γ). α(K)=0.001321 *19*; α(L)=0.0001737 *25*; α(M)=3.73×10^{-5} *6* α(N)=8.56×10^{-6} *12*; α(O)=1.325×10^{-6} *19*; α(P)=8.85×10^{-8} *13*
		918.15 *10*	7.6 *9*	183.4700	5/2$^+$	M1(+E2)	−0.01 *21*	0.00561 *14*	α(K)=0.00478 *12*; α(L)=0.000651 *15*; α(M)=0.000140 *3* α(N)=3.23×10^{-5} *8*; α(O)=5.04×10^{-6} *12*; α(P)=3.46×10^{-7} *9*
		972.53 *4*	31.3 *9*	129.1636	3/2$^-$	E1		1.20×10^{-3}	I$_\gamma$: From ε decay; other: 34 *5* from (n,γ). α(K)=0.001026 *15*; α(L)=0.0001341 *19*; α(M)=2.88×10^{-5} *4* α(N)=6.61×10^{-6} *10*; α(O)=1.024×10^{-6} *15*; α(P)=6.89×10^{-8} *10*
		991.78 *4*	100 *4*	109.7563	(5/2)$^-$	E1		1.15×10^{-3}	E$_\gamma$: Not reported in (n,γ). δ: δ(M2/E1)=0.02 *5*. α(K)=0.000989 *14*; α(L)=0.0001292 *18*; α(M)=2.77×10^{-5} *4* α(N)=6.37×10^{-6} *9*; α(O)=9.87×10^{-7} *14*; α(P)=6.65×10^{-8} *10*
		1060.13 *6*	11.1 *12*	41.5568	5/2$^-$	E1		1.02×10^{-3}	δ: δ(M2/E1)=−0.007 *31*. α(K)=0.000874 *13*; α(L)=0.0001139 *16*; α(M)=2.44×10^{-5} *4* α(N)=5.61×10^{-6} *8*; α(O)=8.70×10^{-7} *13*; α(P)=5.88×10^{-8} *9*
		1101.65 *3*	30.4 *5*	0.0	3/2$^-$	E1		9.52×10^{-4}	I$_\gamma$: From ε decay; other: 189 *38* from (n,γ). δ: δ(M2/E1)=0.03 *23*. α(K)=0.000815 *12*; α(L)=0.0001060 *15*; α(M)=2.28×10^{-5} *4* α(N)=5.22×10^{-6} *8*; α(O)=8.10×10^{-7} *12*; α(P)=5.49×10^{-8} *8*; α(IPF)=1.98×10^{-6} *3* δ: δ(M2/E1)=0.01 *1*.

$^{153}_{64}Gd_{89}$-37

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	α[a]	Comments
1102.765	(3/2,5/2,7/2)$^-$	386.99[d] *2*	14 *4*	715.807	(13/2)$^-$			Mult.: Measurements suggest (M1), but J^π's require M3, so placement may be incorrect.
		660.566 *12*	100 *4*	442.1914	5/2$^+$	E1	0.00258	α(K)=0.00220 *3*; α(L)=0.000293 *5*; α(M)=6.31×10^{-5} *9* α(N)=1.446×10^{-5} *21*; α(O)=2.23×10^{-6} *4*; α(P)=1.466×10^{-7} *21*
		799.27 *5*	59 *7*	303.5433	5/2$^+$	E1	1.75×10^{-3}	α(K)=0.001497 *21*; α(L)=0.000197 *3*; α(M)=4.24×10^{-5} *6* α(N)=9.74×10^{-6} *14*; α(O)=1.505×10^{-6} *21*; α(P)=1.002×10^{-7} *14*
		853.52 *13*	30 *11*	249.5542	5/2$^-$			
1118.34	(3/2$^-$,5/2)	802.27 *7*	49 *8*	316.0271	(3/2)$^+$			
		868.63 *9*	60 *12*	249.5542	5/2$^-$	M1,E2	0.0051 *14*	α(K)=0.0043 *12*; α(L)=0.00061 *14*; α(M)=0.00013 *3* α(N)=3.0×10^{-5} *7*; α(O)=4.7×10^{-6} *12*; α(P)=3.06×10^{-7} *91*
		902.43 *5*	100 *7*	215.9930	7/2$^-$			
		1076.4 *3*	69 *10*	41.5568	5/2$^-$			
1118.49	3/2$^+$	570.2 *5*	36 *29*	548.7650	5/2$^-$			
		682.30 *5*	88 *9*	436.2716	1/2$^-$			
		750.0 *2*	29 *7*	368.6677	(5/2$^-$)			
		869.1 *2*	59 *11*	249.5542	5/2$^-$			
		935.7 *5*	50 *29*	183.4700	5/2$^+$			
		1008.7 *2*	11 *4*	109.7563	(5/2)$^-$			
		1024.62[d] *10*	26 *5*	93.3429	7/2$^-$			Mult.: J^π's require M2 which may imply that γ is misplaced.
		1077.0 *3*	36 *12*	41.5568	5/2$^-$			
		1118.50 *10*	100 *17*	0.0	3/2$^-$	E1	9.27×10^{-4}	α(K)=0.000793 *12*; α(L)=0.0001031 *15*; α(M)=2.21×10^{-5} *3* α(N)=5.08×10^{-6} *8*; α(O)=7.88×10^{-7} *11*; α(P)=5.34×10^{-8} *8*; α(IPF)=3.50×10^{-6} *5*
1124.227	(3/2,5/2)$^-$	395.01 *3*	2.7 *8*	729.208	(1/2$^-$,3/2$^-$)			
		762.58 *5*	26.7 *23*	361.6512	3/2$^-$	M1,E2	0.0069 *20*	α(K)=0.0058 *17*; α(L)=0.00083 *20*; α(M)=0.00018 *5* α(N)=4.2×10^{-5} *10*; α(O)=6.4×10^{-6} *16*; α(P)=4.2×10^{-7} *13*
		820.47 *18*	27 *3*	303.5433	5/2$^+$			
		1030.2 *4*	30 *5*	93.3429	7/2$^-$			
		1124.25 *5*	100 *9*	0.0	3/2$^-$	M1	0.00346	α(K)=0.00295 *5*; α(L)=0.000399 *6*; α(M)=8.60×10^{-5} *12* α(N)=1.98×10^{-5} *3*; α(O)=3.09×10^{-6} *5*; α(P)=2.13×10^{-7} *3*; α(IPF)=8.11×10^{-7} *12*
1131.663	5/2$^+$	65.062 *3*	4.8 *18*	1066.599	3/2$^+$	M1,E2	10.0 *31*	α(K)=4.4 *15*; α(L)=4.3 *35*; α(M)=1.02 *84*

$^{153}_{64}Gd_{89}$-38

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ †‡#	I_γ	E_f	J_f^π	Mult.@	α[a]	Comments
								α(N)=0.23 *19*; α(O)=0.030 *24*; α(P)=3.0×10^{-4} *15* E_γ: Not reported in ε decay.
1131.663	5/2$^+$	310.10 *30*	32 *11*	821.306	5/2$^+$			E_γ: Not reported in (n,γ).
		349.08 *4*	22.2 *24*	782.6734	3/2$^+$			E_γ: Not reported in ε decay.
		422.64 *7*	41 *7*	708.9637	3/2$^+$			E_γ: Not reported in ε decay.
		718.50 *10*	52 *3*	412.8950	3/2$^+$			E_γ: Not reported in (n,γ).
		882.2 *4*	52 *3*	249.5542	5/2$^-$	(E1)	1.44×10^{-3}	α(K)=0.001235 *18*; α(L)=0.0001621 *23*; α(M)=3.48×10^{-5} *5* α(N)=7.99×10^{-6} *12*; α(O)=1.237×10^{-6} *18*; α(P)=8.28×10^{-8} *12* E_γ: Not reported in (n,γ).
		912.3 *2*	24 *7*	219.4428	9/2$^-$			E_γ: Not reported in (n,γ).
		916.5 *5*	25 *14*	215.9930	7/2$^-$			E_γ: Not reported in (n,γ).
		1022.04 *6*	100 *11*	109.7563	(5/2)$^-$	E1	1.09×10^{-3}	α(K)=0.000935 *13*; α(L)=0.0001220 *17*; α(M)=2.62×10^{-5} *4* α(N)=6.01×10^{-6} *9*; α(O)=9.32×10^{-7} *13*; α(P)=6.29×10^{-8} *9*
		1036.69 *6*	46 *11*	95.1737	9/2$^+$	E2	0.00255	α(K)=0.00216 *3*; α(L)=0.000310 *5*; α(M)=6.74×10^{-5} *10* α(N)=1.545×10^{-5} *22*; α(O)=2.37×10^{-6} *4*; α(P)=1.495×10^{-7} *21* Mult.: ce data imply M1,E2 but J^π's requires E2. I_γ: From ε decay; other: 88 *13* from (n,γ).
		1090.03 *11*	20 *9*	41.5568	5/2$^-$	E1	9.68×10^{-4}	α(K)=0.000831 *12*; α(L)=0.0001081 *16*; α(M)=2.32×10^{-5} *4* α(N)=5.33×10^{-6} *8*; α(O)=8.26×10^{-7} *12*; α(P)=5.59×10^{-8} *8* E_γ: Not reported in (n,γ).
		1132.0 *3*	4.3 *14*	0.0	3/2$^-$			E_γ: Not reported in (n,γ).
1140.7	17/2$^-$	289.6 *10*	<14	851.7	15/2$^-$			
		424.9 *5*	24 *3*	715.807	(13/2)$^-$	(E2)	0.0217	α(K)=0.01737 *25*; α(L)=0.00337 *5*; α(M)=0.000752 *11* α(N)=0.0001709 *25*; α(O)=2.50×10^{-5} *4*; α(P)=1.145×10^{-6} *17*
		776 *1*	100 *3*	364.70	(17/2$^+$)			
1152.81	(5/2$^+$)	739.82 *24*	7 *3*	412.8950	3/2$^+$			
		848.96 *15*	42 *6*	303.5433	5/2$^+$			E_γ: poor fit, level-energy difference=849.36.
		903.87 *15*	73 *7*	249.5542	5/2$^-$			E_γ: poor fit, level-energy difference=903.25.
		940.71 *9*	100 *8*	212.0082	3/2$^+$			
		968.5 *4*	15 *4*	183.4700	5/2$^+$			
		1152.88 *14*	64 *6*	0.0	3/2$^-$			
1157.42	(5/2)$^-$	521.16 *3*	13.3 *24*	636.308	7/2$^-$			
		648.51 *14*	14 *3*	508.6645	3/2$^-$			
		795.60 *7*	59 *15*	361.6512	3/2$^-$			
		1027.9 *3*	79 *10*	129.1636	3/2$^-$			
		1157.43 *18*	100 *15*	0.0	3/2$^-$	M1,E2	0.0026 *6*	α(K)=0.0022 *6*; α(L)=0.00031 *7*; α(M)=6.7×10^{-5} *14* α(N)=1.5×10^{-5} *4*; α(O)=2.4×10^{-6} *5*; α(P)=1.6×10^{-7} *4*; α(IPF)=2.16×10^{-6} *12*
1163.71?	(3/2)$^+$	795.15 *13*	31 *12*	368.6677	(5/2$^-$)			
		980.1 *3*	26 *9*	183.4700	5/2$^+$			

$^{153}_{64}Gd_{89}$-39

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	α[a]	Comments
1163.71?	$(3/2)^+$	1053.0 *6*	100 *27*	109.7563	$(5/2)^-$			
1172.620	$(1/2,3/2,5/2)^-$	70.9604 *17*	100 *8*	1101.659	$3/2^+$			
		227.357 *16*	4.8 *14*	945.252	$3/2^+$			
		488.687 *16*	46 *10*	683.9572	$3/2^-$			
		1130.8 *2*	84 *27*	41.5568	$5/2^-$	M1,E2	0.0028 *7*	α(K)=0.0024 *6*; α(L)=0.00032 *7*; α(M)=7.0×10^{-5} *15* α(N)=1.6×10^{-5} *4*; α(O)=2.5×10^{-6} *6*; α(P)=1.68×10^{-7} *43*; α(IPF)=9.6×10^{-7} *6*
1180.75	$5/2^+$	650.2 *3*	9 *5*	530.4604	$3/2^-$			E_γ: Not reported in (n,γ).
		812.1 *4*	22 *8*	368.6677	$(5/2^-)$			E_γ: Not reported in (n,γ).
		890.20 *10*	49 *11*	290.3597	$7/2^+$			E_γ: Not reported in (n,γ).
		931.3 *3*	21 *11*	249.5542	$5/2^-$			Mult.: ce data imply (M1,E2) but J^π's requires E1. E_γ: Not reported in (n,γ).
		964.60 *10*	46 *4*	215.9930	$7/2^-$			E_γ: Not reported in (n,γ).
		997.10 *10*	45 *4*	183.4700	$5/2^+$	M1	0.00460	α(K)=0.00393 *6*; α(L)=0.000532 *8*; α(M)=0.0001149 *16* α(N)=2.65×10^{-5} *4*; α(O)=4.13×10^{-6} *6*; α(P)=2.84×10^{-7} *4*
		1051.48 *8*	60 *8*	129.1636	$3/2^-$	(E1)	1.03×10^{-3}	E_γ: Not reported in (n,γ). α(K)=0.000888 *13*; α(L)=0.0001157 *17*; α(M)=2.48×10^{-5} *4* α(N)=5.70×10^{-6} *8*; α(O)=8.84×10^{-7} *13*; α(P)=5.97×10^{-8} *9* I_γ: From ε decay; other: 26 *3* from (n,γ) normalized for 1071 γ. Mult.: Assigned E1,E2, but J^π's require E1.
		1071.22 *4*	27 *4*	109.7563	$(5/2)^-$	E1	1.00×10^{-3}	α(K)=0.000858 *12*; α(L)=0.0001117 *16*; α(M)=2.40×10^{-5} *4* α(N)=5.50×10^{-6} *8*; α(O)=8.54×10^{-7} *12*; α(P)=5.77×10^{-8} *8*
		1138.90 *15*	100 *6*	41.5568	$5/2^-$	E1	9.01×10^{-4}	α(K)=0.000767 *11*; α(L)=9.97×10^{-5} *14*; α(M)=2.14×10^{-5} *3* α(N)=4.91×10^{-6} *7*; α(O)=7.62×10^{-7} *11*; α(P)=5.17×10^{-8} *8*; α(IPF)=6.44×10^{-6} *10* I_γ: From ε decay; other: 17.2 *17* from (n,γ) normalized for 1071 γ.
		1179.64 *13*	20 *5*	0.0	$3/2^-$	E1	8.56×10^{-4}	α(K)=0.000720 *10*; α(L)=9.35×10^{-5} *13*; α(M)=2.01×10^{-5} *3* α(N)=4.60×10^{-6} *7*; α(O)=7.15×10^{-7} *10*; α(P)=4.85×10^{-8} *7*; α(IPF)=1.706×10^{-5} *25*
1194.81	$(25/2^+)$	466.9 *1*	100	727.87	$(21/2^+)$	E2	0.01675	E_γ: Not reported in (n,γ). α(K)=0.01354 *19*; α(L)=0.00250 *4*; α(M)=0.000557 *8* α(N)=0.0001268 *18*; α(O)=1.87×10^{-5} *3*; α(P)=9.02×10^{-7} *13*

$^{153}_{64}Gd_{89}$-40

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ †‡#	I_γ	E_f	J_f^π	Mult. @	α [a]	Comments
1199.04	(7/2)$^+$	750.0 *2*	23 *6*	448.5199	5/2$^-$			E_γ: Not reported in (n,γ).
		786.8	44	412.8950	3/2$^+$			E_γ: Not reported in (n,γ).
		979.60 *15*	49 *5*	219.4428	9/2$^-$	E1	1.18×10^{-3}	α(K)=0.001012 *15*; α(L)=0.0001323 *19*; α(M)=2.84×10^{-5} *4* α(N)=6.52×10^{-6} *10*; α(O)=1.010×10^{-6} *15*; α(P)=6.80×10^{-8} *10*
		982.9 *1*	65 *24*	215.9930	7/2$^-$			I_γ: From (n,γ); other: 18 *4* from ε decay. Mult.: Assigned E2, but J^π's require E1.
		1105.79 *14*	100 *7*	93.3429	7/2$^-$	E1	9.46×10^{-4}	α(K)=0.000809 *12*; α(L)=0.0001053 *15*; α(M)=2.26×10^{-5} *4* α(N)=5.19×10^{-6} *8*; α(O)=8.05×10^{-7} *12*; α(P)=5.45×10^{-8} *8*; α(IPF)=2.29×10^{-6} *4*
		1157.7 *1*	11.0 *22*	41.5568	5/2$^-$			E_γ: Not reported in (n,γ).
		1199.2 [d]	22	0.0	3/2$^-$			E_γ: Not reported in (n,γ). J^π's imply M2 character.
1208.19	(21/2$^+$)	231.2 *5*	6.7 *8*	976.61	(19/2$^+$)	(M1+E2)	0.17 *3*	α(K)=0.13 *4*; α(L)=0.026 *4*; α(M)=0.0059 *9* α(N)=0.00134 *18*; α(O)=0.000195 *16*; α(P)=9.0×10^{-6} *31*
		335.0 *2*	100 *6*	873.39	(17/2$^+$)	E2	0.0431	α(K)=0.0335 *5*; α(L)=0.00745 *11*; α(M)=0.001681 *24* α(N)=0.000381 *6*; α(O)=5.46×10^{-5} *8*; α(P)=2.14×10^{-6} *3*
		480.5 *2*	22.4 *15*	727.87	(21/2$^+$)	(M1+E2)	0.0217 *63*	α(K)=0.0182 *57*; α(L)=0.0028 *5*; α(M)=0.00061 *11* α(N)=0.000140 *25*; α(O)=2.1×10^{-5} *5*; α(P)=1.29×10^{-6} *46*
		843.3 *2*	63 *4*	364.70	(17/2$^+$)	E2	0.00397	α(K)=0.00333 *5*; α(L)=0.000500 *7*; α(M)=0.0001092 *16* α(N)=2.50×10^{-5} *4*; α(O)=3.80×10^{-6} *6*; α(P)=2.30×10^{-7} *4*
1220.80	(3/2,5/2,7/2)	1038.3 *6*	43 *14*	183.4700	5/2$^+$			
		1110.8 *3*	100 *9*	109.7563	(5/2)$^-$			
1247.515	(3/2,5/2,7/2)$^+$	115.8522 *17*	73 *3*	1131.663	5/2$^+$	E2	1.474	α(K)=0.778 *11*; α(L)=0.538 *8*; α(M)=0.1262 *18* α(N)=0.0282 *4*; α(O)=0.00373 *6*; α(P)=3.94×10^{-5} *6*
		1205.97 *19*	100 *12*	41.5568	5/2$^-$			
1252.146	(1/2,3/2)$^-$	404.320 *9*	5.8 *6*	847.826	5/2$^-$,7/2$^-$			
		1210.58 *4*	100 *10*	41.5568	5/2$^-$			
1268.202	3/2$^-$	306.174 *15*	7.9 *11*	962.035	(1/2,3/2,5/2)$^-$	M1	0.0905	α(K)=0.0767 *11*; α(L)=0.01083 *16*; α(M)=0.00235 *4* α(N)=0.000541 *8*; α(O)=8.40×10^{-5} *12*; α(P)=5.66×10^{-6} *8*
		547.84 *2*	16.2 *18*	720.347	7/2$^-$			

$^{153}_{64}Gd_{89}$-41

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	δ[&b]	α[a]	Comments
1268.202	3/2⁻	964.69 *6*	47 *5*	303.5433	5/2⁺	E1		1.22×10^{-3}	α(K)=0.001042 *15*; α(L)=0.0001362 *19*; α(M)=2.93×10^{-5} *4* α(N)=6.72×10^{-6} *10*; α(O)=1.040×10^{-6} *15*; α(P)=7.00×10^{-8} *10*
		1226.43 *14*	100 *26*	41.5568	5/2⁻	M1,E2		0.0023 *5*	α(K)=0.0020 *5*; α(L)=0.00027 *6*; α(M)=5.8×10^{-5} *12* α(N)=1.3×10^{-5} *3*; α(O)=2.1×10^{-6} *5*; α(P)=1.4×10^{-7} *4*; α(IPF)=9.1×10^{-6} *5*
1272.72	5/2⁺	903.9	89	368.6677	(5/2⁻)				
		982.9 *1*	22 *5*	290.3597	7/2⁺	E2		0.00285	α(K)=0.00241 *4*; α(L)=0.000350 *5*; α(M)=7.60×10^{-5} *11* α(N)=1.743×10^{-5} *25*; α(O)=2.67×10^{-6} *4*; α(P)=1.667×10^{-7} *24*
		1144.30 *20*	31 *3*	129.1636	3/2⁻				
		1179.2	27	93.3429	7/2⁻				
		1231.05 *5*	100 *6*	41.5568	5/2⁻	(E1)		8.16×10^{-4}	α(K)=0.000668 *10*; α(L)=8.65×10^{-5} *13*; α(M)=1.86×10^{-5} *3* α(N)=4.26×10^{-6} *6*; α(O)=6.62×10^{-7} *10*; α(P)=4.50×10^{-8} *7*; α(IPF)=3.84×10^{-5} *6*
		1272.50 *8*	58	0.0	3/2⁻	E1		7.92×10^{-4}	α(K)=0.000630 *9*; α(L)=8.15×10^{-5} *12*; α(M)=1.748×10^{-5} *25* α(N)=4.01×10^{-6} *6*; α(O)=6.23×10^{-7} *9*; α(P)=4.25×10^{-8} *6*; α(IPF)=5.82×10^{-5} *9* δ: δ(M2/E1)=0.04 *14*.
1312.30	(21/2⁻)	261.2 *2*	89 *5*	1051.11	(19/2⁻)	(M1+E2)	−0.27 +*10*−*22*	0.135 *6*	α(K)=0.114 *7*; α(L)=0.0167 *4*; α(M)=0.00365 *9* α(N)=0.000838 *19*; α(O)=0.0001293 *19*; α(P)=8.4×10^{-6} *6* δ: From (α,3nγ).
		507.4 *2*	100 *5*	804.95	(17/2⁻)	E2		0.01342	α(K)=0.01093 *16*; α(L)=0.00195 *3*; α(M)=0.000432 *6* α(N)=9.84×10^{-5} *14*; α(O)=1.456×10^{-5} *21*; α(P)=7.34×10^{-7} *11*
1314.57	(1/2,3/2)	998.5 *4*	100	316.0271	(3/2)⁺				
1318.2	(19/2⁻)	419.4	100	898.8	(15/2⁻)				
1328.320	5/2⁺	462.48[d] *20*	33 *3*	865.611	3/2⁺	E2+M1		0.0240 *69*	α(K)=0.0200 *62*; α(L)=0.0031 *6*; α(M)=0.00068 *11* α(N)=0.00016 *3*; α(O)=2.4×10^{-5} *5*; α(P)=1.42×10^{-6} *50*
		470.7 *2*	25 *4*	857.613	3/2⁻				
		619.405 *14*	36 *3*	708.9637	3/2⁺	M1		0.01474	α(K)=0.01254 *18*; α(L)=0.001728 *25*; α(M)=0.000374 *6*

