Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 113,715 (2012)	31-May-2011

Q(β^-)=−6.01×10^3 *20*; S(n)=1.100×10^4 *4*; S(p)=2544 *12*; Q(α)=834 *18* 2012Wa38
Note: Current evaluation has used the following Q record −6.01E+3 2011000 322544 12833 17 2011AuZZ.
S(n)=10990 *30*, S(p)=2538 *12*, Q(α)=829 *17* (2003Au03).
Additional information 1.
Others:
1998Ca19, 1998Ca36: search for Giant Dipole Resonance (GDR) built on superdeformed state using ^{110}Pd(^{37}Cl,4nγ), E=165 MeV.
See 1996Pi11 for suggested classification of levels as 3- and 5-quasi-particle states.

^{143}Eu Levels

Cross Reference (XREF) Flags

A	^{143}Gd ε decay (39 s)	D	^{144}Sm(p,2nγ) E=30 MeV
B	^{143}Gd ε decay (110.0 s)	E	^{110}Pd(^{37}Cl,4nγ):SD
C	(HI,xnγ)		

E(level)[@]	J$^\pi$[†]	T$_{1/2}$[#]	XREF	Comments
0.0	5/2$^+$	2.59 min *2*	ABCD	%ε+%β^+=100 J$^\pi$: atomic beam (1984Ek01), log *ft*=5.3 to 3/2$^+$. μ: +3.673 *8* Collinear fast beam laser spectroscopy − accelerated beam (1985Ah02, 2011StZZ). Q: +0.51 *3* Collinear fast beam laser spectroscopy − accelerated beam (1985Th06, 2011StZZ). Configuration=(π d$_{5/2}$)$^{-1}$. T$_{1/2}$: wt av: 2.57 min *3* (1993Al03), 2.63 min *5* (1974Ke07) 2.61 min *3* (1966Ma15), 2.3 min *2* (1965Ko04).
258.82 *3*	(3/2)$^+$		A D	J$^\pi$: log *ft*=4.9 via (1/2)$^+$ parent, γ ray to 5/2$^+$ is (M1).
271.93 *3*	7/2$^+$		BCD	J$^\pi$: γ ray to 5/2$^+$ is ΔJ=1, M1; γ ray from 11/2$^-$ is M2. Configuration=(π g$_{7/2}$)$^{-1}$.
389.51 *4*	11/2$^-$	50.0 μs *5*	BCD	T$_{1/2}$: from ^{143}Gd ε decay (1978Fi02). J$^\pi$: γ ray to 5/2$^+$ is E3; ε decay from (11/2$^-$) parent. Configuration=(πh$_{11/2}$).
463.61 *5*	(1/2)$^+$		A D	J$^\pi$: log *ft*=5.7 via (1/2)$^+$ parent, γ to (3/2)$^+$ is stronger than γ ray to 5/2$^+$.
804.1 *3*			D	
812.90 *10*	(1/2,3/2)$^+$		A	J$^\pi$: log *ft*=5.8 via (1/2)$^+$ parent.
906.94 *6*	9/2$^+$		B D	J$^\pi$: γ ray to 5/2$^+$ is E2, ε decay from (11/2$^-$) parent.
977.49 *4*	(9/2)$^-$		BCD	J$^\pi$: γ to 11/2$^-$ is M1+E2, syst.
1057.41 *6*	11/2$^+$		B D	J$^\pi$: γ ray to 7/2$^+$ is ΔJ=2, E2; ε decay from (11/2$^-$) parent.
1057.64 *5*	13/2$^-$		BCD	J$^\pi$: γ ray to 11/2$^-$ is ΔJ=1, M1+E2; strong feeding from high−spin levels.
1088.31 *11*			B	
1188.42 *5*	11/2$^-$		BCD	J$^\pi$: γ ray to 11/2$^-$ is ΔJ=0, E2+M1 (α,p4nγ); γ ray to (9/2)$^-$ is ΔJ=1, M1 (p,2nγ).
1213.94 *10*	11/2$^-$		B D	J$^\pi$: γ ray to 11/2$^-$ is ΔJ=0, E2+(M1).
1256.88 *6*	11/2$^+$		B D	J$^\pi$: γ ray to 7/2$^+$ is ΔJ=2, E2.
1306.05 *6*	15/2$^-$		BCD	J$^\pi$: γ ray to 11/2$^-$ is ΔJ=2, E2; γ ray to 13/2$^-$ is ΔJ=1, D.
1331.24 *11*	11/2$^+$		B D	J$^\pi$: γ ray to 7/2$^+$ is ΔJ=2, Q.
1405.58 *21*			B	
1497.74 *20*			B	
1543.0? *4*	(1/2,3/2)$^+$		A	J$^\pi$: log *ft*=6.3 via (1/2)$^+$ parent.
1565.24 *21*			B	
1602.63 *7*			B D	
1676.50 *8*			B D	

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Adopted Levels, Gammas (continued)

^{143}Eu Levels (continued)

E(level)[@]	Jπ[†]	$T_{1/2}$[#]	XREF	Comments
1723.6? *4*	(1/2,3/2)$^+$		A	Jπ: log *ft*=6.3 via (1/2)$^+$ parent.
1754.23 *8*	$^-$		B D	Jπ: M1 γ ray to (9/2)$^-$.
1761.74 *21*			B	
1893.31 *15*	15/2$^-$		BCD	
1903.61 *15*			B	
1908.2 *5*	15/2$^+$		CD	
1970.6 *3*			B	
2018.72 *5*	(9/2$^-$)		B D	Jπ: log *ft*=5.8 via (11/2$^-$) parent; γ ray to 7/2$^+$.
2065.07 *6*	(9/2$^-$)		B	Jπ: log *ft*=5.9 via (11/2$^-$) parent; γ ray to 7/2$^+$.
2092.15 *7*			B	
2116.25 *14*	17/2$^-$		CD	Jπ: γ ray to 13/2$^-$ is ΔJ=2, Q.
2121.24 *11*	(15/2$^+$)		D	Jπ: γ ray to 11/2$^+$ is ΔJ=2, Q.
2196.71 *5*	(11/2$^-$)		B D	Jπ: log *ft*=5.3 via (11/2$^-$) parent, γ ray to 11/2$^-$ is ΔJ=0, D+Q.
2209.3 *3*			B	
2254.32 *11*			B	
2275.59 *10*			B	
2318.17 *24*	19/2$^-$		C	
2329.01 *18*	17/2$^-$		CD	
2331.89 *21*			B	
2351.12 *10*			B	
2357.84 *14*			D	
2378.22 *11*	19/2$^-$		CD	Jπ: γ ray to 15/2$^-$ is ΔJ=2, E2.
2417.6 *6*			B	
2457.49 *17*	17/2$^+$[‡]		CD	
2473.88 *22*	21/2$^{(-)}$	5.8 ns *15*	C	$T_{1/2}$: from (α,p4nγ) (1988Mu12).
2559.20 *13*	19/2$^+$	7.4 ps *4*	CD	
2600.64 *12*			B D	
2610.8 *5*			B	
2612.04 *16*	21/2$^-$		C	
2629.71 *12*	21/2$^+$[‡]	9.7 ps *21*	C	Jπ: E1 γ ray to 2378 *19*/2$^-$.
2811.51 *15*	23/2$^+$[‡]	2.6 ps *10*	C	
3011.5 *3*	23/2$^-$		C	
3343.44 *21*	25/2$^+$	<3.5 ps	C	
3364.10 *21*	25/2$^+$	<2.8 ps	C	
3414.2 *6*	(25/2)		C	
3603.8 *4*	23/2$^-$		C	
3688.87 *25*	25/2$^-$		C	
3748.97 *23*	27/2$^+$	4.2 ps *14*	C	
3761.5 *3*	27/2$^+$		C	
3788.0 *3*	(27/2)		C	
3963.1 *5*	27/2$^+$		C	
4091.4 *5*	(29/2)		C	
4168.0[&] *3*	27/2$^-$		C	
4215.7 *5*	(29/2)		C	
4318.53 *23*	29/2$^+$	2.0 ps *2*	C	
4397.2 *3*	29/2$^+$		C	
4472.9 *4*	27/2$^-$		C	
4477.83 *24*	31/2$^+$	7.9 ps *3*	C	
4563.0 *5*	(31/2)		C	
4565.7 *5*	31/2$^+$		C	
4653.6 *3*	33/2$^+$	6 ps *2*	C	
4786.6 *4*	31/2$^+$		C	
4946.9 *4*	35/2$^{(+)}$	<2.1 ps	C	
5051.8[&] *4*	31/2$^-$	<7 ps	C	

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Adopted Levels, Gammas (continued)

^{143}Eu Levels (continued)

E(level)[@]	Jπ[†]	$T_{1/2}$[#]	XREF
5074.8 *6*	(31/2)		C
5107.0 *4*	$33/2^{(+)}$		C
5130.7 *6*	$35/2^{+}$		C
5190.8[&] *5*	$31/2^{-}$		C
5243.5 *5*	$33/2^{(-)}$		C
5245.8 *5*	$37/2^{(-)}$		C
5328.7 *4*	$33/2^{(+)}$		C
5382.0 *5*	$37/2^{(-)}$		C
5411.4 *4*	$35/2^{(-)}$		C
5419.4 *4*	$35/2^{(-)}$		C
5587.1 *4*	$37/2^{(-)}$		C
5722.6 *5*	$35/2^{(-)}$		C
5792.4 *4*	$35/2^{(+)}$		C
5799.5 *7*	$37/2^{(-)}$		C
5848.1 *5*	$39/2^{(-)}$		C
5869.3 *4*	$35/2^{(+)}$		C
5904.7[&] *4*	$35/2^{-}$	<0.7 ps	C
5939.3 *7*	$39/2^{+}$		C
6001.0 *5*	$39/2^{(-)}$		C
6055.9 *5*	$39/2^{(-)}$		C
6057.7 *4*	$37/2^{(+)}$		C
6316.3 *6*	41/2		C
6333.3 *4*	$39/2^{(+)}$		C
6363.0 *5*	$39/2^{(-)}$		C
6365.0 *5*	$41/2^{(-)}$		C
6556.3 *6*	$41/2^{(-)}$		C
6694.8 *5*	$41/2^{(+)}$		C
6709.5 *6*	39/2		C
6747.9 *7*			C
6815.3 *7*	43/2		C
6840.6[&] *5*	$39/2^{-}$	<0.7 ps	C
6871.4 *8*	$43/2^{+}$		C
6881.9 *8*	$43/2^{+}$		C
6975.6 *5*	$41/2^{(-)}$		C
7024.3 *6*	$41/2^{(-)}$		C
7152.3 *8*	45/2		C
7154.4 *5*	$43/2^{(+)}$		C
7214.8 *5*	$43/2^{(+)}$		C
7248.8 *8*	45/2		C
7273.8 *5*	$41/2^{(-)}$		C
7288.9 *6*	$43/2^{(-)}$		C
7342.1 *6*	43/2		C
7388.6[&] *5*	$43/2^{-}$	6.4 ps *3*	C
7389.6 *9*	45/2		C
7448.8 *5*	$45/2^{(+)}$		C
7501.5 *5*	$43/2^{(-)}$		C
7577.2 *9*	47/2		C
7659.7 *6*	$45/2^{(+)}$		C
7693.7 *7*	45/2		C
7701.8 *9*	$47/2^{+}$		C
7726.7 *6*	$45/2^{(+)}$		C
7768.9 *8*	$47/2^{+}$		C

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Adopted Levels, Gammas (continued)

^{143}Eu Levels (continued)

