Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Janos Timar and Zoltan Elekes, Balraj Singh	NDS 121, 143 (2014)	31-May-2014

Q(β^-)=−6510 *40*; S(n)=8820 *40*; S(p)=4950 *60*; Q(α)=960 *30* 2012Wa38
S(2n)=20450 *40*, S(2p)=8050 *30*, Q(εp)=1802 *28* (2012Wa38).
1969ArZZ: ^{129}Ce produced and identified in ^{114}Cd(^{20}Ne,5n) reaction followed by half-life measurement. Previous report (1963La03) of ≈13 min half-life for ^{129}Ce was not confirmed by 1969ArZZ. 1977Gi17 identified ^{129}Ce through in-beam γ-ray studies but did not measure its half-life. Later decay studies: 1993Al03, 1997Gi08, 2001Xi01.

^{129}Ce Levels

Cross Reference (XREF) Flags

- A ^{129}Pr ε decay (30 s)
- B ^{100}Mo(^{34}S,5nγ)
- C ^{104}Pd(^{28}Si,2pnγ)
- D ^{116}Sn(^{16}O,3nγ),^{117}Sn(^{16}O,4nγ)

E(level)‡	J$^\pi$†	T$_{1/2}$	XREF	Comments
0.0[c]	(5/2$^+$)	3.5 min *3*	ABCD	%ε+%β^+=100 J$^\pi$: 1998Io01 proposed 7/2$^+$ based on 9/2$^-$ for the 107.6-keV isomer. See detailed J^π comment for adopted (7/2$^-$) assignment for 107.6 level, consequently (5/2$^+$) for the ground state from ΔJ=1, (E1) nature of g.s. transition from the 107.6 level. T$_{1/2}$: from 1993Al03 (total absorption γ-ray spectrometer). Other: 3.5 min *5* (1969ArZZ). Value of ≈13 min (1963La03) is not confirmed by 1969ArZZ.
0.0+x	(1/2$^+$)		A	Additional information 1. E(level): x<0.5 keV from parallel decay paths from the 918.8 level to g.s. and the 0.0+x level. This level is expected to be an isomer.
0+y[g]	(9/2$^-$)		B	Additional information 2.
39.50+x *9*	(3/2$^+$)		A	
107.60[f] *16*	(7/2$^-$)	60 ns *2*	ABCD	μ=−0.648 *35* (1998Io01) Q=1.32 *13* (1998Io01,2014StZZ) μ: from g=−0.185 *10* (1998Io01, TDPAD method) and using J^π=7/2$^-$ rather than 9/2$^-$ as suggested in 1998Io01. 2014StZZ quote μ=−0.83 *5*, based on 9/2 for 107.6 level. Q: TDPAD method (1998Io01). T$_{1/2}$: $\gamma\gamma$(t) (1998Io01). Other: 62 ns *5* from $\gamma\gamma$(t) (1977Gi17). J$^\pi$: 9/2$^-$ is proposed in 1998Io01 based on quadrupole interaction TDPAD experiment, where fitting of the hyperfine structure is better for 9/2$^-$ (reduced χ^2=2.7) than for 7/2$^-$ (reduced χ^2=12). However, with 9/2$^-$ assignment, the α=1/2 signature branch would become the favored branch, in contradiction with many neutron h$_{11/2}$ bands in this mass region. 1998Io01 authors were aware of this issue and to counteract they tentatively introduced a new 11/2$^-$ level at 119.4 keV based on an apparent common energy difference of ≈12 keV between three sets of γ rays in ^{129}Pr to ^{129}Ce decay. But there has been no direct experimental evidence for this new 11/2$^-$ level at 119.4 keV based on the high-statistics triple γ coincidence data in ^{100}Mo(^{34}S,5nγ) (2009Pa40), and other experiments. Thus the evaluators have assigned (7/2$^-$) for the 107.6-keV isomer, consequently (5/2$^+$) (rather than 7/2$^+$ proposed by 1998Io01) for the g.s. based on ΔJ=1, (E1) transition from the 107.6 level to g.s. The assignments for the 107.6 level and g.s are given in parentheses here since a direct measurement of any of these spins is not yet available, except for the work of 1998Io01, which seems to give a contradictory result for spin assignment of 107.6 level. The assignments for the 107.6 level and g.s. adopted here are supported by theoretical model calculations in 2010Bh03 and 1985Ha34. For levels populated in high-spin studies, ascending order of spins with

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Adopted Levels, Gammas (continued)

^{129}Ce Levels (continued)

E(level)‡	Jπ†	$T_{1/2}$	XREF	Comments
				excitation energy is assumed based on yrast pattern of population. $T_{1/2}$: γγ(t) (1998Io01). Other: 62 ns *5* from γγ(t) (1977Gi17).
144.38[d] *9*	(7/2+)		ABCD	
189.59[e] *19*	(9/2−)		ABCD	
243.31+x *9*	(5/2+)		A	
279.01 *9*	(9/2+,7/2+)		A	
331.30+x *20*	(7/2+)		A	
334.93[f] *25*	(11/2−)		ABCD	
348.01[c] *17*	(9/2+)		ABCD	
419.9+y[&g] *10*	(13/2−)		BC	
589.68[d] *22*	(11/2+)		ABCD	
595.5[e] *3*	(13/2−)		BCD	
613.59 *16*			A	
616.9+x *5*			A	
671.41+x *22*	(9/2+)		A	
748.09 *24*			A	
781.1 *4*			A	
789.8+x *5*			A	
805.7[f] *3*	(15/2−)		BCD	
806+x *3*	(11/2+)		A	
808.6 *4*			A	
820.3 *4*			A	
830.0 *3*			A	
831.41+x *22*			A	
835.0+x *4*			A	
868.4[c] *3*	(13/2+)		ABCD	
918.86+x *21*			A	
967.2+y[&g] *11*	(17/2−)		BC	
979.9 *3*			A	
1134.0+x *5*	(3/2,5/2)		A	
1135.5 *4*			A	
1177.5[d] *3*	(15/2+)	0.51[@] ps *6*	BCD	Q(transition)=7.1 *8* (2001Li69).
1186.7[e] *4*	(17/2−)		BCD	
1229.6 *5*			A	
1324.6 *11*			A	
1337.6 *3*			A	
1340+x *3*	(3/2,5/2)		A	
1347.5+x *10*			A	
1422.4[f] *4*	(19/2−)	1.24[@] ps *10*	BCD	Q(transition)=4.35 *18* (1998Li32,2001Li69).
1445.4 *10*			A	
1514.6[c] *4*	(17/2+)		BCD	
1550.5 *5*			A	
1568.1+y[&g] *11*	(21/2−)		BC	
1678.5+x *4*	(3/2,5/2)		A	
1825.9+x *4*			A	
1870.1[d] *4*	(19/2+)	0.46[@] ps *4*	BCD	Q(transition)=4.9 *4* (2001Li69).
1909.0[e] *4*	(21/2−)	0.20[#] ps *6*	BCD	Q(transition)=6.50 *9* (2009Li67).
2008.9 *4*			A	
2150.4[f] *4*	(23/2−)	0.61[#] ps *34*	BCD	Q(transition)=4.0 *14* (2009Li67). $T_{1/2}$: other: 1.01 ps *19* (1998Li32,2001Li69).
2202.0+y[g] *12*	(25/2−)		BC	
2233.1[c] *4*	(21/2+)		BCD	
2536.2[b] *4*	(23/2+)	0.374[@] ps *35*	BCD	Q(transition)=5.3 *5* (2001Li69).

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Adopted Levels, Gammas (continued)

^{129}Ce Levels (continued)

E(level)‡	Jπ†	$T_{1/2}$	XREF	Comments
2622.1[d] 5	(23/2+)		B	
2665.5[e] 5	(25/2−)	0.334# ps 22	BCD	Q(transition)=3.57 11 (2009Li67).
2776.0[a] 5	(25/2+)		BCD	
2867.1[c] 6	(25/2+)		B	
2889.7[f] 5	(27/2−)	0.89# ps 29	BCD	Q(transition)=2.9 6 (2009Li67). $T_{1/2}$: other: 0.47 ps 4 (1998Li32,2001Li69).
2901.2+y[g] 12	(29/2−)		B	
3011.2[b] 5	(27/2+)	1.74@ ps 25	BCD	Q(transition)=4.5 3 (2001Li69).
3145.5[d] 6	(27/2+)		B	
3208.2[e] 5	(29/2−)	1.14# ps 26	BCD	Q(transition)=5.1 5 (2009Li67).
3291.8[a] 5	(29/2+)		BCD	
3447.1[c] 7	(29/2+)		B	
3461.2[f] 5	(31/2−)	0.78# ps 27	BCD	Q(transition)=4.6 9 (2009Li67). $T_{1/2}$: other: 0.92 ps 11 (1998Li32,2001Li69).
3586.1[b] 5	(31/2+)	<1.8@ ps	BCD	$T_{1/2}$: effective half-life, not corrected for side feeding. Q(transition)>3.2 (2001Li69).
3675.4+y[g] 12	(33/2−)		BC	
3788.2[e] 5	(33/2−)	0.30# ps 24	BCD	Q(transition)=6.3 19 (2009Li67).
3803.7[d] 7	(31/2+)		B	
3934.4[a] 6	(33/2+)		BC	
4117.4[f] 6	(35/2−)	0.33# ps 25	BCD	Q(transition)=4.7 15 (2009Li67). $T_{1/2}$: other: 0.69 ps 8 (1998Li32,2001Li69).
4179.0[c] 8	(33/2+)		B	
4295.0[b] 6	(35/2+)		BC	
4507.4[e] 6	(37/2−)	<0.33# ps	BC	Q(transition)>3.5 (2009Li67).
4526.4+y[g] 13	(37/2−)		BC	
4596.9[d] 10	(35/2+)		B	
4711.9[a] 6	(37/2+)		B	
4910.7[f] 6	(39/2−)	<0.28# ps	BCD	$T_{1/2}$: other: <0.6 ps (effective half-life,1998Li32,2001Li69). Q(transition)>3.2 (2009Li67).
5048.8[c] 10	(37/2+)		B	
5135.8[b] 6	(39/2+)		BC	
5367.0[e] 6	(41/2−)		BC	
5449.8+y[g] 13	(41/2−)		BC	
5468.0[d] 11	(39/2+)		B	
5619.3[a] 6	(41/2+)		BC	
5836.8[f] 6	(43/2−)		BC	
6009.8[c] 12	(41/2+)		B	
6105.3[b] 7	(43/2+)		BC	
6361.4[e] 7	(45/2−)		BC	
6448.4+y[g] 14	(45/2−)		BC	
6649.1[a] 9	(45/2+)		BC	
6884.8[f] 8	(47/2−)		BC	
6970.8[c] 13	(45/2+)		B	
7193.1[b] 10	(47/2+)		BC	
7479.7[e] 10	(49/2−)		BC	
7520.8+y[g] 17	(49/2−)		BC	
7789.9[a] 11	(49/2+)		BC	