$^{153}_{64}Gd_{89}$-42

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	δ[&b]	α[a]	Comments
									α(N)=8.61×10^{-5} *12*; α(O)=1.340×10^{-5} *19*; α(P)=9.14×10^{-7} *13*
									I_γ: From (n,γ) relative to Iγ(1199).
1328.320	5/2$^+$	779.52 *10*	100 *38*	548.7650	5/2$^-$	(E1)		0.00184	α(K)=0.001574 *22*; α(L)=0.000208 *3*; α(M)=4.46×10^{-5} *7*
									α(N)=1.024×10^{-5} *15*; α(O)=1.583×10^{-6} *23*; α(P)=1.052×10^{-7} *15*
		885.68 *6*	43 *6*	442.1914	5/2$^+$				Mult.: Measurements suggest E1, but J^π's require M1,E2.
		915.1 *3*	17 *3*	412.8950	3/2$^+$				
		958.0 *6*	19 *8*	368.6677	(5/2$^-$)				
		1012.15 *8*	39 *3*	316.0271	(3/2)$^+$	M1		0.00444	α(K)=0.00379 *6*; α(L)=0.000513 *8*; α(M)=0.0001108 *16*
									α(N)=2.55×10^{-5} *4*; α(O)=3.98×10^{-6} *6*; α(P)=2.74×10^{-7} *4*
		1078.40 *12*	78 *8*	249.5542	5/2$^-$	E1		9.88×10^{-4}	α(K)=0.000847 *12*; α(L)=0.0001103 *16*; α(M)=2.37×10^{-5} *4*
									α(N)=5.44×10^{-6} *8*; α(O)=8.43×10^{-7} *12*; α(P)=5.70×10^{-8} *8*
		1111.6 *3*	19.2 *25*	215.9930	7/2$^-$				
		1144.30 *20*	18.8 *21*	183.4700	5/2$^+$				
		1199.06 *5*	76 *3*	129.1636	3/2$^-$	E1(+M2)	0.08 *8*	0.00088 *12*	α(K)=0.00073 *10*; α(L)=9.6×10^{-5} *15*; α(M)=2.1×10^{-5} *4*
									α(N)=4.7×10^{-6} *8*; α(O)=7.3×10^{-7} *12*; α(P)=5.0×10^{-8} *8*; α(IPF)=2.42×10^{-5} *6*
									I_γ: From ε decay; other: 55 *8* from (n,γ).
									δ: δ(M2/E1)=0.08 *8*.
		1218.45 *8*	48 *3*	109.7563	(5/2)$^-$	E1(+M2)	0.12 *12*	9.1×10^{-4} *25*	α(K)=7.5×10^{-4} *21*; α(L)=9.9×10^{-5} *30*; α(M)=2.12×10^{-5} *65*
									α(N)=4.9×10^{-6} *15*; α(O)=7.6×10^{-7} *24*; α(P)=5.1×10^{-8} *16*; α(IPF)=3.23×10^{-5} *14*
									I_γ: From ε decay; other: 127 *9* from (n,γ).
									δ: δ(M2/E1)=0.12 *12*.
		1233.7 *8*	10 *5*	95.1737	9/2$^+$				
		1328.7 *4*	2.9 *12*	0.0	3/2$^-$				
1337.97	1/2$^-$,3/2$^-$	976.64 *17*	21 *4*	361.6512	3/2$^-$	M1,E2		0.00387 *98*	α(K)=0.00328 *85*; α(L)=0.00046 *11*; α(M)=9.9×10^{-5} *22*
									α(N)=2.3×10^{-5} *5*; α(O)=3.5×10^{-6} *9*; α(P)=2.34×10^{-7} *65*
		1337.87 *10*	100 *9*	0.0	3/2$^-$	M1,E2		0.0019 *4*	α(K)=0.0016 *4*; α(L)=0.00022 *5*; α(M)=4.8×10^{-5} *9*
									α(N)=1.10×10^{-5} *21*; α(O)=1.7×10^{-6} *4*; α(P)=1.2×10^{-7} *3*; α(IPF)=2.93×10^{-5} *17*

$^{153}_{64}Gd_{89}$-43

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	α[a]	Comments
1339.4	(17/2$^-$)	764.3 *5*	67 *7*	575.19	(15/2$^-$)	(M1+E2)	0.0069 *20*	α(K)=0.0058 *17*; α(L)=0.00083 *20*; α(M)=0.00018 *4* α(N)=4.1×10^{-5} *10*; α(O)=6.4×10^{-6} *16*; α(P)=4.1×10^{-7} *13*
		975.5 *8*	100 *7*	363.449	(13/2$^-$)	(E2)	0.00290	α(K)=0.00245 *4*; α(L)=0.000356 *5*; α(M)=7.74×10^{-5} *11* α(N)=1.77×10^{-5} *3*; α(O)=2.71×10^{-6} *4*; α(P)=1.693×10^{-7} *24*
1353.52	(3/2)$^-$	746.18 *14*	20 *4*	607.203	5/2$^-$	M1	0.00930	α(K)=0.00792 *11*; α(L)=0.001084 *16*; α(M)=0.000234 *4* α(N)=5.39×10^{-5} *8*; α(O)=8.40×10^{-6} *12*; α(P)=5.75×10^{-7} *8*
		991.88 *6*	100 *21*	361.6512	3/2$^-$			
		1169.98 *13*	96 *12*	183.4700	5/2$^+$			
1357.0	19/2$^-$	458.3 *5*	35 *4*	898.8	(15/2$^-$)	E2	0.0176	α(K)=0.01421 *21*; α(L)=0.00265 *4*; α(M)=0.000591 *9* α(N)=0.0001344 *20*; α(O)=1.97×10^{-5} *3*; α(P)=9.45×10^{-7} *14*
		505.2 *5*	100 *9*	851.7	15/2$^-$	E2	0.01358	α(K)=0.01105 *16*; α(L)=0.00197 *3*; α(M)=0.000438 *7* α(N)=9.97×10^{-5} *15*; α(O)=1.475×10^{-5} *21*; α(P)=7.42×10^{-7} *11*
1363.58	(1/2,3/2)$^-$	1151.59 *6*	100	212.0082	3/2$^+$			
1384.54	(1/2,3/2)	1342.5 *4*	100 *12*	41.5568	5/2$^-$			
		1384.54 *11*	26 *10*	0.0	3/2$^-$			
1387.46	(3/2,5/2,7/2)	678.8 *1*	6.1 *3*	708.9637	3/2$^+$	M1	0.01174	α(K)=0.00999 *14*; α(L)=0.001373 *20*; α(M)=0.000297 *5* α(N)=6.83×10^{-5} *10*; α(O)=1.064×10^{-5} *15*; α(P)=7.27×10^{-7} *11*
		945.23 *3*	100 *3*	442.1914	5/2$^+$	E1	1.26×10^{-3}	α(K)=0.001083 *16*; α(L)=0.0001417 *20*; α(M)=3.04×10^{-5} *5* α(N)=6.99×10^{-6} *10*; α(O)=1.082×10^{-6} *16*; α(P)=7.27×10^{-8} *11*
		1294.5 *3*	1.66 *14*	93.3429	7/2$^-$	E1	7.81×10^{-4}	α(K)=0.000611 *9*; α(L)=7.90×10^{-5} *11*; α(M)=1.695×10^{-5} *24* α(N)=3.89×10^{-6} *6*; α(O)=6.05×10^{-7} *9*; α(P)=4.12×10^{-8} *6*; α(IPF)=6.93×10^{-5} *10*
		1347.1 *4*	0.54 *18*	41.5568	5/2$^-$			
1401.28	(3/2)$^+$	673.02 *9*	19 *7*	727.802	(3/2,5/2,7/2)$^-$			E_γ: Not reported in ε decay.
		794.1 *2*	51 *10*	607.203	5/2$^-$			
		871.2 *3*	71 *17*	530.4604	3/2$^-$	E1	1.48×10^{-3}	α(K)=0.001265 *18*; α(L)=0.0001662 *24*; α(M)=3.57×10^{-5} *5*

$^{153}_{64}Gd_{89}$-44

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	α[a]	Comments
								α(N)=8.19×10^{-6} *12*; α(O)=1.268×10^{-6} *18*; α(P)=8.48×10^{-8} *12*
1401.28	(3/2)$^+$	964.60 *10*	100 *8*	436.2716	1/2$^-$			
		1032.5 *6*	27 *8*	368.6677	(5/2$^-$)			
		1085.60 *14*	54 *7*	316.0271	(3/2)$^+$	E2	0.00232	α(K)=0.00197 *3*; α(L)=0.000280 *4*; α(M)=6.08×10^{-5} *9* α(N)=1.394×10^{-5} *20*; α(O)=2.14×10^{-6} *3*; α(P)=1.362×10^{-7} *19* I_γ: From ε decay; other: 73 *14* from (n,γ).
		1098.4 *3*	31 *10*	303.5433	5/2$^+$			
		1272.50 *8*	51	129.1636	3/2$^-$			
		1359.76 *15*	82 *6*	41.5568	5/2$^-$	E1	7.60×10^{-4}	α(K)=0.000561 *8*; α(L)=7.24×10^{-5} *11*; α(M)=1.553×10^{-5} *22* α(N)=3.57×10^{-6} *5*; α(O)=5.54×10^{-7} *8*; α(P)=3.78×10^{-8} *6*; α(IPF)=0.0001073 *15* δ: δ(M2/E1)=0.09 *25*.
		1401.5 *2*	10.9 *22*	0.0	3/2$^-$			
1422.939	(3/2,5/2)$^-$	320.200 *19*	18 *6*	1102.765	(3/2,5/2,7/2)$^-$			E_γ: Not reported in ε decay. I_γ: From Iγ(320)/Iγ(980) in (n,γ).
		565.44 *12*	76 *6*	857.613	3/2$^-$			I_γ: From ε decay; other: 9 *2* from Iγ(565)/Iγ(980)=0.13 from (n,γ).
		980.76 *12*	66 *6*	442.1914	5/2$^+$	E1	1.18×10^{-3}	α(K)=0.001010 *15*; α(L)=0.0001320 *19*; α(M)=2.83×10^{-5} *4* α(N)=6.51×10^{-6} *10*; α(O)=1.008×10^{-6} *15*; α(P)=6.79×10^{-8} *10* E_γ: From (n,γ); other: 979.60 *15* from ε decay.
		1054.7 *2*	62 *10*	368.6677	(5/2$^-$)			E_γ: Not reported in (n,γ).
		1107.7[d] *5*	26 *14*	315.1995	1/2$^-$			E_γ: Not reported in (n,γ).
		1118.50 *10*	100 *17*	303.5433	5/2$^+$	E1	9.27×10^{-4}	α(K)=0.000793 *12*; α(L)=0.0001031 *15*; α(M)=2.21×10^{-5} *3* α(N)=5.08×10^{-6} *8*; α(O)=7.88×10^{-7} *11*; α(P)=5.34×10^{-8} *8*; α(IPF)=3.50×10^{-6} *5* E_γ: Not reported in (n,γ).
		1173.24 *22*	24 *7*	249.5542	5/2$^-$			E_γ: Not reported in (n,γ).
		1327.9 *2*	46 *3*	95.1737	9/2$^+$			E_γ: Not reported in ε decay. I_γ: From Iγ(1327)/Iγ(980)=0.70 in (n,γ).
		1381.1 *2*	4.9 *15*	41.5568	5/2$^-$			I_γ: From ε decay; other: 44 *3* from (n,γ).
		1423.2 *3*	29	0.0	3/2$^-$			E_γ: From (n,γ); other: 1421.9 *10* from ε decay.
1426.53	(1/2,3/2)	990.3 *2*	100 *23*	436.2716	1/2$^-$			
		1210.2 *4*	20 *3*	215.9930	7/2$^-$			Mult.: Measurements suggest M1, but J^π's require M2,E3.
		1426.6 *3*	14 *6*	0.0	3/2$^-$			
1436.52	(23/2$^+$)	241.7 *5*	21.0 *12*	1194.81	(25/2$^+$)	(M1+E2)	0.14 *3*	α(K)=0.12 *3*; α(L)=0.0226 *22*; α(M)=0.0051 *6*

$^{153}_{64}Gd_{89}$-45

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	δ[&b]	α[a]	Comments
									α(N)=0.00115 *13*; α(O)=0.000169 *10*; α(P)=8.0×10^{-6} *28*
1436.52	(23/2$^+$)	460.0 *2*	100 *6*	976.61	(19/2$^+$)	E2		0.01743	α(K)=0.01407 *20*; α(L)=0.00262 *4*; α(M)=0.000584 *9*
									α(N)=0.0001328 *19*; α(O)=1.95×10^{-5} *3*;
									α(P)=9.36×10^{-7} *14*
		708.7 *2*	68 *5*	727.87	(21/2$^+$)	D,Q			
1450.33	(1/2,3/2)$^-$	1340.9 *2*	100 *20*	109.7563	(5/2)$^-$	E2		1.55×10^{-3}	α(K)=0.001295 *19*; α(L)=0.000179 *3*; α(M)=3.86×10^{-5} *6*
									α(N)=8.87×10^{-6} *13*; α(O)=1.370×10^{-6} *20*;
									α(P)=8.98×10^{-8} *13*; α(IPF)=2.84×10^{-5} *4*
		1450.06 *16*	85 *30*	0.0	3/2$^-$				
1452.43	(3/2,5/2)$^+$	594.7 *3*	100 *30*	857.613	3/2$^-$				
		948.4 *2*	55 *15*	504.1715	5/2$^+$				
		1203.0 *3*	17 *3*	249.5542	5/2$^-$	E1		8.36×10^{-4}	α(K)=0.000696 *10*; α(L)=9.02×10^{-5} *13*;
									α(M)=1.93×10^{-5} *3*
									α(N)=4.44×10^{-6} *7*; α(O)=6.90×10^{-7} *10*;
									α(P)=4.69×10^{-8} *7*; α(IPF)=2.60×10^{-5} *4*
		1322.8 *3*	37 *5*	129.1636	3/2$^-$	E1		7.70×10^{-4}	α(K)=0.000588 *9*; α(L)=7.60×10^{-5} *11*;
									α(M)=1.631×10^{-5} *23*
									α(N)=3.75×10^{-6} *6*; α(O)=5.82×10^{-7} *9*; α(P)=3.97×10^{-8}
									6; α(IPF)=8.48×10^{-5} *12*
		1342.8 *3*	13.7 *17*	109.7563	(5/2)$^-$	E1		7.64×10^{-4}	α(K)=0.000573 *8*; α(L)=7.40×10^{-5} *11*;
									α(M)=1.588×10^{-5} *23*
									α(N)=3.65×10^{-6} *6*; α(O)=5.67×10^{-7} *8*; α(P)=3.87×10^{-8}
									6; α(IPF)=9.67×10^{-5} *14*
1462.9	19/2$^+$	427.4 *5*	100 *9*	1035.7	15/2$^+$	E2		0.0213	α(K)=0.01710 *25*; α(L)=0.00330 *5*; α(M)=0.000738 *11*
									α(N)=0.0001677 *25*; α(O)=2.45×10^{-5} *4*;
									α(P)=1.128×10^{-6} *17*
		453.1 *5*	14 *5*	1009.52	(17/2$^-$)	D			
1471.8		650.5	100	821.306	5/2$^+$				
1474.18	(11/2$^-$)	1110.3 *3*	79 *15*	363.449	(13/2$^-$)				
		1335.3 *8*	47 *17*	138.40	(13/2$^+$)				
		1379.24 *21*	100 *15*	93.3429	7/2$^-$				
1503.17	(21/2$^-$)	493.4 *5*	39 *3*	1009.52	(17/2$^-$)	E2		0.01445	α(K)=0.01174 *17*; α(L)=0.00212 *3*; α(M)=0.000470 *7*
									α(N)=0.0001070 *16*; α(O)=1.581×10^{-5} *23*;
									α(P)=7.86×10^{-7} *12*
		526.8 *5*	21 *3*	976.61	(19/2$^+$)	D(+Q)			
		775.3 *2*	100 *8*	727.87	(21/2$^+$)	D,Q			Mult.: ΔJ=0 γ.
1509.48	(5/2$^-$)	1297.8 *5*	68 *12*	212.0082	3/2$^+$				
		1416.04 *23*	100 *13*	93.3429	7/2$^-$				
		1467.93 *16*	85 *11*	41.5568	5/2$^-$				
1519.3	(21/2$^-$)	379 *1*		1140.7	17/2$^-$				
		509.6 *5*	52 *4*	1009.52	(17/2$^-$)	E2		0.01327	α(K)=0.01081 *16*; α(L)=0.00192 *3*; α(M)=0.000426 *6*
									α(N)=9.71×10^{-5} *14*; α(O)=1.438×10^{-5} *21*;
									α(P)=7.26×10^{-7} *11*

$^{153}_{64}Gd_{89}$-46

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	δ[&b]	α[a]	Comments
1519.3	(21/2⁻)	791.5 *5*	100 *8*	727.87	(21/2⁺)	D,Q			Mult.: ΔJ=0 γ.
1574.0	(19/2⁻)	234.6 *5*	75 *12*	1339.4	(17/2⁻)	M1+E2		0.16 *3*	α(K)=0.13 *3*; α(L)=0.025 *3*; α(M)=0.0056 *8* α(N)=0.00127 *16*; α(O)=0.000186 *14*; α(P)=8.7×10^{-6} *30*
		769.4 *5*	100 *12*	804.95	(17/2⁻)	(M1+E2)		0.0067 *19*	α(K)=0.0057 *17*; α(L)=0.00082 *19*; α(M)=0.00018 *4* α(N)=4.1×10^{-5} *10*; α(O)=6.3×10^{-6} *16*; α(P)=4.1×10^{-7} *13*
		998.4 *5*	100 *12*	575.19	(15/2⁻)	(E2)		0.00276	α(K)=0.00233 *4*; α(L)=0.000338 *5*; α(M)=7.34×10^{-5} *11* α(N)=1.682×10^{-5} *24*; α(O)=2.58×10^{-6} *4*; α(P)=1.614×10^{-7} *23*
1586.76	(23/2⁻)	274.5 *2*	70 *4*	1312.30	(21/2⁻)	(M1+E2)	−0.20 *+10−16*	0.120 *4*	α(K)=0.101 *4*; α(L)=0.01456 *22*; α(M)=0.00317 *6* α(N)=0.000728 *12*; α(O)=0.0001127 *16*; α(P)=7.4×10^{-6} *4*
		535.6 *2*	100 *5*	1051.11	(19/2⁻)	E2		0.01167	α(K)=0.00954 *14*; α(L)=0.001661 *24*; α(M)=0.000368 *6* α(N)=8.38×10^{-5} *12*; α(O)=1.245×10^{-5} *18*; α(P)=6.44×10^{-7} *9*
1628.04	(25/2⁺)	420.0 *2*	100 *6*	1208.19	(21/2⁺)	E2		0.0224	α(K)=0.0179 *3*; α(L)=0.00349 *5*; α(M)=0.000781 *11* α(N)=0.0001774 *25*; α(O)=2.59×10^{-5} *4*; α(P)=1.179×10^{-6} *17*
		900.0 *2*	19.7 *13*	727.87	(21/2⁺)	E2		0.00344	α(K)=0.00290 *4*; α(L)=0.000429 *6*; α(M)=9.34×10^{-5} *13* α(N)=2.14×10^{-5} *3*; α(O)=3.26×10^{-6} *5*; α(P)=2.00×10^{-7} *3*
1703.0?	(21/2⁻)	562[d] *1*	100 *20*	1140.7	17/2⁻				
1721.70	(1/2,3/2)⁺	1308.6 *2*	30 *11*	412.8950	3/2⁺				
		1721.7 *2*	100 *12*	0.0	3/2⁻				
1745.2	(29/2⁺)	550.3 *2*	100	1194.81	(25/2⁺)	E2		0.01088	α(K)=0.00892 *13*; α(L)=0.001536 *22*; α(M)=0.000340 *5* α(N)=7.75×10^{-5} *11*; α(O)=1.152×10^{-5} *17*; α(P)=6.03×10^{-7} *9*
1818.9	(21/2⁻)	245 *1*	88 *12*	1574.0	(19/2⁻)				
		479 *1*	<62	1339.4	(17/2⁻)				
		767.8 *5*	75 *12*	1051.11	(19/2⁻)	(M1+E2)		0.0068 *19*	α(K)=0.0057 *17*; α(L)=0.00082 *19*; α(M)=0.00018 *4* α(N)=4.1×10^{-5} *10*; α(O)=6.3×10^{-6} *16*; α(P)=4.1×10^{-7} *13*
		1014 *1*	100 *12*	804.95	(17/2⁻)	(E2)		0.00267	α(K)=0.00226 *4*; α(L)=0.000326 *5*; α(M)=7.08×10^{-5} *10* α(N)=1.624×10^{-5} *23*; α(O)=2.49×10^{-6} *4*; α(P)=1.564×10^{-7} *23*
1873.2	(25/2⁻)	286.4 *5*	59 *5*	1586.76	(23/2⁻)	(M1+E2)	−0.24 *+20−30*	0.106 *7*	α(K)=0.090 *7*; α(L)=0.01296 *20*; α(M)=0.00282 *5*