E(level)[@]	Jπ[†]	$T_{1/2}$[#]	XREF	Comments
7804.7 *5*	$45/2^{(-)}$		C	
7925.7 *7*	47/2		C	
7942.6 *9*	47/2		C	
8003.6[&] *5*	$47/2^-$	2.1 ps *2*	C	
8014.0 *8*	47/2		C	
8213.7 *6*	$47/2^{(-)}$		C	
8264.1 *6*	$47/2^{(+)}$		C	
8485.7 *6*	49/2		C	
8655.9 *13*			C	
8730.8 *7*	$49/2^{(-)}$		C	
8794.2[b] *8*	$(51/2^-)$		C	
8870.1[&] *6*	$51/2^-$	0.4 ps *1*	C	
8944.3 *7*	51/2		C	
8972.3 *6*	49/2		C	
9295.5 *9*	$51/2^{(-)}$		C	
9364.7 *8*	53/2		C	
9444.0[b] *9*	$(55/2^-)$		C	
9568.0[a] *6*	53/2		C	
9977.7[&] *6*	$55/2^-$	<0.4 ps	C	
10415.6[a] *7*	57/2		C	
10439.3[b] *10*	$(59/2^-)$		C	
10624.1[&] *7*	$59/2^-$		C	
11227.4[&] *7*	$59/2^-$	<0.4 ps	C	
11512.9[a] *7*	61/2		C	
11852.4[b] *11*	$(63/2^-)$		C	
12018.6[&] *7*	$63/2^-$	<0.4 ps	C	
12824.6[a] *9*	65/2		C	
12974.4[&] *8*	$67/2^-$	0.15 ps *4*	C	
13036.4[b] *15*			C	
14160.0[&] *9*	$71/2^-$	<0.2 ps	C	
14293.6[a] *14*			C	
15551.1[&] *11*	$75/2^-$		C	
15590.5[&] *11*	$75/2^-$		C	
x[c]	J≈(33/2)		E	Additional information 2. E(level): x=8582 *4* (1993At01) deduced from possible deexciting transitions to normal bands. Jπ: from 1999Ax02, who adopt the assignment in 1997Lu03 based on comparison of experimental moments of inertia with those from model calculations. Assignment of (37/2) in 1993At01 was based on deexcitation of SD band. Possible deexcitation to 4656 (33/2) and 4949 (35/2) levels through cascades of two γ rays summing to 3925 *5* and 3634 *5*, respectively (1993At01). A single-step transition of 2418.9 *9* is tentatively assigned (1996At03) to the decay of SD band, but its placement is undetermined. A 2715 transition is also reported in 1999Ax02 in coincidence with transitions in SD-1 band, but its exact placement is not known.
483.28+x[c] *10*	J+2		E	Possible deexcitation to 5590 (37/2), 5795 (35/2), 5851 (39/2) and 5872 levels through cascades of two γ rays summing to 3476 *5*, 3274 *5*, 3211 *5* and 3187 *5*, respectively, was suggested by 1993At01. 1996At03 found, and 1997Le17 confirmed, a 3360.6 transition to

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Adopted Levels, Gammas (continued)

^{143}Eu Levels (continued)

E(level)[@]	Jπ[†]	XREF	Comments
			deexcite this level and feed a normal level that decays to a level above 4947, $35/2^+$.
1029.64+x[c] *15*	J+4	E	Possible deexcitation to 6336 (39/2) level through a cascade of two γ rays summing to 3274 *5* (1993At01).
1638.49+x[c] *18*	J+6	E	
2309.63+x[c] *20*	J+8	E	
3042.06+x[c] *23*	J+10	E	
3835.19+x[c] *25*	J+12	E	
4688.5+x[c] *3*	J+14	E	
5601.4+x[c] *4*	J+16	E	
6573.7+x[c] *4*	J+18	E	
7604.9+x[c] *4*	J+20	E	
8694.8+x[c] *5*	J+22	E	
9843.5+x[c] *5*	J+24	E	
11050.7+x[c] *6*	J+26	E	
12316.4+x[c] *6*	J+28	E	
13640.9+x[c] *6*	J+30	E	
15023.6+x[c] *7*	J+32	E	
16466.7+x[c] *7*	J+34	E	
17969.8+x[c] *7*	J+36	E	
19533.1+x[c] *8*	J+38	E	
21157.1+x[c] *13*	J+40	E	
22841.8+x[c] *16*	J+42	E	
24588.1+x[c] *20*	J+44	E	
26392.9+x[c] *24*	J+46	E	
y[d]	J1≈(61/2)	E	Jπ: from 1999Ax02, based on 33/2 for the lowest level of SD-1 band.
865.2+y[d] *3*	J1+2	E	
1789.0+y[d] *4*	J1+4	E	
2768.8+y[d] *4*	J1+6	E	
3805.0+y[d] *5*	J1+8	E	
4898.3+y[d] *5*	J1+10	E	
6048.9+y[d] *6*	J1+12	E	
7257.2+y[d] *6*	J1+14	E	
8523.2+y[d] *7*	J1+16	E	
9847.4+y[d] *7*	J1+18	E	
11230.4+y[d] *8*	J1+20	E	
12672.3+y[d] *9*	J1+22	E	
14173.5+y[d] *10*	J1+24	E	
15734.5+y[d] *10*	J1+26	E	
17355.8+y[d] *16*	J1+28	E	
19040+y[d] *3*	J1+30	E	
20780+y[d] *4*	J1+32	E	

[†] J^π for levels seen in (HI,xnγ) are from DCO ratios, excit.
[‡] Levels connected to each other by strong M1 (1996Pi11).
[#] From γ(t) in (HI,xnγ) (1996Pi11), unless given otherwise.
[@] From least-squares fit to Eγ.

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Adopted Levels, Gammas (continued)

^{143}Eu Levels (continued)

& Band(A): cascade-1, π=−.
[a] Band(B): cascade-2, possibly π=(+).
[b] Band(C): cascade-3.
[c] Band(D): SD-1 band (1999Ax02,2000Li14,1993At01,1991Mu08). Q(intrinsic)=13.0 *15* (1995Fo02), 13 *1* (1993At01,1993At03). The lifetime details are given by 1995Fo02 and 1993At03. Percent population=1.1 (1993At01), 1.0 (1995Mu11), 1.8 (1999Ax02). β_2=0.52 *5*, β_4=0.05. Configuration=$((\nu\ 6)^{+4}(\pi\ 6)^{+1})$, involving i13/2 intruder orbitals from N=6 shell for both neutrons and protons (1995Fo02).
[d] Band(E): SD-2 band (1999Ax02). Percent population=35% *4* of SD-1 band (1999Ax02). Configuration=$(\pi\ 6)^2(\nu\ 7)^0$ (1999Ax02) (configuration involving m quasi-protons in N=6 intruder orbitals is expressed as $(\pi\ 6)^m$, etc.).

Adopted Levels, Gammas (continued)

γ(^{143}Eu)

E_i(level)	J_i^π	E_γ[&]	I_γ[@]	E_f	J_f^π	Mult.[‡]	δ[a]	α[†]	Comments
258.82	(3/2)$^+$	258.81 *3*	100	0.0	5/2$^+$	(M1)		0.1305	α(K)=0.1107 *16*; α(L)=0.01555 *22*; α(M)=0.00336 *5*; α(N+..)=0.000903 *13* α(N)=0.000768 *11*; α(O)=0.0001221 *17*; α(P)=1.216×10^{-5} *17*
271.93	7/2$^+$	271.94 *3*	100	0.0	5/2$^+$	M1		0.1143	α(K)=0.0970 *14*; α(L)=0.01360 *19*; α(M)=0.00293 *5*; α(N+..)=0.000789 *11* α(N)=0.000672 *10*; α(O)=0.0001067 *15*; α(P)=1.064×10^{-5} *15*
389.51	11/2$^-$	117.57 *5*	100 *8*	271.93	7/2$^+$	M2		9.84	α(K)=7.56 *11*; α(L)=1.771 *25*; α(M)=0.405 *6*; α(N+..)=0.1086 *16* α(N)=0.0930 *14*; α(O)=0.01437 *21*; α(P)=0.001239 *18* B(M2)(W.u.)=0.088 *10*
		389.47 *5*	53 *4*	0.0	5/2$^+$	E3		0.0885	α(K)=0.0603 *9*; α(L)=0.0218 *3*; α(M)=0.00505 *7*; α(N+..)=0.001305 *19* α(N)=0.001135 *16*; α(O)=0.0001632 *23*; α(P)=6.25×10^{-6} *9* B(E3)(W.u.)=0.68 *8*
463.61	(1/2)$^+$	204.77 *5*	100 *7*	258.82	(3/2)$^+$	M1,E2		0.223 *24*	α(K)=0.18 *4*; α(L)=0.037 *8*; α(M)=0.0083 *19*; α(N+..)=0.0022 *5* α(N)=0.0019 *4*; α(O)=0.00028 *5*; α(P)=1.8×10^{-5} *6*
		463.7 *1*	51 *4*	0.0	5/2$^+$				
804.1		340.5 *3*	100	463.61	(1/2)$^+$				
812.90	(1/2,3/2)$^+$	554.1 *3*	14 *7*	258.82	(3/2)$^+$				
		812.9 *1*	100 *10*	0.0	5/2$^+$				
906.94	9/2$^+$	906.96 *6*	100	0.0	5/2$^+$	E2		0.00322 *5*	α(K)=0.00272 *4*; α(L)=0.000396 *6*; α(M)=8.57×10^{-5} *12*; α(N+..)=2.29×10^{-5} *4* α(N)=1.95×10^{-5} *3*; α(O)=3.06×10^{-6} *5*; α(P)=2.79×10^{-7} *4*
977.49	(9/2)$^-$	588.00 *3*	100	389.51	11/2$^-$	M1+E2		0.012 *4*	α(K)=0.010 *3*; α(L)=0.0015 *3*; α(M)=0.00033 *7*; α(N+..)=8.7×10^{-5} *18* α(N)=7.4×10^{-5} *15*; α(O)=1.2×10^{-5} *3*; α(P)=1.1×10^{-6} *4*
1057.41	11/2$^+$	785.56 *6*	100	271.93	7/2$^+$	E2		0.00443 *7*	α(K)=0.00371 *6*; α(L)=0.000559 *8*; α(M)=0.0001215 *17*; α(N+..)=3.24×10^{-5} *5* α(N)=2.77×10^{-5} *4*; α(O)=4.31×10^{-6} *6*; α(P)=3.80×10^{-7} *6*
1057.64	13/2$^-$	668.10 *3*	100	389.51	11/2$^-$	M1+E2	−0.75 *+23−73*	0.0096 *16*	α(K)=0.0081 *14*; α(L)=0.00114 *16*; α(M)=0.00025 *4*; α(N+..)=6.6×10^{-5} *9* α(N)=5.6×10^{-5} *8*; α(O)=8.9×10^{-6} *13*; α(P)=8.6×10^{-7} *17*
1088.31		698.8 *1*	100	389.51	11/2$^-$				
1188.42	11/2$^-$	131.1 *1*	3.5 *6*	1057.41	11/2$^+$				
		210.9 *1*	10 *1*	977.49	(9/2)$^-$	M1		0.227	α(K)=0.193 *3*; α(L)=0.0272 *4*; α(M)=0.00588 *9*; α(N+..)=0.001581 *23* α(N)=0.001346 *19*; α(O)=0.000214 *3*; α(P)=2.12×10^{-5} *3*

$^{143}_{63}Eu_{80}$-7

Adopted Levels, Gammas (continued)

γ(^{143}Eu) (continued)