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Adopted Levels, Gammas (continued)

^{129}Ce Levels (continued)

E(level)‡	Jπ†	XREF	E(level)‡	Jπ†	XREF	E(level)‡	Jπ†	XREF
8038.5[f] *10*	(51/2⁻)	BC	9672.0[b] *13*	(55/2⁺)	B	11979.4[f] *15*	(63/2⁻)	B
8385.0[b] *11*	(51/2⁺)	BC	9890.3+y[g] *22*	(57/2⁻)	BC	12565+y[g] *3*	(65/2⁻)	BC
8667.8+y[g] *20*	(53/2⁻)	BC	10045.3[e] *13*	(57/2⁻)	B	14021+y[g] *3*	(69/2⁻)	BC
8711.9[e] *11*	(53/2⁻)	BC	10601.4[f] *13*	(59/2⁻)	B	15554+y[g] *3*	(73/2⁻)	B
9033.6[a] *12*	(53/2⁺)	B	11189.4+y[g] *24*	(61/2⁻)	BC	17178+y[g] *4*	(77/2⁻)	B
9282.5[f] *12*	(55/2⁻)	BC	11470.3[e] *14*	(61/2⁻)	B	18905+y[g] *4*	(81/2⁻)	B

† Spin and parity values are those proposed by 2009Pa40 on the basis of cranked-shell model analysis and γ multipolarities deduced from selected $\gamma(\theta)$ data in (^{16}O,3nγ),(^{16}O,4nγ) reactions. Bandhead spins and parities were estimated from Nilsson levels for N=71. For some low-spin levels populated only in ε decay, the assignments are from 1996Gi08 based on systematics and models. The evaluators consider all J^π assignments as tentative, including those for the g.s. and for the 60-ns isomer at 108 keV.

‡ From least-squares fit to the adopted Eγ data. Eγ data in (^{16}O,3nγ),(^{16}O,4nγ) differ considerably from the adopted Eγ values, therefore level energies at high spins in this dataset differ by about 4 keV from the adopted level energies. However, it does not affect the level identification and interpretation.

From DSAM (2009Li67).

@ From DSAM (1998Li32,2001Li69), unless otherwise stated. Both papers report same lifetimes for $19/2^-$ to $39/2^-$ levels in the 7/2[523] band. 2001Li69 report, in addition, lifetimes for $15/2^+$ to $31/2^+$ levels in the 5/2[402] band.

& Possibly feeds lowest members of positive-parity band. No linking transitions were found.

[a] Band(A): $\nu h_{11/2}\otimes\pi(h_{11/2},g_{7/2}),\alpha=+1/2$. Quasiparticle configuration=fEB. Band crossing at $\hbar\omega$=0.294 MeV.

[b] Band(a): $\nu h_{11/2}\otimes\pi(h_{11/2},g_{7/2}),\alpha=-1/2$. Quasiparticle configuration=eEB. Band crossing at $\hbar\omega$=0.301 MeV.

[c] Band(B): $\nu d_{5/2}$, $\alpha=+1/2$. Quasiparticle configuration=a below, aEF above the band crossing. Band crossing at $\hbar\omega$=0.318 MeV. Second band crossing at $\hbar\omega$=0.48 MeV due to pair of $\pi h_{11/2}$ neutrons.

[d] Band(b): $\nu d_{5/2}$, $\alpha=-1/2$. Quasiparticle configuration=b below, bEF above the band crossing. Band crossing at $\hbar\omega$=0.318 MeV.

[e] Band(C): $\nu h_{11/2},\alpha=+1/2$. Quasiparticle configuration=f below, fEF above the band crossing. Band crossing at $\hbar\omega$=0.312 MeV.

[f] Band(c): $\nu h_{11/2},\alpha=-1/2$. Quasiparticle configuration=e below, eEF above the band crossing. Band crossing at $\hbar\omega$=0.325 MeV.

[g] Band(D): ν1/2[541], $\alpha=+1/2$. Decoupled enhanced deformation band. Interpreted as SD band in 1996Ga13 on the basis of Q(intrinsic) measurement. Possible transitions to band based on $5/2^+$ and its signature partner.

Adopted Levels, Gammas (continued)

γ(^{129}Ce)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[‡]	α[#]	Comments
39.50+x	(3/2$^+$)	39.5 *1*	100	0.0+x	(1/2$^+$)	[M1]		2.62 *5*	α(L)=2.07 *4*; α(M)=0.434 *7* α(N)=0.0962 *16*; α(O)=0.01554 *25*; α(P)=0.001162 *19*
107.60	(7/2$^-$)	107.7 *2*	100	0.0	(5/2$^+$)	(E1)		0.198	B(E1)(W.u.)=2.95×10^{-6} *10* α(K)=0.169 *3*; α(L)=0.0234 *4*; α(M)=0.00486 *8* α(N)=0.001063 *16*; α(O)=0.0001656 *25*; α(P)=1.027×10^{-5} *16*
144.38	(7/2$^+$)	144.3 *1*	100	0.0	(5/2$^+$)	[M1+E2]		0.432 *14*	α(K)=0.361 *6*; α(L)=0.056 *7*; α(M)=0.0118 *16* α(N)=0.0026 *4*; α(O)=0.00041 *5*; α(P)=2.73×10^{-5} *6*
189.59	(9/2$^-$)	81.9 *1*	100	107.60	(7/2$^-$)	[M1+E2]		2.27 *18*	α(K)=1.82 *4*; α(L)=0.36 *12*; α(M)=0.08 *3* α(N)=0.017 *6*; α(O)=0.0026 *8*; α(P)=0.000136 *3*
243.31+x	(5/2$^+$)	203.8 *2*	100 *5*	39.50+x	(3/2$^+$)	[M1+E2]		0.1629 *25*	α(K)=0.1379 *21*; α(L)=0.0198 *12*; α(M)=0.0042 *3* α(N)=0.00092 *6*; α(O)=0.000148 *8*; α(P)=1.05×10^{-5} *3*
		243.3 *1*	79 *4*	0.0+x	(1/2$^+$)	[E2]		0.0957	α(K)=0.0749 *11*; α(L)=0.01633 *23*; α(M)=0.00354 *5* α(N)=0.000769 *11*; α(O)=0.0001152 *17*; α(P)=4.78×10^{-6} *7*
279.01	(9/2$^+$,7/2$^+$)	134.6 *2*	16.4 *23*	144.38	(7/2$^+$)	[M1+E2]		0.527 *19*	α(K)=0.440 *8*; α(L)=0.069 *10*; α(M)=0.0146 *23* α(N)=0.0032 *5*; α(O)=0.00051 *7*; α(P)=3.32×10^{-5} *7*
		279.0 *1*	100 *5*	0.0	(5/2$^+$)	[M1,E2]		0.0691 *12*	α(K)=0.0588 *13*; α(L)=0.00813 *19*; α(M)=0.00170 *5* α(N)=0.000377 *10*; α(O)=6.08×10^{-5} *12*; α(P)=4.46×10^{-6} *13*
331.30+x	(7/2$^+$)	88.0 *5*	8.8 *12*	243.31+x	(5/2$^+$)	[M1+E2]		1.83 *14*	α(K)=1.48 *4*; α(L)=0.28 *8*; α(M)=0.060 *19* α(N)=0.013 *4*; α(O)=0.0020 *6*; α(P)=0.000111 *3*
		291.8 *2*	100 *5*	39.50+x	(3/2$^+$)	[E2]		0.0532	α(K)=0.0426 *6*; α(L)=0.00835 *12*; α(M)=0.00180 *3* α(N)=0.000392 *6*; α(O)=5.94×10^{-5} *9*; α(P)=2.80×10^{-6} *4*
334.93	(11/2$^-$)	145.3 *2*	100 *3*	189.59	(9/2$^-$)	(M1)		0.412	α(K)=0.351 *6*; α(L)=0.0478 *7*; α(M)=0.01000 *15* α(N)=0.00222 *4*; α(O)=0.000359 *6*; α(P)=2.72×10^{-5} *4*
		227.8 *5*	32 *15*	107.60	(7/2$^-$)	(E2)		0.1189 *19*	α(K)=0.0922 *15*; α(L)=0.0210 *4*; α(M)=0.00456 *8* α(N)=0.000989 *17*; α(O)=0.0001475 *24*; α(P)=5.81×10^{-6} *9* I_γ: data are discrepant with values of 11.0 *10* in ε decay, 60.5 *14* in (^{34}S,nγ) and 24 *4* in (^{16}O,3nγ). Unweighted average is taken.
348.01	(9/2$^+$)	203.5 *2*	100 *3*	144.38	(7/2$^+$)	(M1+E2)	−0.40 *8*	0.1642 *24*	α(K)=0.1381 *20*; α(L)=0.0207 *8*; α(M)=0.00436 *17* α(N)=0.00096 *4*; α(O)=0.000153 *5*; α(P)=1.035×10^{-5} *20*
		348.7 *3*	31.2 *24*	0.0	(5/2$^+$)	(E2)		0.0306	α(K)=0.0249 *4*; α(L)=0.00447 *7*; α(M)=0.000957 *14* α(N)=0.000209 *3*; α(O)=3.21×10^{-5} *5*; α(P)=1.679×10^{-6} *24* I_γ: others: 22.5 *19* in ε decay, 74 *9* and 46 *7* in (^{16}O,3nγ); the latter are In severe disagreement.
419.9+y	(13/2$^-$)	419.9[&] *10*	100	0+y	(9/2$^-$)				
589.68	(11/2$^+$)	241.8 *3*	100 *5*	348.01	(9/2$^+$)	(M1+E2)	−0.25 *8*	0.1019	α(K)=0.0867 *14*; α(L)=0.0120 *3*; α(M)=0.00252 *6*

