

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Yu. Khazov and A. Rodionov, F. G. Kondev		NDS 112,855 (2011)	31-Oct-2010

Q(β^-)= -3.08×10^3 4; S(n)= 9.84×10^3 5; S(p)= 4.35×10^3 3; Q(α)= -4.2×10^2 3 [2012Wa38](#)

Note: Current evaluation has used the following Q record -3071 32 9842 46 4348 28 -420 28 [2009AuZZ](#).

¹³³La Levels

Cross Reference (XREF) Flags

- A ¹³³Ce ϵ decay (5.1 h)
- B ¹³³Ce ϵ decay (97 min)
- C ¹³²Ba(³He,d),(α ,t)
- D (HL,xn γ)

E(level) [†]	J $^\pi$ [‡]	T _{1/2}	XREF	Comments
0.0 ^d	5/2 ⁺	3.912 h 8	ABCD	% ϵ +% β^+ =100 J $^\pi$: ABMR measurement (1973In04). T _{1/2} : from 1973NaZF . Other: 4.0 h (1950Na09). configuration: a mixture between $\pi 5/2[413]$ (g _{7/2}) and $\pi 5/2[402]$ (d _{5/2}).
87.940 ^b 11	5/2 ⁺	1.30 ns 10	A D	J $^\pi$: 87.939 γ M1+E2, $\Delta J=0$, to 5/2 ⁺ g.s. T _{1/2} : from 1973Mo08 , delayed coincidence.
97.259 10	3/2 ⁺	<0.4 ns	AB	configuration: a mixture between $\pi 5/2[402]$ (d _{5/2}) and $\pi 5/2[413]$ (g _{7/2}). J $^\pi$: 97.261 γ M1+E2 to 5/2 ⁺ g.s.; direct population in ¹³³ Ce ϵ + β^+ decay (J $^\pi$ =1/2 ⁺). T _{1/2} : from 1973Mo08 , delayed coincidence. Other: 0.4 ns δ (1984Is06), \leq 0.1 ns (1972Be77).
130.803 ^c 10	7/2 ⁺ #	1.12 ns 18	A CD	configuration: dominant $\pi 3/2[411]$ (d _{5/2}). J $^\pi$: 130.803 γ M1+E2 to 5/2 ⁺ g.s. and 346.4 γ M1+(E2) from 9/2 ⁺ . T _{1/2} : from 1973Mo08 , delayed coincidence; supersedes the value of 1.19 ns 20 in 1970BaYT . Other: 0.8 ns 3 (1967Ab10).
174.1 4	1/2 ⁺	0.83 ns 18	B	J $^\pi$: 174.0 γ E2 to 5/2 ⁺ g.s., 76.9 γ M1+E2 to 3/2 ⁺ ; direct population in ¹³³ Ce ϵ + β^+ decay (J $^\pi$ =1/2 ⁺). T _{1/2} : from 1973Mo08 (delayed coincidence). configuration: dominant $\pi 1/2[420]$ (d _{5/2}).
477.219 ^d 21	9/2 ⁺		A D	J $^\pi$: 477.22 γ stretched E2 to 5/2 ⁺ , 346.39 γ M1(+E2) to 7/2 ⁺ ; band assignment.
495.02 3	7/2 ⁺ #		A	J $^\pi$: 397.75 γ E2 to 3/2 ⁺ .
535.595 ^e 21	11/2 ⁻ #	62 ns 4	A CD	$\mu=7.5$ 4 J $^\pi$: 58.39 γ E1 to 9/2 ⁺ , 404.78 γ M2 to 7/2 ⁺ ; L=5 in (α ,t). T _{1/2} : weighted average of 64 ns 5 (1975Bu10) and 60 ns 5 (1973Le09). Other: 70 ns 30 (1967Ab10). μ : from g=1.37 8 (1979BuZW) using $\gamma\gamma(\theta,H,t)$. Other: 2.2 (1969GeZZ). configuration: low- Ω $\pi(h_{11/2})$ configuration; strongly Coriolis mixed.
541.20 ^a 3	7/2 ⁺		A D	J $^\pi$: 541.09 γ M1 to 5/2 ⁺ , 444.2 γ (E2) to 3/2 ⁺ .
563.350 ^b 25	9/2 ⁺ #		A D	J $^\pi$: 475.49 γ E2 to 5/2 ⁺ , 432.55 γ M1+E2 to 7/2 ⁺ .
591.25 6	7/2,9/2 ⁺ #		A	J $^\pi$: 591.24 γ to 5/2 ⁺ , 114.02 γ to 9/2 ⁺ .
654.56 ^c 4	11/2 ⁺ #		A D	J $^\pi$: 523.76 γ E2 to 7/2 ⁺ , 177.3 γ M1,E2 to 9/2 ⁺ .
765.37 6	(5/2 ⁺)		A	J $^\pi$: 224.16 γ M1,E2 to 7/2 ⁺ ; non-population in ¹³³ Ce ϵ + β^+ decay (J $^\pi$ =9/2 ⁻).
784.541 22	7/2 ⁻		A	J $^\pi$: 784.55 γ E1 to 5/2 ⁺ , 248.95 γ E2 to 11/2 ⁻ , 307.3 γ E1 to 9/2 ⁺ .
838.24 4	9/2 ⁺		A	J $^\pi$: 274.84 γ M1,E2 to 9/2 ⁺ , 838.1 γ to 5/2 ⁺ , 350.0 γ from 13/2 ⁺ .
867.16 7	7/2 ⁺ #		A	J $^\pi$: 769.9 γ to 3/2 ⁺ , 371.9 γ to 5/2 ⁺ .

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Adopted Levels, Gammas (continued)

¹³³La Levels (continued)