$^{153}_{64}Gd_{89}$-47

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	δ[&b]	α[a]	Comments
									α(N)=0.000648 *11*; α(O)=0.0001002 *18*; α(P)=6.6×10^{-6} *6* δ: From (α,3nγ).
1873.2	(25/2$^-$)	560.9 *2*	100 *7*	1312.30	(21/2$^-$)	E2		0.01037	α(K)=0.00851 *12*; α(L)=0.001454 *21*; α(M)=0.000321 *5* α(N)=7.33×10^{-5} *11*; α(O)=1.092×10^{-5} *16*; α(P)=5.76×10^{-7} *8*
1891.3	23/2$^-$	534.3 *5*	100	1357.0	19/2$^-$	(E2)		0.01174	α(K)=0.00960 *14*; α(L)=0.001673 *24*; α(M)=0.000370 *6* α(N)=8.44×10^{-5} *12*; α(O)=1.254×10^{-5} *18*; α(P)=6.47×10^{-7} *10*
1901.9	25/2$^-$	382.7 *10*	<11	1519.3	(21/2$^-$)				
		398.9 *10*	<11	1503.17	(21/2$^-$)	(E2)		0.0259	α(K)=0.0206 *4*; α(L)=0.00413 *7*; α(M)=0.000924 *15* α(N)=0.000210 *4*; α(O)=3.05×10^{-5} *5*; α(P)=1.347×10^{-6} *21*
		465.2 *5*	36 *4*	1436.52	(23/2$^+$)				
		707.1 *2*	100 *7*	1194.81	(25/2$^+$)	D,Q			Mult.: ΔJ=0 γ.
1944.0	(23/2$^+$)	481.1 *5*	100	1462.9	19/2$^+$	(E2)		0.01545	α(K)=0.01253 *18*; α(L)=0.00229 *4*; α(M)=0.000508 *8* α(N)=0.0001156 *17*; α(O)=1.705×10^{-5} *25*; α(P)=8.37×10^{-7} *12*
1979.4	(27/2$^+$)	234.1 *5*	10.7 *18*	1745.2	(29/2$^+$)	(M1+E2)		0.16 *3*	α(K)=0.13 *3*; α(L)=0.025 *3*; α(M)=0.0056 *8* α(N)=0.00128 *17*; α(O)=0.000187 *14*; α(P)=8.7×10^{-6} *30*
		543.1 *2*	100 *5*	1436.52	(23/2$^+$)	E2		0.01126	α(K)=0.00922 *13*; α(L)=0.001596 *23*; α(M)=0.000353 *5* α(N)=8.05×10^{-5} *12*; α(O)=1.196×10^{-5} *17*; α(P)=6.22×10^{-7} *9*
		784.5 *5*	23.2 *18*	1194.81	(25/2$^+$)	D,Q			Mult.: ΔJ=1 γ.
2038.5	25/2$^-$	519.2 *5*	44 *4*	1519.3	(21/2$^-$)	(E2)		0.01264	α(K)=0.01031 *15*; α(L)=0.00182 *3*; α(M)=0.000403 *6* α(N)=9.19×10^{-5} *14*; α(O)=1.362×10^{-5} *20*; α(P)=6.94×10^{-7} *10*
		535.3 *5*	100 *8*	1503.17	(21/2$^-$)	(E2)		0.01168	α(K)=0.00955 *14*; α(L)=0.001664 *24*; α(M)=0.000368 *6* α(N)=8.39×10^{-5} *12*; α(O)=1.247×10^{-5} *18*; α(P)=6.44×10^{-7} *10*
		843.7 *5*	64 *4*	1194.81	(25/2$^+$)	D,Q			Mult.: ΔJ=0 γ.
2073.2	(23/2$^-$)	254 *1*	100 *17*	1818.9	(21/2$^-$)				
		499 *1*	<83	1574.0	(19/2$^-$)				
		761 *1*	<83	1312.30	(21/2$^-$)				
2102.3	(27/2$^-$)	907.5 *2*	100	1194.81	(25/2$^+$)	D			
2131.5	(29/2$^+$)	503.5 *2*	100 *7*	1628.04	(25/2$^+$)	E2		0.01370	α(K)=0.01115 *16*; α(L)=0.00199 *3*; α(M)=0.000442 *7* α(N)=0.0001007 *15*; α(O)=1.489×10^{-5} *21*; α(P)=7.48×10^{-7} *11*
		937 *1*	5.4 *11*	1194.81	(25/2$^+$)				
2170.0	27/2$^-$	296.9 *5*	42 *3*	1873.2	(25/2$^-$)	(M1+E2)	−0.43 *+25−70*	0.093 *15*	α(K)=0.078 *15*; α(L)=0.01171 *22*; α(M)=0.00256 *5* α(N)=0.000587 *9*; α(O)=9.0×10^{-5} *4*; α(P)=5.7×10^{-6} *13* δ: From (α,3nγ).
		583.2 *2*	100 *6*	1586.76	(23/2$^-$)	E2		0.00940	α(K)=0.00774 *11*; α(L)=0.001303 *19*; α(M)=0.000287 *4* α(N)=6.56×10^{-5} *10*; α(O)=9.80×10^{-6} *14*; α(P)=5.25×10^{-7} *8*

$^{153}_{64}Gd_{89}$-48

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	α[a]	Comments
2330.6	(25/2$^-$)	257 *1*	100 *17*	2073.2	(23/2$^-$)			
		512 *1*	<83	1818.9	(21/2$^-$)			
		744 *1*	<83	1586.76	(23/2$^-$)			
2360.5	29/2$^-$	258.1 *10*	<23	2102.3	(27/2$^-$)			
		381.2 *5*	27 *5*	1979.4	(27/2$^+$)			
		458.5 *5*	95 *9*	1901.9	25/2$^-$	(E2)	0.0176	α(K)=0.01420 *21*; α(L)=0.00265 *4*; α(M)=0.000590 *9* α(N)=0.0001342 *20*; α(O)=1.97×10^{-5} *3*; α(P)=9.44×10^{-7} *14*
		614.8 *5*	100 *9*	1745.2	(29/2$^+$)			
2361.8	33/2$^+$	616.6 *2*	100	1745.2	(29/2$^+$)	E2	0.00820	α(K)=0.00677 *10*; α(L)=0.001117 *16*; α(M)=0.000246 *4* α(N)=5.62×10^{-5} *8*; α(O)=8.41×10^{-6} *12*; α(P)=4.61×10^{-7} *7*
2458.6	27/2$^-$	567.3 *5*	100	1891.3	23/2$^-$	E2	0.01008	α(K)=0.00828 *12*; α(L)=0.001408 *20*; α(M)=0.000311 *5* α(N)=7.10×10^{-5} *10*; α(O)=1.058×10^{-5} *15*; α(P)=5.61×10^{-7} *8*
2463.2	27/2$^+$	519.2 *5*	100	1944.0	(23/2$^+$)	(E2)	0.01264	α(K)=0.01031 *15*; α(L)=0.00182 *3*; α(M)=0.000403 *6* α(N)=9.19×10^{-5} *14*; α(O)=1.362×10^{-5} *20*; α(P)=6.94×10^{-7} *10*
2476.0	29/2$^-$	306.0 *5*	31 *8*	2170.0	27/2$^-$	(M1+E2)	0.074 *17*	α(K)=0.060 *17*; α(L)=0.0106 *4*; α(M)=0.00234 *4* α(N)=0.000534 *11*; α(O)=7.9×10^{-5} *5*; α(P)=4.2×10^{-6} *15*
		602.8 *5*	100 *8*	1873.2	(25/2$^-$)	E2	0.00866	α(K)=0.00714 *11*; α(L)=0.001188 *17*; α(M)=0.000262 *4* α(N)=5.98×10^{-5} *9*; α(O)=8.95×10^{-6} *13*; α(P)=4.86×10^{-7} *7*
2580.0	29/2$^-$	541.4 *5*	100 *12*	2038.5	25/2$^-$	E2	0.01135	α(K)=0.00929 *14*; α(L)=0.001610 *23*; α(M)=0.000356 *5* α(N)=8.12×10^{-5} *12*; α(O)=1.207×10^{-5} *18*; α(P)=6.27×10^{-7} *9*
		834.8 *5*	56 *6*	1745.2	(29/2$^+$)	D,Q		Mult.: ΔJ=0 γ.
2595.1	(31/2$^+$)	616.3 *5*	48 *4*	1979.4	(27/2$^+$)	E2	0.00821	α(K)=0.00678 *10*; α(L)=0.001118 *16*; α(M)=0.000246 *4* α(N)=5.62×10^{-5} *8*; α(O)=8.42×10^{-6} *12*; α(P)=4.62×10^{-7} *7*
		849.7 *2*	100 *4*	1745.2	(29/2$^+$)	D(+Q)		
2716.7	(33/2$^+$)	585.2 *2*	100	2131.5	(29/2$^+$)	E2	0.00932	α(K)=0.00767 *11*; α(L)=0.001290 *19*; α(M)=0.000285 *4* α(N)=6.50×10^{-5} *10*; α(O)=9.70×10^{-6} *14*; α(P)=5.21×10^{-7} *8*
2789.7	31/2$^-$	313.8 *10*	29 *7*	2476.0	29/2$^-$			
		619.7 *5*	100 *7*	2170.0	27/2$^-$	E2	0.00810	α(K)=0.00669 *10*; α(L)=0.001101 *16*; α(M)=0.000243 *4* α(N)=5.54×10^{-5} *8*; α(O)=8.30×10^{-6} *12*; α(P)=4.56×10^{-7} *7*
2883.9	33/2$^-$	522.4 *5*	37 *11*	2361.8	33/2$^+$	D,Q		
		523.2 *5*	100 *11*	2360.5	29/2$^-$	E2	0.01239	α(K)=0.01012 *15*; α(L)=0.00178 *3*; α(M)=0.000394 *6* α(N)=8.98×10^{-5} *13*; α(O)=1.332×10^{-5} *19*; α(P)=6.81×10^{-7} *10*
3018.2	(31/2$^+$)	555 *1*	100	2463.2	27/2$^+$			
3030.2	37/2$^+$	668.4 *5*	100	2361.8	33/2$^+$	E2	0.00675	α(K)=0.00560 *8*; α(L)=0.000899 *13*; α(M)=0.000197 *3* α(N)=4.51×10^{-5} *7*; α(O)=6.79×10^{-6} *10*; α(P)=3.83×10^{-7} *6*
3049.6	(31/2$^-$)	591 *1*	100	2458.6	27/2$^-$			
3109.4	(33/2$^-$)	319.5 *10*	<71	2789.7	31/2$^-$			
		633.5 *5*	100 *29*	2476.0	29/2$^-$			
3125.4	(33/2$^-$)	545.4 *5*	100 *17*	2580.0	29/2$^-$			
		763.7 *10*	<83	2361.8	33/2$^+$			
3158.8	(33/2$^-$)	797 *1*	100	2361.8	33/2$^+$			
3275.6	(35/2$^+$)	680.5 *10*	100	2595.1	(31/2$^+$)			

$^{153}_{64}Gd_{89}$-49

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π	Mult.[@]	α[a]	Comments
3367.7	(37/2$^+$)	650.9 *5*	100	2716.7	(33/2$^+$)	(E2)	0.00719	α(K)=0.00596 *9*; α(L)=0.000964 *14*; α(M)=0.000212 *3* α(N)=4.84×10^{-5} *7*; α(O)=7.28×10^{-6} *11*; α(P)=4.07×10^{-7} *6*
3427.0	(35/2$^-$)	317.6 *10*	<125	3109.4	(33/2$^-$)			
		637.3 *10*	100 *25*	2789.7	31/2$^-$			
3470.2	(37/2$^-$)	586.3 *5*	100	2883.9	33/2$^-$	(E2)	0.00928	α(K)=0.00764 *11*; α(L)=0.001284 *19*; α(M)=0.000283 *4* α(N)=6.46×10^{-5} *10*; α(O)=9.65×10^{-6} *14*; α(P)=5.19×10^{-7} *8*
3742.8	(41/2$^+$)	712.6 *10*	100	3030.2	37/2$^+$	(E2)	0.00580	α(K)=0.00483 *7*; α(L)=0.000760 *11*; α(M)=0.0001667 *25* α(N)=3.81×10^{-5} *6*; α(O)=5.76×10^{-6} *9*; α(P)=3.32×10^{-7} *5*
4044.0	(41/2$^+$)	676.3 *10*	100	3367.7	(37/2$^+$)			
4123.2	(41/2$^-$)	653 *1*	100	3470.2	(37/2$^-$)			
4497.8	(45/2$^+$)	755 *1*	100	3742.8	(41/2$^+$)			
4732.0	(45/2$^+$)	688 *1*	100	4044.0	(41/2$^+$)			
4840.2	(45/2$^-$)	717 *1*	100	4123.2	(41/2$^-$)			
5296.8	(49/2$^+$)	799 *1*	100	4497.8	(45/2$^+$)			
5456.0	(49/2$^+$)	724 *1*	100	4732.0	(45/2$^+$)			
6143.8	(53/2$^+$)	847 *1*	100	5296.8	(49/2$^+$)			
6230.0	(53/2$^+$)	774 *1*	100	5456.0	(49/2$^+$)			
(6247.07)	1/2$^+$	4525.1 *2*	29.6 *11*	1721.70	(1/2,3/2)$^+$			
		4744.0 *3*	4.9 *3*	1503.0	(1/2,3/2)			
		4762.1 *4*	10.6 *5*	1484.9	(1/2,3/2)			
		4796.2 *5*	2.5 *5*	1450.33	(1/2,3/2)$^-$			
		4861.9 *5*	7.8 *8*	1384.54	(1/2,3/2)			
		4883.9 *3*	7.5 *7*	1363.58	(1/2,3/2)$^-$			
		4892.8 *3*	5.8 *6*	1353.52	(3/2)$^-$			
		4909.1 *2*	28.1 *6*	1337.97	1/2$^-$,3/2$^-$			
		4932.4 *3*	7.0 *6*	1314.57	(1/2,3/2)			
		4953.1 *2*	42.3 *5*	1293.89	(1/2,3/2)			
		4972.1 *11*	1.5 *5*	1272.72	5/2$^+$			
		4978.6 *5*	3.5 *7*	1268.202	3/2$^-$			
		4995.7 *6*	5.5 *8*	1252.146	(1/2,3/2)$^-$			
		4998.9 *6*	2.9 *6*	1247.515	(3/2,5/2,7/2)$^+$			
		5026.2 *6*	2.5 *3*	1220.80	(3/2,5/2,7/2)			
		5074.42 *19*	7.5 *3*	1172.620	(1/2,3/2,5/2)$^-$			
		5084.2 *6*	4.8 *8*	1163.71?	(3/2)$^+$			
		5089.0 *5*	5.7 *8*	1157.42	(5/2)$^-$			
		5122.55 *17*	9.4 *5*	1124.227	(3/2,5/2)$^-$			
		5128.0 *3*	3.3 *3*	1118.34	(3/2$^-$,5/2)			
		5144.6 *4*	4.0 *5*	1102.765	(3/2,5/2,7/2)$^-$			
		5192.2 *2*	81.0 *8*	1054.723	3/2$^-$			
		5207.3 *3*	8.9 *6*	1040.47	(1/2,3/2,5/2)$^-$			
		5231.3 *8*	3.9 *10*	1015.24	(1/2,3/2)$^+$			
		5256.3 *9*	2.3 *7*	990.155	(3/2$^+$)			
		5285.0 *6*	2.6 *3*	962.035	(1/2,3/2,5/2)$^-$			

$^{153}_{64}Gd_{89}$-50

Adopted Levels, Gammas (continued)

γ(^{153}Gd) (continued)

E_i(level)	J_i^π	E_γ[†‡#]	I_γ	E_f	J_f^π
(6247.07)	1/2$^+$	5301.9 *2*	12.5 *5*	945.252	3/2$^+$
		5352.6 *6*	2.9 *5*	894.615	(1/2,3/2,5/2)$^+$
		5361.6 *5*	5.8 *8*	885.910	3/2$^-$
		5389.7 *3*	15.1 *8*	857.613	3/2$^-$
		5426.4 *4*	6.4 *7*	821.306	5/2$^+$
		5434.4 *4*	3.2 *3*	812.643	(5/2$^-$)
		5457.0 *5*	1.9 *2*	791.016	(3/2$^+$)
		5464.1 *4*	3.3 *3*	782.6734	3/2$^+$
		5517.2 *5*	2.5 *3*	729.208	(1/2$^-$,3/2$^-$)
		5537.6 *4*	7.4 *6*	708.9637	3/2$^+$
		5562.5 *5*	4.3 *3*	683.9572	3/2$^-$
		5569.7 *8*	1.5 *3*	676.725	(1/2,3/2,5/2)$^+$
		5582.8 *4*	4.9 *5*	664.3263	(1/2,3/2)$^-$
		5639.2 *5*	2.2 *3*	607.203	5/2$^-$
		5669.0 *9*	2.7 *5*	579.126	(7/2)$^-$
(6247.07)	1/2$^+$	5696.1 *6*	1.8 *2*	551.093	(5/2$^-$)
		5716.0 *5*	4.1 *5*	530.4604	3/2$^-$
		5738.6 *2*	29.7 *6*	508.6645	3/2$^-$
		5763.9 *3*	11.8 *6*	482.9366	1/2$^+$
		5810.9 *3*	16.6 *10*	436.2716	1/2$^-$
		5833.3 *4*	4.1 *3*	412.8950	3/2$^+$
		5885.5 *2*	26.6 *6*	361.6512	3/2$^-$
		5919.1 *2*	20.7 *10*	327.8529	1/2$^+$
		5931.8 *2*	40.8 *8*	315.1995	1/2$^-$
		5943.6 *4*	4.1 *3*	303.5433	5/2$^+$
		6034.5 *4*	5.0 *3*	212.0082	3/2$^+$
		6138.0 *5*	2.1 *2*	109.7563	(5/2)$^-$
		6246.89 *7*	100.0 *10*	0.0	3/2$^-$
7033.8	(57/2$^+$)	890 *1*	100	6143.8	(53/2$^+$)

† From ^{152}Gd(n,γ) and ^{153}Tb ε decay if given there, or from ^{152}Sm(α,3nγ). Fewer values are from ^{154}Gd(p,dγ) and from ^{150}Sm(α,nγ).

‡ Many γ-ray energies were reported with very high precison that led to multiple situations for which Eγ value differs from ΔE_{levels} value by three or more times σ.

Additional information 1.

@ Mainly from data from ^{153}Tb ε decay and ^{152}Gd(n,γ). There are many cases for which conversion-electron data exist, but where the electron and/or γ lines are multiplets. Other assignments are from γ(θ) in ^{152}Sm(α,3nγ). Without extra notice transitions are stretched.

& From ^{153}Tb ε decay, primarily 1983Pr07, if not specifically noted.

a Additional information 2.

b If No value given it was assumed δ=1.00 for E2/M1, δ=1.00 for E3/M2 and δ=0.10 for the other multipolarities.

c Multiply placed with undivided intensity.

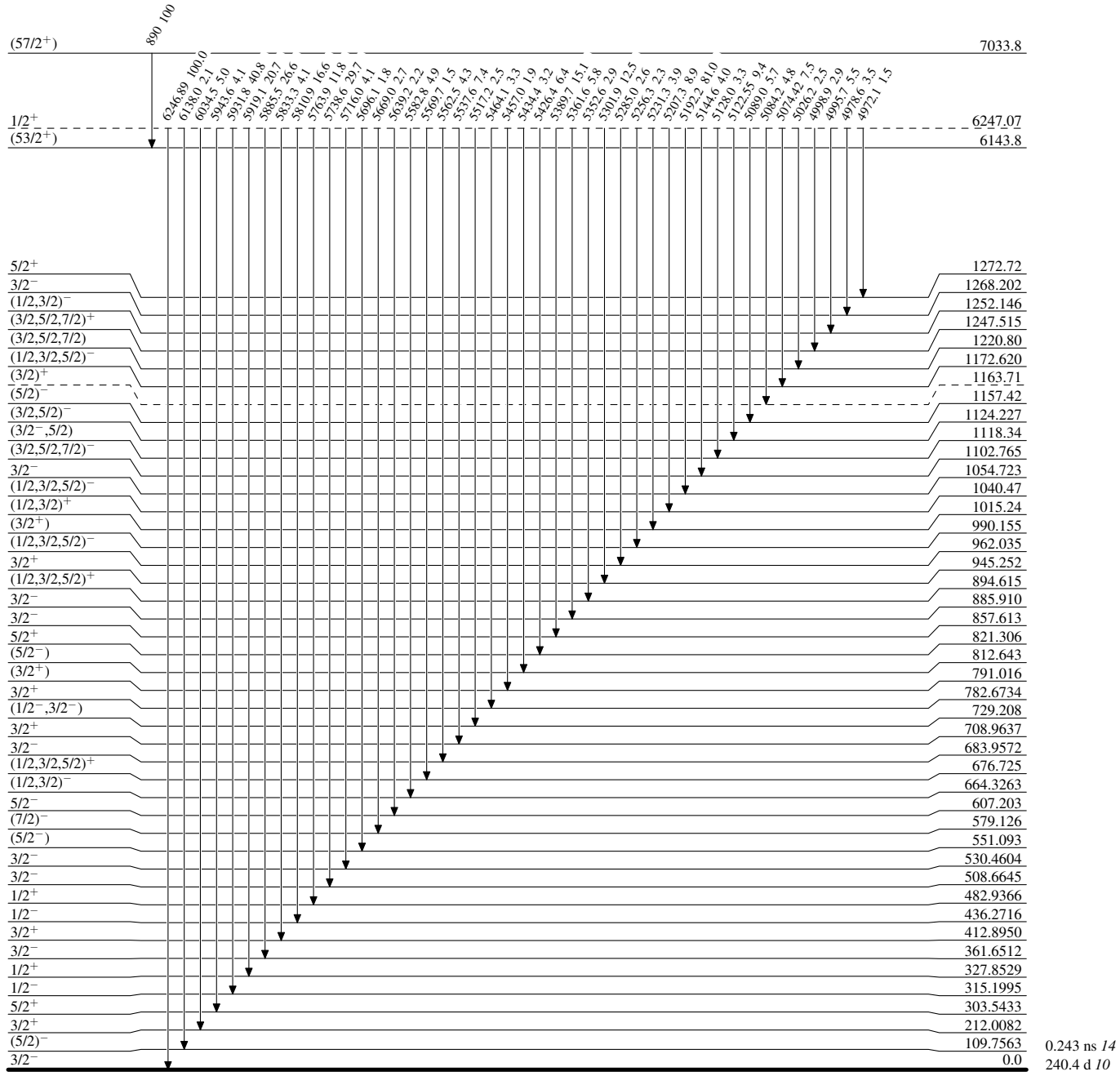
d Placement of transition in the level scheme is uncertain.