$^{129}_{58}Ce_{71}$-5

Adopted Levels, Gammas (continued)

γ(^{129}Ce) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[‡]	α[#]	Comments
									α(N)=0.000558 *13*; α(O)=8.99×10^{-5} *18*; α(P)=6.60×10^{-6} *12*
589.68	(11/2$^+$)	444.9 *3*	58 *4*	144.38	(7/2$^+$)	(E2)		0.01492	α(K)=0.01237 *18*; α(L)=0.00202 *3*; α(M)=0.000428 *6* α(N)=9.40×10^{-5} *14*; α(O)=1.464×10^{-5} *21*; α(P)=8.59×10^{-7} *13* I_γ: others: 103 *4* In ε decay, 244 *12* and 108 *11* In (^{16}O,3nγ) are In disagreement.
595.5	(13/2$^-$)	260.7 *3*	100 *4*	334.93	(11/2$^-$)	(M1+E2)	0.7 *2*	0.0812 *15*	α(K)=0.0678 *18*; α(L)=0.0106 *5*; α(M)=0.00224 *10* α(N)=0.000493 *21*; α(O)=7.76×10^{-5} *25*; α(P)=4.96×10^{-6} *22*
		405.8 *3*	25.8 *16*	189.59	(9/2$^-$)	(E2)		0.0194	α(K)=0.01601 *23*; α(L)=0.00270 *4*; α(M)=0.000576 *9* α(N)=0.0001261 *18*; α(O)=1.95×10^{-5} *3*; α(P)=1.102×10^{-6} *16* I_γ: others: 127 *5* and 72 *5* In (^{16}O,3nγ) are In disagreement.
613.59		334.5 *2*	16.7 *21*	279.01	(9/2$^+$,7/2$^+$)				
		506.1 *2*	100 *3*	107.60	(7/2$^-$)				
616.9+x		373 *1*	4.2 *8*	243.31+x	(5/2$^+$)				
		577.5 *5*	100 *8*	39.50+x	(3/2$^+$)				
671.41+x	(9/2$^+$)	340 *1*	9.3 *19*	331.30+x	(7/2$^+$)				
		428.1 *2*	100 *4*	243.31+x	(5/2$^+$)				
748.09		558.5 *2*	100 *6*	189.59	(9/2$^-$)				
		640.5 *3*	35 *3*	107.60	(7/2$^-$)				
781.1		≈446	<11	334.93	(11/2$^-$)				
		591.5 *3*	100 *6*	189.59	(9/2$^-$)				
		≈675	66 *5*	107.60	(7/2$^-$)				
789.8+x		546.5 *5*	100	243.31+x	(5/2$^+$)				
805.7	(15/2$^-$)	210.2 *3*	60.0 *25*	595.5	(13/2$^-$)	(M1+E2)	−1.1 *1*	0.1526 *23*	α(K)=0.1228 *19*; α(L)=0.0235 *7*; α(M)=0.00504 *15* α(N)=0.00110 *4*; α(O)=0.000168 *5*; α(P)=8.48×10^{-6} *17* I_γ: others: 25.0 *19* and 100 *6* In (^{16}O,3nγ) are In disagreement.
		470.7 *3*	100 *4*	334.93	(11/2$^-$)	(Q)			
806+x	(11/2$^+$)	≈475	100	331.30+x	(7/2$^+$)				
808.6		619 *1*	100 *6*	189.59	(9/2$^-$)				
		701.0 *3*	69 *4*	107.60	(7/2$^-$)				
820.3		630 *1*	76 *6*	189.59	(9/2$^-$)				
		712.8 *3*	100 *7*	107.60	(7/2$^-$)				
830.0		640.5 *3*	16.6 *14*	189.59	(9/2$^-$)				
		722.4 *3*	100 *7*	107.60	(7/2$^-$)				
831.41+x		≈501	4.6 *15*	331.30+x	(7/2$^+$)				
		588.1 *2*	100 *3*	243.31+x	(5/2$^+$)				
835.0+x		591.7 *3*	100	243.31+x	(5/2$^+$)				

$^{129}_{58}Ce_{71}$-6

Adopted Levels, Gammas (continued)

γ(^{129}Ce) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult. ‡	δ ‡	α #	Comments
868.4	(13/2$^+$)	278.7 *3*	100 *4*	589.68	(11/2$^+$)	[M1+E2]		0.0693 *12*	α(K)=0.0590 *13*; α(L)=0.00815 *20*; α(M)=0.00171 *5* α(N)=0.000378 *10*; α(O)=6.10×10^{-5} *12*; α(P)=4.48×10^{-6} *14*
		520.6 *3*	88 *5*	348.01	(9/2$^+$)	(Q)			I_γ: other: 154 *15* In (^{16}O,3nγ) is In disagreement.
918.86+x		305.3 *2*	43 *3*	613.59					
		675.5 *3*	100 *7*	243.31+x	(5/2$^+$)				
967.2+y	(17/2$^-$)	547.3 *3*	100	419.9+y	(13/2$^-$)				
979.9		789.7 *3*	81 *6*	189.59	(9/2$^-$)				
		873.0 *3*	100 *6*	107.60	(7/2$^-$)				
1134.0+x	(3/2,5/2)	1094.5 *5*	100	39.50+x	(3/2$^+$)				
1135.5		1027.9 *3*	100	107.60	(7/2$^-$)				
1177.5	(15/2$^+$)	309.5 *3*	48 *3*	868.4	(13/2$^+$)	(M1+E2)	−0.8 *4*	0.0496 *24*	B(M1)(W.u.)=(0.28 *12*); B(E2)(W.u.)=(1.3×10^3 *8*) α(K)=0.042 *3*; α(L)=0.00633 *21*; α(M)=0.00134 *6* α(N)=0.000295 *11*; α(O)=4.66×10^{-5} *10*; α(P)=3.0×10^{-6} *3* I_γ: others: 29 *3* and 100 *6* In (^{16}O,3nγ), the former value In disagreement. δ: B(E2)(W.u.) is too high for $T_{1/2}$=0.51 ps and δ(E2/M1)=0.8 *4*; RUL<300 suggests either δ<0.3 or a longer half-life.
		587.5 *3*	100 *6*	589.68	(11/2$^+$)	(E2)		0.00703	B(E2)(W.u.)=2.7×10^2 *4* α(K)=0.00591 *9*; α(L)=0.000884 *13*; α(M)=0.000187 *3* α(N)=4.11×10^{-5} *6*; α(O)=6.49×10^{-6} *10*; α(P)=4.20×10^{-7} *6*
1186.7	(17/2$^-$)	381.2 *3*	46 *4*	805.7	(15/2$^-$)	[M1+E2]		0.0303 *8*	α(K)=0.0259 *7*; α(L)=0.00349 *6*; α(M)=0.000729 *11* α(N)=0.0001617 *24*; α(O)=2.61×10^{-5} *5*; α(P)=1.96×10^{-6} *7*
		591.2 *3*	100 *7*	595.5	(13/2$^-$)	Q			
1229.6		1040.0 *5*	100 *10*	189.59	(9/2$^-$)				
		1122 *1*	48 *5*	107.60	(7/2$^-$)				
1324.6		1217 *1*	100	107.60	(7/2$^-$)				
1337.6		≈990	<14	348.01	(9/2$^+$)				
		1193.2 *3*	100 *5*	144.38	(7/2$^+$)				
		1230 *1*	21.9 *14*	107.60	(7/2$^-$)				
1340+x	(3/2,5/2)	1300 *3*	100 *6*	39.50+x	(3/2$^+$)				
1347.5+x		1104 *3*	20 *3*	243.31+x	(5/2$^+$)				
		1308 *1*	100 *10*	39.50+x	(3/2$^+$)				
1422.4	(19/2$^-$)	236.0 *3*	18.0 *14*	1186.7	(17/2$^-$)	(M1+E2)		0.1087	α(K)=0.0923 *16*; α(L)=0.0130 *6*; α(M)=0.00273 *12* α(N)=0.000604 *25*; α(O)=9.7×10^{-5} *4*; α(P)=7.00×10^{-6} *19* I_γ: other: 11.9 *13* In (^{16}O,3nγ).
		616.5 *3*	100	805.7	(15/2$^-$)	(E2)		0.00622	B(E2)(W.u.)=110 *9* α(K)=0.00524 *8*; α(L)=0.000774 *11*; α(M)=0.0001630