E(level) [†]	J ^π [‡]	XREF	Comments
950.34 5	(9/2) ⁺ #	A D	J ^π : 819.47γ M1(+E2) to 7/2 ⁺ , 296.0γ to 11/2 ⁺ .
979.94 ^e 8	15/2 ⁻	A D	J ^π : 444.2γ stretched E2 to 11/2 ⁻ ; band assignment.
1045.937 23	9/2 ⁻ #	A	J ^π : 261.396γ M1(+E2) to 7/2 ⁻ , 510.36γ M1(+E2) to 11/2 ⁻ .
1092.37 5	7/2 ⁺ ,9/2 ⁺ #	A	J ^π : 437.69γ M1,E2 to 11/2 ⁺ , 1004.49γ to 5/2 ⁺ .
1153.35 ^f 5	13/2 ⁻	A D	J ^π : 617.7γ M1+E2 to 11/2 ⁻ , 173γ to 15/2 ⁻ ; band assignment.
1188.57 ^d 5	13/2 ⁺	A D	J ^π : 711.42γ E2 to 9/2 ⁺ , 534.3γ M1+E2 to 11/2 ⁺ band assignment.
1194.62? 8	7/2,9/2 ⁺ #	A	J ^π : 699.58γ to 7/2 ⁺ , 1107.1γ to 5/2 ⁺ .
1218.90 14	7/2 ⁺ #	A	J ^π : 1121.5γ to 3/2 ⁺ , 380.7γ to 9/2 ⁺ .
1219.97 ^a 19	(11/2 ⁺)	D	J ^π : 742.3γ (M1) to 9/2 ⁺ ; band assignment.
1260.61 ^b 15	13/2 ⁺	D	J ^π : 697.1γ E2 to 9/2 ⁺ ; band assignment.
1311.07 9	7/2 ⁺ ,9/2,11/2 ⁺ #	A D	J ^π : 747.76γ to 9/2 ⁺ , 656.47γ to 11/2 ⁺ .
1318.57? 10	7/2,9/2 ⁺ #	A	J ^π : 553.16γ to (5/2 ⁺), 841.37γ to 9/2 ⁺ .
1365.02 4	11/2 ⁻ #	A	J ^π : 211.65γ M1,E2 to 13/2 ⁻ , 384.6γ to 15/2 ⁻ .
1377.93 ^c 13	15/2 ⁺	D	J ^π : 723.46γ E2 to 11/2 ⁺ ; band assignment.
1396.42 4	5/2 ⁻	A	J ^π : 611.83γ M1(+E2) to 7/2 ⁻ ; not populated directly in ¹³³ Ce ε+β ⁺ decay (J ^π =9/2 ⁻).
1468.87 4	9/2 ⁻ #	A	J ^π : 315.45γ E2 to 13/2 ⁻ , 72.39γ to 5/2 ⁻ .
1495.8 3	(11/2 ⁺)	D	J ^π : 1018.6γ M1+E2 to 9/2 ⁺ .
1561.19 10	(11/2 ⁻)#	A D	J ^π : 581.12γ to 15/2 ⁻ , 408.0γ to 13/2 ⁻ .
1657.4 6		D	
1661.23 ^e 17	19/2 ⁻	D	J ^π : 681.27γ stretched E2 to 15/2 ⁻ ; band assignment.
1663.9 4		D	
1690.66 4	(9/2) ⁻ #	A	J ^π : 294.23γ E2 to 5/2 ⁻ , 906.13γ M1,E2 to 7/2 ⁻ .
1715.41 5	7/2 ⁻ ,9/2 ⁻ #	A	J ^π : 1584.62γ E1 to 7/2 ⁺ , 1238.0γ to 11/2 ⁻ .
1734.18 14	(11/2 ⁻)#	A	J ^π : 754.25γ to 15/2 ⁻ .
1735.45 4	(9/2) ⁻ #	A	J ^π : 689.48γ M1(+E2) to 9/2 ⁻ , 339.03γ to 5/2 ⁻ .
1737.86 ^f 16	17/2 ⁻	D	J ^π : 584.8γ E2 to 13/2 ⁻ , 757.89γ M1+E2 to 15/2 ⁻ ; band assignment.
1748.29 6	7/2,9/2 ⁺ #	A	J ^π : 963.6γ to 7/2 ⁻ , 1207.04γ to 7/2 ⁺ .
1753.63 5	7/2 ⁻ ,9/2,11/2 ⁺ #	A	J ^π : 1623.0γ to 7/2 ⁺ , 1217.7γ to 11/2 ⁻ .
1778.23? 9	7/2,9/2,11/2 ⁺ #	A	J ^π : 1646.9γ to 7/2 ⁺ .
1784.19 6	(9/2 ⁺ ,11/2 ⁺)#	A	J ^π : 419.16γ to 11/2 ⁻ , 1129.7γ to 11/2 ⁺ , 278γ (E1) from 9/2 ⁻ .
1784.75? 11	7/2 ⁻ ,9/2,11/2 ⁻ #	A	J ^π : 1000.2γ to 7/2 ⁻ , 1249.1γ to 11/2 ⁻ .
1806.61 7	(9/2 ⁻ ,11/2 ⁻)#	A D	J ^π : 1152.05γ (E1) to 11/2 ⁺ .
1815.8 4	(15/2 ⁻)	D	J ^π : 662.5γ (M1+E2) to 13/2 ⁻ .
1850.90 5	(9/2 ⁻)#	A	J ^π : 1720.2γ (E1) to 7/2 ⁺ , 1196.28γ to 11/2 ⁺ .
1857.40 3	7/2 ⁻ #	A	J ^π : 1769.36γ E1 to 5/2 ⁺ .
1912.81 5	9/2 ⁻ #	A	J ^π : 1782.03γ E1 to 7/2 ⁺ , 1377.22γ M1,E2 to 11/2 ⁻ , 1258.2γ to 11/2 ⁺ .
1954.00 ^a 23	(15/2 ⁺)	D	J ^π : 734.1γ to (11/2 ⁺); band assignment.
1958.67 16	9/2 ⁻ ,11/2 ⁺ #	A	J ^π : 805.4γ to 13/2 ⁻ .
1967.77 5	7/2 ⁻ ,9/2 ⁻ #	A	J ^π : 1432.22γ M1,E2 to 11/2 ⁻ , 1183.33γ M1,E2 to 7/2 ⁻ , 1837.3γ to 7/2 ⁺ .
1983.38 10	7/2 ⁻ ,9/2,11/2 ⁺ #	A	J ^π : 1852.3γ to 7/2 ⁺ , 1447.7γ to 11/2 ⁻ .
2018.27 6	7/2 ⁻ #	A	J ^π : 1233.64γ M1(+E2) to 7/2 ⁻ , 2018.23γ to 5/2 ⁺ .
2029.85 9	7/2,9/2 ⁺ #	A	J ^π : 1941.83γ to 5/2 ⁺ .
2035.21 7	(7/2 ⁻ ,9/2 ⁻ ,11/2 ⁻)#	A	J ^π : 228.59γ M1,E2 to (9/2 ⁻ ,11/2 ⁻).
2036.05 3	7/2 ⁻ ,9/2 ⁻ #	A	J ^π : 990.13γ M1(+E2) to 9/2 ⁻ , 1494.9γ E1 to 7/2 ⁺ , 639.3γ to 5/2 ⁻ .
2039.66 ^d 17	17/2 ⁺	D	J ^π : 850.84γ E2 to 13/2 ⁺ ; band assignment.
2062.17 4	9/2 ⁻ #	A	J ^π : 1526.56γ E2(+M1) to 11/2 ⁻ , 1016.22γ M1(+E2) to 9/2 ⁻ , 1931.4γ to 7/2 ⁺ .

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Adopted Levels, Gammas (continued)

¹³³La Levels (continued)