E_i(level)	J_i^π	E_γ[&]	I_γ[@]	E_f	J_f^π	Mult.[‡]	α[†]	Comments
1188.42	11/2$^-$	798.89 *6*	100 *7*	389.51	11/2$^-$	E2+M1	0.0058 *16*	α(K)=0.0049 *14*; α(L)=0.00069 *16*; α(M)=0.00015 *4*; α(N+..)=4.0×10^{-5} *9* α(N)=3.4×10^{-5} *8*; α(O)=5.4×10^{-6} *13*; α(P)=5.2×10^{-7} *16*
1213.94	11/2$^-$	824.43 *9*	100	389.51	11/2$^-$	E2+(M1)	0.0054 *14*	α(K)=0.0046 *13*; α(L)=0.00064 *15*; α(M)=0.00014 *3*; α(N+..)=3.7×10^{-5} *9* α(N)=3.1×10^{-5} *7*; α(O)=5.0×10^{-6} *12*; α(P)=4.8×10^{-7} *14*
1256.88	11/2$^+$	984.93 *5*	100	271.93	7/2$^+$	E2	0.00270 *4*	α(K)=0.00228 *4*; α(L)=0.000327 *5*; α(M)=7.07×10^{-5} *10*; α(N+..)=1.89×10^{-5} *3* α(N)=1.614×10^{-5} *23*; α(O)=2.53×10^{-6} *4*; α(P)=2.35×10^{-7} *4*
1306.05	15/2$^-$	248.4 *1*	67 *9*	1057.64	13/2$^-$	D		
		916.53 *5*	100 *17*	389.51	11/2$^-$	E2	0.00315 *5*	α(K)=0.00266 *4*; α(L)=0.000386 *6*; α(M)=8.36×10^{-5} *12*; α(N+..)=2.23×10^{-5} *4* α(N)=1.91×10^{-5} *3*; α(O)=2.98×10^{-6} *5*; α(P)=2.73×10^{-7} *4*
1331.24	11/2$^+$	1059.3 *1*	100	271.93	7/2$^+$	Q		
1405.58		428.1 *2*	100	977.49	(9/2)$^-$			
1497.74		590.8 *2*	100 *50*	906.94	9/2$^+$			
		1225.8 *5*	75 *25*	271.93	7/2$^+$			
1543.0?	(1/2,3/2)$^+$	1284.2 *4*	100	258.82	(3/2)$^+$			
1565.24		1293.3 *2*	100	271.93	7/2$^+$			
1602.63		545.3 *1*	50 *7*	1057.41	11/2$^+$			
		625.23 *8*	100 *7*	977.49	(9/2)$^-$			
		1213.1 *3*	47 *7*	389.51	11/2$^-$			
1676.50		1404.56 *7*	100	271.93	7/2$^+$			
1723.6?	(1/2,3/2)$^+$	1464.8 *4*	100	258.82	(3/2)$^+$			
1754.23	$^-$	497.3 *1*	70 *10*	1256.88	11/2$^+$			
		776.8 *1*	100 *10*	977.49	(9/2)$^-$	M1	0.00780 *11*	α(K)=0.00666 *10*; α(L)=0.000901 *13*; α(M)=0.000194 *3*; α(N+..)=5.22×10^{-5} *8* α(N)=4.44×10^{-5} *7*; α(O)=7.07×10^{-6} *10*; α(P)=7.17×10^{-7} *10*
1761.74		1489.8 *2*	100	271.93	7/2$^+$			
1893.31	15/2$^-$	836.6 *3*	100.0	1057.41	11/2$^+$			
		1504.9 *4*	60.00	389.51	11/2$^-$			
1903.61		845.5 *2*	46 *15*	1057.64	13/2$^-$			
		926.6 *2*	100 *14*	977.49	(9/2)$^-$			
1908.2	15/2$^+$	602.1 *6*	100.0	1306.05	15/2$^-$			
1970.6		993.1 *3*	100	977.49	(9/2)$^-$			
2018.72	(9/2$^-$)	830.1 *1*	18 *2*	1188.42	11/2$^-$			
		1041.35 *5*	100 *8*	977.49	(9/2)$^-$			
		1629.3 *1*	64 *6*	389.51	11/2$^-$			
		1746.4 *1*	25 *3*	271.93	7/2$^+$			
2065.07	(9/2$^-$)	1087.3 *1*	29 *6*	977.49	(9/2)$^-$			

$^{143}_{63}Eu_{80}$-8

Adopted Levels, Gammas (continued)

γ(^{143}Eu) (continued)

E_i(level)	J_i^π	E_γ[&]	I_γ[@]	E_f	J_f^π	Mult.[‡]	δ[a]	α[†]	Comments
2065.07	(9/2⁻)	1158.2 *1*	21 *3*	906.94	9/2⁺				
		1675.9 *3*	18 *3*	389.51	11/2⁻				
		1793.21 *7*	100 *6*	271.93	7/2⁺				
2092.15		1702.5 *1*	36 *3*	389.51	11/2⁻				
		1820.27 *7*	100 *8*	271.93	7/2⁺				
2116.25	17/2⁻	810.2 *3*	32.44	1306.05	15/2⁻				
		1058.7 *2*	100.0	1057.64	13/2⁻				
2121.24	(15/2⁺)	1063.6 *1*	100	1057.41	11/2⁺	Q			
2196.71	(11/2⁻)	304.2 *2*	13 *1*	1893.31	15/2⁻	(E2)		0.0558	α(K)=0.0431 *6*; α(L)=0.00985 *14*; α(M)=0.00221 *4*; α(N+..)=0.000575 *9* α(N)=0.000498 *7*; α(O)=7.31×10^{-5} *11*; α(P)=4.02×10^{-6} *6*
		594.3 *1*	7.6 *7*	1602.63					
		890.52 *9*	43 *4*	1306.05	15/2⁻				
		1008.28 *5*	18 *2*	1188.42	11/2⁻	M1		0.00416 *6*	α(K)=0.00355 *5*; α(L)=0.000477 *7*; α(M)=0.0001024 *15*; α(N+..)=2.76×10^{-5} *4* α(N)=2.35×10^{-5} *4*; α(O)=3.74×10^{-6} *6*; α(P)=3.81×10^{-7} *6*
		1138.9 *1*	11 *1*	1057.64	13/2⁻				
		1219.21 *7*	54 *4*	977.49	(9/2)⁻				
		1807.14 *7*	100 *3*	389.51	11/2⁻	Q+D			
2209.3		1231.8 *3*	100	977.49	(9/2)⁻				
2254.32		1196.9 *1*	100 *8*	1057.41	11/2⁺				
		1276.9 *5*	28 *9*	977.49	(9/2)⁻				
2275.59		1087.3 *1*	100 *20*	1188.42	11/2⁻				
		1297.6 *2*	42 *7*	977.49	(9/2)⁻				
		1886.0 *2*	90 *10*	389.51	11/2⁻				
2318.17	19/2⁻	1012.2 *3*	100.0	1306.05	15/2⁻				
2329.01	17/2⁻	1023.0 *4*	52.17	1306.05	15/2⁻				
		1271.6 *3*	100.0	1057.64	13/2⁻				
2331.89		1354.4 *2*	100	977.49	(9/2)⁻				
2351.12		1162.8 *2*	100 *8*	1188.42	11/2⁻				
		1373.6 *1*	69 *8*	977.49	(9/2)⁻				
2357.84		1143.9 *1*	100	1213.94	11/2⁻				
2378.22	19/2⁻	1072.2 *1*	100	1306.05	15/2⁻	E2		0.00226 *4*	α(K)=0.00192 *3*; α(L)=0.000271 *4*; α(M)=5.84×10^{-5} *9*; α(N+..)=1.562×10^{-5} *22* α(N)=1.333×10^{-5} *19*; α(O)=2.10×10^{-6} *3*; α(P)=1.98×10^{-7} *3*
2417.6		1329.3 *5*	100	1088.31					
2457.49	17/2⁺	549.3 *6*	13.79	1908.2	15/2⁺				
		563.3 *4*	28.74	1893.31	15/2⁻				
		1151.6 *2*	100.0	1306.05	15/2⁻	D+Q	−4.2 *+4−5*		
2473.88	21/2$^{(-)}$	155.8 *3*	100.0	2318.17	19/2⁻	D			
2559.20	19/2⁺	101.6 *3*	26.05	2457.49	17/2⁺	M1+(E2)	+0.09 *14*	1.77 *4*	α(K)=1.49 *3*; α(L)=0.22 *3*; α(M)=0.047 *7*; α(N+..)=0.0127 *18*

$^{143}_{63}Eu_{80}$-9

Adopted Levels, Gammas (continued)

γ(^{143}Eu) (continued)

E_i(level)	J_i^π	E_γ[&]	I_γ[@]	E_f	J_f^π	Mult.[‡]	α[†]	Comments
								α(N)=0.0108 *16*; α(O)=0.00171 *20*; α(P)=0.000164 *5* B(M1)(W.u.)=0.40 *3*; B(E2)(W.u.)=(1.8×10^2 *+57−18*)
2559.20	19/2$^+$	230.2 *2*	9.968	2329.01	17/2$^-$	E1	0.0302	α(K)=0.0257 *4*; α(L)=0.00357 *5*; α(M)=0.000768 *11*; α(N+..)=0.000204 *3* α(N)=0.0001742 *25*; α(O)=2.69×10^{-5} *4*; α(P)=2.38×10^{-6} *4* B(E1)(W.u.)=0.000150 *9*
		442.9 *2*	100.00	2116.25	17/2$^-$	E1	0.00595 *9*	α(K)=0.00508 *8*; α(L)=0.000684 *10*; α(M)=0.0001466 *21*; α(N+..)=3.91×10^{-5} *6* α(N)=3.34×10^{-5} *5*; α(O)=5.24×10^{-6} *8*; α(P)=4.95×10^{-7} *7* B(E1)(W.u.)=0.000211 *12*
2600.64		1386.69 *7*	100	1213.94	11/2$^-$			
2610.8		1633.3 *6*	33 *17*	977.49	(9/2)$^-$			
		2338.9 *8*	100 *33*	271.93	7/2$^+$			
2612.04	21/2$^-$	138.2 *2*	17.39	2473.88	21/2$^{(-)}$			
		233.9 *2*	100.0	2378.22	19/2$^-$			
		495.6 *3*	33.33	2116.25	17/2$^-$			
2629.71	21/2$^+$	70.5 *1*	58.62	2559.20	19/2$^+$	M1	5.06	α(K)=4.27 *7*; α(L)=0.615 *9*; α(M)=0.1329 *20*; α(N+..)=0.0357 *6* α(N)=0.0304 *5*; α(O)=0.00482 *7*; α(P)=0.000474 *7* B(M1)(W.u.)=0.82 *18*
		156 *1*	4.138	2473.88	21/2$^{(-)}$	D		
		251.5 *1*	100.0	2378.22	19/2$^-$	E1	0.0240	α(K)=0.0204 *3*; α(L)=0.00283 *4*; α(M)=0.000607 *9*; α(N+..)=0.0001612 *23* α(N)=0.0001379 *20*; α(O)=2.14×10^{-5} *3*; α(P)=1.91×10^{-6} *3* B(E1)(W.u.)=0.00035 *8*
2811.51	23/2$^+$	181.8 *1*	100.0	2629.71	21/2$^+$	M1	0.342	α(K)=0.290 *4*; α(L)=0.0411 *6*; α(M)=0.00887 *13*; α(N+..)=0.00239 *4* α(N)=0.00203 *3*; α(O)=0.000322 *5*; α(P)=3.20×10^{-5} *5* B(M1)(W.u.)=1.0 *4*
		199.5 *2*	6.179	2612.04	21/2$^-$	E1	0.0441	α(K)=0.0374 *6*; α(L)=0.00525 *8*; α(M)=0.001128 *16*; α(N+..)=0.000298 *5* α(N)=0.000256 *4*; α(O)=3.94×10^{-5} *6*; α(P)=3.42×10^{-6} *5* B(E1)(W.u.)=0.00053 *21*
3011.5	23/2$^-$	381.8 *5*	62.50	2629.71	21/2$^+$			
		399.5 *4*	100.0	2612.04	21/2$^-$			
3343.44	25/2$^+$	531.9 *2*	100.0	2811.51	23/2$^+$	M1	0.0200	α(K)=0.01699 *24*; α(L)=0.00233 *4*; α(M)=0.000502 *7*; α(N+..)=0.0001351 *19* α(N)=0.0001149 *17*; α(O)=1.83×10^{-5} *3*; α(P)=1.84×10^{-6} *3* B(M1)(W.u.)>0.041
3364.10	25/2$^+$	552.6 *2*	100.0	2811.51	23/2$^+$	M1	0.0181	α(K)=0.01544 *22*; α(L)=0.00212 *3*; α(M)=0.000455 *7*; α(N+..)=0.0001225 *18* α(N)=0.0001043 *15*; α(O)=1.659×10^{-5} *24*; α(P)=1.673×10^{-6} *24* B(M1)(W.u.)>0.046
3414.2	(25/2)	603 *1*		2811.51	23/2$^+$			
3603.8	23/2$^-$	1285.6 *4*	100.0	2318.17	19/2$^-$			
3688.87	25/2$^-$	877.4 *3*	97.62	2811.51	23/2$^+$			
		1076.8 *3*	100.0	2612.04	21/2$^-$			
3748.97	27/2$^+$	384.9 *2*	100.0	3364.10	25/2$^+$	M1	0.0457	α(K)=0.0388 *6*; α(L)=0.00539 *8*; α(M)=0.001161 *17*; α(N+..)=0.000312 *5*

$^{143}_{63}Eu_{80}$-10

Adopted Levels, Gammas (continued)

γ(^{143}Eu) (continued)