Adopted Levels, Gammas (continued)

γ(^{129}Ce) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[‡]	α[#]	Comments
									23 α(N)=3.59×10^{-5} *5*; α(O)=5.69×10^{-6} *8*; α(P)=3.74×10^{-7} *6*
1445.4		1301 *1*	100	144.38	(7/2$^+$)				
1514.6	(17/2$^+$)	337.1 *3*	53 *3*	1177.5	(15/2$^+$)	(M1+E2)		0.0418 *10*	α(K)=0.0356 *9*; α(L)=0.00485 *7*; α(M)=0.001014 *16* α(N)=0.000225 *4*; α(O)=3.63×10^{-5} *6*; α(P)=2.70×10^{-6} *9* I$_\gamma$: others: 30 *3* and 32 *5* In (^{16}O,3nγ) are In disagreement.
		646.1 *3*	100 *6*	868.4	(13/2$^+$)	(Q)			
1550.5		960.8 *4*	100	589.68	(11/2$^+$)				
1568.1+y	(21/2$^-$)	600.9 *3*	100	967.2+y	(17/2$^-$)				
1678.5+x	(3/2,5/2)	1639.0 *3*	100	39.50+x	(3/2$^+$)				
1825.9+x		1154.5 *3*	100	671.41+x	(9/2$^+$)				
1870.1	(19/2$^+$)	355.5 *3*	44 *3*	1514.6	(17/2$^+$)	[M1+E2]		0.0363 *9*	α(K)=0.0310 *8*; α(L)=0.00420 *6*; α(M)=0.000879 *13* α(N)=0.000195 *3*; α(O)=3.15×10^{-5} *5*; α(P)=2.35×10^{-6} *8* I$_\gamma$: others: 11 *4* In (^{16}O,3nγ) is In disagreement.
		692.7 *3*	100 *8*	1177.5	(15/2$^+$)	[E2]		0.00466	α(K)=0.00394 *6*; α(L)=0.000566 *8*; α(M)=0.0001190 *17* α(N)=2.62×10^{-5} *4*; α(O)=4.17×10^{-6} *6*; α(P)=2.83×10^{-7} *4* B(E2)(W.u.)=137 *18*
1909.0	(21/2$^-$)	486.6 *3*	48 *5*	1422.4	(19/2$^-$)	[M1+E2]		0.0162 *5*	α(K)=0.0139 *5*; α(L)=0.00184 *4*; α(M)=0.000385 *8* α(N)=8.53×10^{-5} *18*; α(O)=1.38×10^{-5} *4*; α(P)=1.05×10^{-6} *4* I$_\gamma$: others: 15 *3* In (^{16}O,3nγ) is In disagreement.
		722.3 *3*	100 *7*	1186.7	(17/2$^-$)	[E2]		0.00421	B(E2)(W.u.)=2.5×10^2 *8* α(K)=0.00357 *5*; α(L)=0.000508 *8*; α(M)=0.0001066 *15* α(N)=2.35×10^{-5} *4*; α(O)=3.75×10^{-6} *6*; α(P)=2.57×10^{-7} *4*
2008.9		1864.5 *3*	100	144.38	(7/2$^+$)				
2150.4	(23/2$^-$)	241.4 *3*	11.7 *13*	1909.0	(21/2$^-$)	(M1+E2)		0.1022 *16*	α(K)=0.0868 *16*; α(L)=0.0122 *5*; α(M)=0.00256 *11* α(N)=0.000566 *22*; α(O)=9.1×10^{-5} *3*; α(P)=6.59×10^{-6} *18* I$_\gamma$: 12.5 *11* from (^{16}O,3nγ) agrees well.
		727.9 *3*	100 *5*	1422.4	(19/2$^-$)	(E2)		0.00413	B(E2)(W.u.)=1.0×10^2 *6* α(K)=0.00351 *5*; α(L)=0.000498 *7*; α(M)=0.0001045 *15* α(N)=2.31×10^{-5} *4*; α(O)=3.68×10^{-6} *6*; α(P)=2.52×10^{-7} *4*
2202.0+y	(25/2$^-$)	633.9 *3*	100	1568.1+y	(21/2$^-$)				
2233.1	(21/2$^+$)	363.1 *3*	45 *4*	1870.1	(19/2$^+$)	(M1+E2)	−0.95 *75*	0.031 *4*	α(K)=0.026 *4*; α(L)=0.00394 *7*; α(M)=0.000832 *12* α(N)=0.000183 *3*; α(O)=2.90×10^{-5} *9*; α(P)=1.9×10^{-6} *4* I$_\gamma$: other: 31 *6* from (^{16}O,3nγ).
		718.4 *3*	100 *6*	1514.6	(17/2$^+$)	(Q)			
2536.2	(23/2$^+$)	303.2 *3*	67 *4*	2233.1	(21/2$^+$)	(M1+E2)	−0.95 *75*	0.052 *4*	B(M1)(W.u.)=(0.4 *4*); B(E2)(W.u.)=(2.8×10^3 *24*) α(K)=0.043 *5*; α(L)=0.0068 *4*; α(M)=0.00144 *11* α(N)=0.000318 *21*; α(O)=4.99×10^{-5} *19*; α(P)=3.1×10^{-6} *6* I$_\gamma$: other: 32 *4* from (^{16}O,3nγ) is In disagreement. δ: B(E2)(W.u.) is too high for T$_{1/2}$=0.51 ps and

$^{129}_{58}Ce_{71}$-8

Adopted Levels, Gammas (continued)

γ(^{129}Ce) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[‡]	α[#]	Comments
									δ(E2/M1)=0.95 *75*; RUL<300 suggests either δ<0.2 or longer half-life.
2536.2	(23/2$^+$)	666.1 *3*	100 *5*	1870.1	(19/2$^+$)	[E2]		0.00513	B(E2)(W.u.)=175 *20* α(K)=0.00433 *6*; α(L)=0.000628 *9*; α(M)=0.0001320 *19* α(N)=2.91×10^{-5} *4*; α(O)=4.62×10^{-6} *7*; α(P)=3.10×10^{-7} *5*
2622.1	(23/2$^+$)	389.0 *6*	<70	2233.1	(21/2$^+$)				
		752.1 *6*	100 *17*	1870.1	(19/2$^+$)				
2665.5	(25/2$^-$)	515.2 *3*	68 *7*	2150.4	(23/2$^-$)	[M1+E2]		0.0140 *5*	α(K)=0.0120 *4*; α(L)=0.00159 *4*; α(M)=0.000332 *7* α(N)=7.37×10^{-5} *16*; α(O)=1.20×10^{-5} *3*; α(P)=9.1×10^{-7} *4* I_γ: other: 33 *7* from (^{16}O,3nγ) is In disagreement.
		756.6 *3*	100 *12*	1909.0	(21/2$^-$)	[E2]		0.00377	B(E2)(W.u.)=105 *17* α(K)=0.00320 *5*; α(L)=0.000451 *7*; α(M)=9.47×10^{-5} *14* α(N)=2.09×10^{-5} *3*; α(O)=3.33×10^{-6} *5*; α(P)=2.31×10^{-7} *4*
2776.0	(25/2$^+$)	239.8 *3*	100 *4*	2536.2	(23/2$^+$)	(M1+E2)	−0.25 *8*	0.1042	α(K)=0.0886 *14*; α(L)=0.0123 *3*; α(M)=0.00258 *7* α(N)=0.000571 *13*; α(O)=9.20×10^{-5} *19*; α(P)=6.75×10^{-6} *13*
		542.9 *3*	42 *4*	2233.1	(21/2$^+$)				I_γ: other: 162 *13* from (^{16}O,3nγ) is In severe disagreement.
2867.1	(25/2$^+$)	245.0 *3*	100 *8*	2622.1	(23/2$^+$)				
		633.9 *6*	<26	2233.1	(21/2$^+$)				
2889.7	(27/2$^-$)	224.3 *3*	27.3 *18*	2665.5	(25/2$^-$)	[M1+E2]		0.1250 *19*	α(K)=0.1060 *18*; α(L)=0.0150 *7*; α(M)=0.00316 *16* α(N)=0.00070 *4*; α(O)=0.000112 *5*; α(P)=8.04×10^{-6} *22* I_γ: other: 10.4 *8* from (^{16}O,3nγ) is In disagreement.
		739.3 *3*	100 *5*	2150.4	(23/2$^-$)	(E2)		0.00398	B(E2)(W.u.)=57 *19* α(K)=0.00338 *5*; α(L)=0.000478 *7*; α(M)=0.0001004 *14* α(N)=2.22×10^{-5} *4*; α(O)=3.53×10^{-6} *5*; α(P)=2.43×10^{-7} *4*
2901.2+y	(29/2$^-$)	699.2 *3*	100	2202.0+y	(25/2$^-$)				
3011.2	(27/2$^+$)	235.2 *3*	100 *4*	2776.0	(25/2$^+$)	[M1+E2]		0.1098	α(K)=0.0932 *16*; α(L)=0.0131 *6*; α(M)=0.00276 *13* α(N)=0.00061 *3*; α(O)=9.8×10^{-5} *4*; α(P)=7.07×10^{-6} *19*
		474.9 *3*	85 *5*	2536.2	(23/2$^+$)	[E2]		0.01243	α(K)=0.01034 *15*; α(L)=0.001648 *24*; α(M)=0.000350 *5* α(N)=7.68×10^{-5} *11*; α(O)=1.200×10^{-5} *17*; α(P)=7.23×10^{-7} *11* B(E2)(W.u.)=150 *24* I_γ: other: 100 *8* from (^{16}O,3nγ).
3145.5	(27/2$^+$)	278.4 *3*	100 *7*	2867.1	(25/2$^+$)				
		523.5 *6*	45 *8*	2622.1	(23/2$^+$)				
3208.2	(29/2$^-$)	318.5 *3*	100 *4*	2889.7	(27/2$^-$)	(M1+E2)	−0.09 *6*	0.0492	α(K)=0.0421 *7*; α(L)=0.00561 *8*; α(M)=0.001173 *17* α(N)=0.000260 *4*; α(O)=4.22×10^{-5} *6*; α(P)=3.22×10^{-6} *5* B(M1)(W.u.)=(0.39 *10*); B(E2)(W.u.)=(21 *+28−21*)
		542.7 *3*	47 *3*	2665.5	(25/2$^-$)	[E2]		0.00865	α(K)=0.00725 *11*; α(L)=0.001108 *16*; α(M)=0.000234 *4* α(N)=5.15×10^{-5} *8*; α(O)=8.11×10^{-6} *12*; α(P)=5.13×10^{-7} *8* B(E2)(W.u.)=84 *21* I_γ: other: 81 *6* from (^{16}O,3nγ) is In disagreement.
3291.8	(29/2$^+$)	280.7 *3*	100 *5*	3011.2	(27/2$^+$)				