$^{153}_{64}Gd_{89}$-51

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

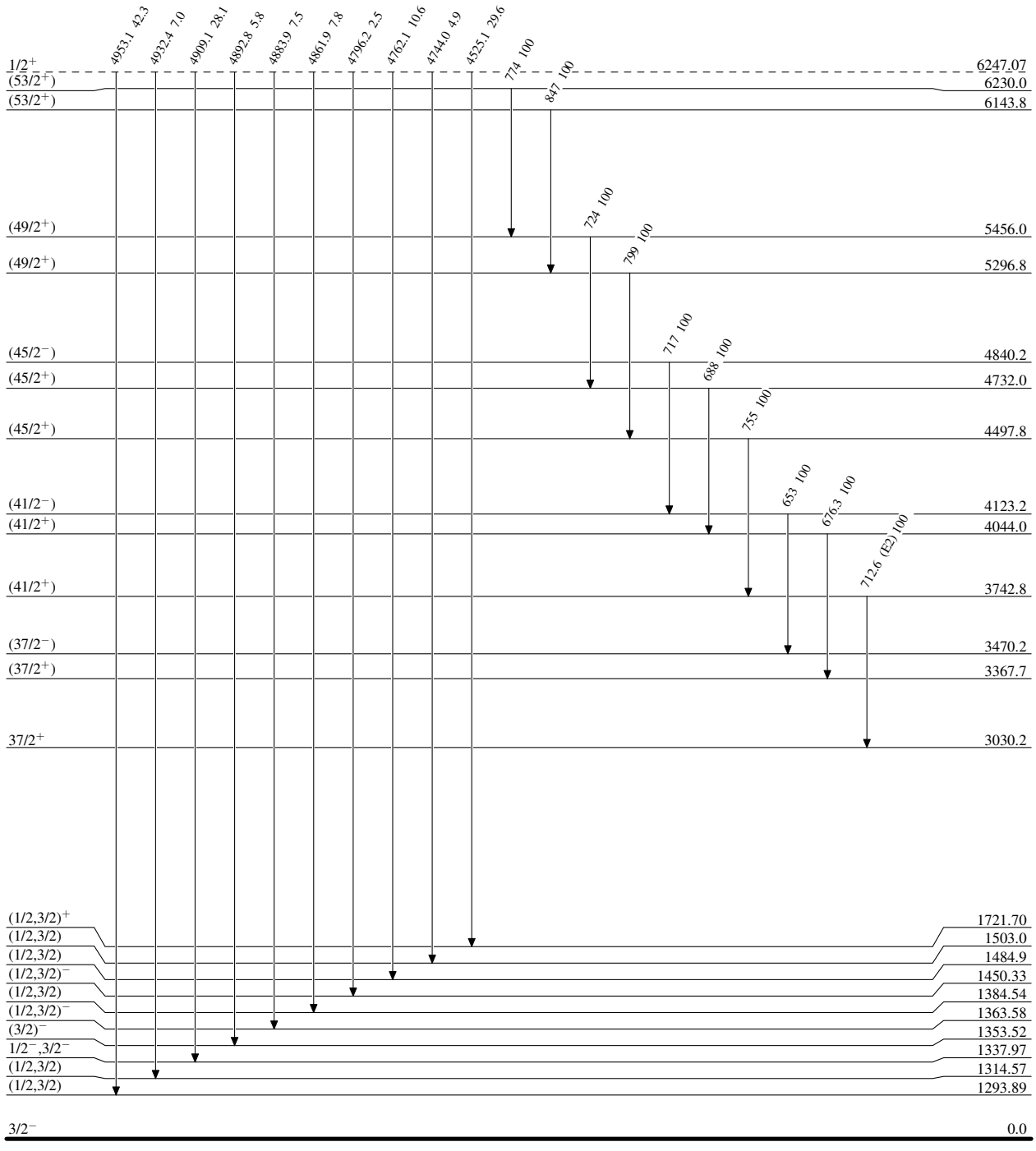


$^{153}_{64}Gd_{89}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

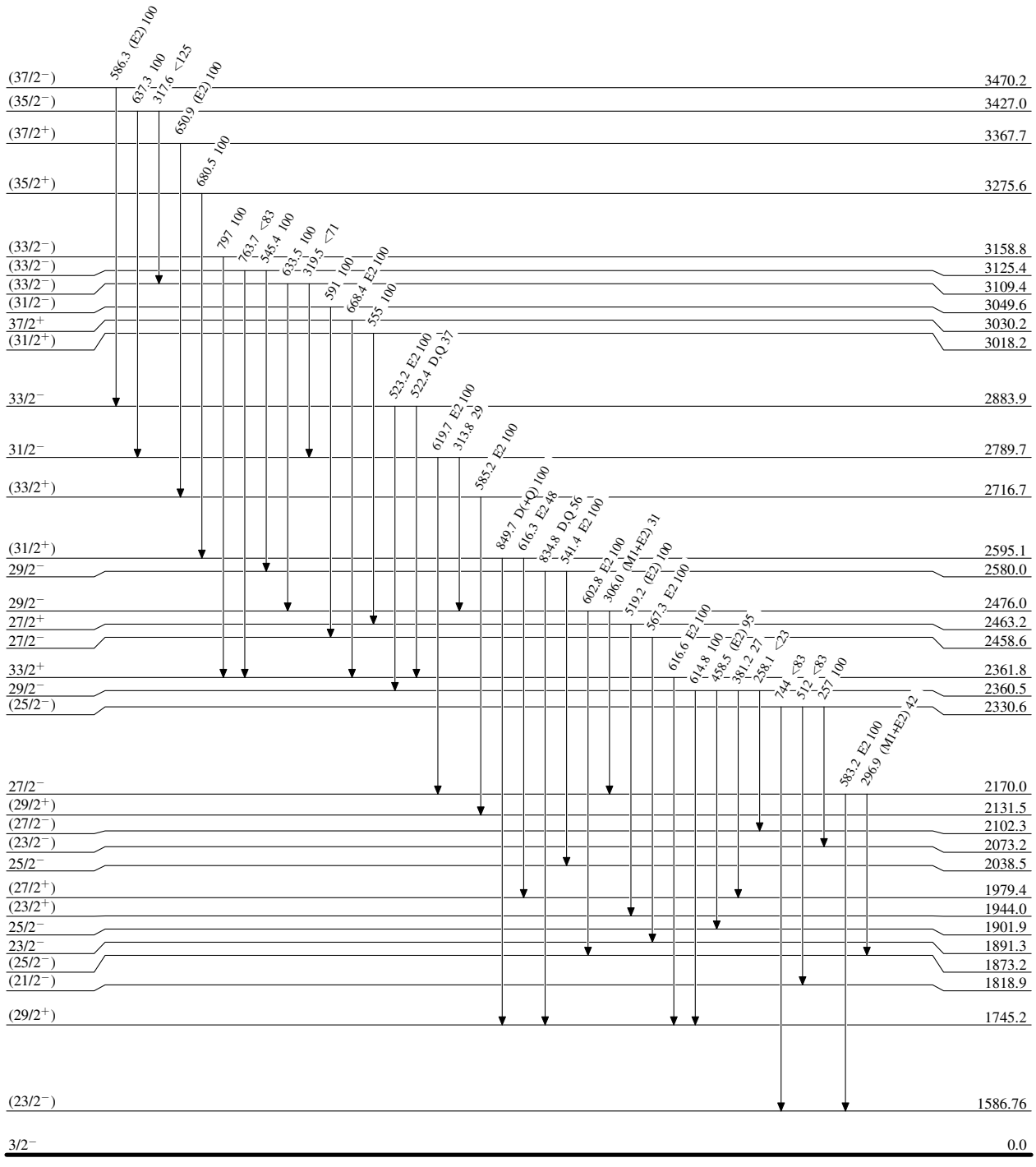


$^{153}_{64}Gd_{89}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{153}_{64}Gd_{89}$

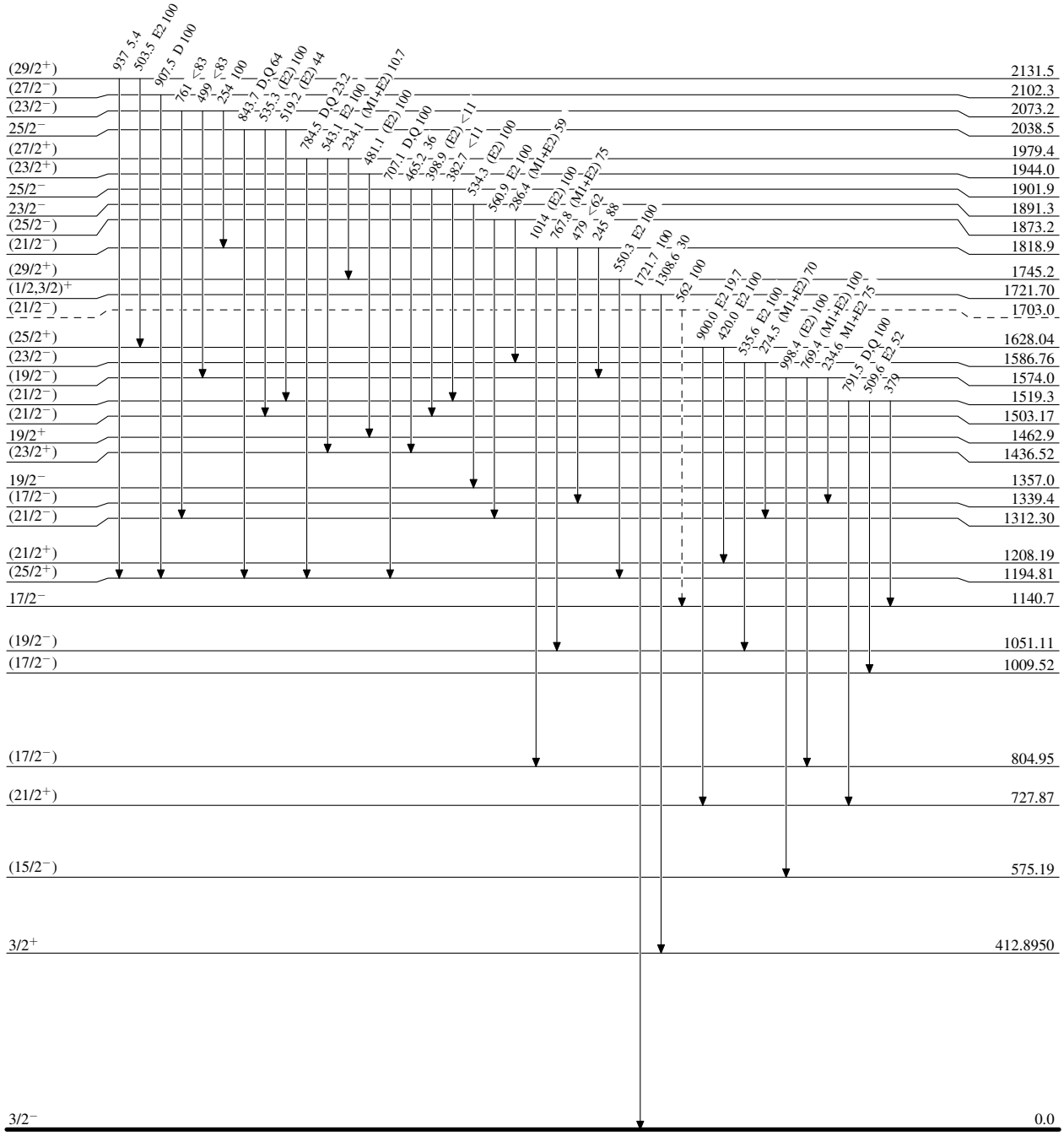
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

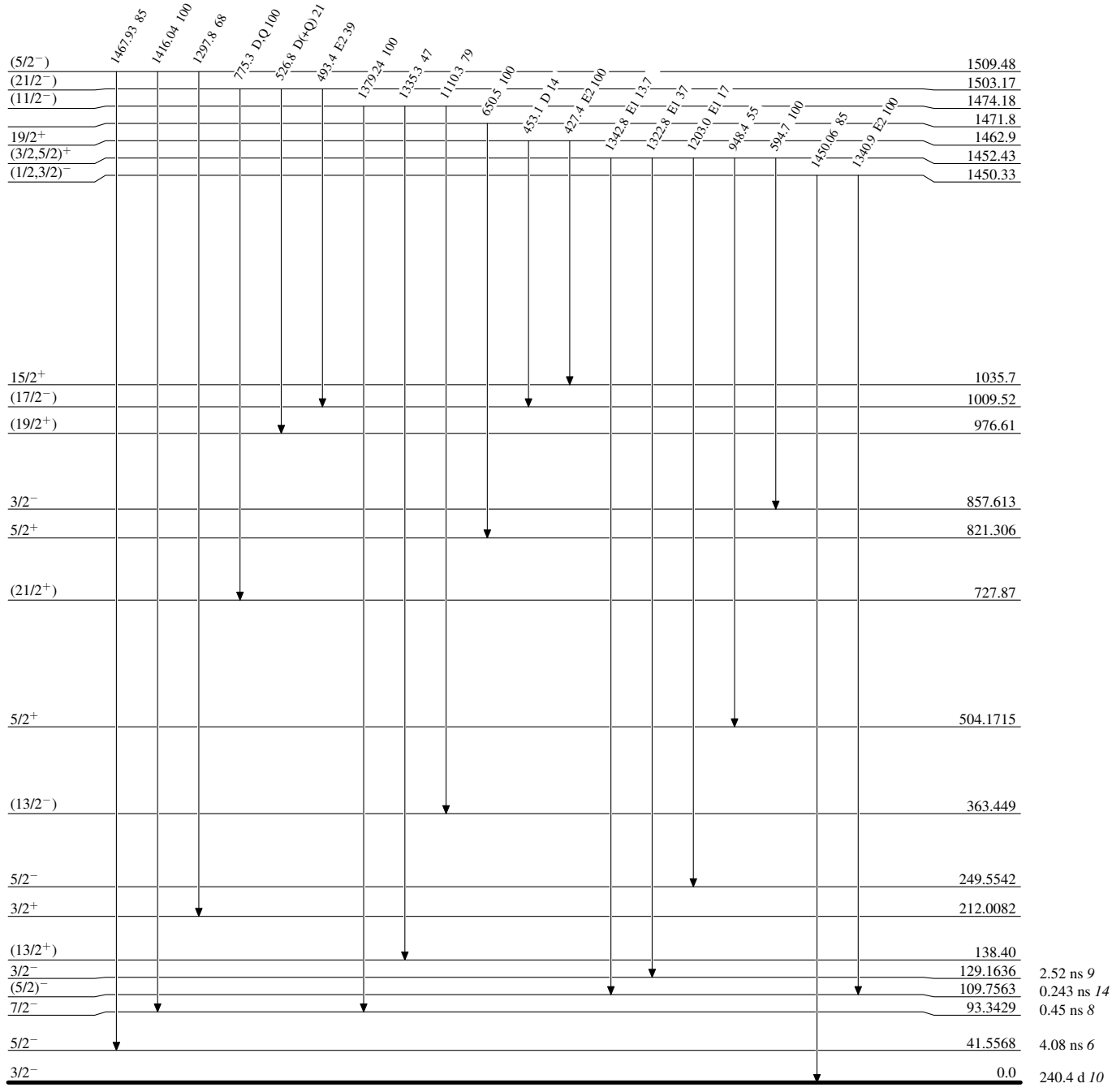


$^{153}_{64}Gd_{89}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



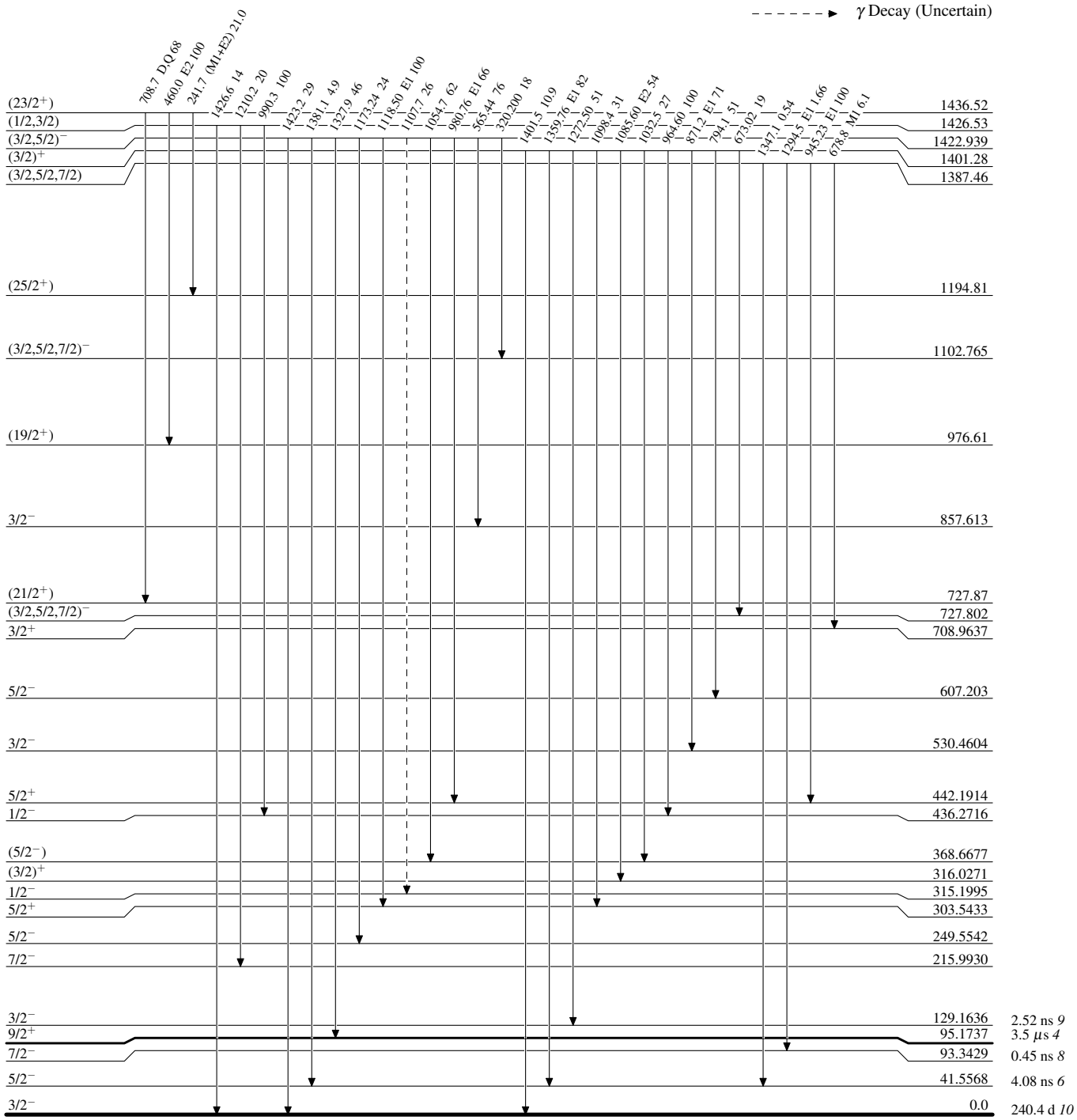
$^{153}_{64}Gd_{89}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{153}_{64}Gd_{89}$

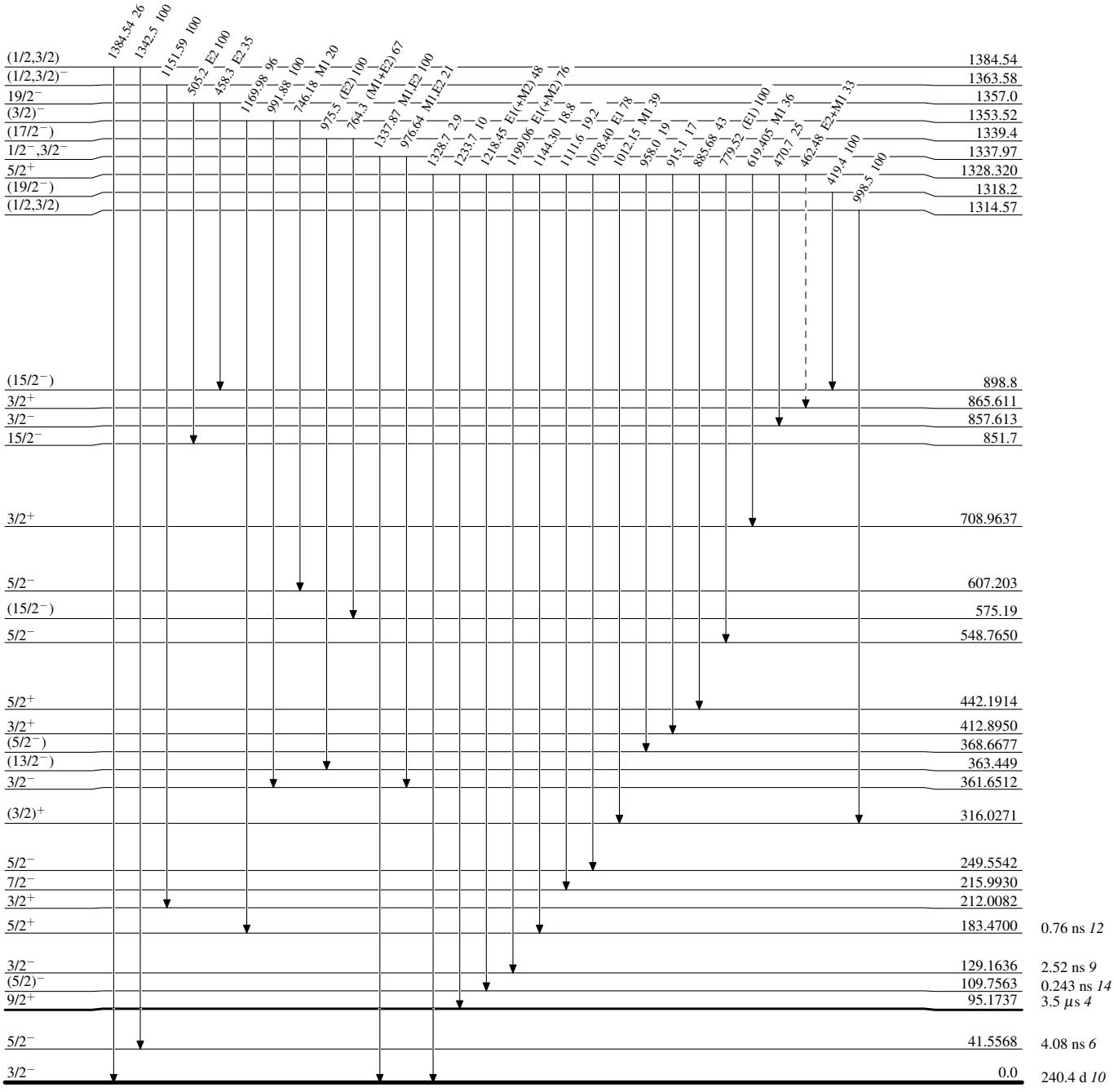
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