E_i(level)	J_i^π	E_γ[&]	I_γ[@]	E_f	J_f^π	Mult.[‡]	α[†]	Comments
								α(N)=0.000266 *4*; α(O)=4.23×10^{-5} *6*; α(P)=4.24×10^{-6} *6* B(M1)(W.u.)=0.062 *21*
3748.97	27/2$^+$	405.5 *2*	41.26	3343.44	25/2$^+$	M1	0.0399	α(K)=0.0339 *5*; α(L)=0.00470 *7*; α(M)=0.001012 *15*; α(N+..)=0.000272 *4* α(N)=0.000232 *4*; α(O)=3.69×10^{-5} *6*; α(P)=3.70×10^{-6} *6* B(M1)(W.u.)=0.022 *8*
3761.5	27/2$^+$	397.4 *3*	100.0	3364.10	25/2$^+$			
3788.0	(27/2)	99.1 *2*	100.0	3688.87	25/2$^-$			
3963.1	27/2$^+$	549.0 *5*	41.67	3414.2	(25/2)			
		599.0 *5*	100.0	3364.10	25/2$^+$			
4091.4	(29/2)	303.4 *4*	100.0	3788.0	(27/2)			
4168.0	27/2$^-$	803.9 *3*	100.0	3364.10	25/2$^+$			
		824.4 *5*	3.846	3343.44	25/2$^+$			
		1156.5 *4*	8.242	3011.5	23/2$^-$			
4215.7	(29/2)	427.8 *3*	100.0	3788.0	(27/2)			
4318.53	29/2$^+$	557.2 *4*	13.61	3761.5	27/2$^+$	M1	0.0178	α(K)=0.01512 *22*; α(L)=0.00207 *3*; α(M)=0.000446 *7*; α(N+..)=0.0001200 *17* α(N)=0.0001021 *15*; α(O)=1.625×10^{-5} *23*; α(P)=1.638×10^{-6} *24* B(M1)(W.u.)=0.0044 *5*
		569.6 *2*	100.0	3748.97	27/2$^+$	M1	0.01680	α(K)=0.01431 *20*; α(L)=0.00196 *3*; α(M)=0.000421 *6*; α(N+..)=0.0001134 *16* α(N)=9.65×10^{-5} *14*; α(O)=1.536×10^{-5} *22*; α(P)=1.550×10^{-6} *22* B(M1)(W.u.)=0.030 *3*
		954.4 *2*	54.44	3364.10	25/2$^+$	E2	0.00289 *4*	α(K)=0.00244 *4*; α(L)=0.000352 *5*; α(M)=7.61×10^{-5} *11*; α(N+..)=2.03×10^{-5} *3* α(N)=1.735×10^{-5} *25*; α(O)=2.72×10^{-6} *4*; α(P)=2.51×10^{-7} *4* B(E2)(W.u.)=2.21 *23*
		975.0 *3*	27.81	3343.44	25/2$^+$	E2	0.00276 *4*	α(K)=0.00233 *4*; α(L)=0.000335 *5*; α(M)=7.24×10^{-5} *11*; α(N+..)=1.93×10^{-5} *3* α(N)=1.652×10^{-5} *24*; α(O)=2.59×10^{-6} *4*; α(P)=2.40×10^{-7} *4* B(E2)(W.u.)=1.02 *11*
4397.2	29/2$^+$	648.2 *4*	45.16	3748.97	27/2$^+$			
		1033.0 *3*	100.0	3364.10	25/2$^+$			
		1054.0 *4*	38.71	3343.44	25/2$^+$			
4472.9	27/2$^-$	869.1 *5*	100.0	3603.8	23/2$^-$			
4477.83	31/2$^+$	80.7 *2*	6.075	4397.2	29/2$^+$	M1	3.42 *6*	α(K)=2.89 *5*; α(L)=0.415 *7*; α(M)=0.0897 *15*; α(N+..)=0.0241 *4* α(N)=0.0205 *4*; α(O)=0.00325 *6*; α(P)=0.000320 *5* B(M1)(W.u.)=0.163 *7*
		159.3 *1*	100.0	4318.53	29/2$^+$	M1	0.494	α(K)=0.418 *6*; α(L)=0.0594 *9*; α(M)=0.01283 *19*; α(N+..)=0.00345 *5* α(N)=0.00294 *5*; α(O)=0.000466 *7*; α(P)=4.62×10^{-5} *7* B(M1)(W.u.)=0.349 *14*
		728.8 *2*	21.50	3748.97	27/2$^+$	E2	0.00526 *8*	α(K)=0.00440 *7*; α(L)=0.000675 *10*; α(M)=0.0001470 *21*; α(N+..)=3.91×10^{-5} *6* α(N)=3.35×10^{-5} *5*; α(O)=5.19×10^{-6} *8*; α(P)=4.49×10^{-7} *7* B(E2)(W.u.)=0.85 *4*
4563.0	(31/2)	471.6 *4*	100.0	4091.4	(29/2)			
4565.7	31/2$^+$	602.6 *4*	100.0	3963.1	27/2$^+$			

$^{143}_{63}Eu_{80}$-11

Adopted Levels, Gammas (continued)

γ(^{143}Eu) (continued)

E_i(level)	J_i^π	E_γ [&]	I_γ [@]	E_f	J_f^π	Mult. [‡]	δ [a]	α [†]	Comments
4565.7	31/2$^+$	804.2 *5*	89.7	3761.5	27/2$^+$				
4653.6	33/2$^+$	175.8 *2*	100.0	4477.83	31/2$^+$	M1		0.375	α(K)=0.318 *5*; α(L)=0.0451 *7*; α(M)=0.00974 *14*; α(N+..)=0.00262 *4* α(N)=0.00223 *4*; α(O)=0.000354 *5*; α(P)=3.51×10^{-5} *5* B(M1)(W.u.)=0.49 *17*
4786.6	31/2$^+$	1037.6 *4*	100.0	3748.97	27/2$^+$				
4946.9	35/2$^{(+)}$	293.3 *2*	100.0	4653.6	33/2$^+$	(M1)		0.0934	α(K)=0.0793 *12*; α(L)=0.01109 *16*; α(M)=0.00239 *4*; α(N+..)=0.000644 *9* α(N)=0.000548 *8*; α(O)=8.71×10^{-5} *13*; α(P)=8.69×10^{-6} *13* B(M1)(W.u.)>0.38
5051.8	31/2$^-$	578.8 *4*	20.62	4472.9	27/2$^-$	E2		0.00917 *13*	α(K)=0.00757 *11*; α(L)=0.001252 *18*; α(M)=0.000274 *4*; α(N+..)=7.26×10^{-5} *11* α(N)=6.23×10^{-5} *9*; α(O)=9.56×10^{-6} *14*; α(P)=7.63×10^{-7} *11* B(E2)(W.u.)>4.8
		883.8 *2*	100.00	4168.0	27/2$^-$	E2		0.00341 *5*	α(K)=0.00287 *4*; α(L)=0.000421 *6*; α(M)=9.11×10^{-5} *13*; α(N+..)=2.43×10^{-5} *4* α(N)=2.08×10^{-5} *3*; α(O)=3.25×10^{-6} *5*; α(P)=2.95×10^{-7} *5* B(E2)(W.u.)>2.8
5074.8	(31/2)	859.1 *4*	100.0	4215.7	(29/2)				
5107.0	33/2$^{(+)}$	629.1 *3*	100.0	4477.83	31/2$^+$				
5130.7	35/2$^+$	565.0 *4*	100.0	4565.7	31/2$^+$				
5190.8	31/2$^-$	717.9 *4*	100.0	4472.9	27/2$^-$				
5243.5	33/2$^{(-)}$	169 *1*		5074.8	(31/2)				
		456.9 *4*	100.0	4786.6	31/2$^+$				
		680.5 *5*	22.73	4563.0	(31/2)				
5245.8	37/2$^{(-)}$	298.9 *4*	100.0	4946.9	35/2$^{(+)}$				
5328.7	33/2$^{(+)}$	675.0 *3*	100.0	4653.6	33/2$^+$				
5382.0	37/2$^{(-)}$	435.3 *4*	100.0	4946.9	35/2$^{(+)}$				
5411.4	35/2$^{(-)}$	168 *1*		5243.5	33/2$^{(-)}$				
		757.8 *3*	100.0	4653.6	33/2$^+$				
5419.4	35/2$^{(-)}$	765.8 *2*	100.0	4653.6	33/2$^+$				
5587.1	37/2$^{(-)}$	167.8 *3*	100.0	5419.4	35/2$^{(-)}$				
		175.7 *5*	≈62.50	5411.4	35/2$^{(-)}$	D(+Q)	−0.02 *10*		
5722.6	35/2$^{(-)}$	1069.0 *4*	100.0	4653.6	33/2$^+$				
5792.4	35/2$^{(+)}$	463.6 *3*	70.37	5328.7	33/2$^{(+)}$	E2,M1		0.022 *6*	α(K)=0.019 *6*; α(L)=0.0029 *5*; α(M)=0.00062 *10*; α(N+..)=0.00017 *3* α(N)=0.000142 *22*; α(O)=2.2×10^{-5} *4*; α(P)=2.0×10^{-6} *7*
		685.3 *3*	33.33	5107.0	33/2$^{(+)}$				
		845.6 *3*	100.0	4946.9	35/2$^{(+)}$				
		1139.0 *3*	38.89	4653.6	33/2$^+$				

Adopted Levels, Gammas (continued)

γ(^{143}Eu) (continued)

E_i(level)	J_i^π	E_γ[&]	I_γ[@]	E_f	J_f^π	Mult.[‡]	α[†]	Comments
5799.5	37/2$^{(-)}$	76.9 *4*	100.0	5722.6	35/2$^{(-)}$			
5848.1	39/2$^{(-)}$	261.0 *2*	100.0	5587.1	37/2$^{(-)}$			
5869.3	35/2$^{(+)}$	77.0 *4*	33.33	5792.4	35/2$^{(+)}$			
		762.2 *4*	91.67	5107.0	33/2$^{(+)}$			
		922.3 *4*	100.0	4946.9	35/2$^{(+)}$			
		1215.7 *4*	100.0	4653.6	33/2$^+$			
5904.7	35/2$^-$	713.9 *3*	9.449	5190.8	31/2$^-$	E2	0.00552 *8*	α(K)=0.00461 *7*; α(L)=0.000712 *10*; α(M)=0.0001551 *22*; α(N+..)=4.12×10^{-5} *6* α(N)=3.53×10^{-5} *5*; α(O)=5.47×10^{-6} *8*; α(P)=4.70×10^{-7} *7* B(E2)(W.u.)>8.5
		852.9 *2*	100.0	5051.8	31/2$^-$	E2	0.00368 *6*	α(K)=0.00310 *5*; α(L)=0.000458 *7*; α(M)=9.93×10^{-5} *14*; α(N+..)=2.65×10^{-5} *4* α(N)=2.26×10^{-5} *4*; α(O)=3.53×10^{-6} *5*; α(P)=3.18×10^{-7} *5* B(E2)(W.u.)>37
5939.3	39/2$^+$	808.6 *3*	100.0	5130.7	35/2$^+$			
6001.0	39/2$^{(-)}$	413.9 *3*	100.0	5587.1	37/2$^{(-)}$			
6055.9	39/2$^{(-)}$	468.8 *3*	100.0	5587.1	37/2$^{(-)}$			
6057.7	37/2$^{(+)}$	188.4 *2*	75.93	5869.3	35/2$^{(+)}$			
		265.3 *2*	100.0	5792.4	35/2$^{(+)}$	E2,M1	0.104 *19*	α(K)=0.084 *20*; α(L)=0.0154 *9*; α(M)=0.0034 *3*; α(N+..)=0.00090 *6* α(N)=0.00077 *6*; α(O)=0.000117 *4*; α(P)=9.E−6 *3*
6316.3	41/2	315.3 *3*	100.0	6001.0	39/2$^{(-)}$			
6333.3	39/2$^{(+)}$	275.5 *2*	100.0	6057.7	37/2$^{(+)}$	E2,M1	0.093 *18*	α(K)=0.076 *18*; α(L)=0.0136 *6*; α(M)=0.00301 *19*; α(N+..)=0.00079 *4* α(N)=0.00068 *4*; α(O)=0.0001037 *17*; α(P)=7.8×10^{-6} *25*
6363.0	39/2$^{(-)}$	775.9 *3*	100.0	5587.1	37/2$^{(-)}$			
6365.0	41/2$^{(-)}$	516.9 *4*	100.0	5848.1	39/2$^{(-)}$			
6556.3	41/2$^{(-)}$	500.5 *4*	100.0	6055.9	39/2$^{(-)}$			
6694.8	41/2$^{(+)}$	361.5 *2*	100.0	6333.3	39/2$^{(+)}$	E2,M1	0.043 *11*	α(K)=0.036 *10*; α(L)=0.0059 *5*; α(M)=0.00129 *9*; α(N+..)=0.00034 *3* α(N)=0.000292 *22*; α(O)=4.5×10^{-5} *5*; α(P)=3.8×10^{-6} *13*
6709.5	39/2	1463.6 *5*	100.0	5245.8	37/2$^{(-)}$			
6747.9		1801.0 *6*	100.0	4946.9	35/2$^{(+)}$			
6815.3	43/2	499.0 *3*	100.0	6316.3	41/2			
6840.6	39/2$^-$	935.9 *2*	100.0	5904.7	35/2$^-$	E2	0.00301 *5*	α(K)=0.00254 *4*; α(L)=0.000368 *6*; α(M)=7.96×10^{-5} *12*; α(N+..)=2.13×10^{-5} *3* α(N)=1.82×10^{-5} *3*; α(O)=2.84×10^{-6} *4*; α(P)=2.61×10^{-7} *4* B(E2)(W.u.)>25
6871.4	43/2$^+$	932.1 *4*	100.0	5939.3	39/2$^+$			
6881.9	43/2$^+$	942.6 *4*	100.0	5939.3	39/2$^+$			
6975.6	41/2$^{(-)}$	266.0 *4*	83.33	6709.5	39/2			
		1593.8 *4*	100.0	5382.0	37/2$^{(-)}$			
		1729.7 *6*	58.33	5245.8	37/2$^{(-)}$			
7024.3	41/2$^{(-)}$	661.3 *4*	100.0	6363.0	39/2$^{(-)}$			
7152.3	45/2	337.0 *4*	100.0	6815.3	43/2			