$^{129}_{58}Ce_{71}$-9

Adopted Levels, Gammas (continued)

γ(^{129}Ce) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[#]	Comments
3291.8	(29/2$^+$)	516.0 *6*	29 *4*	2776.0	(25/2$^+$)			I_γ: other: 57 *7* from (^{16}O,3nγ) is In disagreement.
3447.1	(29/2$^+$)	301.8 *6*	100 *9*	3145.5	(27/2$^+$)			
		579.9 *6*	95 *19*	2867.1	(25/2$^+$)			
3461.2	(31/2$^-$)	253.1 *3*	100 *4*	3208.2	(29/2$^-$)	[M1+E2]	0.0899 *14*	α(K)=0.0764 *15*; α(L)=0.0107 *4*; α(M)=0.00224 *8* α(N)=0.000495 *17*; α(O)=7.97×10^{-5} *22*; α(P)=5.80×10^{-6} *17*
		571.4 *3*	31.0 *21*	2889.7	(27/2$^-$)	[E2]	0.00756	B(E2)(W.u.)=68 *25* α(K)=0.00635 *9*; α(L)=0.000956 *14*; α(M)=0.000202 *3* α(N)=4.44×10^{-5} *7*; α(O)=7.01×10^{-6} *10*; α(P)=4.50×10^{-7} *7* I_γ: other: 156 *22* from (^{16}O,3nγ) is In severe disagreement.
3586.1	(31/2$^+$)	294.2 *3*	100 *5*	3291.8	(29/2$^+$)	[M1+E2]	0.0599 *12*	α(K)=0.0510 *12*; α(L)=0.00702 *14*; α(M)=0.00147 *4* α(N)=0.000326 *7*; α(O)=5.25×10^{-5} *9*; α(P)=3.87×10^{-6} *12*
		574.9 *3*	89 *6*	3011.2	(27/2$^+$)	[E2]	0.00744	B(E2)(W.u.)>59 α(K)=0.00625 *9*; α(L)=0.000940 *14*; α(M)=0.000198 *3* α(N)=4.37×10^{-5} *7*; α(O)=6.89×10^{-6} *10*; α(P)=4.44×10^{-7} *7* I_γ: other: 200 *25* from (^{16}O,3nγ) is In severe disagreement.
3675.4+y	(33/2$^-$)	774.2 *3*	100	2901.2+y	(29/2$^-$)			
3788.2	(33/2$^-$)	327.1 *3*	100 *4*	3461.2	(31/2$^-$)	[M1+E2]	0.0452 *10*	α(K)=0.0386 *10*; α(L)=0.00526 *8*; α(M)=0.001100 *18* α(N)=0.000244 *4*; α(O)=3.94×10^{-5} *6*; α(P)=2.93×10^{-6} *10*
		579.9 *3*	40 *3*	3208.2	(29/2$^-$)	[E2]	0.00727	B(E2)(W.u.)=2.1×10^2 *17* α(K)=0.00611 *9*; α(L)=0.000917 *13*; α(M)=0.000194 *3* α(N)=4.26×10^{-5} *6*; α(O)=6.73×10^{-6} *10*; α(P)=4.34×10^{-7} *7* I_γ: other: 164 *15* from (^{16}O,3nγ) is In severe disagreement.
3803.7	(31/2$^+$)	356.6 *6*	92 *16*	3447.1	(29/2$^+$)			
		658.2 *6*	100 *20*	3145.5	(27/2$^+$)			
3934.4	(33/2$^+$)	348.2 *3*	62 *6*	3586.1	(31/2$^+$)			
		642.6 *3*	100 *9*	3291.8	(29/2$^+$)			
4117.4	(35/2$^-$)	329.2 *3*	100 *4*	3788.2	(33/2$^-$)	[M1+E2]	0.0445 *10*	α(K)=0.0379 *10*; α(L)=0.00517 *8*; α(M)=0.001082 *18* α(N)=0.000240 *4*; α(O)=3.87×10^{-5} *6*; α(P)=2.88×10^{-6} *9*
		656.3 *3*	62 *4*	3461.2	(31/2$^-$)	[E2]	0.00532	B(E2)(W.u.)=1.4×10^2 *11* α(K)=0.00449 *7*; α(L)=0.000653 *10*; α(M)=0.0001374 *20* α(N)=3.03×10^{-5} *5*; α(O)=4.81×10^{-6} *7*; α(P)=3.21×10^{-7} *5* I_γ: other: 137 *17* from (^{16}O,3nγ) is In severe disagreement.
4179.0	(33/2$^+$)	375.4 *6*	62 *15*	3803.7	(31/2$^+$)			
		731.8 *6*	100 *26*	3447.1	(29/2$^+$)			
4295.0	(35/2$^+$)	360.7 *3*	100 *8*	3934.4	(33/2$^+$)			
		708.9 *3*	100 *10*	3586.1	(31/2$^+$)			
4507.4	(37/2$^-$)	390.0 *3*	100 *5*	4117.4	(35/2$^-$)	[M1+E2]	0.0285 *8*	α(K)=0.0244 *7*; α(L)=0.00328 *5*; α(M)=0.000686 *10* α(N)=0.0001522 *23*; α(O)=2.46×10^{-5} *5*; α(P)=1.85×10^{-6} *7*
		719.1 *3*	64 *6*	3788.2	(33/2$^-$)	[E2]	0.00426	α(K)=0.00361 *5*; α(L)=0.000514 *8*; α(M)=0.0001079 *16* α(N)=2.38×10^{-5} *4*; α(O)=3.79×10^{-6} *6*; α(P)=2.59×10^{-7} *4* B(E2)(W.u.)>88
4526.4+y	(37/2$^-$)	851.0 *3*	100	3675.4+y	(33/2$^-$)			

$^{129}_{58}Ce_{71}$-10

Adopted Levels, Gammas (continued)

γ(^{129}Ce) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	α[#]	Comments
4596.9	(35/2$^+$)	793.2 *6*	100	3803.7	(31/2$^+$)			
4711.9	(37/2$^+$)	417.0 *3*	73 *7*	4295.0	(35/2$^+$)			
		777.4 *3*	100 *10*	3934.4	(33/2$^+$)			
4910.7	(39/2$^-$)	403.4 *3*	100 *7*	4507.4	(37/2$^-$)	[M1+E2]	0.0262 *7*	α(K)=0.0224 *7*; α(L)=0.00300 *5*; α(M)=0.000628 *10* α(N)=0.0001391 *22*; α(O)=2.25×10^{-5} *4*; α(P)=1.70×10^{-6} *6*
		793.2 *3*	96 *7*	4117.4	(35/2$^-$)	[E2]	0.00338	B(E2)(W.u.)>80 α(K)=0.00287 *4*; α(L)=0.000401 *6*; α(M)=8.40×10^{-5} *12* α(N)=1.86×10^{-5} *3*; α(O)=2.97×10^{-6} *5*; α(P)=2.07×10^{-7} *3*
5048.8	(37/2$^+$)	869.8 *6*	100	4179.0	(33/2$^+$)			
5135.8	(39/2$^+$)	423.9 *3*	77 *8*	4711.9	(37/2$^+$)			
		840.8 *3*	100 *14*	4295.0	(35/2$^+$)			
5367.0	(41/2$^-$)	456.3 *3*	95 *16*	4910.7	(39/2$^-$)			
		859.6 *3*	100 *9*	4507.4	(37/2$^-$)			
5449.8+y	(41/2$^-$)	923.4 *3*	100	4526.4+y	(37/2$^-$)			
5468.0	(39/2$^+$)	871.1 *6*	100	4596.9	(35/2$^+$)			
5619.3	(41/2$^+$)	483.6 *6*	64 *8*	5135.8	(39/2$^+$)			
		907.4 *3*	100 *10*	4711.9	(37/2$^+$)			
5836.8	(43/2$^-$)	469.9 *3*	100 *9*	5367.0	(41/2$^-$)			
		926.1 *3*	66 *10*	4910.7	(39/2$^-$)			
6009.8	(41/2$^+$)	961.0[@] *6*	100	5048.8	(37/2$^+$)			
6105.3	(43/2$^+$)	486.0 *6*	78 *19*	5619.3	(41/2$^+$)			
		969.6 *6*	100 *22*	5135.8	(39/2$^+$)			
6361.4	(45/2$^-$)	524.5 *6*	74 *12*	5836.8	(43/2$^-$)			
		994.3 *6*	100 *16*	5367.0	(41/2$^-$)			
6448.4+y	(45/2$^-$)	998.6 *3*	100	5449.8+y	(41/2$^-$)			
6649.1	(45/2$^+$)	1029.8 *6*	100	5619.3	(41/2$^+$)			
6884.8	(47/2$^-$)	523[&]		6361.4	(45/2$^-$)			E_γ: from (^{28}Si,2pnγ) only.
		1048.1 *6*	100	5836.8	(43/2$^-$)			
6970.8	(45/2$^+$)	961.0[@&] *6*	100	6009.8	(41/2$^+$)			
7193.1	(47/2$^+$)	1087.8 *6*	100	6105.3	(43/2$^+$)			
7479.7	(49/2$^-$)	1118.3 *6*	100	6361.4	(45/2$^-$)			
7520.8+y	(49/2$^-$)	1072.4 *10*	100	6448.4+y	(45/2$^-$)			
7789.9	(49/2$^+$)	1140.8 *6*	100	6649.1	(45/2$^+$)			
8038.5	(51/2$^-$)	1153.7 *6*	100	6884.8	(47/2$^-$)			
8385.0	(51/2$^+$)	1191.8 *6*	100	7193.1	(47/2$^+$)			
8667.8+y	(53/2$^-$)	1147.0 *10*	100	7520.8+y	(49/2$^-$)			
8711.9	(53/2$^-$)	1232.2 *6*	100	7479.7	(49/2$^-$)			
9033.6	(53/2$^+$)	1243.7 *6*	100	7789.9	(49/2$^+$)			
9282.5	(55/2$^-$)	1244.0 *6*	100	8038.5	(51/2$^-$)			
9672.0	(55/2$^+$)	1287.0[&] *6*	100	8385.0	(51/2$^+$)			
9890.3+y	(57/2$^-$)	1222.5 *10*	100	8667.8+y	(53/2$^-$)			
10045.3	(57/2$^-$)	1333.4 *6*	100	8711.9	(53/2$^-$)			