E(level) [†]	J ^π [‡]	XREF	Comments
2075.47 ^b 14	17/2 ⁺	D	J ^π : 814.85γ E2 to 13/2 ⁺ ; band structure.
2122.56 17	11/2 ⁻ #	A	J ^π : 1143.0γ to 15/2 ⁻ .
2132.08 7	7/2,9/2 ⁺ #	A	J ^π : 2044.09γ to 5/2 ⁺ .
2137.19 7	9/2 ⁻ #	A	J ^π : 983.9γ to 13/2 ⁻ , 740.84γ to 5/2 ⁻ .
2155.42 8	(9/2 ⁻)#	A	J ^π : 759.04γ to 5/2 ⁻ , 1620.0γ to 11/2 ⁻ , 1500.4γ to 11/2 ⁺ .
2175.63 9	(11/2 ⁻)#	A D	J ^π : 1129.7γ (M1,E2) to 9/2 ⁻ , 359.3γ to (15/2 ⁻).
2199.96 6	(9/2 ⁻)#	A	J ^π : 834.77γ M1,E2 to 11/2 ⁻ , 2111.84γ to 5/2 ⁺ .
2201.32 22	(19/2 ⁻)	D	J ^π : 540.3γ to 15/2 ⁻ , 1221.1γ to 19/2 ⁻ .
2220.1 3		D	
2249.98 9	7/2 ⁺ ,9/2 ⁺ #	A	J ^π : 1595.43γ to 11/2 ⁺ , 2249.9γ to 5/2 ⁺ .
2261.4 3	(13/2 ⁻ ,15/2,17/2)	D	J ^π : 1281.5γ D to 15/2 ⁻ , 523.2γ to 17/2 ⁻ .
2262.48 ^c 23	19/2 ⁺	D	J ^π : 884.51γ E2 15/2 ⁺ ; band assignment.
2289.26 22		D	
2298.5 3	7/2,9/2 ⁺ #	A	J ^π : 2210.6γ to 5/2 ⁺ .
2359.89 8	(7/2,9/2,11/2) ⁻ #	A	J ^π : 392.16γ M1,E2 to 7/2 ⁻ ,9/2 ⁻ .
2367.34 17	(7/2,9/2) ⁺	A	J ^π : 2279.1γ to 5/2 ⁺ , 1712.4γ to 11/2 ⁺ .
2368.33 [@] 13	17/2 ⁺	D	J ^π : 1179.8γ E2 to 13/2 ⁺ , 990.5γ M1+E2 to 15/2 ⁺ ; band assignment.
2424.7 4		D	
2449.86 ^e 22	23/2 ⁻	D	J ^π : 788.6γ E2 to 19/2 ⁻ ; band assignment.
2501.31 11	9/2 ⁻ ,11/2 ⁺ #	A	J ^π : 1455.3γ to 13/2 ⁻ , 1960.3γ to 7/2 ⁺ .
2503.61 [@] 17	19/2 ⁺	D	J ^π : 135.1γ D to 17/2 ⁺ , 1125.73γ to 15/2 ⁺ ; band assignment.
2535.06 ^f 21	21/2 ⁻	D	J ^π : 797.7γ E2 to 17/2 ⁻ , 873.72γ M1+E2 to 19/2 ⁻ ; band assignment.
2572.76 [?] 24	(7/2 ⁺)#	A	J ^π : 2474.8γ to 3/2 ⁺ .
2581.14 25	(21/2 ⁻)	D	J ^π : 920.05γ M1+E2 to 19/2 ⁻ .
2682.2 [@] 3	21/2 ⁺	D	J ^π : 178.7γ M1+E2 to 19/2 ⁺ ; band assignment.
2716.1 4		D	
2727.3 ^{&} 6	(19/2 ⁺)	D	J ^π : 1066.2γ to 19/2 ⁻ ; band assignment.
2734.8 [?] 4	7/2 ⁻ ,9/2 ⁺ #	A	J ^π : 1369.9γ to 11/2 ⁻ , 2734.1γ to 5/2 ⁺ .
2851.10 22	9/2 ⁻ ,11/2 ⁺ #	A	J ^π : 2720.5γ to 7/2 ⁺ , 1698.0γ to 13/2 ⁻ .
2884.8 ^d 6	(21/2 ⁺)	D	J ^π : 845.1γ to 17/2 ⁺ ; band structure.
2891.3 3	23/2 ⁺	D	J ^π : 209.03γ M1+E2 to 21/2 ⁺ , 387.0γ M1+E2 from 25/2 ⁺ .
2894.3 ^{&} 4	(21/2 ⁺)	D	J ^π : 854.3γ to 17/2 ⁺ ; band assignment.
2915.95 25	(23/2 ⁻)	D	J ^π : 714.6γ E2 to (19/2 ⁻), 846.4γ from (27/2 ⁻).
2927.9 [@] 4	23/2 ⁺	D	J ^π : 245.6γ M1+E2 to 21/2 ⁺ ; band assignment.
3003.7 4	(23/2 ⁻)	D	J ^π : 802.4γ E2 to (19/2 ⁻).
3104.6 ^g 5	(25/2)	D	J ^π : 178.0γ D+Q, ΔJ=1 to (23/2 ⁺).
3111.2 ^{&} 4	(23/2 ⁺)	D	J ^π : 607.4γ to 19/2 ⁺ , 428.7γ D+Q to 21/2 ⁺ ; band structure.
3258.9 [@] 4	25/2 ⁺	D	J ^π : 331.03γ M1+E2 to 23/2 ⁺ , 576.8γ to 21/2 ⁺ ; band structure.
3270.0 6		D	
3277.6 ^c 7	23/2 ⁺	D	J ^π : 1014.5γ to 19/2 ⁺ ; band structure.
3278.3 4	25/2 ⁺	D	J ^π : 350.5γ M1+E2 to 23/2 ⁺ , 336.1γ M1+E2 from 3614.6-keV level.
3292.5 ^e 3	27/2 ⁻	D	J ^π : 842.7γ E2 to 23/2 ⁻ ; band assignment.
3382.4 ^{&} 4	(25/2 ⁺)	D	J ^π : 454.3γ (D+Q) to 23/2 ⁺ , 700.5γ to 21/2 ⁺ ; band structure.
3431.5 ^f 3	25/2 ⁻	D	J ^π : 896.5γ E2 to 21/2 ⁻ , 981.2γ M1+E2 to 23/2 ⁻ ; band structure.
3448.63 22	25/2 ⁻	D	J ^π : 998.62γ M1+E2 to 23/2 ⁻ , 913.56γ (Q) to 21/2 ⁻ .
3551.9 9		D	
3600.2 ^h 3	(27/2 ⁻)	D	J ^π : 168.5γ stretched D to 25/2 ⁻ , 307.7γ D+Q to 27/2 ⁻ .
3614.7 [@] 4	27/2 ⁺	D	J ^π : 336.1γ M1+E2 to 25/2 ⁺ , 686.8γ (E2) to 23/2 ⁺ ; band structure.
3647.2 ^g 5	(27/2)	D	J ^π : 542.44γ M1+E2 to (25/2).

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Adopted Levels, Gammas (continued)

¹³³La Levels (continued)

E(level) [†]	J ^π [‡]	XREF	Comments
3762.5 3	(27/2 ⁻)	D	J ^π : 1312.9γ to 23/2 ⁻ , 187.3γ D, ΔJ=1 from 3948.9-keV level J ^π =(29/2 ⁻).
3778.5& 5	(27/2 ⁺)	D	J ^π : 396.0γ to (25/2 ⁺), 667.3γ to (23/2 ⁺); band structure.
3948.8 ^h 4	(29/2 ⁻)	D	J ^π : 348.4γ D, ΔJ=1 to (27/2 ⁻).
4012.3 ^g 5	(29/2)	D	J ^π : 907.76γ (E2) to (25/2), 364.7γ (M1+E2) to (27/2); band structure.
4030.9@ 4	29/2 ⁺	D	J ^π : 415.9γ (M1) to 27/2 ⁺ , 772.3γ to 25/2 ⁺ ; band structure.
4055.3 5		D	
4072.2 5		D	
4134.3& 5	(29/2 ⁺)	D	J ^π : 355.5γ D to (27/2 ⁺), 751.9γ to (25/2 ⁺); band structure.
4227.0 ^e 4	31/2 ⁻	D	J ^π : 934.5γ to 27/2 ⁻ ; band structure.
4359.5 ^f 9	(29/2)	D	J ^π : 1067.0γ to 27/2 ⁻ ; band structure.
4397.1 ^h 4	(31/2 ⁻)	D	J ^π : 448.26γ to (29/2 ⁻); band structure.
4475.4@ 5	31/2 ⁺	D	J ^π : 444.5γ to 29/2 ⁺ , 860.7γ to 27/2 ⁺ ; band structure.
4511.1 ^g 6	(31/2)	D	J ^π : 498.9γ to (29/2), 863.6γ to (27/2); band structure.
4512.9 5		D	
4569.0 9		D	
4831.6 ^h 5	(33/2 ⁻)	D	J ^π : 434.5γ stretched (D) to (31/2 ⁻); band structure.
4871.5 5		D	
4926.7 ^g 6	(33/2)	D	J ^π : 914.4γ to (29/2); band structure.
4938.5@ 6	33/2 ⁺	D	J ^π : 463.1γ (M1+E2) to 31/2 ⁺ ; band structure.
5004.6 6		D	
5038.9 5		D	
5198.5 ^e 5	35/2 ⁻	D	J ^π : 971.5γ E2 to 31/2 ⁻ ; band structure.
5219.9 12		D	
5221.3 ^h 6	(35/2 ⁻)	D	J ^π : 389.7γ to (33/2 ⁻); band structure.
5319.6 7		D	
5352.0@ 6	35/2 ⁺	D	J ^π : 876.6γ to 31/2 ⁺ ; band structure.
6144.7 ^e 6	(39/2 ⁻)	D	J ^π : 946.2γ to 35/2 ⁻ ; band structure.
6283.3@ 7	(39/2 ⁺)	D	J ^π : 931.3γ to 35/2 ⁺ ; band structure.