$^{143}_{63}Eu_{80}$-13

Adopted Levels, Gammas (continued)

γ(^{143}Eu) (continued)

E_i(level)	J_i^π	E_γ[&]	I_γ[@]	E_f	J_f^π	Mult.[‡]	α[†]	Comments
7154.4	$43/2^{(+)}$	459.5 *2*	100.0	6694.8	$41/2^{(+)}$	E2,M1	0.023 *6*	α(K)=0.019 *6*; α(L)=0.0029 *5*; α(M)=0.00064 *10*; α(N+..)=0.00017 *3* α(N)=0.000146 *22*; α(O)=2.3×10^{-5} *4*; α(P)=2.0×10^{-6} *7*
7214.8	$43/2^{(+)}$	239.1 *4*	47.62	6975.6	$41/2^{(-)}$			
		849.8 *4*	100.0	6365.0	$41/2^{(-)}$			
7248.8	45/2	433.5 *4*	100.0	6815.3	43/2			
7273.8	$41/2^{(-)}$	940.4 *4*	100.0	6333.3	$39/2^{(+)}$			
7288.9	$43/2^{(-)}$	313.4 *4*	100.0	6975.6	$41/2^{(-)}$			
7342.1	43/2	317.9 *4*	100.0	7024.3	$41/2^{(-)}$			
		785.9 *5*	50.00	6556.3	$41/2^{(-)}$			
		977.0 *5*	60.00	6365.0	$41/2^{(-)}$			
7388.6	$43/2^-$	548.0 *2*	100.0	6840.6	$39/2^-$	E2	0.01054	α(K)=0.00867 *13*; α(L)=0.001463 *21*; α(M)=0.000321 *5*; α(N+..)=8.49×10^{-5} *12* α(N)=7.29×10^{-5} *11*; α(O)=1.114×10^{-5} *16*; α(P)=8.70×10^{-7} *13* B(E2)(W.u.)=39.9 *19*
7389.6	45/2	574.3 *5*	100.0	6815.3	43/2			
7448.8	$45/2^{(+)}$	234.0 *5*	100.0	7214.8	$43/2^{(+)}$			
		294.4 *4*	83.33	7154.4	$43/2^{(+)}$			
7501.5	$43/2^{(-)}$	227.6 *4*	26.32	7273.8	$41/2^{(-)}$			
		806.8 *3*	100.0	6694.8	$41/2^{(+)}$			
7577.2	47/2	187.6 *2*	100.0	7389.6	45/2			
7659.7	$45/2^{(+)}$	371.0 *4*	100.0	7288.9	$43/2^{(-)}$			
7693.7	45/2	351.6 *4*	100.0	7342.1	43/2			
7701.8	$47/2^+$	830.4 *4*	100.0	6871.4	$43/2^+$			
7726.7	$45/2^{(+)}$	572.2 *4*	100.0	7154.4	$43/2^{(+)}$	E2,M1	0.013 *4*	α(K)=0.011 *4*; α(L)=0.0016 *4*; α(M)=0.00035 *7*; α(N+..)=9.4×10^{-5} *19* α(N)=8.0×10^{-5} *16*; α(O)=1.3×10^{-5} *3*; α(P)=1.2×10^{-6} *4*
7768.9	$47/2^+$	887.1 *5*	52.63	6881.9	$43/2^+$			
		897.4 *4*	100.0	6871.4	$43/2^+$			
7804.7	$45/2^{(-)}$	303.3 *3*	100.0	7501.5	$43/2^{(-)}$			
		650.3 *3*	89.29	7154.4	$43/2^{(+)}$			
7925.7	47/2	476.9 *4*	100.0	7448.8	$45/2^{(+)}$			
7942.6	47/2	693.8 *4*	100.0	7248.8	45/2			
8003.6	$47/2^-$	615.0 *2*	100.00	7388.6	$43/2^-$	E2	0.00789 *11*	α(K)=0.00654 *10*; α(L)=0.001058 *15*; α(M)=0.000231 *4*; α(N+..)=6.13×10^{-5} *9* α(N)=5.26×10^{-5} *8*; α(O)=8.09×10^{-6} *12*; α(P)=6.61×10^{-7} *10* B(E2)(W.u.)=69 *7*
8014.0	47/2	320.3 *3*	100.0	7693.7	45/2			
8213.7	$47/2^{(-)}$	409.0 *3*	100.0	7804.7	$45/2^{(-)}$			
8264.1	$47/2^{(+)}$	537.2 *4*	100.0	7726.7	$45/2^{(+)}$	E2,M1	0.015 *5*	α(K)=0.013 *4*; α(L)=0.0019 *4*; α(M)=0.00041 *8*; α(N+..)=0.000111 *21* α(N)=9.5×10^{-5} *18*; α(O)=1.5×10^{-5} *3*; α(P)=1.4×10^{-6} *5*
		604.5 *4*	62.50	7659.7	$45/2^{(+)}$			
		815.3 *5*	81.25	7448.8	$45/2^{(+)}$			

$^{143}_{63}Eu_{80}$-14

Adopted Levels, Gammas (continued)

γ(^{143}Eu) (continued)

E_i(level)	J_i^π	E_γ[&]	I_γ[@]	E_f	J_f^π	Mult.[‡]	α[†]	Comments
8485.7	49/2	221.6 *3*	100.0	8264.1	47/2$^{(+)}$			
8655.9		887 *1*		7768.9	47/2$^+$			
8730.8	49/2$^{(-)}$	517.1 *4*	100.0	8213.7	47/2$^{(-)}$			
8794.2	(51/2$^-$)	790.7 *5*		8003.6	47/2$^-$			
8870.1	51/2$^-$	866.6 *2*	100.0	8003.6	47/2$^-$	E2	0.00356 *5*	α(K)=0.00300 *5*; α(L)=0.000441 *7*; α(M)=9.55×10^{-5} *14*; α(N+..)=2.55×10^{-5} *4* α(N)=2.18×10^{-5} *3*; α(O)=3.40×10^{-6} *5*; α(P)=3.07×10^{-7} *5* B(E2)(W.u.)=65 *17*
8944.3	51/2	458.6 *3*	100.0	8485.7	49/2			
8972.3	49/2	968.7 *3*	100.0	8003.6	47/2$^-$			
9295.5	51/2$^{(-)}$	564.7 *5*	100.0	8730.8	49/2$^{(-)}$			
9364.7	53/2	420.4 *4*	100.0	8944.3	51/2			
9444.0	(55/2$^-$)	649.8 *4*		8794.2	(51/2$^-$)			
9568.0	53/2	595.6 *4*	25.93	8972.3	49/2			
		697.9 *2*	100.0	8870.1	51/2$^-$			
9977.7	55/2$^-$	1107.6 *2*	100.0	8870.1	51/2$^-$	E2	0.00212 *3*	α(K)=0.00180 *3*; α(L)=0.000252 *4*; α(M)=5.43×10^{-5} *8*; α(N+..)=1.495×10^{-5} *21* α(N)=1.241×10^{-5} *18*; α(O)=1.95×10^{-6} *3*; α(P)=1.85×10^{-7} *3*; α(IPF)=4.11×10^{-7} *7* B(E2)(W.u.)>19
10415.6	57/2	847.6 *3*	100.0	9568.0	53/2			
10439.3	(59/2$^-$)	995.2 *5*	100.0	9444.0	(55/2$^-$)			
10624.1	59/2$^-$	646.2 *4*	100.0	9977.7	55/2$^-$			
11227.4	59/2$^-$	602.8 *5*	19.51	10624.1	59/2$^-$			
		1249.8 *3*	100.0	9977.7	55/2$^-$	E2	0.001671 *24*	α(K)=0.001412 *20*; α(L)=0.000195 *3*; α(M)=4.19×10^{-5} *6*; α(N+..)=2.33×10^{-5} *4* α(N)=9.56×10^{-6} *14*; α(O)=1.509×10^{-6} *22*; α(P)=1.455×10^{-7} *21*; α(IPF)=1.203×10^{-5} *18* B(E2)(W.u.)>8.7
11512.9	61/2	1097.3 *3*	100.0	10415.6	57/2			
11852.4	(63/2$^-$)	1413.1 *5*	100.0	10439.3	(59/2$^-$)			
12018.6	63/2$^-$	791.1 *4*	100.0	11227.4	59/2$^-$	E2	0.00436 *7*	α(K)=0.00366 *6*; α(L)=0.000550 *8*; α(M)=0.0001194 *17*; α(N+..)=3.18×10^{-5} *5* α(N)=2.72×10^{-5} *4*; α(O)=4.23×10^{-6} *6*; α(P)=3.74×10^{-7} *6* B(E2)(W.u.)>66
		1394.7 *5*	54.84	10624.1	59/2$^-$	E2	0.001380 *20*	α(K)=0.001140 *16*; α(L)=0.0001550 *22*; α(M)=3.33×10^{-5} *5*; α(N+..)=5.12×10^{-5} α(N)=7.61×10^{-6} *11*; α(O)=1.203×10^{-6} *17*; α(P)=1.176×10^{-7} *17*; α(IPF)=4.23×10^{-5} *6* B(E2)(W.u.)>2.1

Adopted Levels, Gammas (continued)

γ(^{143}Eu) (continued)