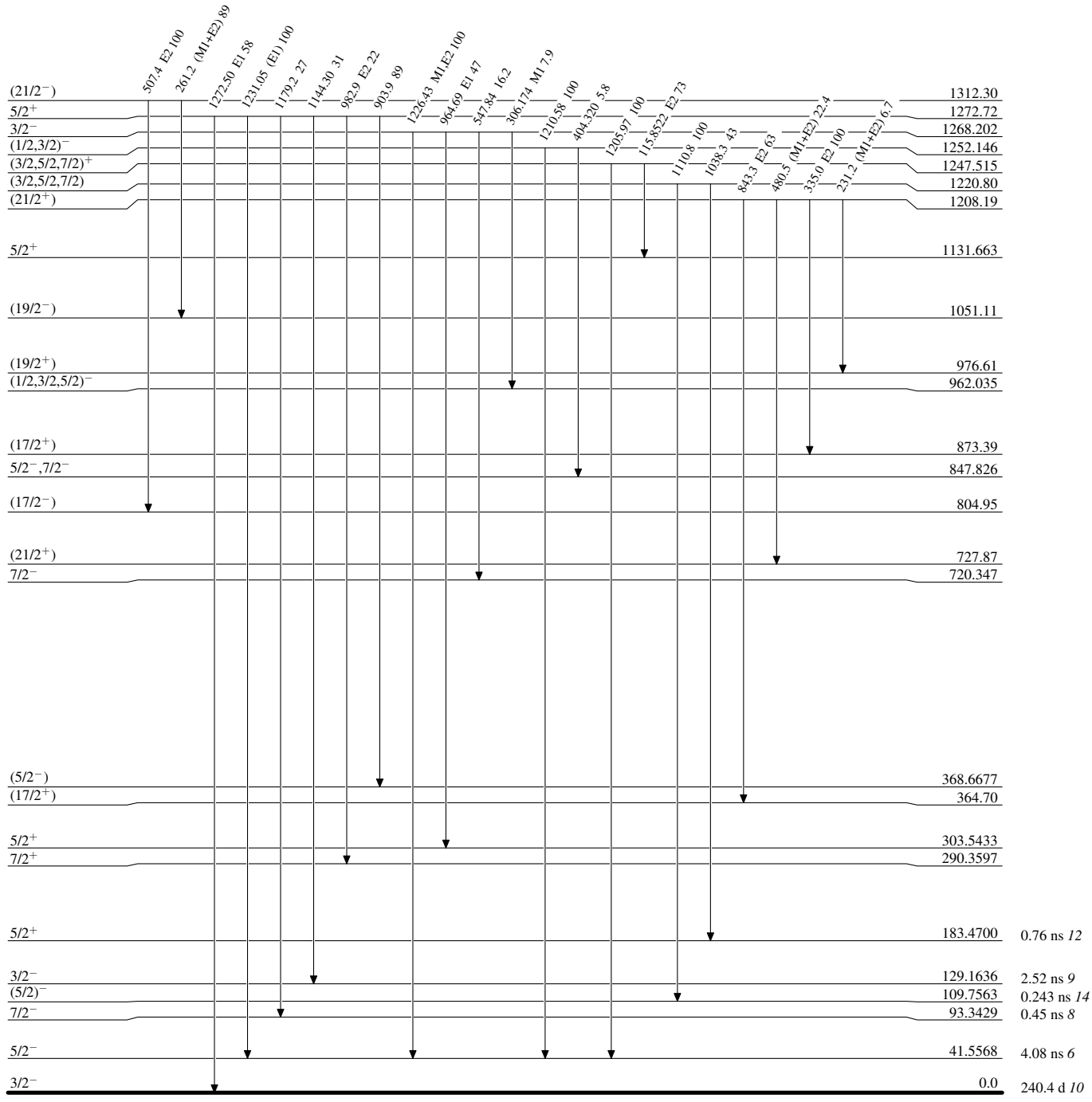


$^{153}_{64}Gd_{89}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



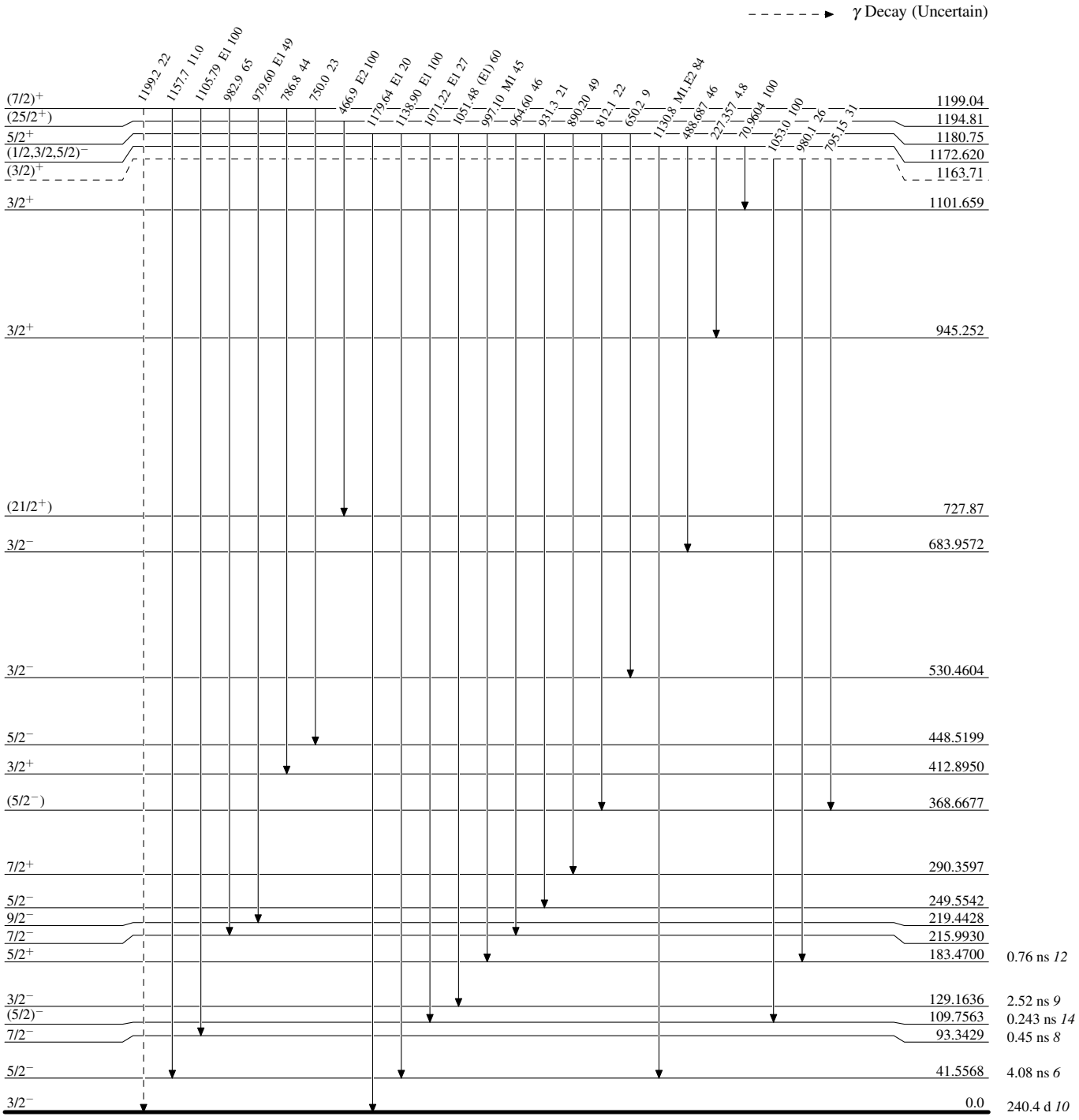
$^{153}_{64}Gd_{89}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

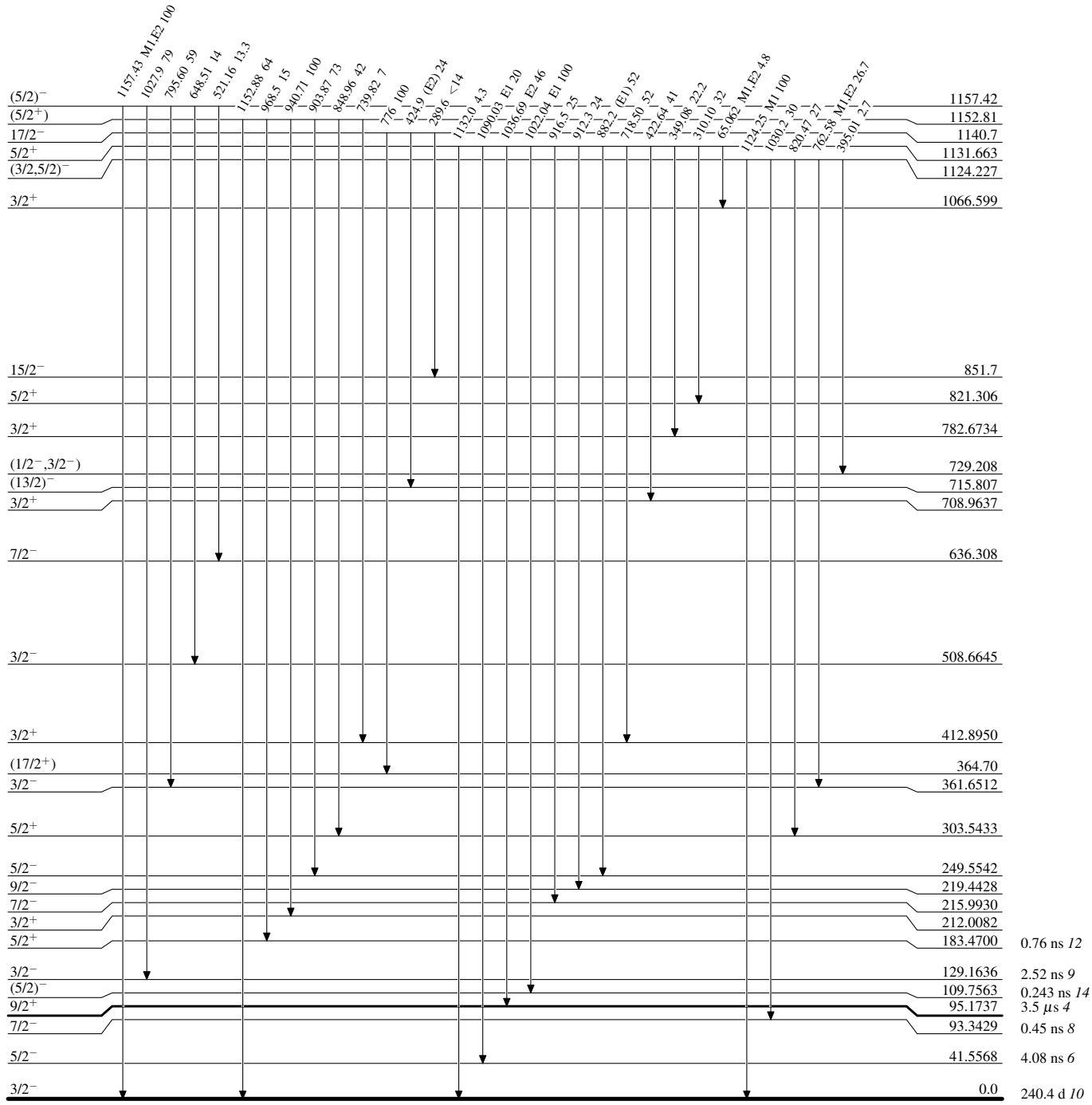


$^{153}_{64}Gd_{89}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{153}_{64}Gd_{89}$

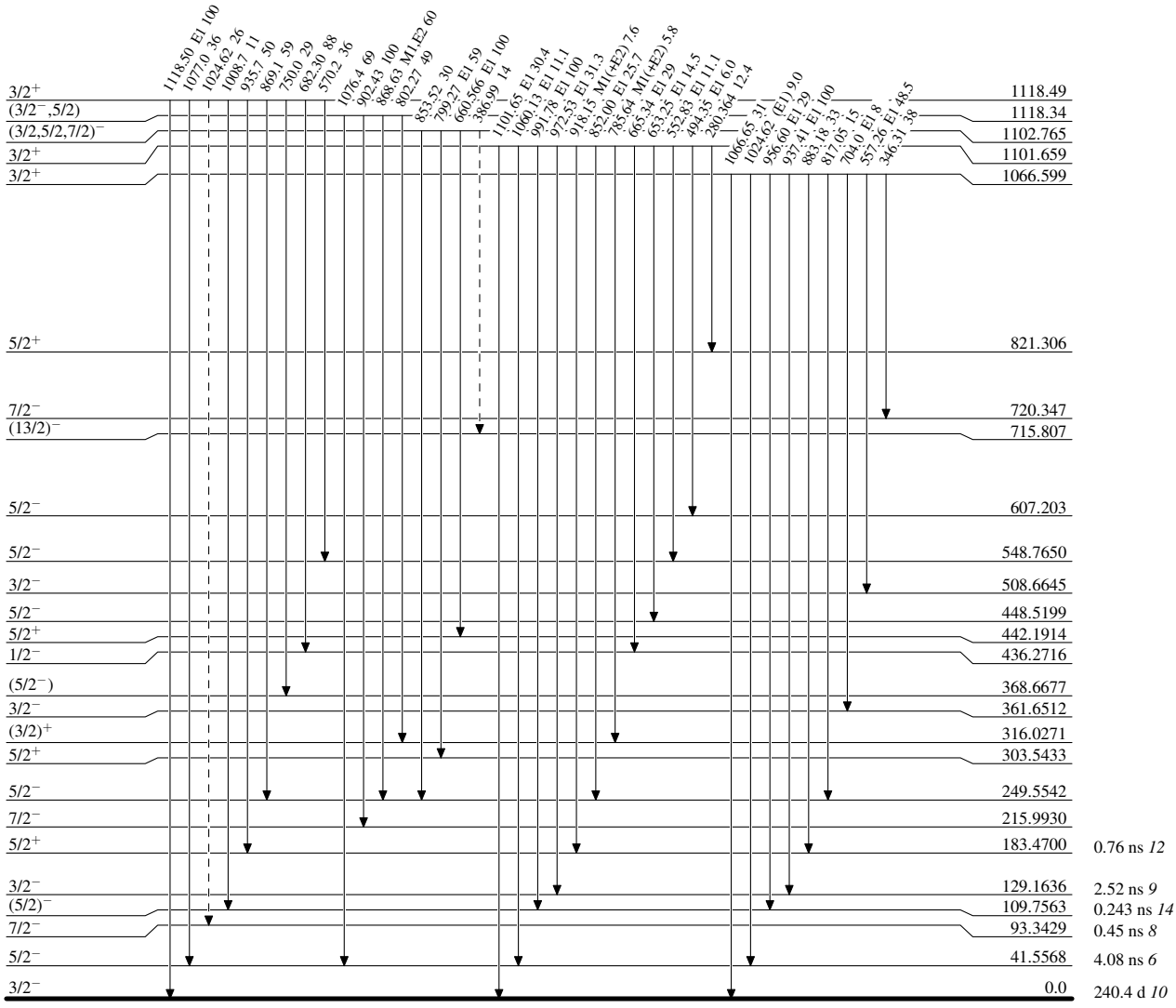
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)

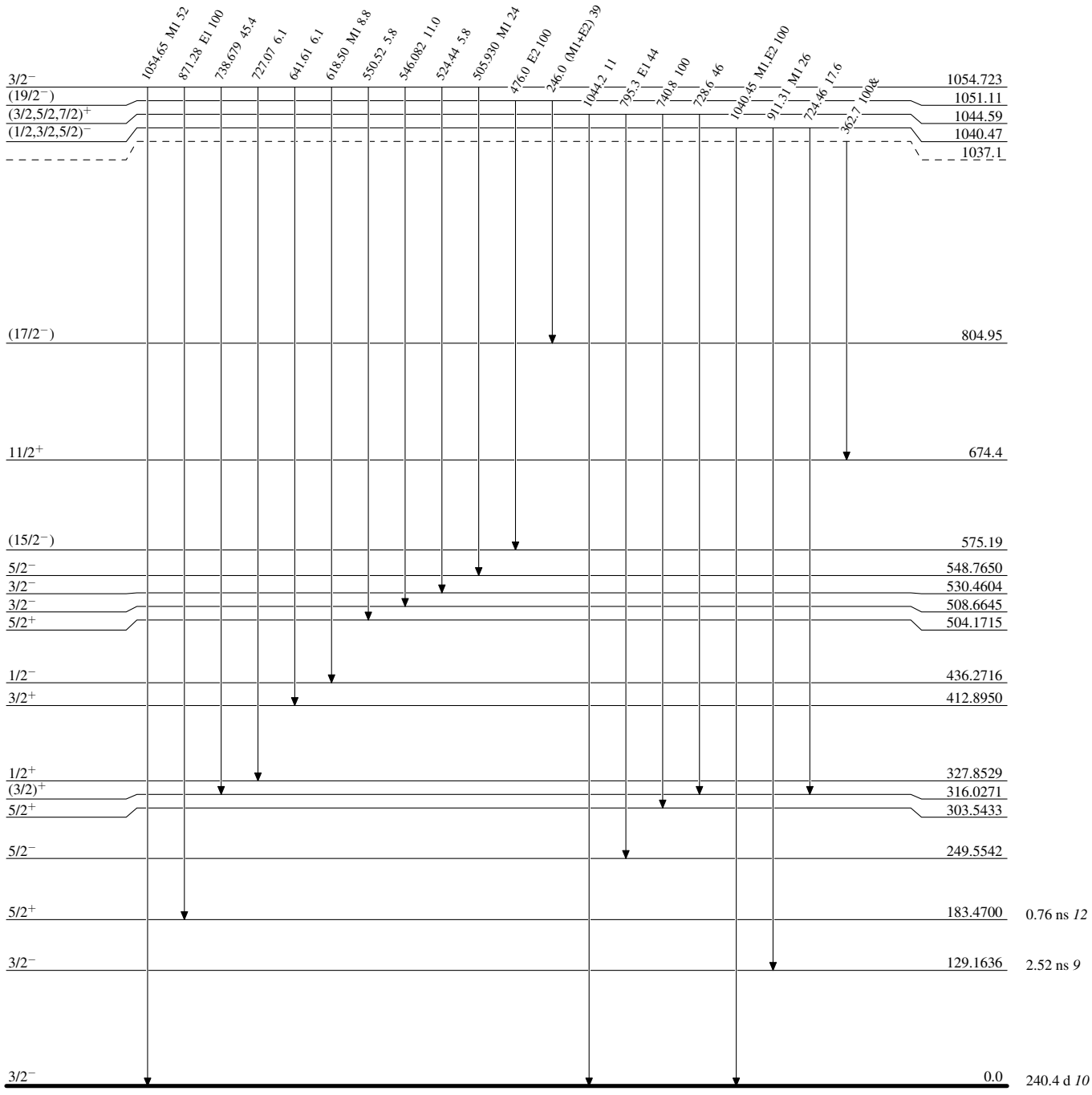


$^{153}_{64}Gd_{89}$

Adopted Levels, Gammas

Level Scheme (continued)

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

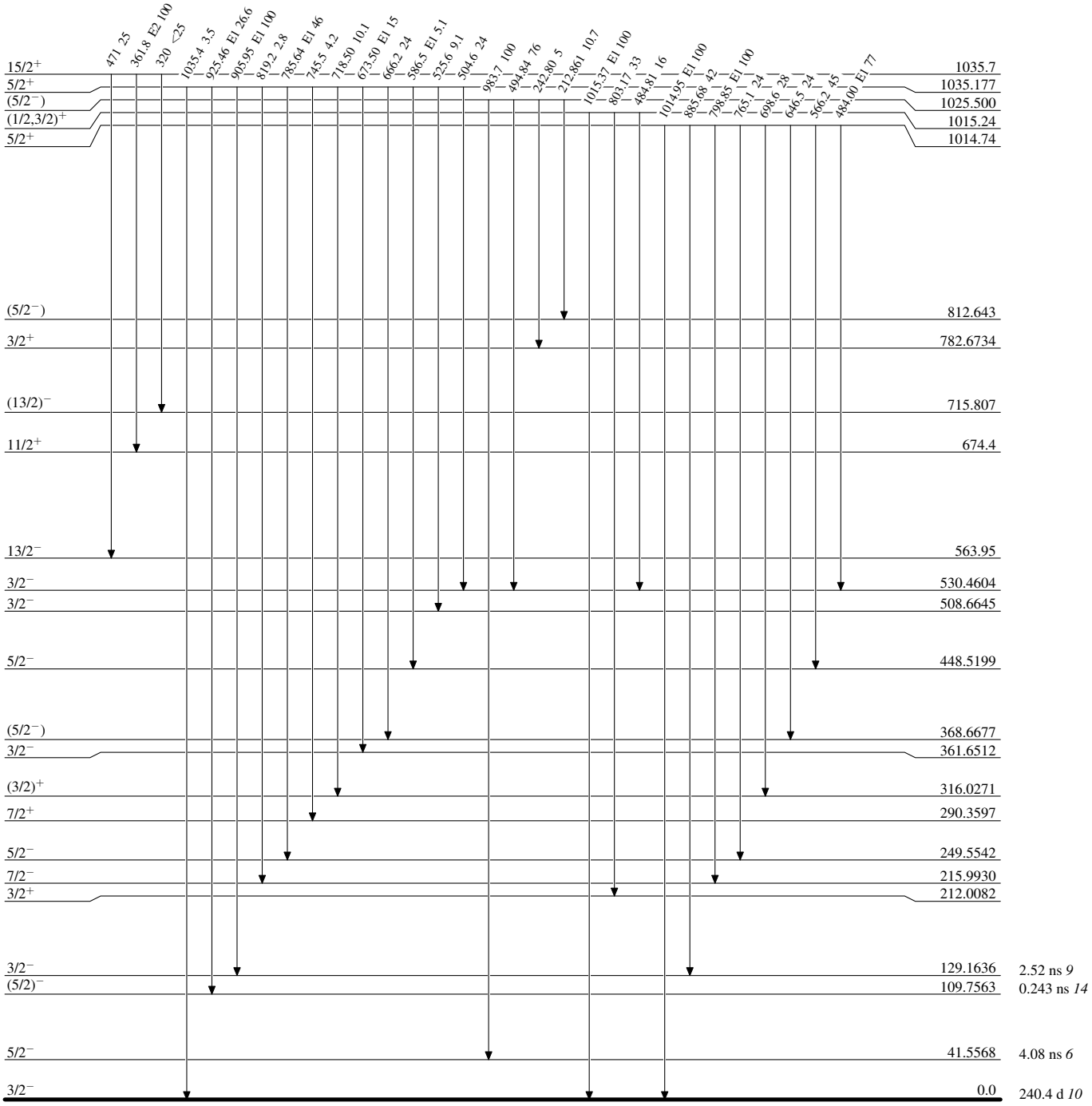


$^{153}_{64}Gd_{89}$

Adopted Levels, Gammas

Level Scheme (continued)