[†] From a least-squares fit to Eγ's.

[‡] From deduced γ-ray transition multiplicities, unless otherwise stated.

Direct population in ¹³³Ce ε+β⁺ decay (J^π=9/2⁻).

@ Band(A): based on 17/2⁺ 2368-keV state, ΔJ=1.

& Band(B): based on (19/2⁺) 2727-keV state, ΔJ=1.

^a Band(C): based on 7/2⁺ 541-keV state.

^b Band(D): based on 5/2⁺ 88-keV state.

^c Band(E): based on 7/2⁺ 131-keV state.

^d Band(F): based on 5/2⁺ ground state.

^e Band(G): based on 11/2- 536-keV isomer, α=-1/2.

^f Band(H): based on 13/2- 1153-keV state, α=+1/2.

^g Band(I): possible rotational band based on (25/2) 3104.6-keV state.

^h Band(J): possible rotational band based on (27/2⁻) 3600.3-keV state.

Adopted Levels, Gammas (continued)

$E_i(\text{level})$	J_i^π	E_γ^\ddagger	I_γ^\ddagger	E_f	J_f^π	Mult.#	$\gamma(^{133}\text{La})$		Comments	
							$\delta^\#$	α^\dagger		
87.940	5/2 ⁺	87.939 11	100	0.0	5/2 ⁺	M1+E2	0.051	+12-16	1.566	B(M1)(W.u.)=0.0097 8; B(E2)(W.u.)=2.1 10 $\alpha(\text{K})=1.335$ 19; $\alpha(\text{L})=0.183$ 3; $\alpha(\text{M})=0.0382$ 6; $\alpha(\text{N+..})=0.00985$ 16 $\alpha(\text{N})=0.00838$ 14; $\alpha(\text{O})=0.001359$ 21; $\alpha(\text{P})=0.0001040$ 15
97.259	3/2 ⁺	97.261 10	100	0.0	5/2 ⁺	M1+E2	0.157	17	1.195 18	B(M1)(W.u.)>0.026; B(E2)(W.u.)>35 $\alpha(\text{K})=1.007$ 15; $\alpha(\text{L})=0.149$ 4; $\alpha(\text{M})=0.0311$ 8; $\alpha(\text{N+..})=0.00799$ 20 $\alpha(\text{N})=0.00682$ 17; $\alpha(\text{O})=0.001092$ 25; $\alpha(\text{P})=7.78 \times 10^{-5}$ 11 E_γ : not observed, but existence is required by 346 γ -97 γ coin. I_γ : from intensity balance.
130.803	7/2 ⁺	(33.54)		97.259	3/2 ⁺					
		42.7 1	0.44 7	87.940	5/2 ⁺	M1+E2	0.160	+18-21	13.6 3	B(M1)(W.u.)=0.00068 16; B(E2)(W.u.)=6.1 20 $\alpha(\text{K})=10.68$ 17; $\alpha(\text{L})=2.27$ 20; $\alpha(\text{M})=0.48$ 5; $\alpha(\text{N+..})=0.122$ 11 $\alpha(\text{N})=0.105$ 9; $\alpha(\text{O})=0.0161$ 13; $\alpha(\text{P})=0.000842$ 14
		130.803 10	100 2	0.0	5/2 ⁺	M1+E2	0.239	+30-21	0.520	B(M1)(W.u.)=0.0052 9; B(E2)(W.u.)=11 4 $\alpha(\text{K})=0.437$ 7; $\alpha(\text{L})=0.0653$ 20; $\alpha(\text{M})=0.0137$ 5; $\alpha(\text{N+..})=0.00350$ 11 $\alpha(\text{N})=0.00299$ 10; $\alpha(\text{O})=0.000478$ 13; $\alpha(\text{P})=3.35 \times 10^{-5}$ 5
174.1	1/2 ⁺	76.9 ^a 5	100 ^a 14	97.259	3/2 ⁺	M1+E2	0.057	+10-19	2.31 6	B(M1)(W.u.)=0.017 6; B(E2)(W.u.)=6 3 $\alpha(\text{K})=1.96$ 5; $\alpha(\text{L})=0.272$ 8; $\alpha(\text{M})=0.0567$ 16; $\alpha(\text{N+..})=0.0146$ 4 $\alpha(\text{N})=0.0125$ 4; $\alpha(\text{O})=0.00202$ 6; $\alpha(\text{P})=0.000153$ 4
		174.0 ^a 5	2.6 ^a 6	0.0	5/2 ⁺	E2			0.286 5	B(E2)(W.u.)=0.8 3 $\alpha(\text{K})=0.214$ 4; $\alpha(\text{L})=0.0570$ 11; $\alpha(\text{M})=0.01237$ 23; $\alpha(\text{N+..})=0.00305$ 6 $\alpha(\text{N})=0.00265$ 5; $\alpha(\text{O})=0.000391$ 8; $\alpha(\text{P})=1.293 \times 10^{-5}$ 22
477.219	9/2 ⁺	346.39 5	10.6 2	130.803	7/2 ⁺	M1(+E2)			0.033 4	$\alpha(\text{K})=0.028$ 4; $\alpha(\text{L})=0.00420$ 12; $\alpha(\text{M})=0.00088$ 4; $\alpha(\text{N+..})=0.000225$ 6 $\alpha(\text{N})=0.000192$ 6; $\alpha(\text{O})=3.05 \times 10^{-5}$ 5; $\alpha(\text{P})=2.0 \times 10^{-6}$ 4
		389.37 9	0.54 5	87.940	5/2 ⁺	E2			0.0211	$\alpha(\text{K})=0.01739$ 25; $\alpha(\text{L})=0.00291$ 4; $\alpha(\text{M})=0.000615$ 9; $\alpha(\text{N+..})=0.0001553$ 22 $\alpha(\text{N})=0.0001333$ 19; $\alpha(\text{O})=2.08 \times 10^{-5}$ 3; $\alpha(\text{P})=1.203 \times 10^{-6}$ 17
		477.22 4	100	0.0	5/2 ⁺	E2			0.01173	$\alpha(\text{K})=0.00980$ 14; $\alpha(\text{L})=0.001527$ 22; $\alpha(\text{M})=0.000321$ 5; $\alpha(\text{N+..})=8.16 \times 10^{-5}$ 12 $\alpha(\text{N})=6.99 \times 10^{-5}$ 10; $\alpha(\text{O})=1.100 \times 10^{-5}$ 16; $\alpha(\text{P})=6.92 \times 10^{-7}$ 10
495.02	7/2 ⁺	364.19 4	100 3	130.803	7/2 ⁺	M1,E2			0.029 4	$\alpha(\text{K})=0.024$ 4; $\alpha(\text{L})=0.00361$ 6; $\alpha(\text{M})=0.000757$ 16; $\alpha(\text{N+..})=0.000193$ 3 $\alpha(\text{N})=0.000165$ 3; $\alpha(\text{O})=2.63 \times 10^{-5}$ 6; $\alpha(\text{P})=1.8 \times 10^{-6}$ 4
		397.75 6	47.8 19	97.259	3/2 ⁺	E2			0.0198	$\alpha(\text{K})=0.01635$ 23; $\alpha(\text{L})=0.00271$ 4; $\alpha(\text{M})=0.000573$ 8;