E_i(level)	J_i^π	E_γ[&]	I_γ[@]	E_f	J_f^π	Mult.[‡]	α[†]	Comments
12824.6	65/2	1311.7 *5*	100.0	11512.9	61/2			
12974.4	67/2$^-$	955.8 *4*	100.0	12018.6	63/2$^-$	E2	0.00288 *4*	α(K)=0.00243 *4*; α(L)=0.000351 *5*; α(M)=7.58×10^{-5} *11*; α(N+..)=2.02×10^{-5} *3* α(N)=1.729×10^{-5} *25*; α(O)=2.71×10^{-6} *4*; α(P)=2.50×10^{-7} *4* B(E2)(W.u.)=1.1×10^{2} *3*
13036.4		1184 *1*	100.0	11852.4	(63/2$^-$)			
14160.0	71/2$^-$	1185.5 *4*	100.0	12974.4	67/2$^-$	E2	0.00185 *3*	α(K)=0.001567 *22*; α(L)=0.000218 *3*; α(M)=4.69×10^{-5} *7*; α(N+..)=1.672×10^{-5} *24* α(N)=1.070×10^{-5} *15*; α(O)=1.687×10^{-6} *24*; α(P)=1.615×10^{-7} *23*; α(IPF)=4.17×10^{-6} *7* B(E2)(W.u.)>27
14293.6		1469 *1*	100.0	12824.6	65/2			
15551.1	75/2$^-$	1391.1 *5*	100.0	14160.0	71/2$^-$			
15590.5	75/2$^-$	1430.5 *5*	100.0	14160.0	71/2$^-$			
483.28+x	J+2	483.28 *10*	0.32 *2*	x	J≈(33/2)			
1029.64+x	J+4	546.36[#] *10*	0.69 *3*	483.28+x	J+2			
1638.49+x	J+6	608.85 *10*	1.05 *3*	1029.64+x	J+4			
2309.63+x	J+8	671.14[#] *10*	0.96 *4*	1638.49+x	J+6			
3042.06+x	J+10	732.42 *10*	0.99 *3*	2309.63+x	J+8			
3835.19+x	J+12	793.13 *10*	0.98 *3*	3042.06+x	J+10			
4688.5+x	J+14	853.30 *10*	1.01 *4*	3835.19+x	J+12			
5601.4+x	J+16	912.9[#] *2*	0.98 *8*	4688.5+x	J+14			
6573.7+x	J+18	972.26 *10*	1.04 *8*	5601.4+x	J+16			
7604.9+x	J+20	1031.25 *20*	1.03 *7*	6573.7+x	J+18			
8694.8+x	J+22	1089.93 *20*	0.95 *6*	7604.9+x	J+20			
9843.5+x	J+24	1148.67[#] *20*	0.75 *11*	8694.8+x	J+22			
11050.7+x	J+26	1207.13 *20*	0.81 *4*	9843.5+x	J+24			
12316.4+x	J+28	1265.69 *20*	0.66 *3*	11050.7+x	J+26			
13640.9+x	J+30	1324.52 *21*	0.56 *3*	12316.4+x	J+28			
15023.6+x	J+32	1382.70 *21*	0.43 *3*	13640.9+x	J+30			
16466.7+x	J+34	1443.12 *21*	0.33 *3*	15023.6+x	J+32			
17969.8+x	J+36	1503.03 *21*	0.32 *3*	16466.7+x	J+34			
19533.1+x	J+38	1563.3 *2*	0.17 *2*	17969.8+x	J+36			
21157.1+x	J+40	1624.0 *10*	0.09 *2*	19533.1+x	J+38			
22841.8+x	J+42	1684.7 *10*		21157.1+x	J+40			
24588.1+x	J+44	1746.3 *12*		22841.8+x	J+42			
26392.9+x	J+46	1804.8 *12*		24588.1+x	J+44			
865.2+y	J1+2	865.2[#] *3*	0.29 *4*	y	J1≈(61/2)			
1789.0+y	J1+4	923.76 *13*	0.32 *3*	865.2+y	J1+2			
2768.8+y	J1+6	979.8 *2*		1789.0+y	J1+4			

$^{143}_{63}Eu_{80}$-16

Adopted Levels, Gammas (continued)

γ(^{143}Eu) (continued)

E_i(level)	J_i^π	E_γ[&]	I_γ[@]	E_f	J_f^π	E_i(level)	J_i^π	E_γ[&]	I_γ[@]	E_f	J_f^π
3805.0+y	J1+8	1036.27 *22*		2768.8+y	J1+6	12672.3+y	J1+22	1441.9 *3*	0.14 *3*	11230.4+y	J1+20
4898.3+y	J1+10	1093.3 *2*		3805.0+y	J1+8	14173.5+y	J1+24	1501.2 *4*	0.07 *2*	12672.3+y	J1+22
6048.9+y	J1+12	1150.6[#] *2*		4898.3+y	J1+10	15734.5+y	J1+26	1561.0 *4*	0.06 *2*	14173.5+y	J1+24
7257.2+y	J1+14	1208.3 *3*	0.32 *3*	6048.9+y	J1+12	17355.8+y	J1+28	1621.3 *12*		15734.5+y	J1+26
8523.2+y	J1+16	1266.0 *2*	0.29 *3*	7257.2+y	J1+14	19040+y	J1+30	1684 *2*		17355.8+y	J1+28
9847.4+y	J1+18	1324.2 *3*	0.21 *3*	8523.2+y	J1+16	20780+y	J1+32	1740 *2*		19040+y	J1+30
11230.4+y	J1+20	1383.0 *3*	0.16 *3*	9847.4+y	J1+18						

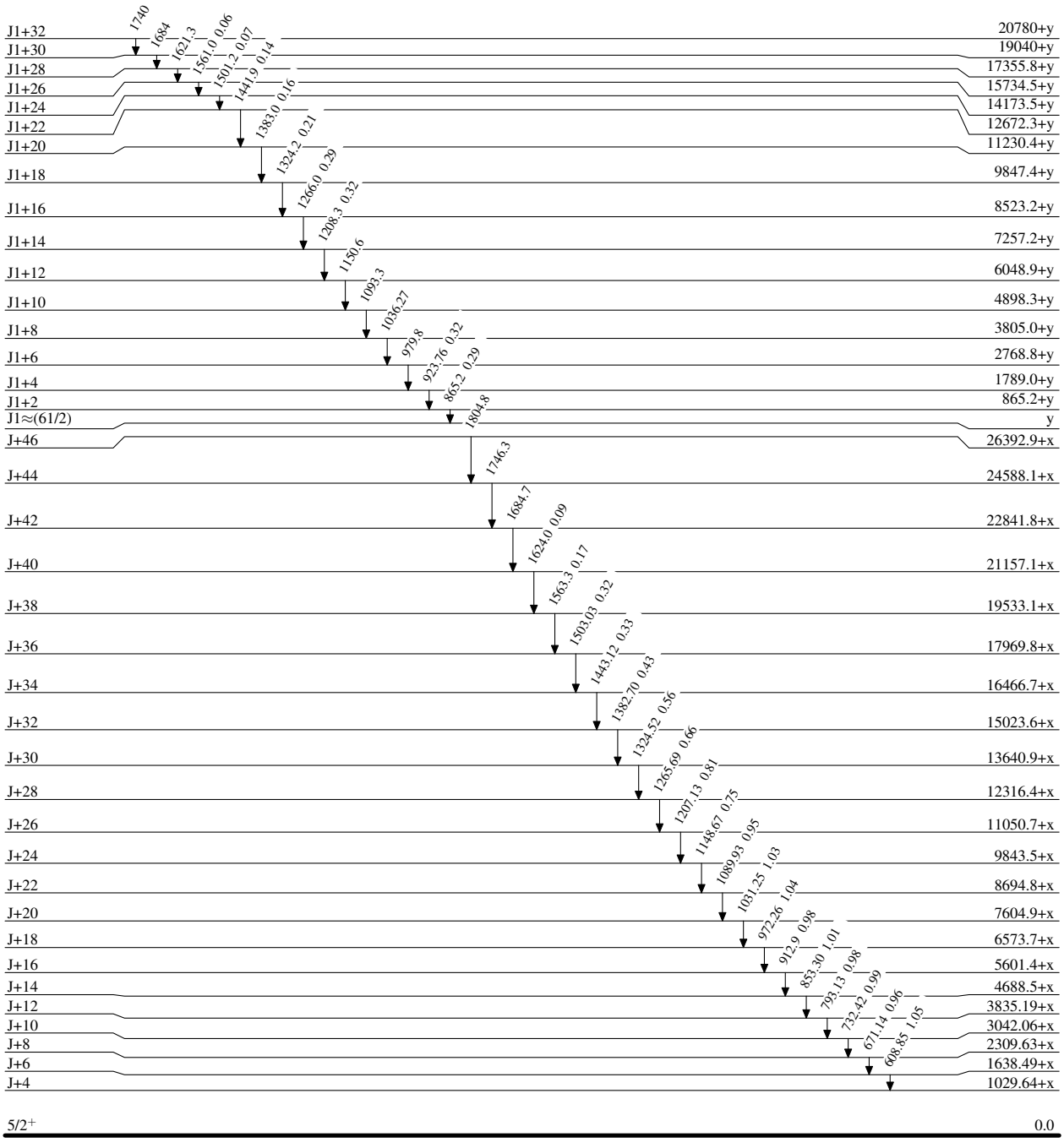
[†] Additional information 3.
[‡] From α(K)exp (^{143}Gd ε decay) and γ(θ) in (p,2nγ) and (^{6}Li,5nγ). In (HI,xnγ) mult are from DCO, the ΔJ=2, Q γ′s are usually E2, and ΔJ=1, D+Q γ′s are usually M1+E2.
[#] This γ ray is close in energy to a contaminant line.
[@] Relative branching ratios except for SD-1 and SD-2 bands, for which relative intensities within each band are given.
[&] From ^{143}Gd ε decay, (HI,xnγ).
[a] From (HI,xnγ).