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

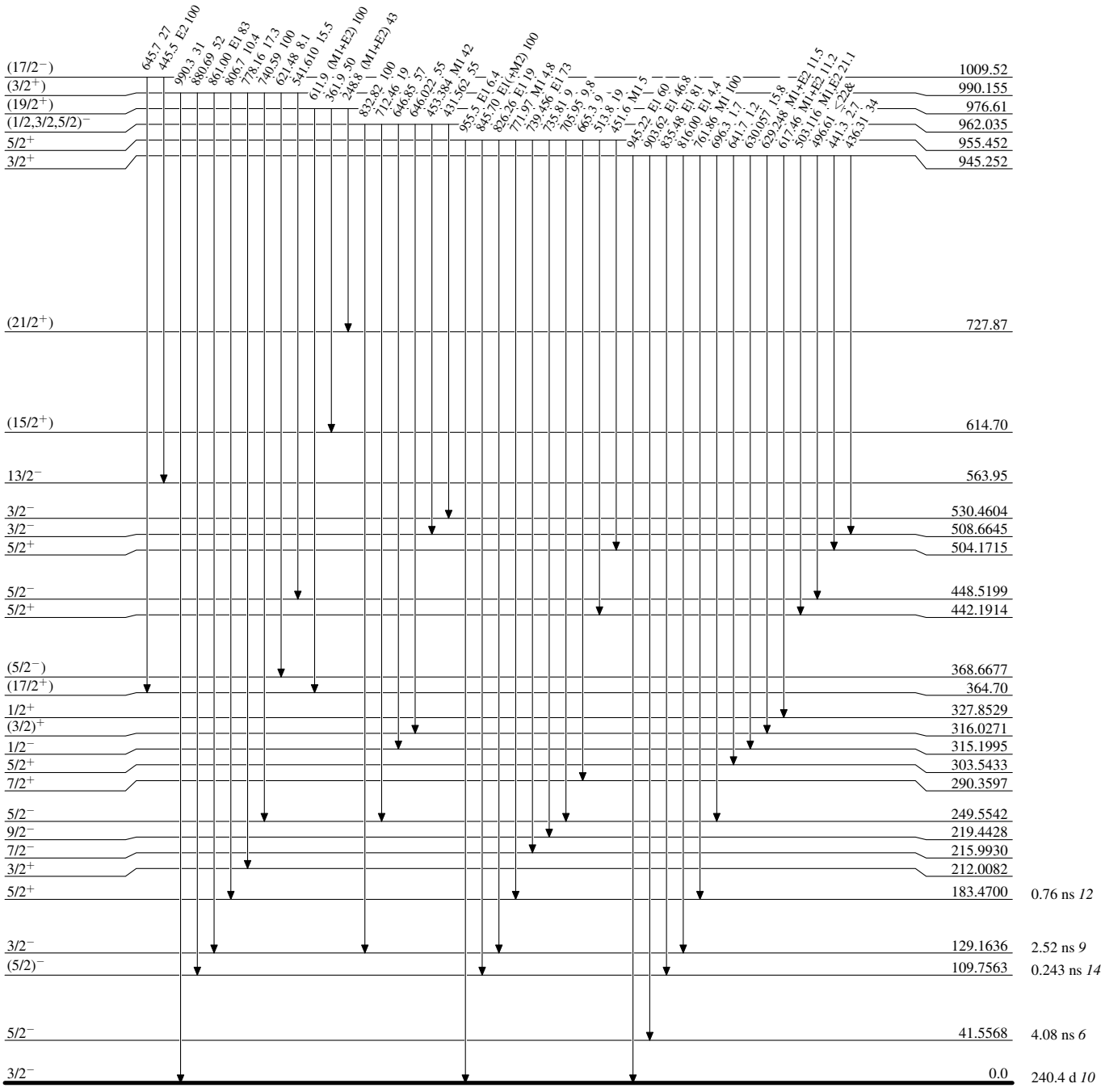


$^{153}_{64}Gd_{89}$

Adopted Levels, Gammas

Level Scheme (continued)

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

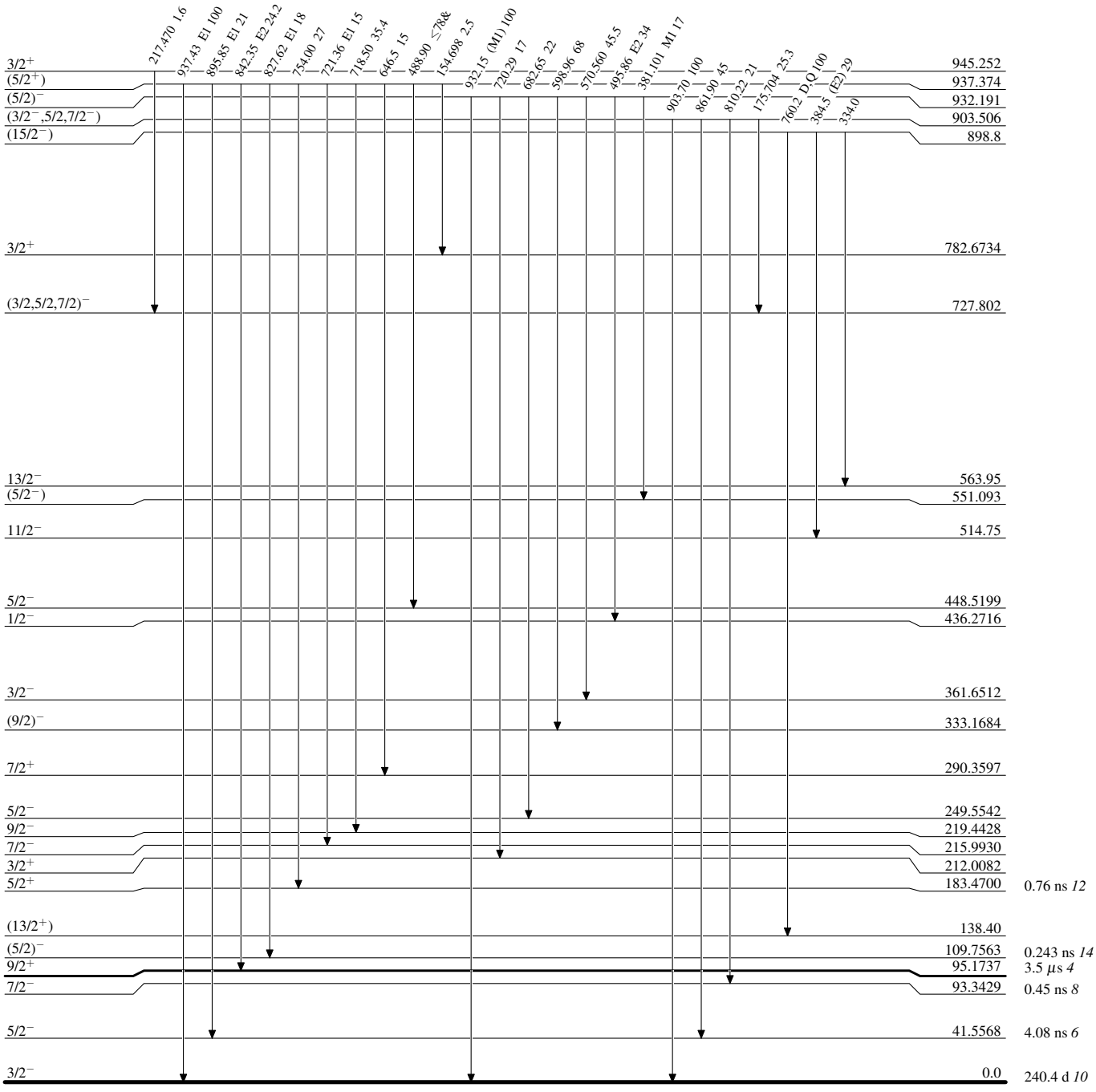


$^{153}_{64}Gd_{89}$

Adopted Levels, Gammas

Level Scheme (continued)

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

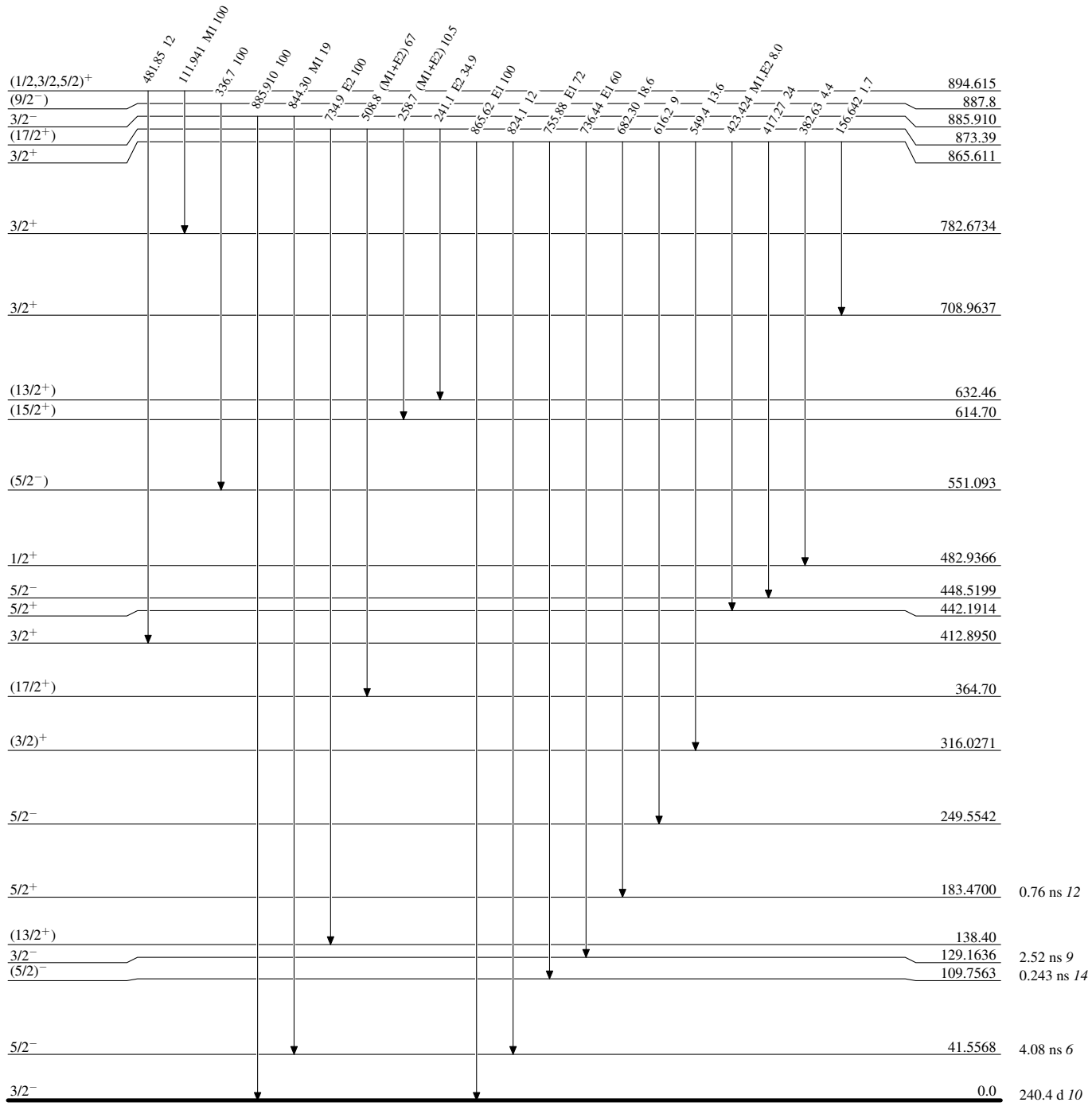


$^{153}_{64}Gd_{89}$

Adopted Levels, Gammas

Level Scheme (continued)

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

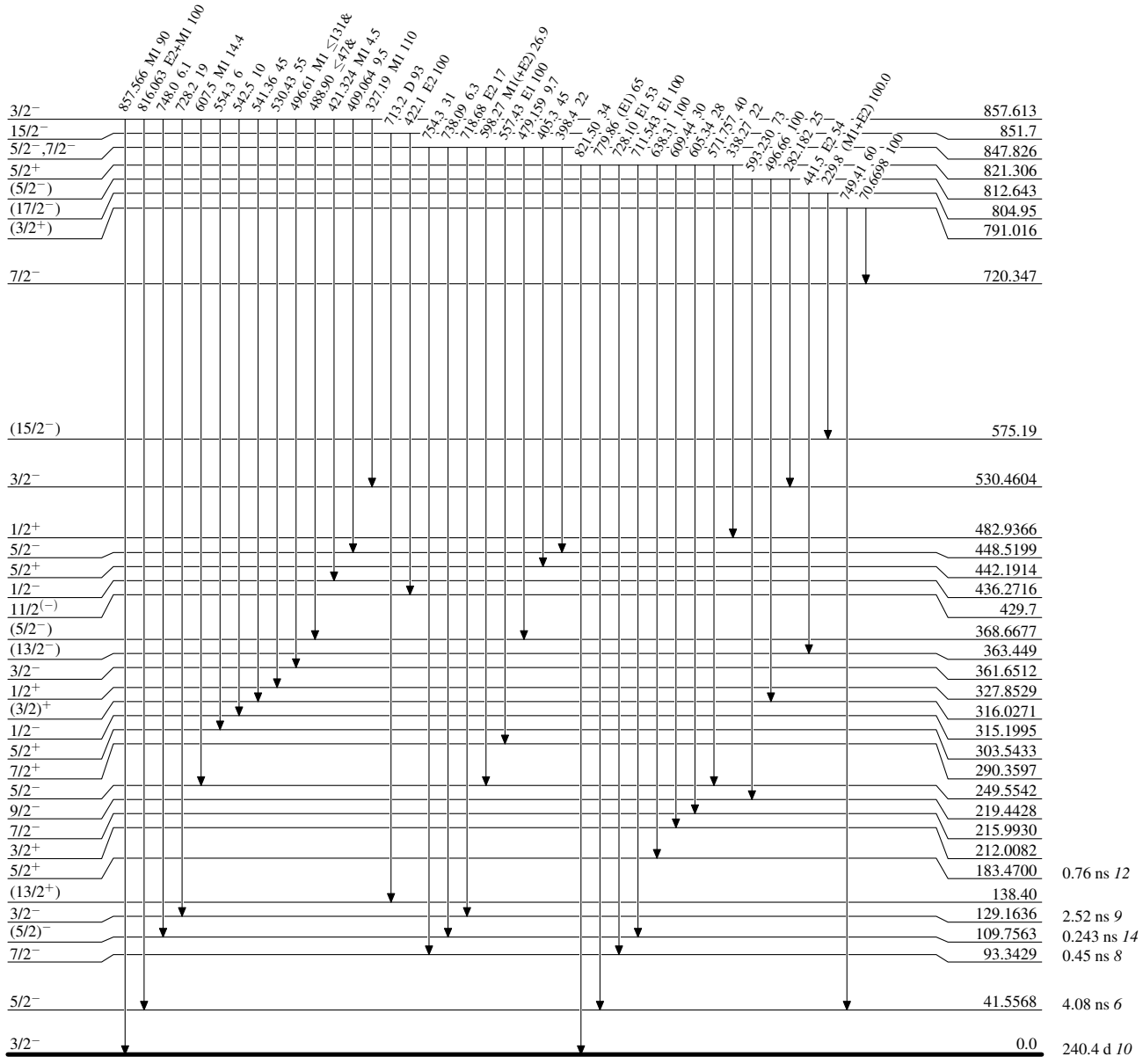


$^{153}_{64}Gd_{89}$

Adopted Levels, Gammas

Level Scheme (continued)

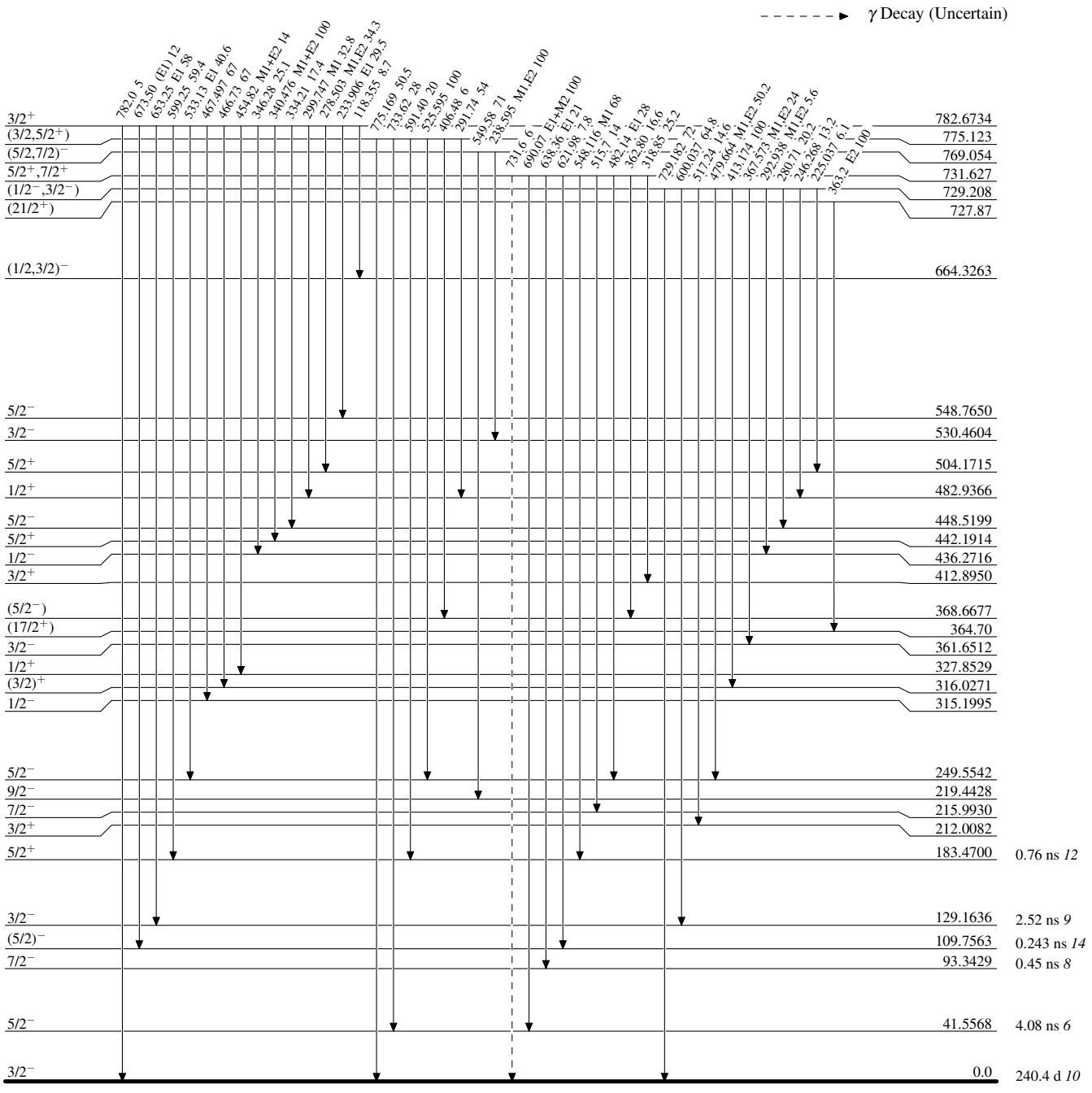
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



Adopted Levels, Gammas

Level Scheme (continued)

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



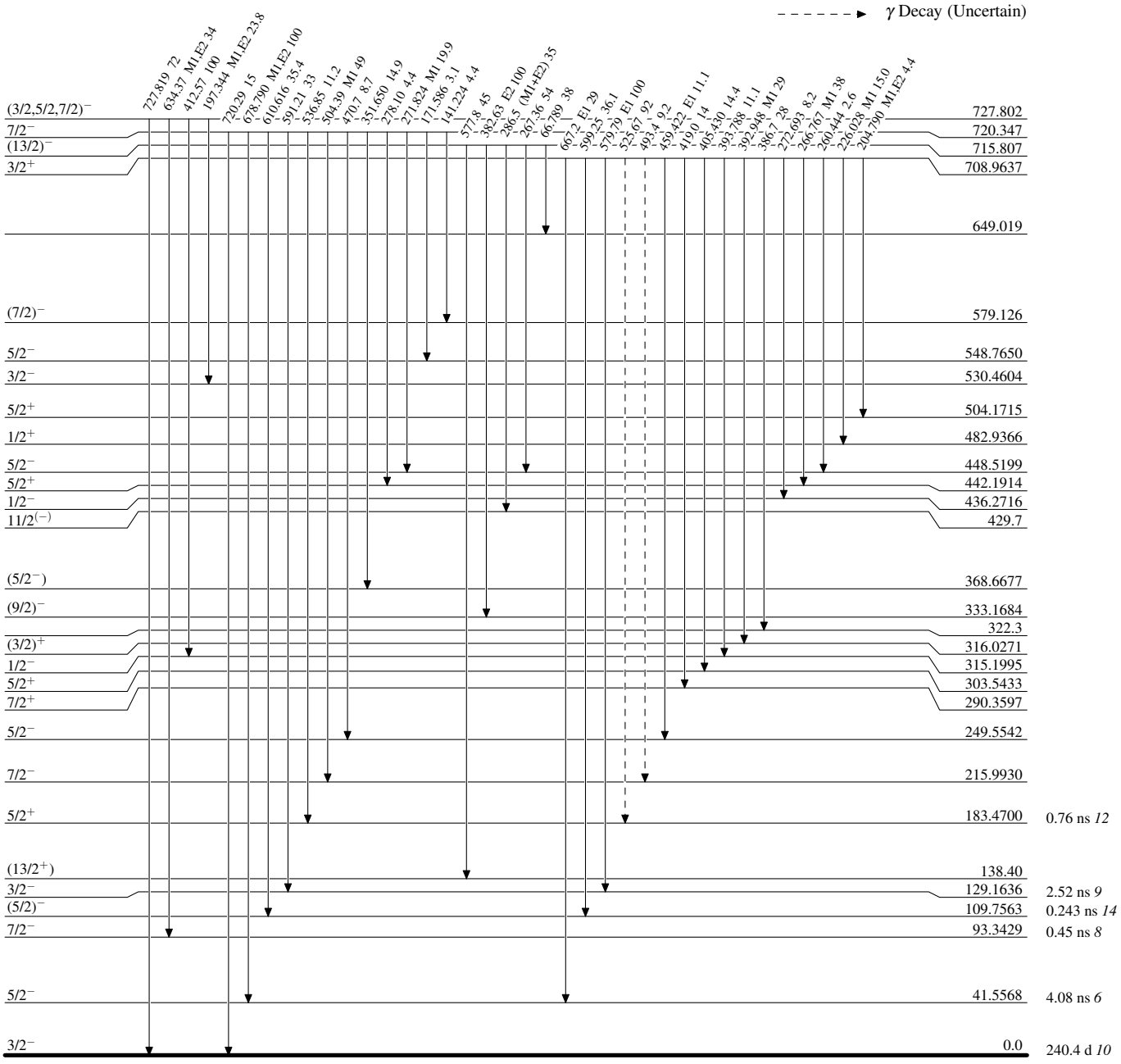
$^{153}_{64}Gd_{89}$

Adopted Levels, Gammas

Level Scheme (continued)