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Adopted Levels, Gammas (continued)

E _i (level)	J _i ^π	E _γ [‡]	I _γ [‡]	E _f	J _f ^π	Mult. #	γ(¹³³ La) (continued)		Comments
							δ#	α [†]	
495.02	7/2 ⁺	407.10 10	19.7 16	87.940	5/2 ⁺	M1,E2		0.021 3	α(N+..)=0.0001449 21 α(N)=0.0001243 18; α(O)=1.94×10 ⁻⁵ 3; α(P)=1.134×10 ⁻⁶ 16 α(K)=0.018 3; α(L)=0.00260 10; α(M)=0.000545 16; α(N+..)=0.000139 6 α(N)=0.000119 5; α(O)=1.90×10 ⁻⁵ 11; α(P)=1.3×10 ⁻⁶ 3
535.595	11/2 ⁻	495.07 7 58.39 3	48.1 19 100 2	0.0 477.219	5/2 ⁺ 9/2 ⁺	E1		1.023	α(K)=0.862 13; α(L)=0.1280 18; α(M)=0.0265 4; α(N+..)=0.00660 10 α(N)=0.00568 8; α(O)=0.000868 13; α(P)=4.88×10 ⁻⁵ 7 B(E1)(W.u.)=9.9×10 ⁻⁶ 7
		404.78 4	8.82 18	130.803	7/2 ⁺	M2		0.0883	α(K)=0.0742 11; α(L)=0.01117 16; α(M)=0.00235 4; α(N+..)=0.000608 9 α(N)=0.000518 8; α(O)=8.38×10 ⁻⁵ 12; α(P)=6.32×10 ⁻⁶ 9 B(M2)(W.u.)=0.073 6
		535	0.61 20	0.0	5/2 ⁺	[E3]		0.0234	B(E3)(W.u.)=4.3 15 α(K)=0.0186 3; α(L)=0.00383 6; α(M)=0.000824 12; α(N+..)=0.000207 3
541.20	7/2 ⁺	63.93 11	0.19 5	477.219	9/2 ⁺	[M1,E2]		7 4	α(N)=0.0001784 25; α(O)=2.73×10 ⁻⁵ 4; α(P)=1.370×10 ⁻⁶ 20 α(K)=3.7 4; α(L)=2.6 22; α(M)=0.6 5; α(N+..)=0.14 12
		410.39 10	24.5 8	130.803	7/2 ⁺	M1,E2		0.021 3	α(N)=0.12 10; α(O)=0.017 14; α(P)=0.00024 3 α(K)=0.018 3; α(L)=0.00254 10; α(M)=0.000532 17; α(N+..)=0.000136 6
		444.2 1	≈47	97.259	3/2 ⁺	(E2)		0.01436	α(N)=0.000116 5; α(O)=1.86×10 ⁻⁵ 11; α(P)=1.3×10 ⁻⁶ 3 α(K)=0.01195 17; α(L)=0.00191 3; α(M)=0.000401 6; α(N+..)=0.0001018 15
		453.27 5	33.9 12	87.940	5/2 ⁺	M1,E2		0.0159 24	α(N)=8.73×10 ⁻⁵ 13; α(O)=1.368×10 ⁻⁵ 20; α(P)=8.38×10 ⁻⁷ 12 α(K)=0.0135 23; α(L)=0.00192 14; α(M)=0.000400 25; α(N+..)=0.000103 8
		541.09 10	100 13	0.0	5/2 ⁺	M1		0.01175	α(N)=8.8×10 ⁻⁵ 6; α(O)=1.40×10 ⁻⁵ 12; α(P)=1.00×10 ⁻⁶ 21 α(K)=0.01010 15; α(L)=0.001308 19; α(M)=0.000271 4; α(N+..)=7.00×10 ⁻⁵ 10
563.350	9/2 ⁺	86.11 12	0.07 2	477.219	9/2 ⁺	[M1,E2]		2.5 9	α(N)=5.96×10 ⁻⁵ 9; α(O)=9.72×10 ⁻⁶ 14; α(P)=7.72×10 ⁻⁷ 11 α(K)=1.65 24; α(L)=0.7 5; α(M)=0.15 12; α(N+..)=0.04 3
		432.55 4	100.0 22	130.803	7/2 ⁺	M1+E2	+0.07 4	0.0206	α(N)=0.032 24; α(O)=0.005 4; α(P)=0.000105 6 α(K)=0.01765 25; α(L)=0.00230 4; α(M)=0.000477 7; α(N+..)=0.0001235 18
		475.49 6	90.0 22	87.940	5/2 ⁺	E2		0.01185	α(N)=0.0001050 15; α(O)=1.713×10 ⁻⁵ 24; α(P)=1.354×10 ⁻⁶ 20 α(K)=0.00990 14; α(L)=0.001544 22; α(M)=0.000325 5; α(N+..)=8.25×10 ⁻⁵ 12 α(N)=7.07×10 ⁻⁵ 10; α(O)=1.112×10 ⁻⁵ 16; α(P)=6.99×10 ⁻⁷ 10

Adopted Levels, Gammas (continued)