$^{129}_{58}Ce_{71}$-11

Adopted Levels, Gammas (continued)

$\gamma(^{129}Ce)$ (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
10601.4	$(59/2^-)$	1318.9 *6*	100	9282.5	$(55/2^-)$	14021+y	$(69/2^-)$	1456.4 *10*	100	12565+y	$(65/2^-)$
11189.4+y	$(61/2^-)$	1299.1 *10*	100	9890.3+y	$(57/2^-)$	15554+y	$(73/2^-)$	1533.0 *10*	100	14021+y	$(69/2^-)$
11470.3	$(61/2^-)$	1425.0 *6*	100	10045.3	$(57/2^-)$	17178+y	$(77/2^-)$	1623.5 *10*	100	15554+y	$(73/2^-)$
11979.4	$(63/2^-)$	1378.0 *6*	100	10601.4	$(59/2^-)$	18905+y	$(81/2^-)$	1727.0 *10*	100	17178+y	$(77/2^-)$
12565+y	$(65/2^-)$	1375.6 *10*	100	11189.4+y	$(61/2^-)$						

† Most data are from ^{100}Mo(^{34}S,5nγ). Weighted averages taken from ε decay, (^{34}S,5nγ) and ^{116}Sn(^{16}O,3nγ) for levels below ≈ 500 keV, where the values are in general agreement. Above this energy, levels populated in ε decay and high-spin reactions do not much overlap, the values are either from ε decay or from ^{100}Mo(^{34}S,5nγ).

‡ From γ anisotropies (1977Gi17) and $\gamma(\theta)$ (1984Ar13); RUL for E2 and M2 used when level lifetimes are available or with assumed ≈10 ns coincidence resolving time in $\gamma\gamma$ data.

δ(E2/M1)=0.3 assumed when not given.

@ Multiply placed.

& Placement of transition in the level scheme is uncertain.

$^{129}_{58}Ce_{71}$-12

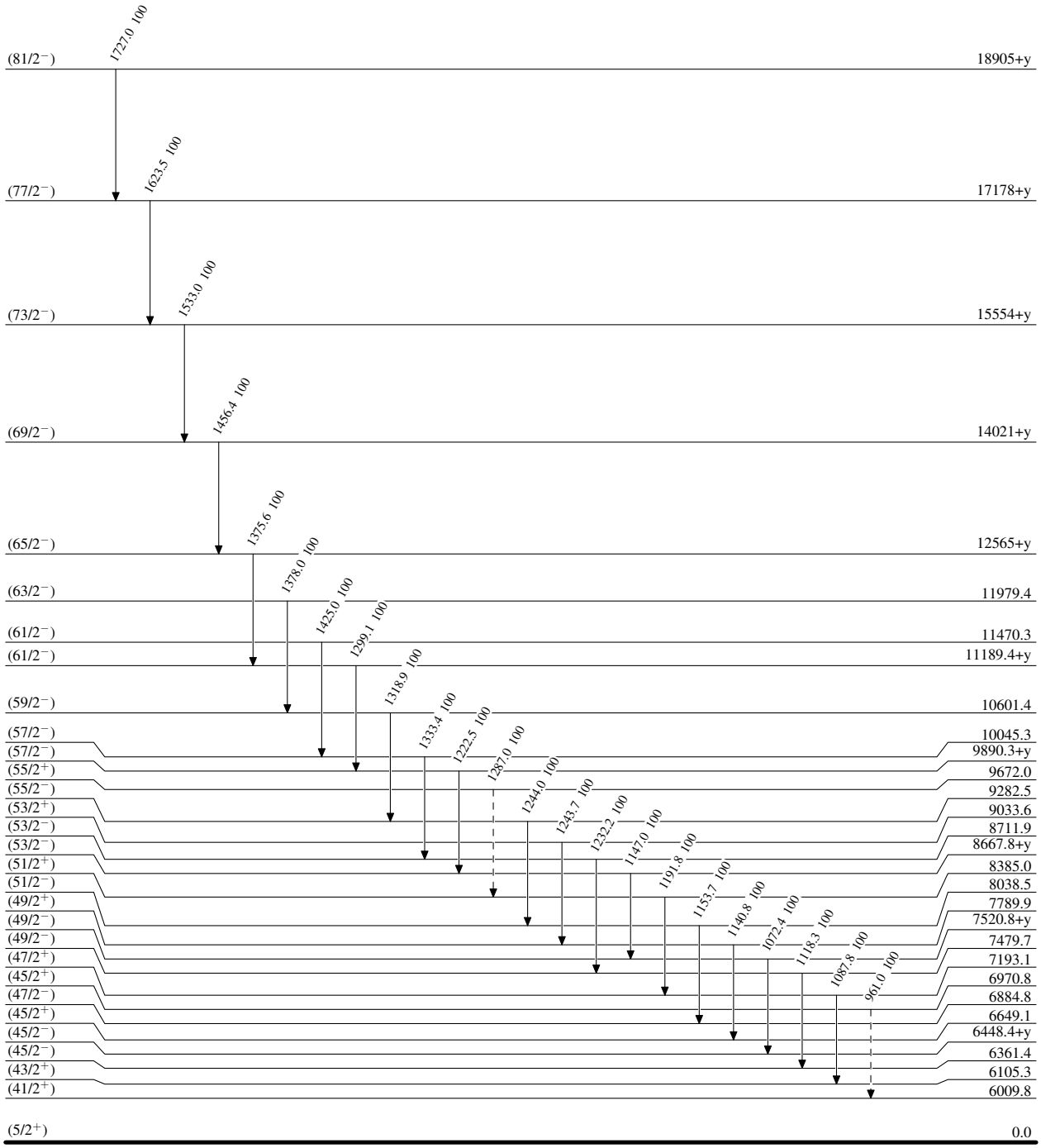
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{129}_{58}Ce_{71}$