$^{143}_{63}Eu_{80}$-17

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

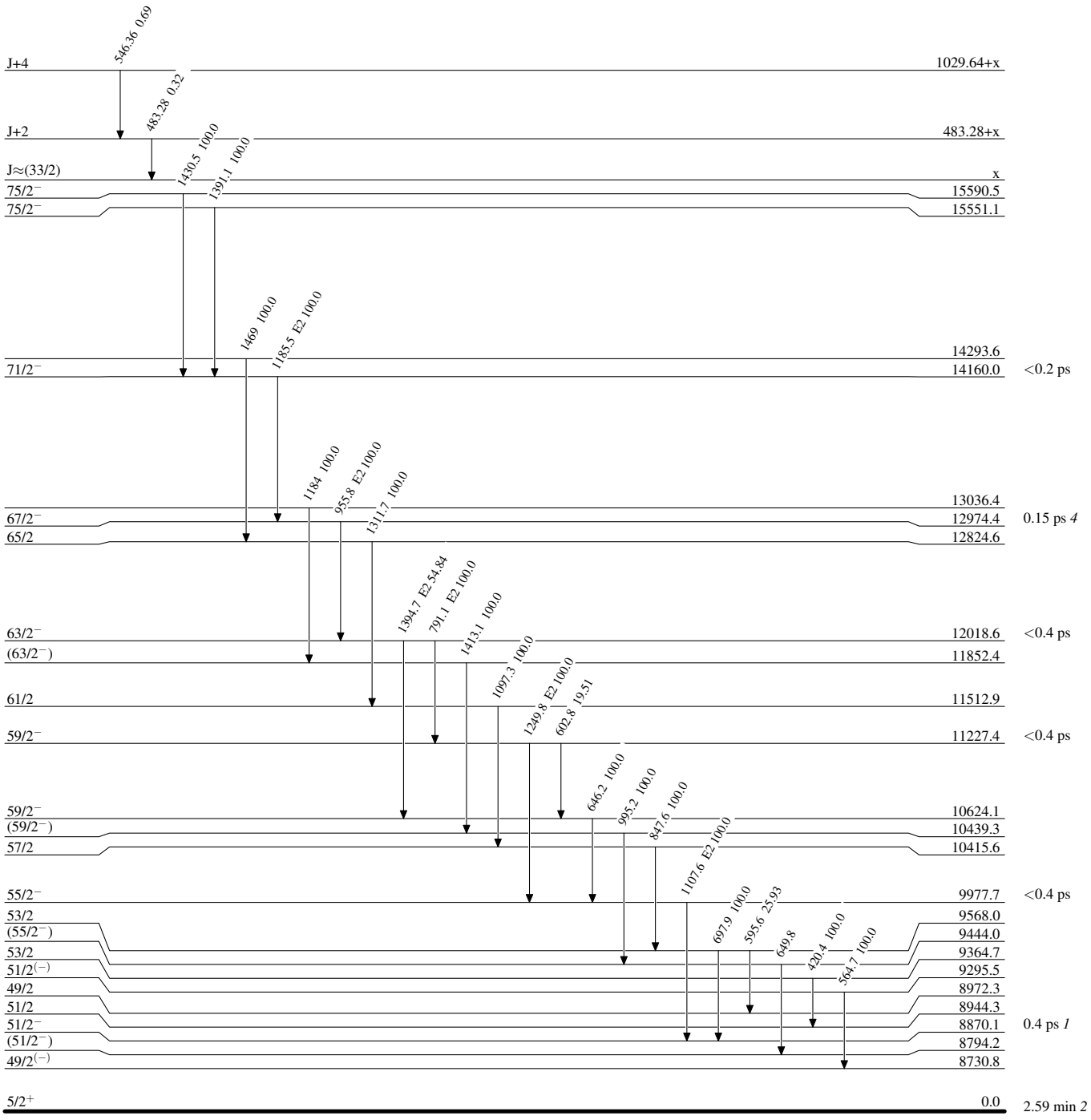


$^{143}_{63}Eu_{80}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

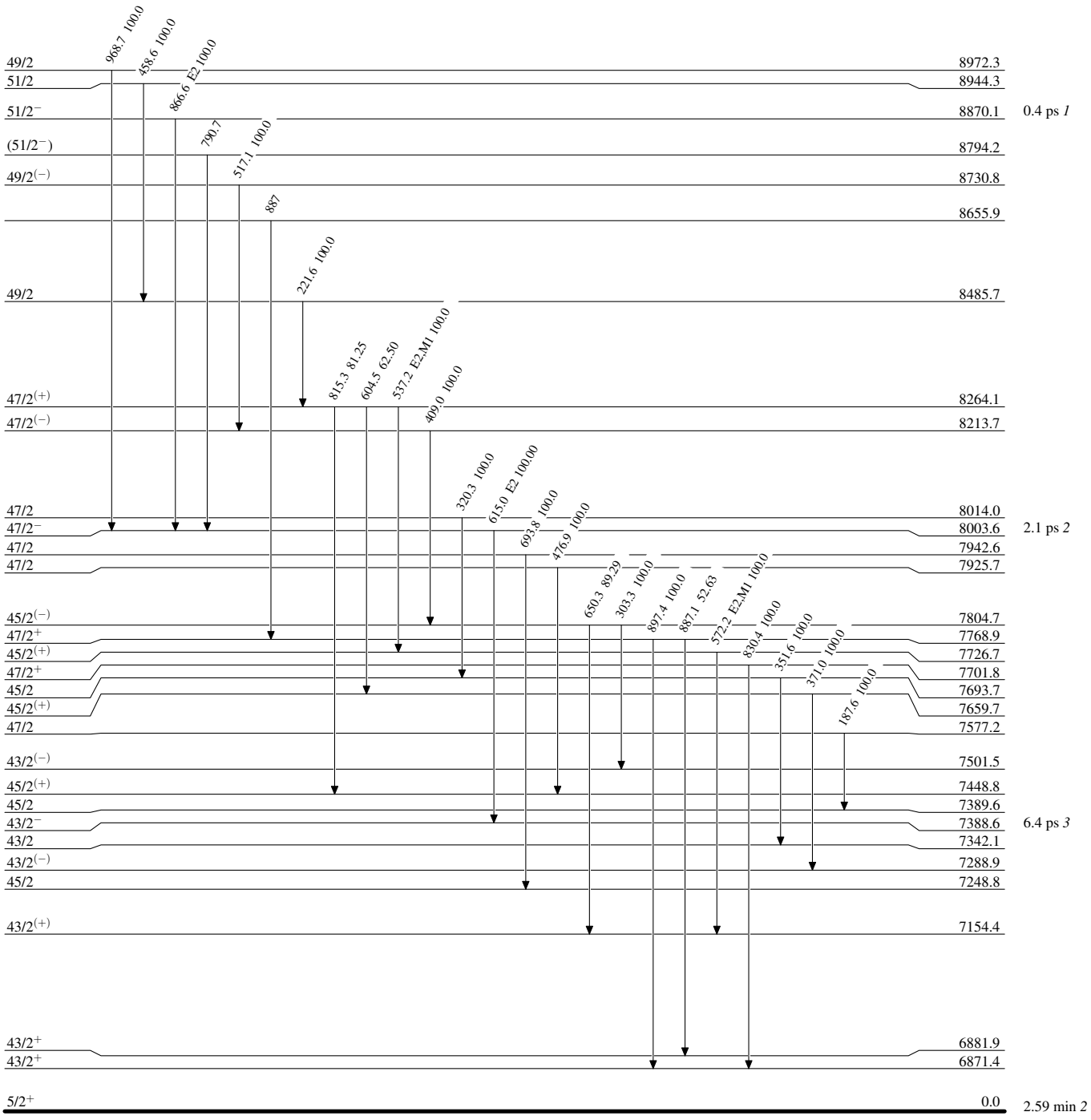


$^{143}_{63}Eu_{80}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

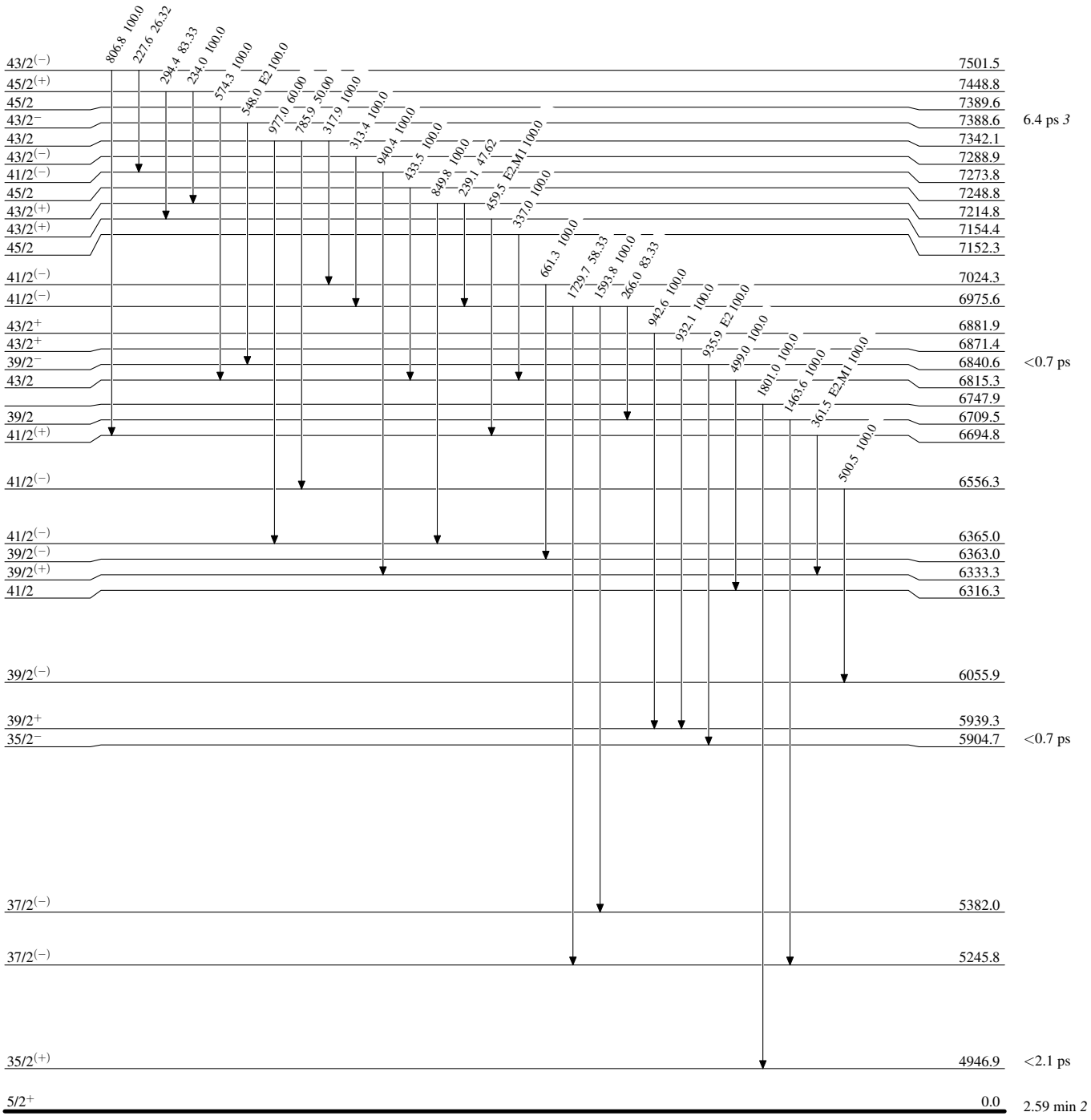


$^{143}_{63}Eu_{80}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

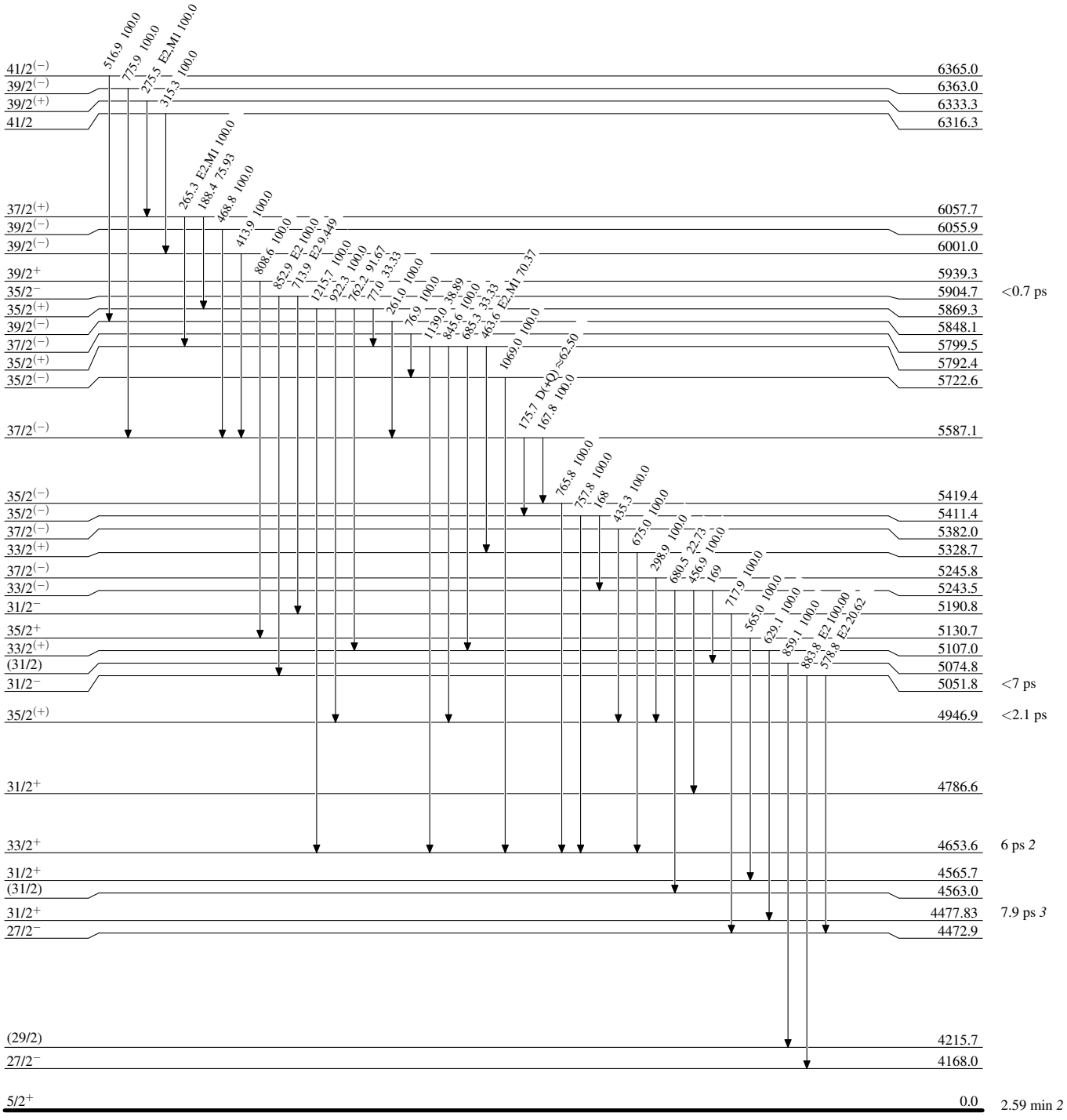


$^{143}_{63}Eu_{80}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