$\gamma(^{133}\text{La})$ (continued)									
$E_i(\text{level})$	J_i^π	E_γ^{\ddagger}	I_γ^{\ddagger}	E_f	J_f^π	Mult.#	α^\dagger	Comments	
591.25	7/2,9/2 ⁺	50.09 10		541.20	7/2 ⁺				
		114.02 11		477.219	9/2 ⁺				
		460.5 5	≈30	130.803	7/2 ⁺				
654.56	11/2 ⁺	591.24 10	100 13	0.0	5/2 ⁺				
		118.96 13	0.8 3	535.595	11/2 ⁻				
		159.56 18	0.44 17	495.02	7/2 ⁺				
		177.3 2	1.6 6	477.219	9/2 ⁺	M1,E2	0.24 3	$\alpha(\text{K})=0.193$ 9; $\alpha(\text{L})=0.039$ 14; $\alpha(\text{M})=0.008$ 4; $\alpha(\text{N}+..)=0.0021$ 8 $\alpha(\text{N})=0.0018$ 7; $\alpha(\text{O})=0.00027$ 9; $\alpha(\text{P})=1.33\times 10^{-5}$ 12	
		523.76 5	100 3	130.803	7/2 ⁺	E2	0.00909 13	$\alpha(\text{K})=0.00763$ 11; $\alpha(\text{L})=0.001156$ 17; $\alpha(\text{M})=0.000243$ 4; $\alpha(\text{N}+..)=6.17\times 10^{-5}$ 9 $\alpha(\text{N})=5.28\times 10^{-5}$ 8; $\alpha(\text{O})=8.35\times 10^{-6}$ 12; $\alpha(\text{P})=5.43\times 10^{-7}$ 8	
765.37	(5/2 ⁺)	224.16 7	51 6	541.20	7/2 ⁺	M1,E2	0.118 4	$\alpha(\text{K})=0.0965$ 22; $\alpha(\text{L})=0.017$ 4; $\alpha(\text{M})=0.0036$ 9; $\alpha(\text{N}+..)=0.00091$ 21 $\alpha(\text{N})=0.00078$ 19; $\alpha(\text{O})=0.000121$ 25; $\alpha(\text{P})=6.8\times 10^{-6}$ 8	
		634.5 2	40 14	130.803	7/2 ⁺				
784.541	7/2 ⁻	678.3 ^b	100 ^b 50	87.940	5/2 ⁺				
		765.19 12	96 10	0.0	5/2 ⁺				
		221.2 1	≈0.8	563.350	9/2 ⁺				
		248.95 2	13.8 3	535.595	11/2 ⁻	E2	0.0857	$\alpha(\text{K})=0.0679$ 10; $\alpha(\text{L})=0.01405$ 20; $\alpha(\text{M})=0.00301$ 5; $\alpha(\text{N}+..)=0.000751$ 11 $\alpha(\text{N})=0.000649$ 9; $\alpha(\text{O})=9.81\times 10^{-5}$ 14; $\alpha(\text{P})=4.40\times 10^{-6}$ 7	
		307.30 6	9.7 4	477.219	9/2 ⁺	E1	0.01121	$\alpha(\text{K})=0.00964$ 14; $\alpha(\text{L})=0.001245$ 18; $\alpha(\text{M})=0.000257$ 4; $\alpha(\text{N}+..)=6.59\times 10^{-5}$ 10 $\alpha(\text{N})=5.62\times 10^{-5}$ 8; $\alpha(\text{O})=9.03\times 10^{-6}$ 13; $\alpha(\text{P})=6.63\times 10^{-7}$ 10	
		653.75 12	4.6 4	130.803	7/2 ⁺				
		784.55 8	100 2	0.0	5/2 ⁺	E1	0.001290 18	$\alpha(\text{K})=0.001115$ 16; $\alpha(\text{L})=0.0001390$ 20; $\alpha(\text{M})=2.86\times 10^{-5}$ 4; $\alpha(\text{N}+..)=7.38\times 10^{-6}$ $\alpha(\text{N})=6.28\times 10^{-6}$ 9; $\alpha(\text{O})=1.021\times 10^{-6}$ 15; $\alpha(\text{P})=7.97\times 10^{-8}$ 12	
838.24	9/2 ⁺	274.84 7	34 5	563.350	9/2 ⁺	M1,E2	0.0643 24	$\alpha(\text{K})=0.053$ 4; $\alpha(\text{L})=0.0086$ 11; $\alpha(\text{M})=0.0018$ 3; $\alpha(\text{N}+..)=0.00046$ 6 $\alpha(\text{N})=0.00040$ 6; $\alpha(\text{O})=6.2\times 10^{-5}$ 7; $\alpha(\text{P})=3.8\times 10^{-6}$ 6	
		360.96 10	24 6	477.219	9/2 ⁺	(M1,E2)	0.030 4	$\alpha(\text{K})=0.025$ 4; $\alpha(\text{L})=0.00371$ 6; $\alpha(\text{M})=0.000778$ 19; $\alpha(\text{N}+..)=0.000199$ 3 $\alpha(\text{N})=0.000170$ 3; $\alpha(\text{O})=2.70\times 10^{-5}$ 6; $\alpha(\text{P})=1.8\times 10^{-6}$ 4	
867.16	7/2 ⁺	707.41 6	100 7	130.803	7/2 ⁺				
		838.1 2	37 6	0.0	5/2 ⁺				
		371.9 3	16 5	495.02	7/2 ⁺				
		736.32 11	50 7	130.803	7/2 ⁺				
		769.9 2	35 6	97.259	3/2 ⁺				
		779.16 14	61 10	87.940	5/2 ⁺				
950.34	(9/2) ⁺	867.2 5	100 20	0.0	5/2 ⁺				
		112.03 11	0.83 16	838.24	9/2 ⁺				
		165.72 18	26 9	784.541	7/2 ⁻				

Adopted Levels, Gammas (continued)

$\gamma(^{133}\text{La})$ (continued)								
$E_i(\text{level})$	J_i^π	E_γ ‡	I_γ ‡	E_f	J_f^π	Mult. #	α^\dagger	Comments
950.34	(9/2) ⁺	296.0 1	7 3	654.56	11/2 ⁺	(M1+E2)	0.0157 24	$\alpha(\text{K})=0.0133$ 22; $\alpha(\text{L})=0.00189$ 14; $\alpha(\text{M})=0.000395$ 25; $\alpha(\text{N}+..)=0.000101$ 8
		455.28 10	12 4	495.02	7/2 ⁺			
819.47 15	100 5	130.803	7/2 ⁺	M1(+E2)	0.0036 7			$\alpha(\text{K})=0.0031$ 6; $\alpha(\text{L})=0.00041$ 7; $\alpha(\text{M})=8.5\times 10^{-5}$ 13; $\alpha(\text{N}+..)=2.2\times 10^{-5}$ 4
								$\alpha(\text{N})=1.9\times 10^{-5}$ 3; $\alpha(\text{O})=3.0\times 10^{-6}$ 5; $\alpha(\text{P})=2.3\times 10^{-7}$ 5 Mult.: (D) stretched in (HI,xny).
979.94	15/2 ⁻	862.29 13 444.2 1	78 3 100	87.940 535.595	5/2 ⁺ 11/2 ⁻	E2	0.01436	$\alpha(\text{K})=0.01195$ 17; $\alpha(\text{L})=0.00191$ 3; $\alpha(\text{M})=0.000401$ 6; $\alpha(\text{N}+..)=0.0001018$ 15
1045.937	9/2 ⁻	261.396 14	8.41 19	784.541	7/2 ⁻	M1(+E2)	0.0746 18	$\alpha(\text{N})=8.73\times 10^{-5}$ 13; $\alpha(\text{O})=1.368\times 10^{-5}$ 20; $\alpha(\text{P})=8.38\times 10^{-7}$ 12 $\alpha(\text{K})=0.062$ 4; $\alpha(\text{L})=0.0102$ 16; $\alpha(\text{M})=0.0022$ 4; $\alpha(\text{N}+..)=0.00054$ 9 $\alpha(\text{N})=0.00047$ 8; $\alpha(\text{O})=7.3\times 10^{-5}$ 9; $\alpha(\text{P})=4.4\times 10^{-6}$ 7
		504.73 8 510.36 7	2.5 6 100 3	541.20 535.595	7/2 ⁺ 11/2 ⁻	M1(+E2)	0.0117 20	$\alpha(\text{K})=0.0099$ 18; $\alpha(\text{L})=0.00138$ 14; $\alpha(\text{M})=0.00029$ 3; $\alpha(\text{N}+..)=7.4\times 10^{-5}$ 8 $\alpha(\text{N})=6.3\times 10^{-5}$ 6; $\alpha(\text{O})=1.01\times 10^{-5}$ 12; $\alpha(\text{P})=7.4\times 10^{-7}$ 16
1092.37	7/2 ⁺ , 9/2 ⁺	914.8 3	0.64 13	130.803	7/2 ⁺	M1,E2		
		437.69 7	42 10	654.56	11/2 ⁺			
		551.2 2	19 5	541.20	7/2 ⁺			
597.36 14	100 8	495.02	7/2 ⁺	M1,E2	0.0078 14	$\alpha(\text{K})=0.0067$ 13; $\alpha(\text{L})=0.00091$ 12; $\alpha(\text{M})=0.000189$ 23; $\alpha(\text{N}+..)=4.9\times 10^{-5}$ 7 $\alpha(\text{N})=4.1\times 10^{-5}$ 6; $\alpha(\text{O})=6.7\times 10^{-6}$ 10; $\alpha(\text{P})=5.0\times 10^{-7}$ 11		
615.39 12	72 8	477.219	9/2 ⁺	(M1,E2)	0.0073 13	$\alpha(\text{K})=0.0062$ 12; $\alpha(\text{L})=0.00084$ 11; $\alpha(\text{M})=0.000175$ 22; $\alpha(\text{N}+..)=4.5\times 10^{-5}$ 6 $\alpha(\text{N})=3.8\times 10^{-5}$ 5; $\alpha(\text{O})=6.2\times 10^{-6}$ 9; $\alpha(\text{P})=4.6\times 10^{-7}$ 10		
1153.35	13/2 ⁻	961.8 4	41 10	130.803	7/2 ⁺	(M1,E2)	0.26 3	$\alpha(\text{K})=0.208$ 11; $\alpha(\text{L})=0.042$ 16; $\alpha(\text{M})=0.009$ 4; $\alpha(\text{N}+..)=0.0023$ 9 $\alpha(\text{N})=0.0020$ 8; $\alpha(\text{O})=0.00030$ 11; $\alpha(\text{P})=1.43\times 10^{-5}$ 12
		1004.49 10 173 1	94 6 <5.7	87.940 979.94	5/2 ⁺ 15/2 ⁻			
617.7 2	100 14	535.595	11/2 ⁻	M1+E2	0.0072 13	$\alpha(\text{K})=0.0061$ 12; $\alpha(\text{L})=0.00083$ 11; $\alpha(\text{M})=0.000173$ 22; $\alpha(\text{N}+..)=4.5\times 10^{-5}$ 6 $\alpha(\text{N})=3.8\times 10^{-5}$ 5; $\alpha(\text{O})=6.1\times 10^{-6}$ 9; $\alpha(\text{P})=4.6\times 10^{-7}$ 10 $\delta: -0.32$ 10 or -1.8 4.		
1188.57	13/2 ⁺	350.03 11	15 3	838.24	9/2 ⁺	M1+E2	0.0104 18	$\alpha(\text{K})=0.0088$ 16; $\alpha(\text{L})=0.00122$ 13; $\alpha(\text{M})=0.00025$ 3; $\alpha(\text{N}+..)=6.5\times 10^{-5}$ 7
		534.3 @ 8	31 @ 15	654.56	11/2 ⁺			
711.42 7	100	477.219	9/2 ⁺	E2	0.00416 6	$\alpha(\text{K})=0.00353$ 5; $\alpha(\text{L})=0.000496$ 7; $\alpha(\text{M})=0.0001034$ 15;		