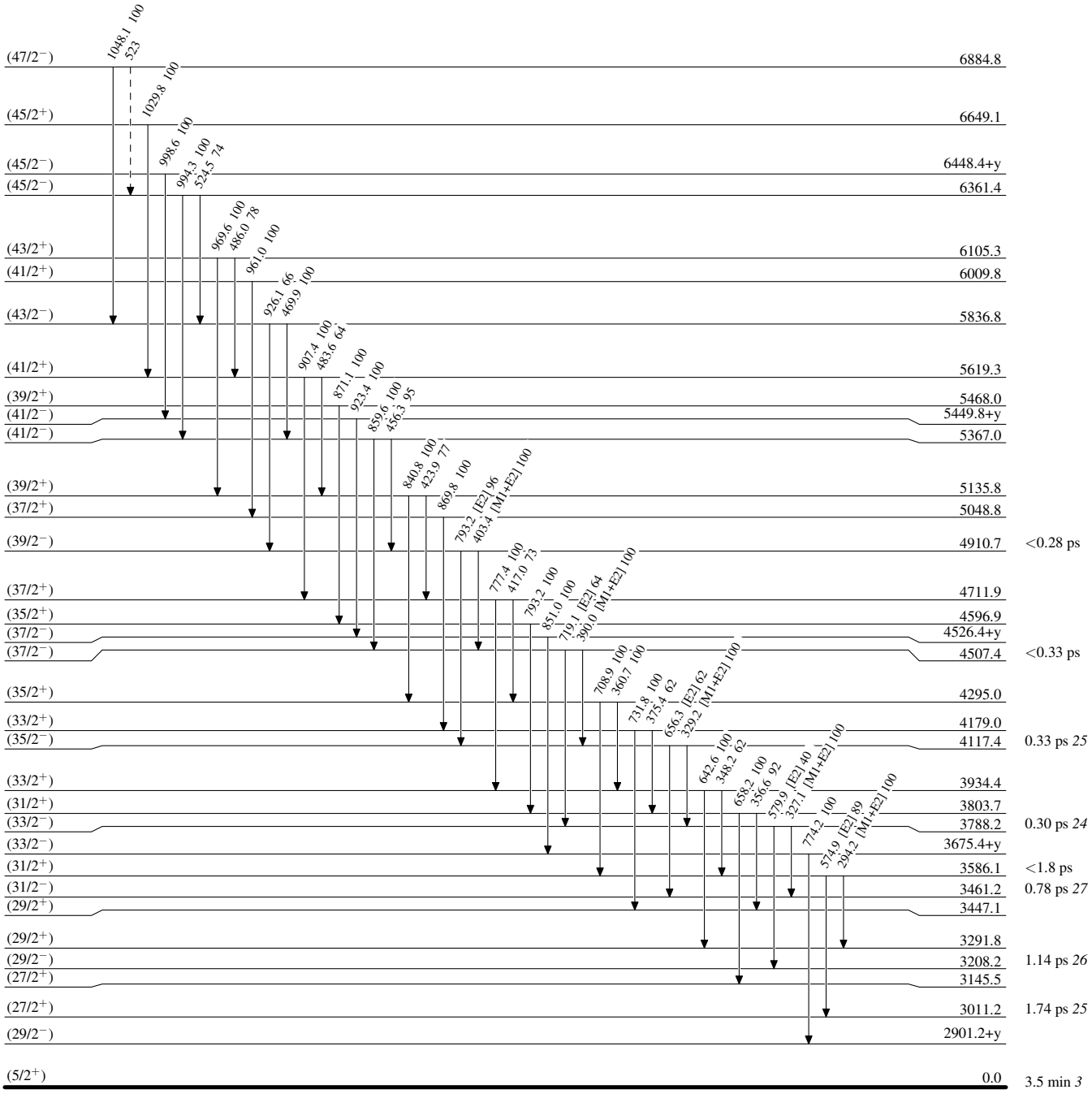
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

– – – – – – ► γ Decay (Uncertain)

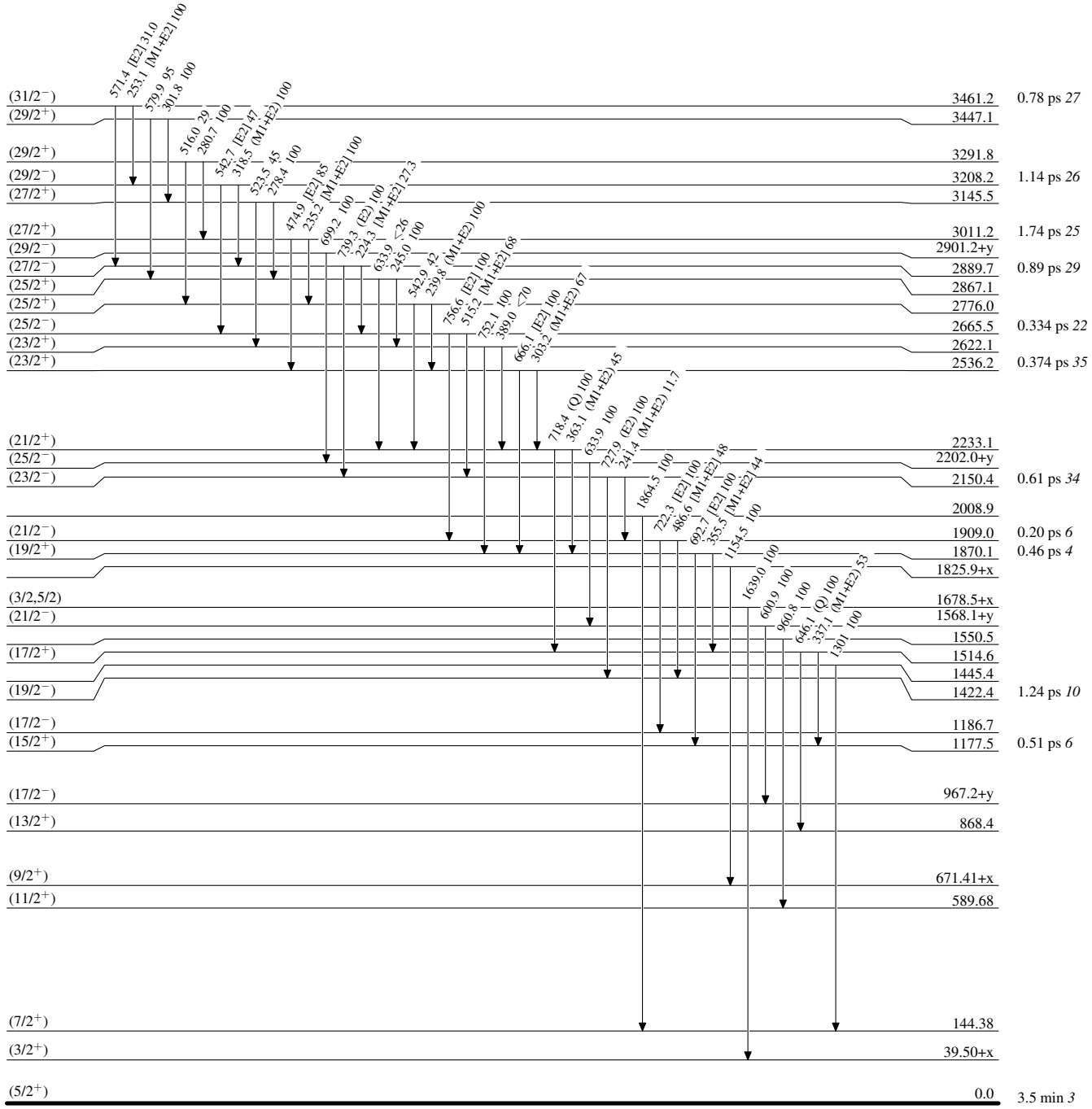


$^{129}_{58}Ce_{71}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

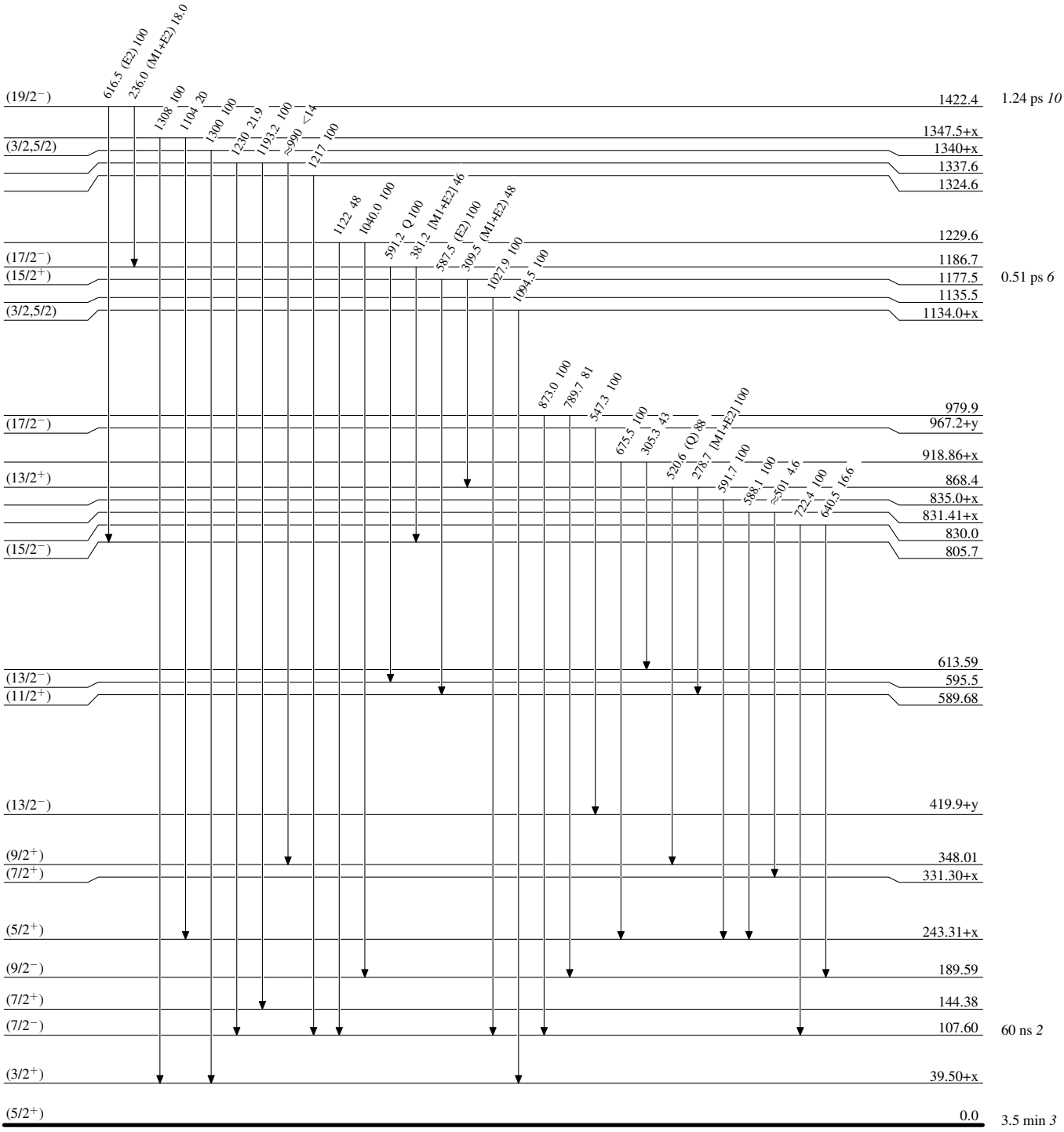


$^{129}_{58}Ce_{71}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{129}_{58}Ce_{71}$