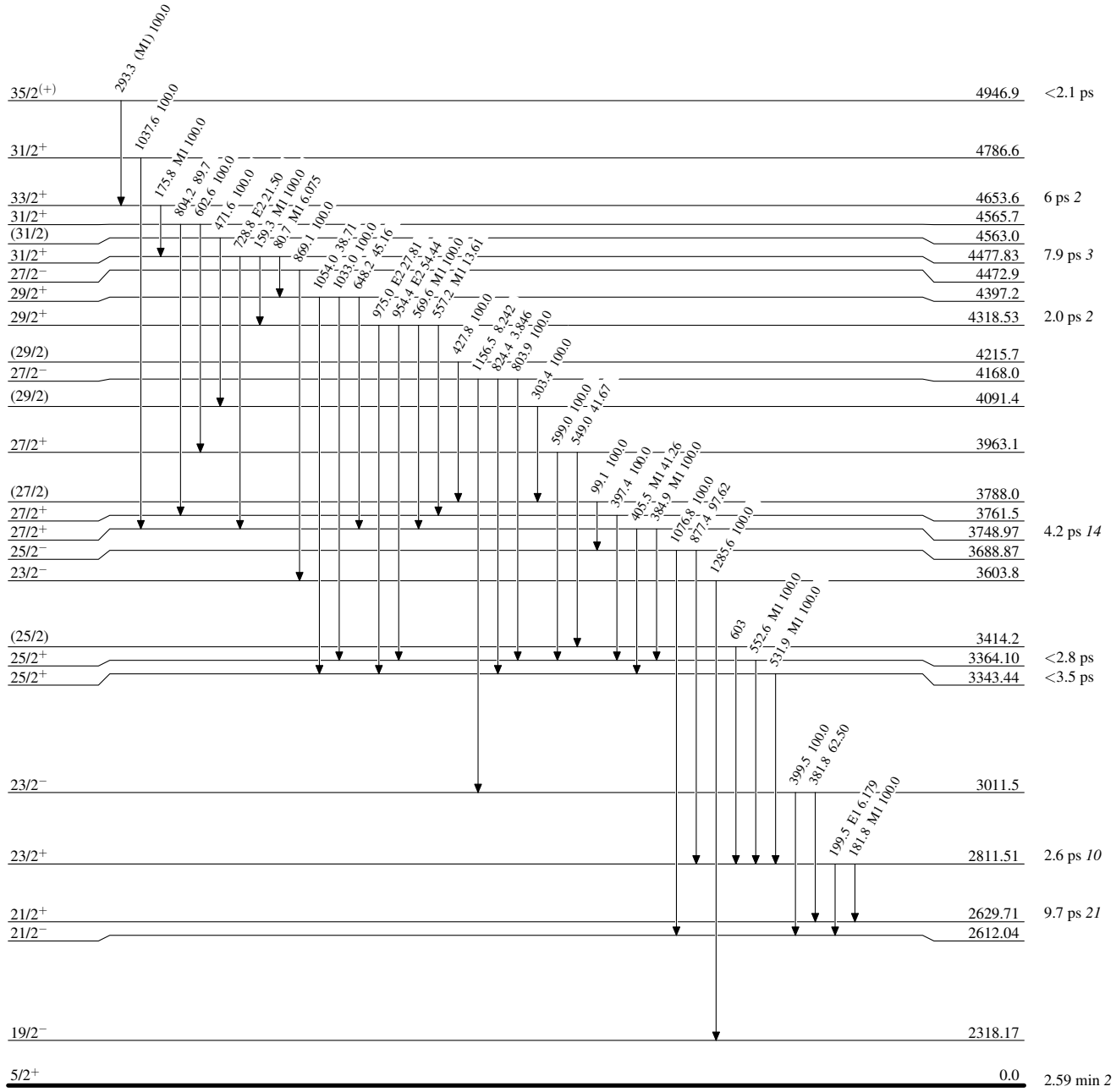


$^{143}_{63}Eu_{80}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

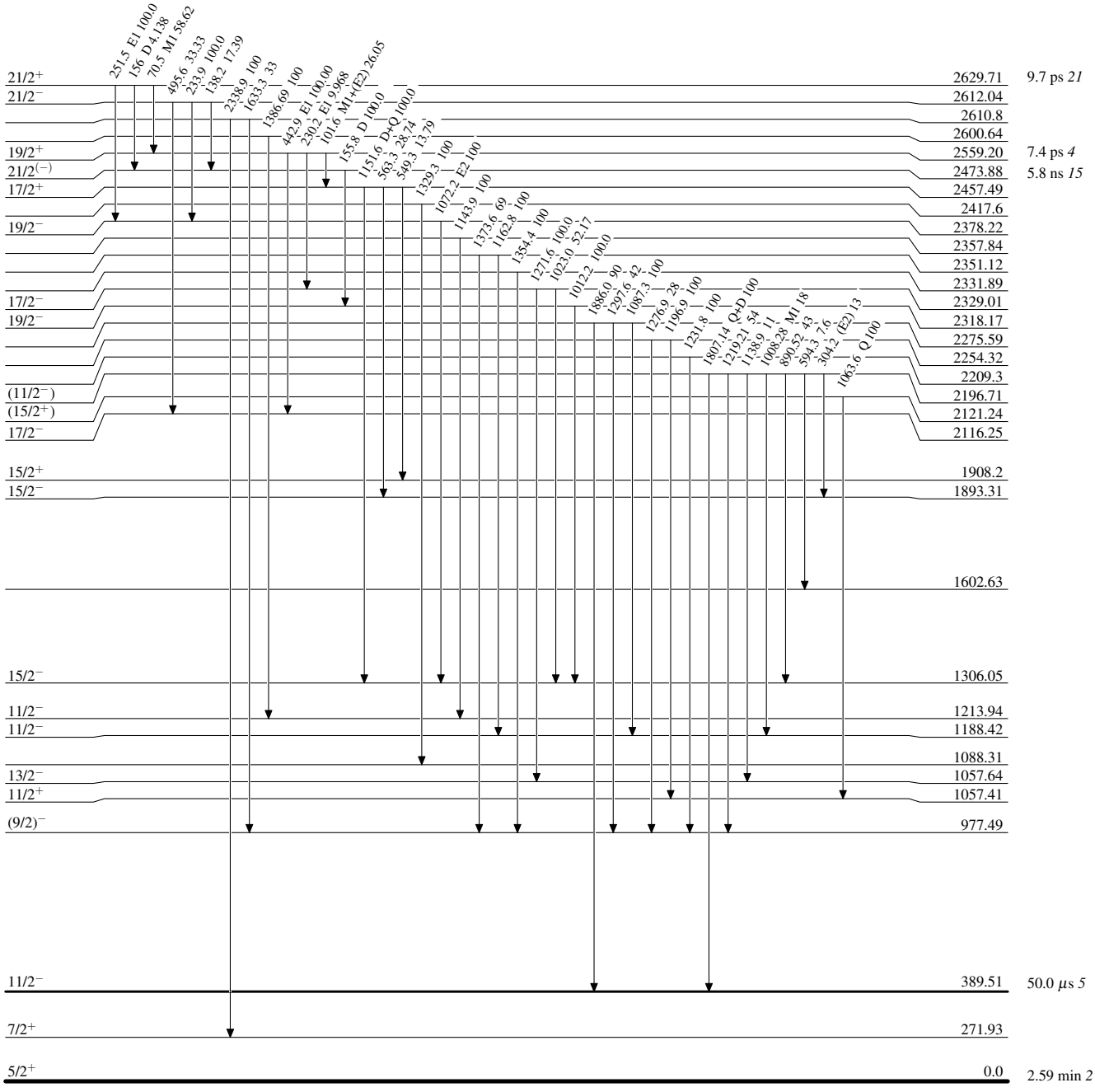


$^{143}_{63}Eu_{80}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

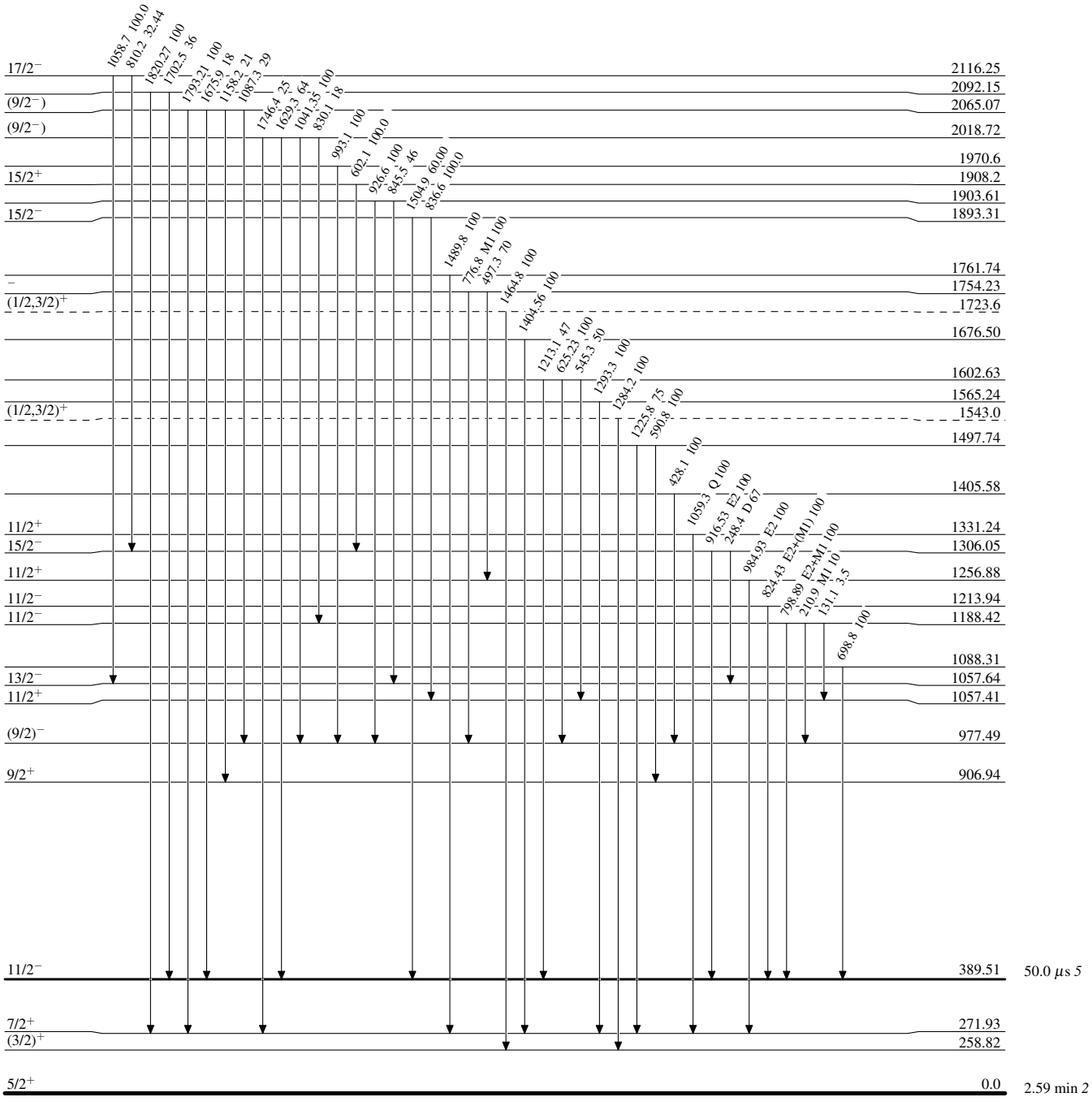


$^{143}_{63}Eu_{80}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

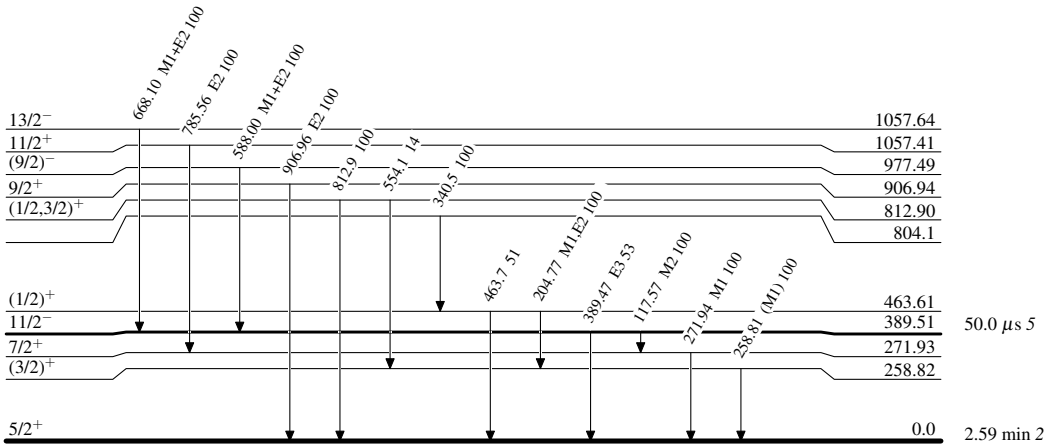


$^{143}_{63}Eu_{80}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{143}_{63}Eu_{80}$

Adopted Levels, Gammas