Legend

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

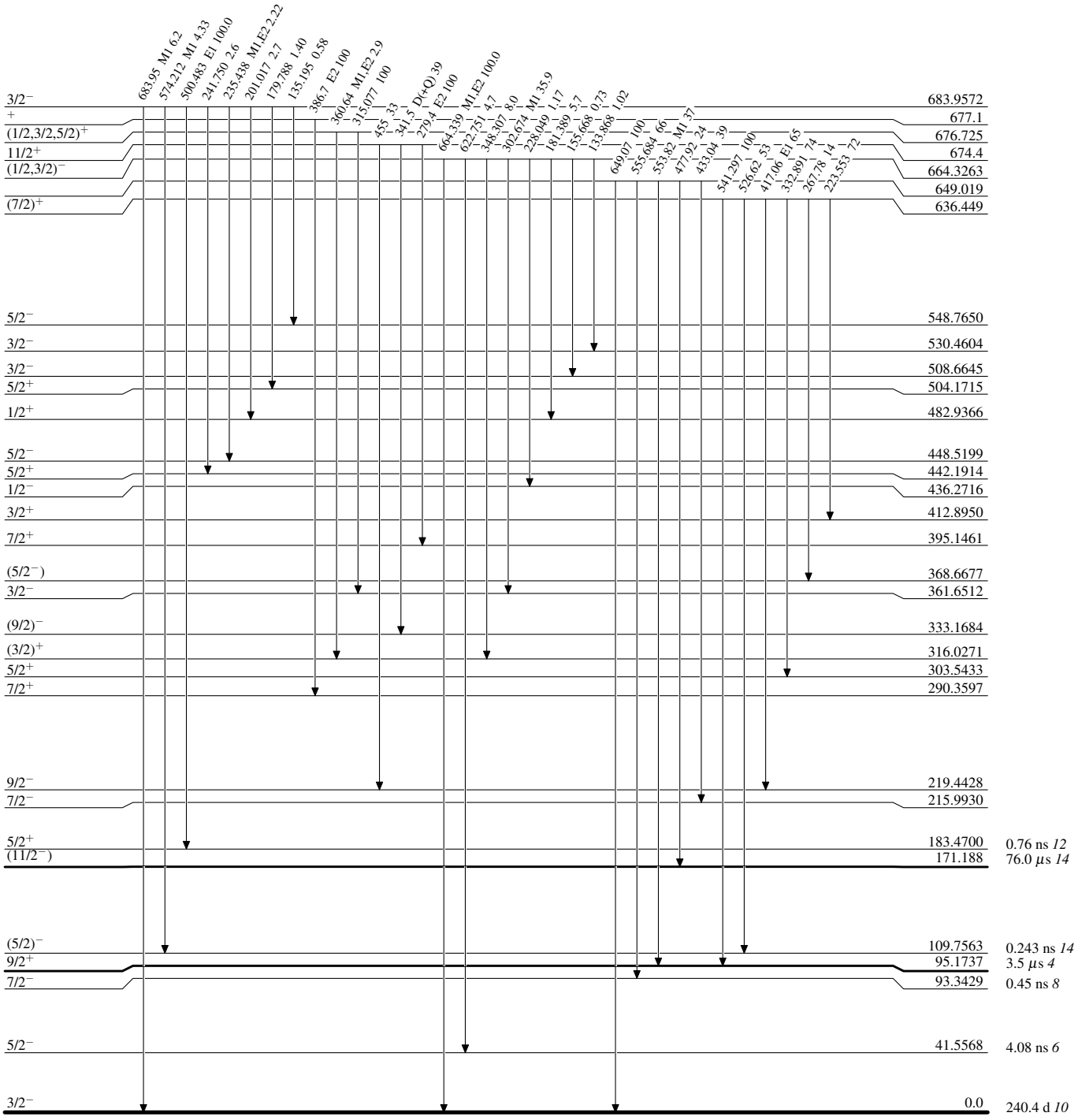


$^{153}_{64}Gd_{89}$

Adopted Levels, Gammas

Level Scheme (continued)

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



$^{153}_{64}Gd_{89}$

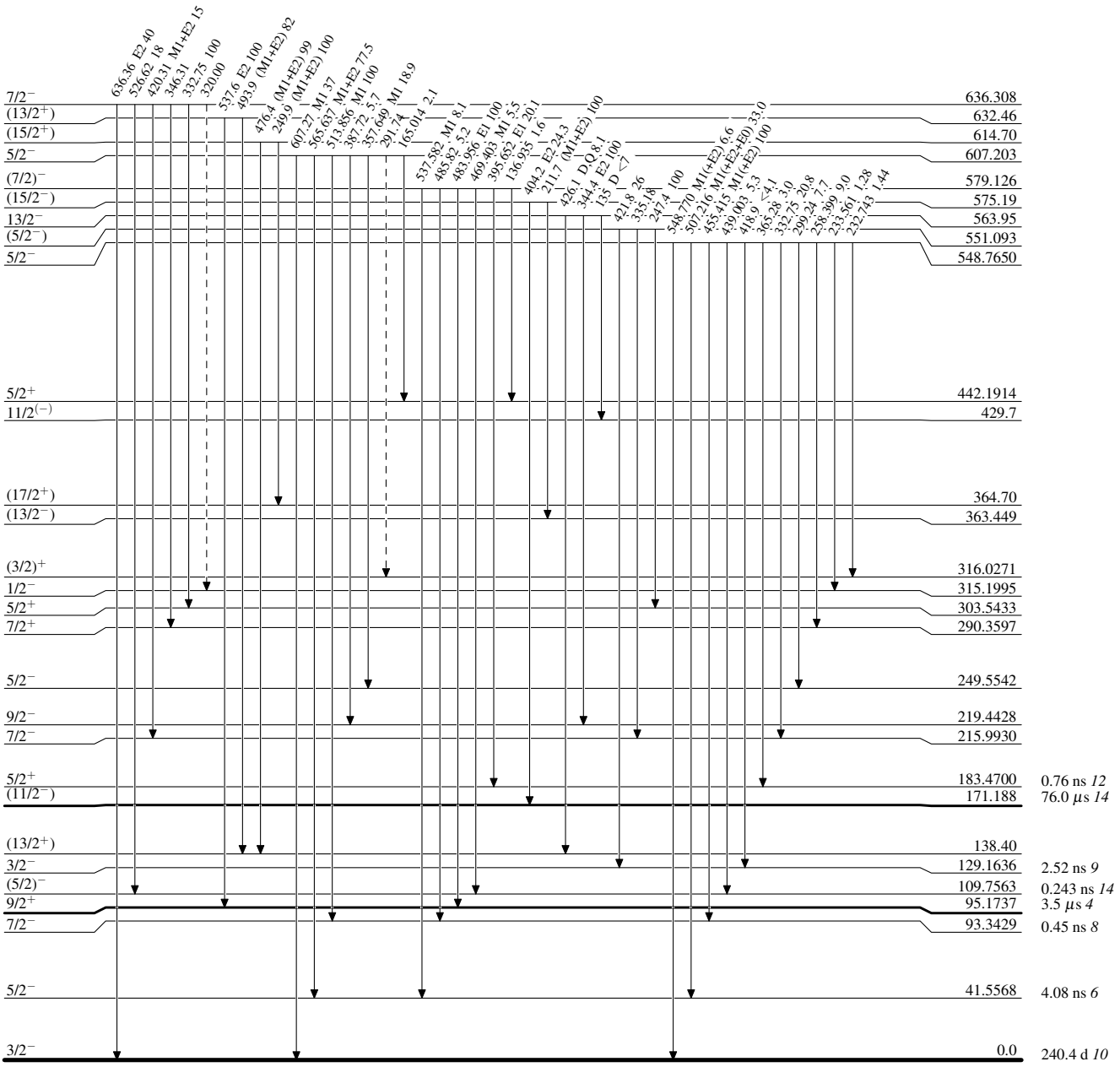
Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

γ Decay (Uncertain)



$^{153}_{64}Gd_{89}$

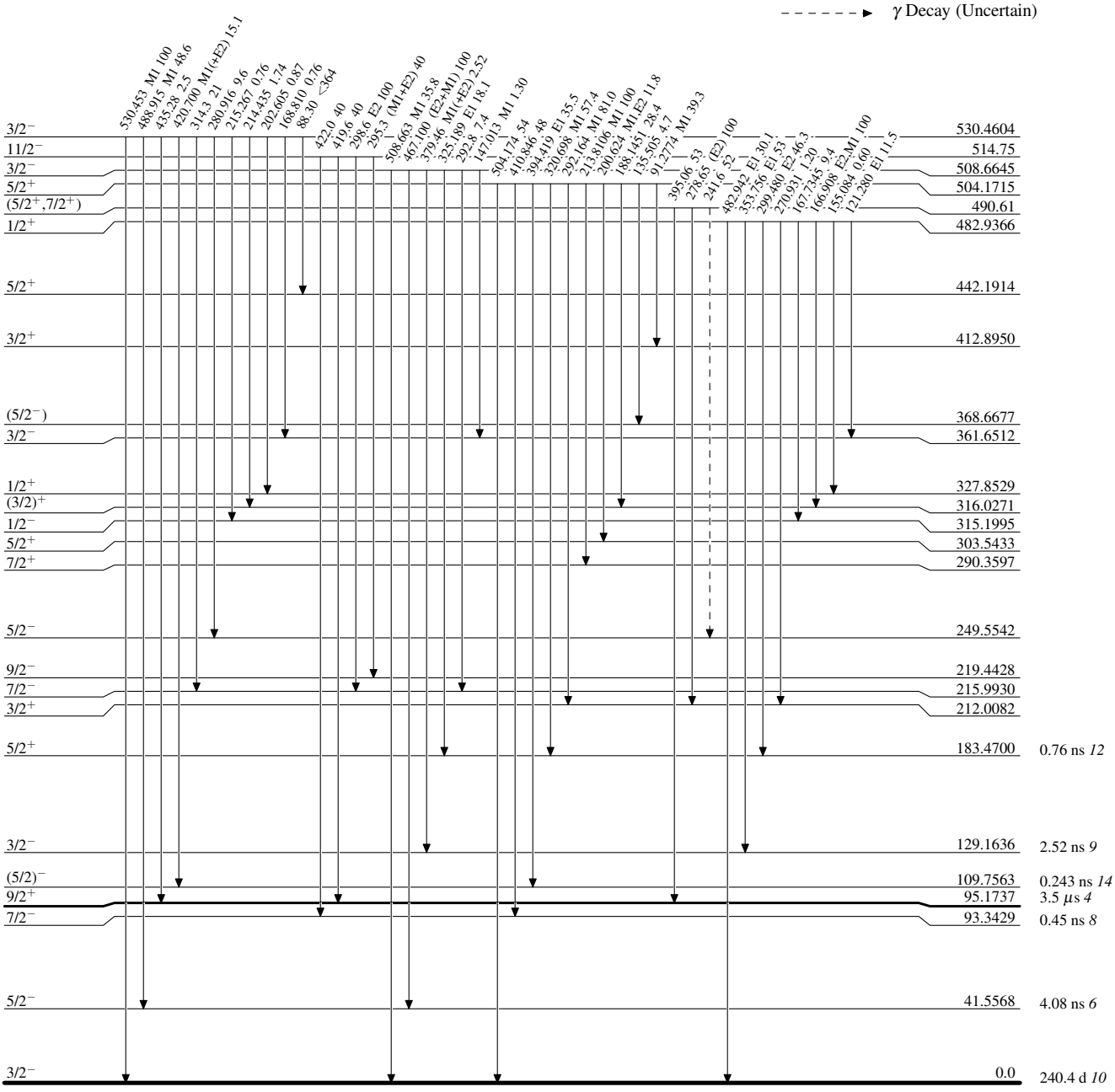
Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

γ Decay (Uncertain)

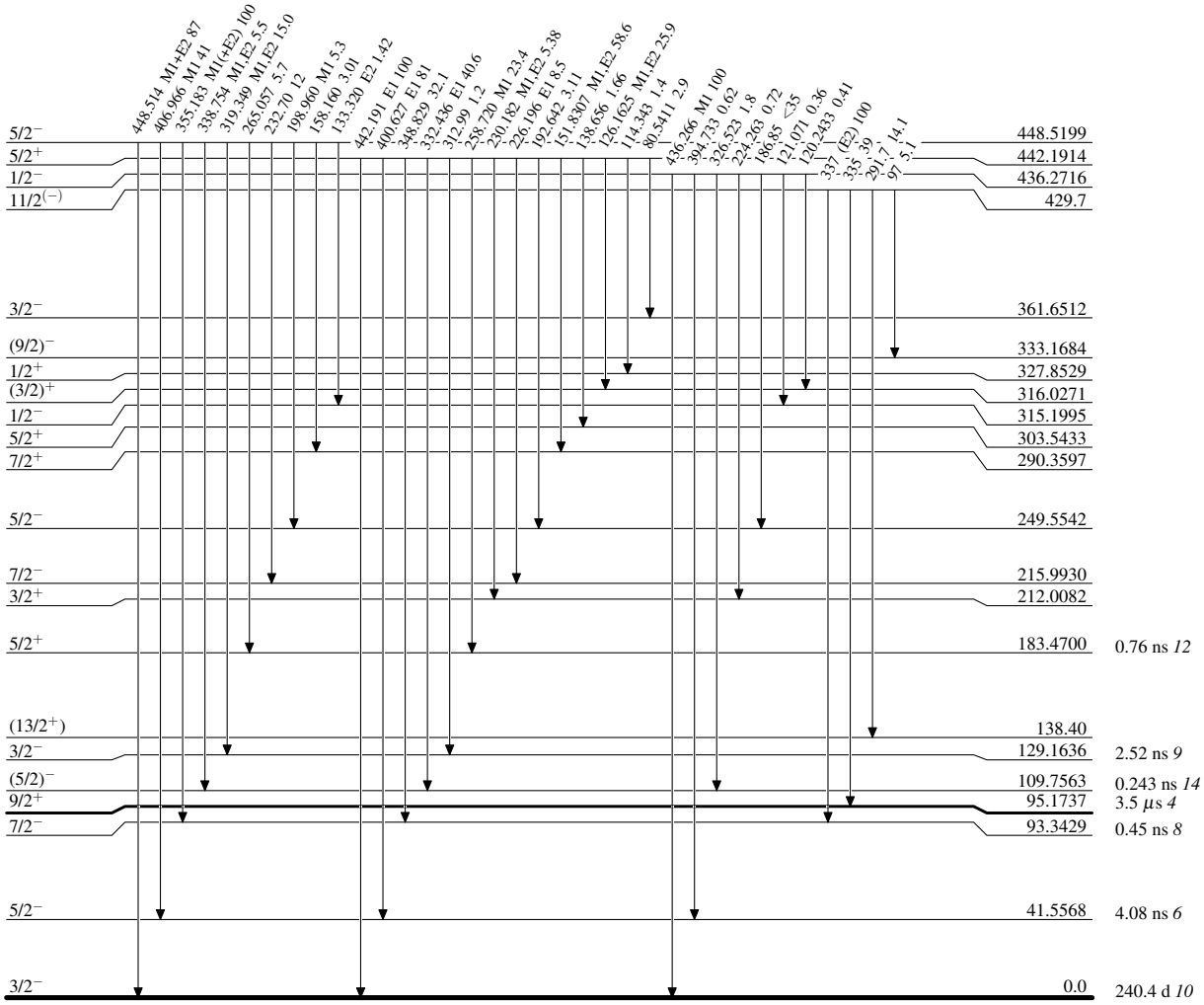


$^{153}_{64}Gd_{89}$

Adopted Levels, Gammas

Level Scheme (continued)

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



$^{153}_{64}Gd_{89}$

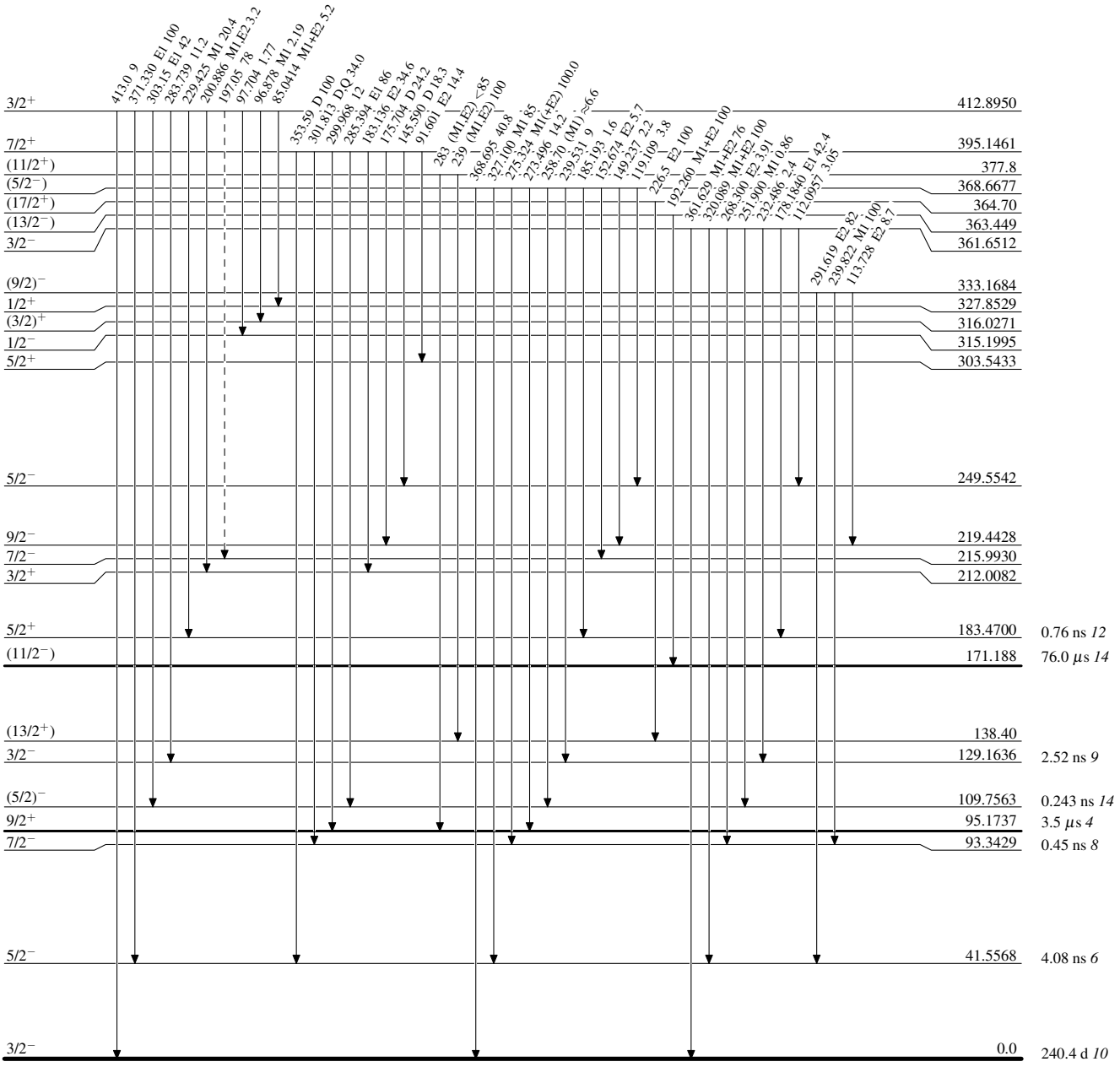
Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

γ Decay (Uncertain)

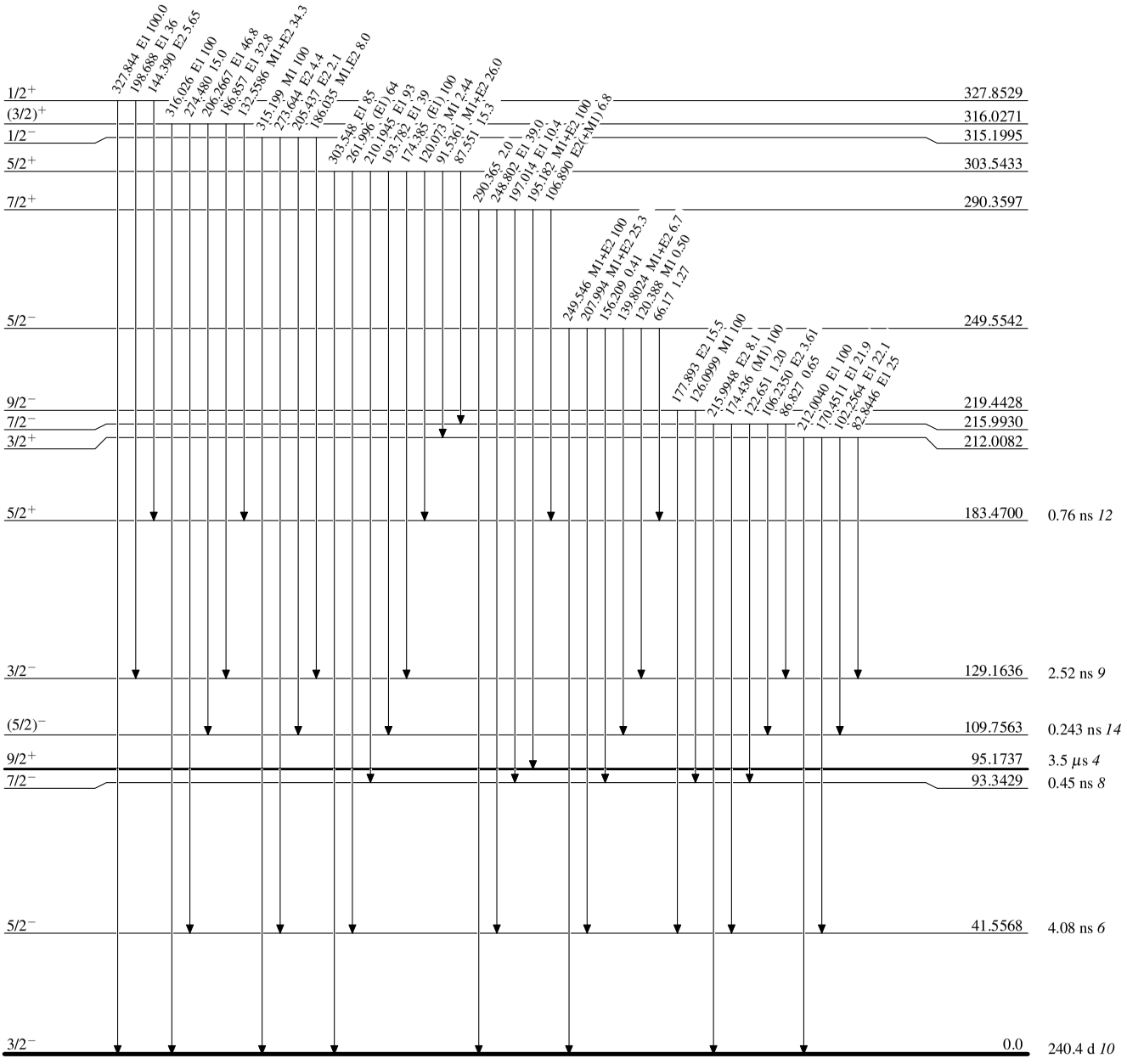


$^{153}_{64}Gd_{89}$

Adopted Levels, Gammas

Level Scheme (continued)