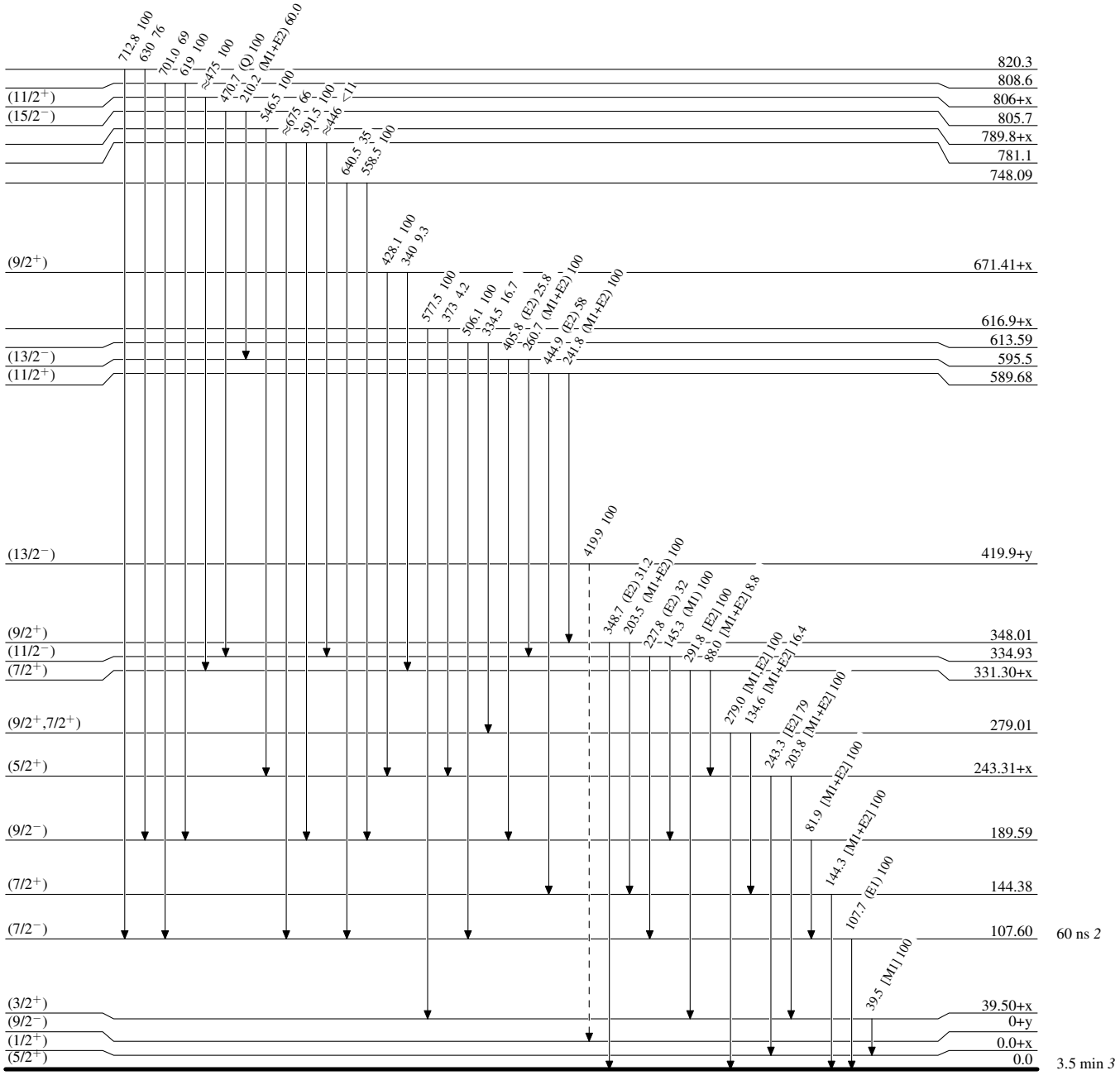
Adopted Levels, Gammas

Legend

Level Scheme (continued)

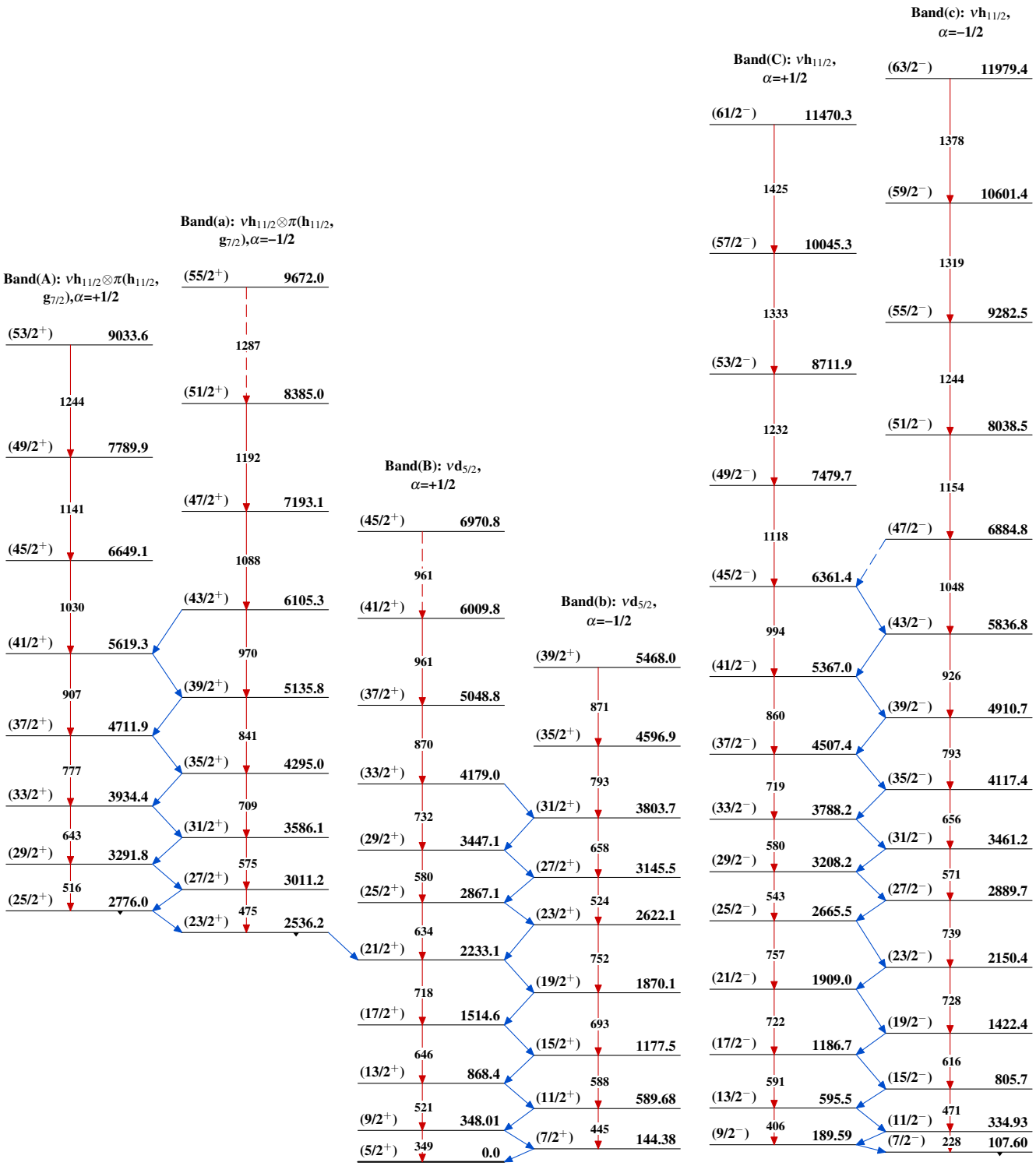
Intensities: Relative photon branching from each level

– – – – – – ► γ Decay (Uncertain)



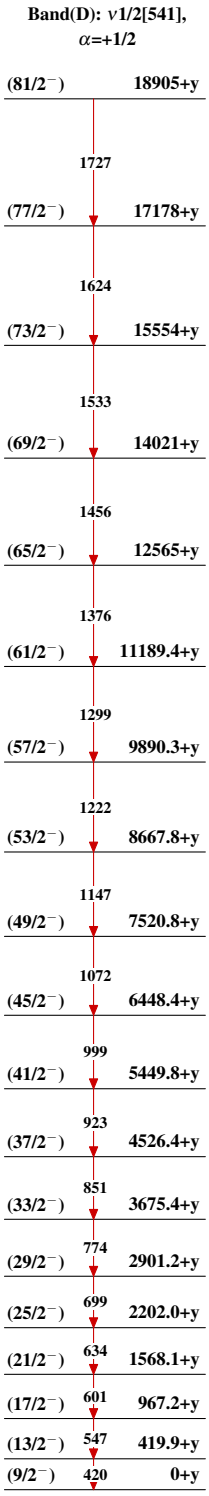
$^{129}_{58}Ce_{71}$

Adopted Levels, Gammas



$^{129}_{58}Ce_{71}$

Adopted Levels, Gammas (continued)



$^{129}_{58}Ce_{71}$