Adopted Levels, Gammas (continued)

$\gamma(^{133}\text{La})$ (continued)								
$E_i(\text{level})$	J_i^π	E_γ^\ddagger	I_γ^\ddagger	E_f	J_f^π	Mult.#	α^\dagger	Comments
								$\alpha(\text{N+..})=2.65\times 10^{-5}$ 4 $\alpha(\text{N})=2.26\times 10^{-5}$ 4; $\alpha(\text{O})=3.62\times 10^{-6}$ 5; $\alpha(\text{P})=2.56\times 10^{-7}$ 4
1194.62?	7/2,9/2 ⁺	699.58 7	100 8	495.02	7/2 ⁺			
		1107.1 3	45 11	87.940	5/2 ⁺			
1218.90	7/2 ⁺	380.7 2	14 4	838.24	9/2 ⁺			
		678.3 ^b 5	100 ^b 30	541.20	7/2 ⁺			
		1121.5 2	18 5	97.259	3/2 ⁺			
1219.97	(11/2 ⁺)	679.3 [@] 3	100 [@] 44	541.20	7/2 ⁺			
		742.3 [@] 3	32 [@] 14	477.219	9/2 ⁺	(M1)	0.00544 8	$\alpha(\text{K})=0.00469$ 7; $\alpha(\text{L})=0.000600$ 9; $\alpha(\text{M})=0.0001241$ 18; $\alpha(\text{N+..})=3.21\times 10^{-5}$ 5 $\alpha(\text{N})=2.73\times 10^{-5}$ 4; $\alpha(\text{O})=4.46\times 10^{-6}$ 7; $\alpha(\text{P})=3.56\times 10^{-7}$ 5
1260.61	13/2 ⁺	606.3 [@] 8	22.4 [@] 23	654.56	11/2 ⁺			
		697.1 [@] 3	100 [@] 10	563.350	9/2 ⁺	E2	0.00437 7	$\alpha(\text{K})=0.00371$ 6; $\alpha(\text{L})=0.000523$ 8; $\alpha(\text{M})=0.0001091$ 16; $\alpha(\text{N+..})=2.79\times 10^{-5}$ 4 $\alpha(\text{N})=2.38\times 10^{-5}$ 4; $\alpha(\text{O})=3.81\times 10^{-6}$ 6; $\alpha(\text{P})=2.68\times 10^{-7}$ 4
1311.07	7/2 ⁺ ,9/2,11/2	656.47 11	65 12	654.56	11/2 ⁺			
		747.76 12	100 14	563.350	9/2 ⁺			
1318.57?	7/2,9/2 ⁺	553.16 15	13 4	765.37	(5/2 ⁺)			
		841.37 14	100 6	477.219	9/2 ⁺			
1365.02	11/2 ⁻	211.65 6	27 2	1153.35	13/2 ⁻	M1,E2	0.140 7	$\alpha(\text{K})=0.1143$ 17; $\alpha(\text{L})=0.021$ 6; $\alpha(\text{M})=0.0044$ 13; $\alpha(\text{N+..})=0.0011$ 3 $\alpha(\text{N})=0.0010$ 3; $\alpha(\text{O})=0.00015$ 4; $\alpha(\text{P})=8.0\times 10^{-6}$ 9
		319.03 7	31 3	1045.937	9/2 ⁻	M1,E2	0.042 4	$\alpha(\text{K})=0.035$ 4; $\alpha(\text{L})=0.0054$ 4; $\alpha(\text{M})=0.00114$ 9; $\alpha(\text{N+..})=0.000289$ 17 $\alpha(\text{N})=0.000247$ 16; $\alpha(\text{O})=3.91\times 10^{-5}$ 15; $\alpha(\text{P})=2.5\times 10^{-6}$ 5
		384.6 5	<7	979.94	15/2 ⁻			
		580.4 5	<4	784.541	7/2 ⁻			
		802.1 3	16 3	563.350	9/2 ⁺			
		829.42 15	100 4	535.595	11/2 ⁻	M1(+E2)	0.0035 7	$\alpha(\text{K})=0.0030$ 6; $\alpha(\text{L})=0.00040$ 7; $\alpha(\text{M})=8.3\times 10^{-5}$ 13; $\alpha(\text{N+..})=2.1\times 10^{-5}$ 4 $\alpha(\text{N})=1.8\times 10^{-5}$ 3; $\alpha(\text{O})=2.9\times 10^{-6}$ 5; $\alpha(\text{P})=2.3\times 10^{-7}$ 5
		887.7 2	24 5	477.219	9/2 ⁺			
1377.93	15/2 ⁺	723.46 [@] 17	100 [@]	654.56	11/2 ⁺	E2	0.00399 6	$\alpha(\text{K})=0.00339$ 5; $\alpha(\text{L})=0.000475$ 7; $\alpha(\text{M})=9.90\times 10^{-5}$ 14; $\alpha(\text{N+..})=2.54\times 10^{-5}$ 4 $\alpha(\text{N})=2.16\times 10^{-5}$ 3; $\alpha(\text{O})=3.47\times 10^{-6}$ 5; $\alpha(\text{P})=2.46\times 10^{-7}$ 4
1396.42	5/2 ⁻	351 1	<3.5	1045.937	9/2 ⁻			
		611.83 6	100 3	784.541	7/2 ⁻	M1(+E2)	0.0074 14	$\alpha(\text{K})=0.0063$ 12; $\alpha(\text{L})=0.00085$ 12; $\alpha(\text{M})=0.000177$ 23; $\alpha(\text{N+..})=4.6\times 10^{-5}$ 6 $\alpha(\text{N})=3.9\times 10^{-5}$ 5; $\alpha(\text{O})=6.3\times 10^{-6}$ 9; $\alpha(\text{P})=4.7\times 10^{-7}$ 11