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



$^{153}_{64}Gd_{89}$

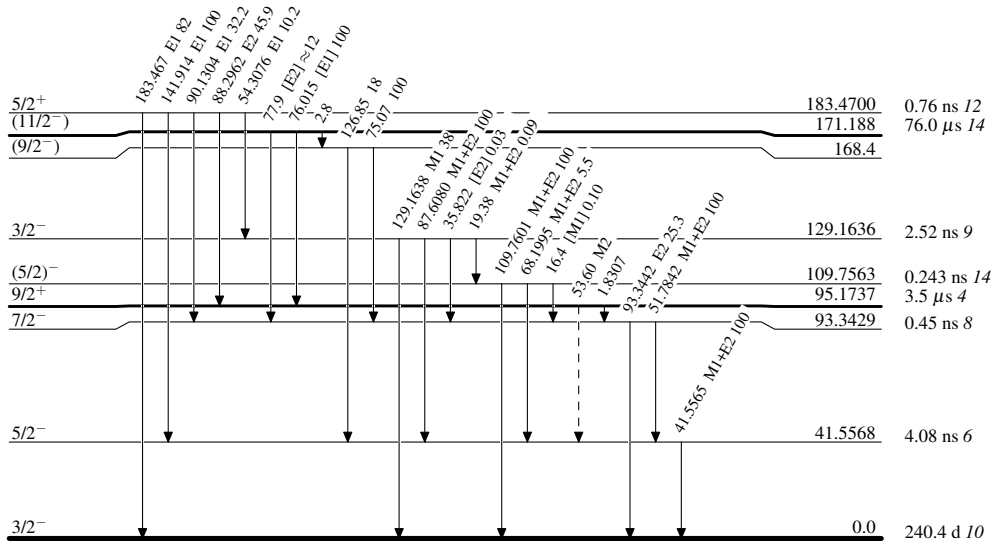
Adopted Levels, Gammas

Legend

Level Scheme (continued)

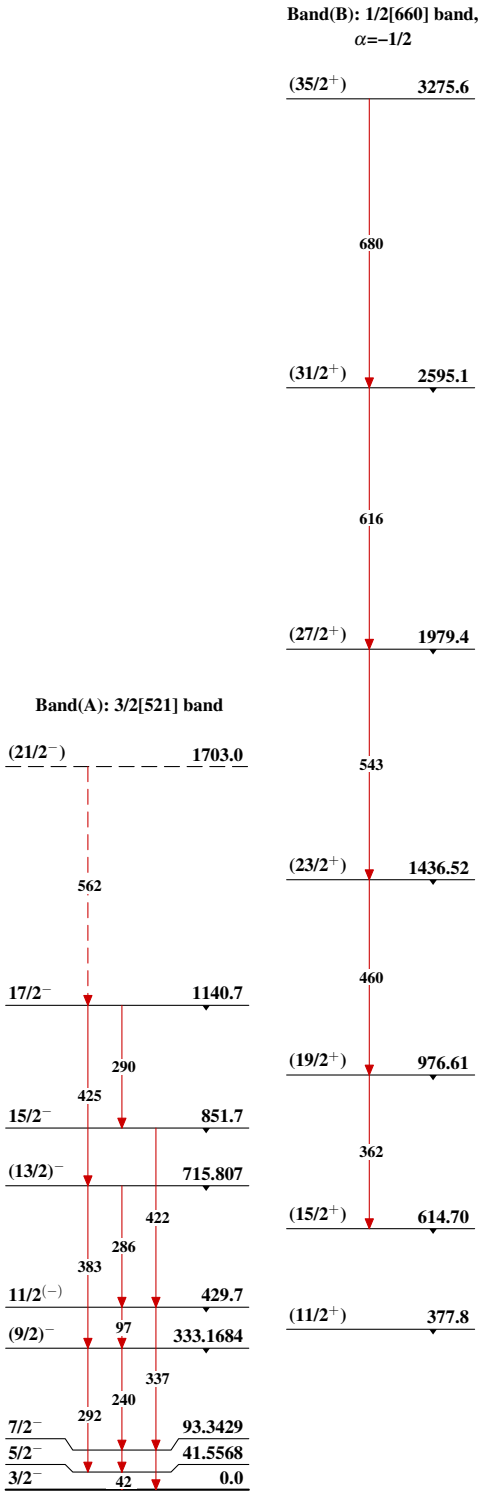
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

γ Decay (Uncertain)



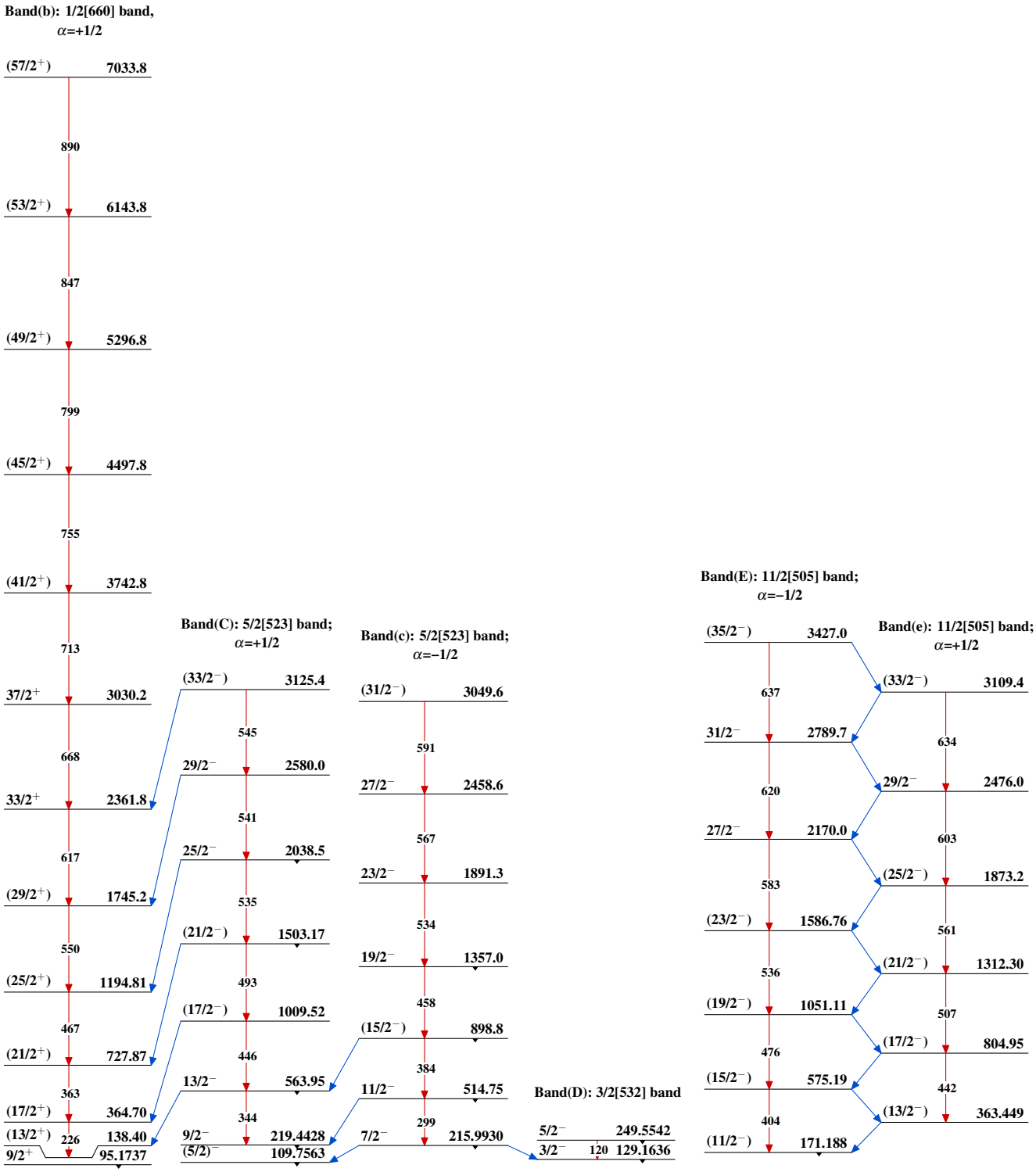
$^{153}_{64}Gd_{89}$

Adopted Levels, Gammas



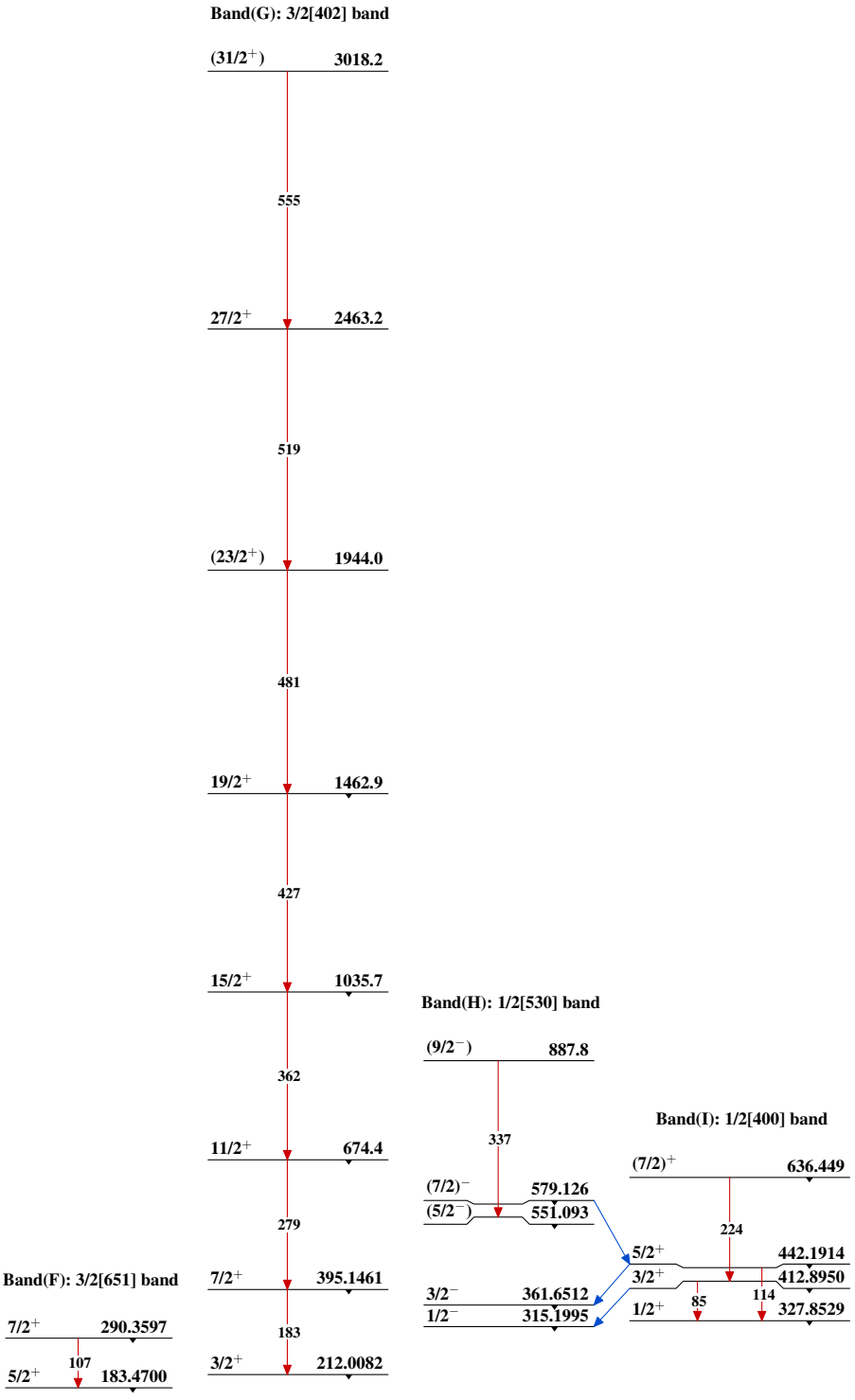
$^{153}_{64}Gd_{89}$

Adopted Levels, Gammas (continued)

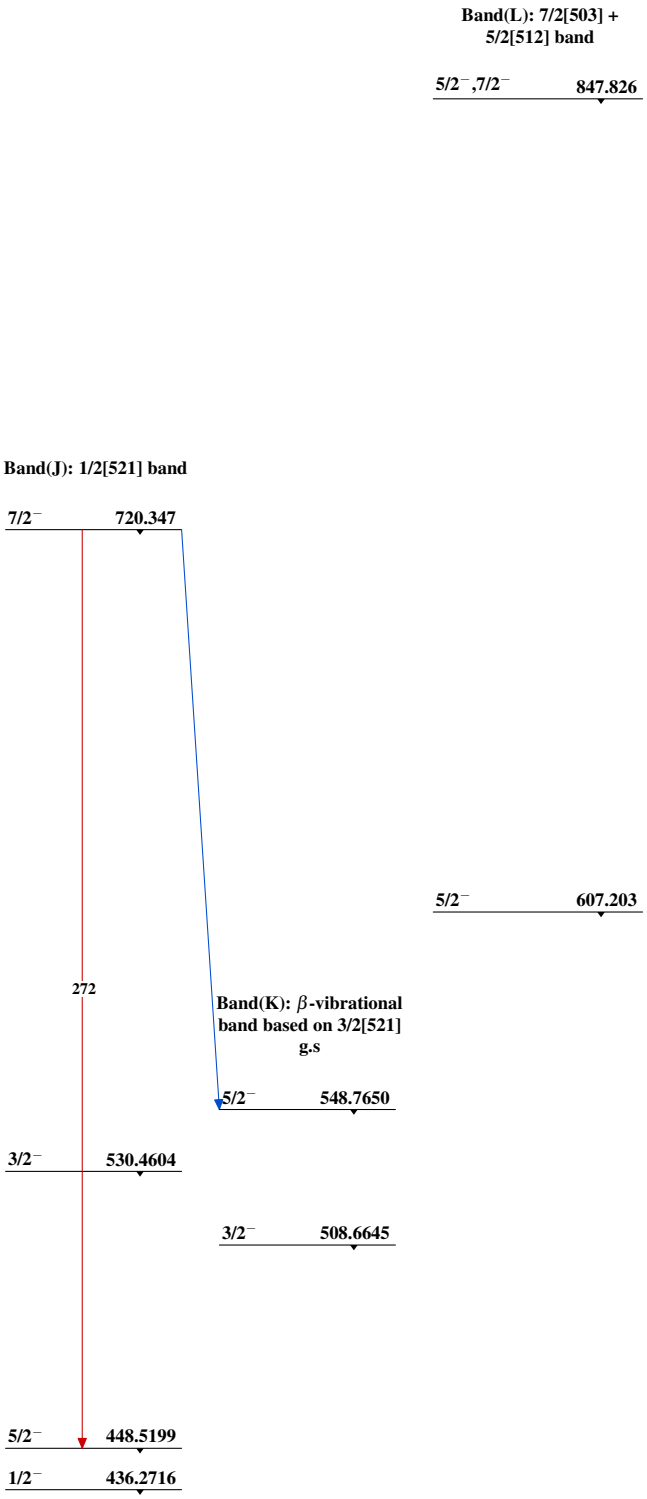


$^{153}_{64}Gd_{89}$

Adopted Levels, Gammas (continued)

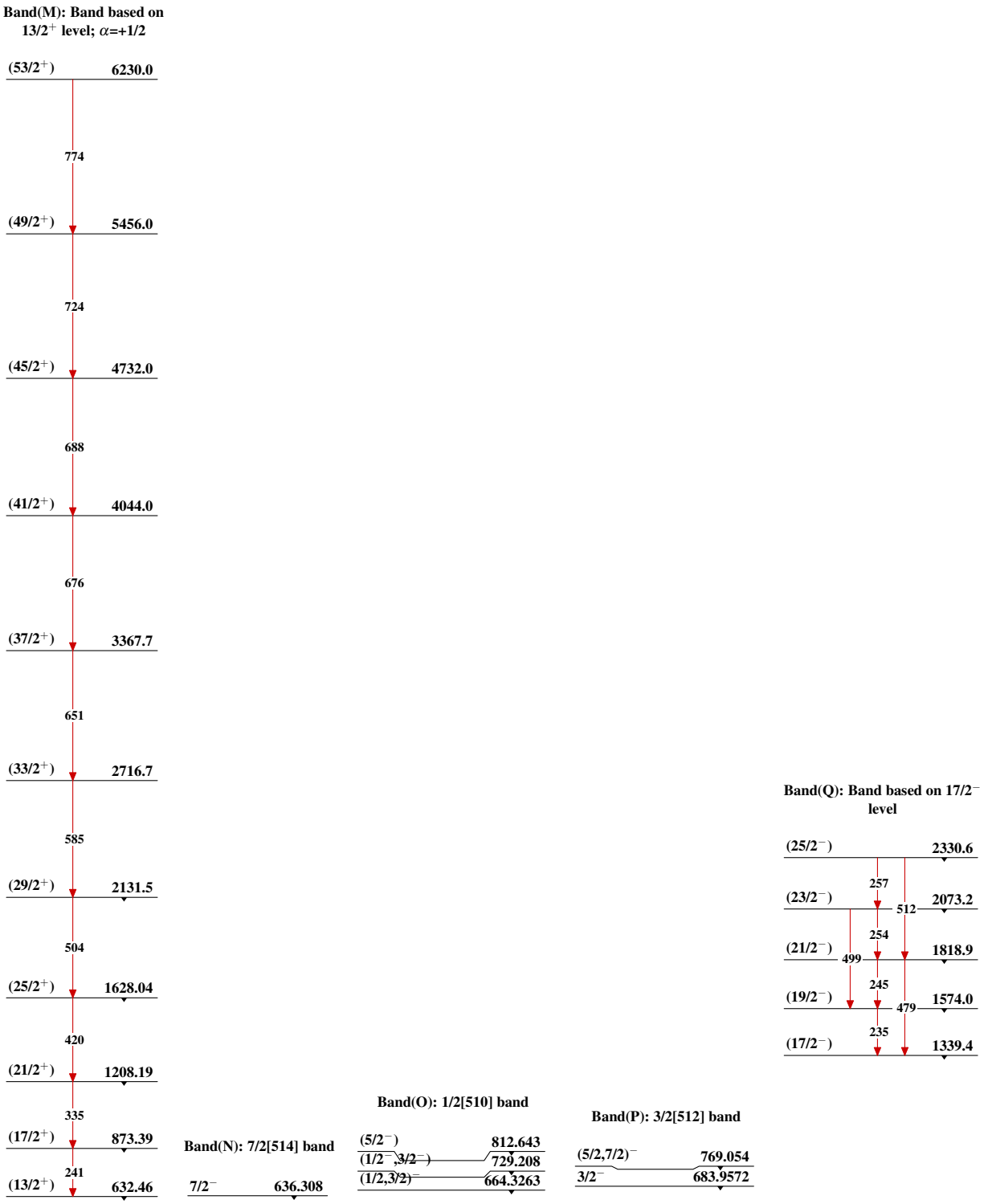


Adopted Levels, Gammas (continued)

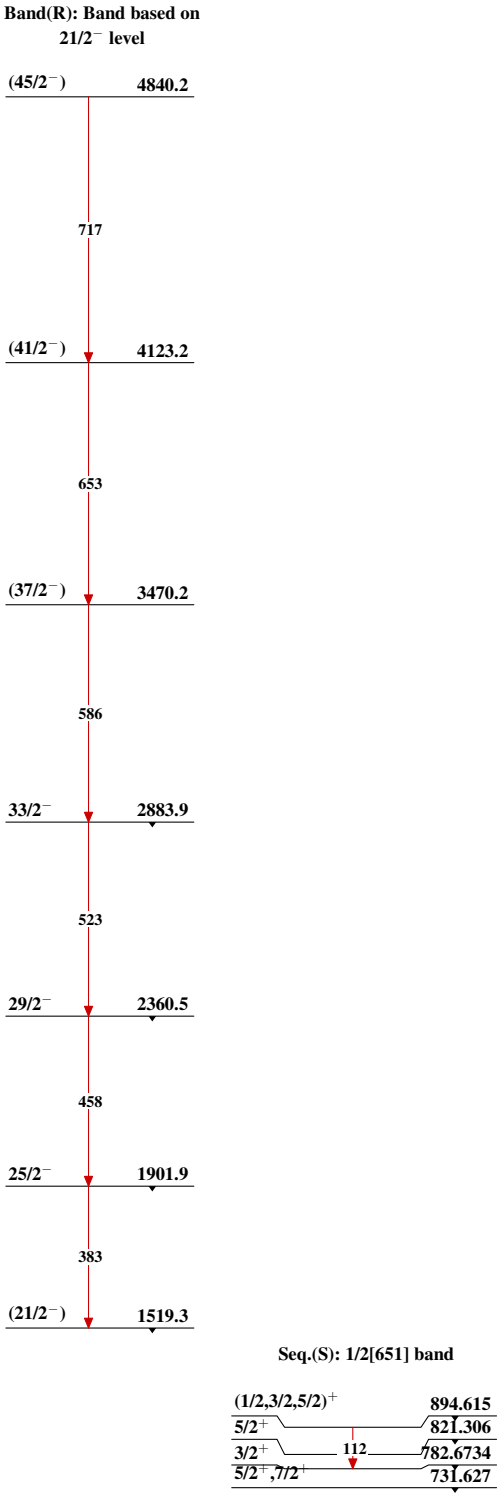


$^{153}_{64}Gd_{89}$

Adopted Levels, Gammas (continued)



Adopted Levels, Gammas (continued)



$^{153}_{64}Gd_{89}$

Adopted Levels, Gammas (continued)

$^{153}_{64}Gd_{89}$