Adopted Levels, Gammas (continued)

$\gamma(^{133}\text{La})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ^\ddagger	I_γ^\ddagger	E_f	J_f^π	Mult. #	α^\ddagger	Comments
1396.42	5/2 ⁻	1265.57 15	13.9 12	130.803	7/2 ⁺			
1468.87	9/2 ⁻	72.39 10	3.1 9	1396.42	5/2 ⁻			
		150.3 2		1318.57?	7/2,9/2 ⁺			
		315.45 8	28 3	1153.35	13/2 ⁻	E2		
		422.92 5	100 3	1045.937	9/2 ⁻	M1,E2		
		684.28 8	57 4	784.541	7/2 ⁻			
1495.8	(11/2) ⁺	1018.6 @ 3	100 @	477.219	9/2 ⁺	M1+E2	0.0022 4	$\alpha(\text{K})=0.0019$ 4; $\alpha(\text{L})=0.00025$ 4; $\alpha(\text{M})=5.1\times 10^{-5}$ 8; $\alpha(\text{N}+..)=1.31\times 10^{-5}$ 20 $\alpha(\text{N})=1.11\times 10^{-5}$ 17; $\alpha(\text{O})=1.8\times 10^{-6}$ 3; $\alpha(\text{P})=1.4\times 10^{-7}$ 3
1561.19	(11/2) ⁻	408.0 5	≈15	1153.35	13/2 ⁻			
		581.12 10	100 10	979.94	15/2 ⁻			
1657.4		706.8 & 8		950.34	(9/2) ⁺			
		1003.0 @ 8	<100 @	654.56	11/2 ⁺			
1661.23	19/2 ⁻	681.27 @ 17	100 @	979.94	15/2 ⁻	E2	0.00462 7	$\alpha(\text{K})=0.00392$ 6; $\alpha(\text{L})=0.000556$ 8; $\alpha(\text{M})=0.0001159$ 17; $\alpha(\text{N}+..)=2.97\times 10^{-5}$ 5 $\alpha(\text{N})=2.53\times 10^{-5}$ 4; $\alpha(\text{O})=4.05\times 10^{-6}$ 6; $\alpha(\text{P})=2.83\times 10^{-7}$ 4
1663.9		510.5 & 8		1153.35	13/2 ⁻			
		1128.2 & 8		535.595	11/2 ⁻			
1690.66	(9/2) ⁻	294.23 5	25.3 12	1396.42	5/2 ⁻	E2	0.0499	$\alpha(\text{K})=0.0403$ 6; $\alpha(\text{L})=0.00761$ 11; $\alpha(\text{M})=0.001623$ 23; $\alpha(\text{N}+..)=0.000407$ 6 $\alpha(\text{N})=0.000350$ 5; $\alpha(\text{O})=5.36\times 10^{-5}$ 8; $\alpha(\text{P})=2.68\times 10^{-6}$ 4
		502.04 9	10 2	1188.57	13/2 ⁺			
		644.74 4	100 2	1045.937	9/2 ⁻	M1(+E2)	0.0065 12	$\alpha(\text{K})=0.0055$ 11; $\alpha(\text{L})=0.00075$ 11; $\alpha(\text{M})=0.000155$ 21; $\alpha(\text{N}+..)=4.0\times 10^{-5}$ 6 $\alpha(\text{N})=3.4\times 10^{-5}$ 5; $\alpha(\text{O})=5.5\times 10^{-6}$ 8; $\alpha(\text{P})=4.1\times 10^{-7}$ 9
		906.13 11	22.1 14	784.541	7/2 ⁻	M1,E2	0.0029 6	$\alpha(\text{K})=0.0025$ 5; $\alpha(\text{L})=0.00032$ 5; $\alpha(\text{M})=6.7\times 10^{-5}$ 11; $\alpha(\text{N}+..)=1.7\times 10^{-5}$ 3 $\alpha(\text{N})=1.47\times 10^{-5}$ 23; $\alpha(\text{O})=2.4\times 10^{-6}$ 4; $\alpha(\text{P})=1.8\times 10^{-7}$ 4
		1036.3 3	6.2 30	654.56	11/2 ⁺			
		1212.9 2	40 4	477.219	9/2 ⁺			
1715.41	7/2 ⁻ ,9/2 ⁻	877.13 14	15.3 13	838.24	9/2 ⁺			
		930.87 12	7.2 18	784.541	7/2 ⁻			
		1174.1 3	6.2 16	541.20	7/2 ⁺			
		1180.1 2	4.9 12	535.595	11/2 ⁻			
		1238.0 2	5.9 12	477.219	9/2 ⁺			
		1584.62 6	100 3	130.803	7/2 ⁺	E1	0.000636 9	$\alpha(\text{K})=0.000308$ 5; $\alpha(\text{L})=3.75\times 10^{-5}$ 6; $\alpha(\text{M})=7.71\times 10^{-6}$ 11; $\alpha(\text{N}+..)=0.000283$ 4 $\alpha(\text{N})=1.694\times 10^{-6}$ 24; $\alpha(\text{O})=2.77\times 10^{-7}$ 4; $\alpha(\text{P})=2.22\times 10^{-8}$ 4; $\alpha(\text{IPF})=0.000281$ 4

Adopted Levels, Gammas (continued)

$\gamma(^{133}\text{La})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ^\ddagger	I_γ^\ddagger	E_f	J_f^π	Mult. #	$\delta^\#$	α^\dagger	Comments
1734.18	(11/2 ⁻)	415.4 5 754.25 12	23 6 100	1318.57? 979.94	7/2,9/2 ⁺ 15/2 ⁻				
1735.45	(9/2 ⁻)	174.0 2	1.5 8	1561.19	(11/2 ⁻)	M1+E2	0.67 7	0.246 5	$\alpha(\text{K})=0.201$ 3; $\alpha(\text{L})=0.0358$ 15; $\alpha(\text{M})=0.0076$ 4; $\alpha(\text{N}+..)=0.00192$ 8 $\alpha(\text{N})=0.00165$ 7; $\alpha(\text{O})=0.000256$ 10; $\alpha(\text{P})=1.450\times 10^{-5}$ 24
		339.03 5 546.86 8 689.48 4	23.7 14 5.5 5 100 3	1396.42 1188.57 1045.937	5/2 ⁻ 13/2 ⁺ 9/2 ⁻	M1(+E2)		0.0055 11	$\alpha(\text{K})=0.0047$ 9; $\alpha(\text{L})=0.00063$ 9; $\alpha(\text{M})=0.000130$ 19; $\alpha(\text{N}+..)=3.4\times 10^{-5}$ 5 $\alpha(\text{N})=2.9\times 10^{-5}$ 4; $\alpha(\text{O})=4.6\times 10^{-6}$ 8; $\alpha(\text{P})=3.5\times 10^{-7}$ 8
		950.99 7	31.0 8	784.541	7/2 ⁻	(E2)		0.00213 3	$\alpha(\text{K})=0.00182$ 3; $\alpha(\text{L})=0.000244$ 4; $\alpha(\text{M})=5.06\times 10^{-5}$ 7; $\alpha(\text{N}+..)=1.300\times 10^{-5}$ 19 $\alpha(\text{N})=1.108\times 10^{-5}$ 16; $\alpha(\text{O})=1.79\times 10^{-6}$ 3; $\alpha(\text{P})=1.334\times 10^{-7}$ 19
		1081.1 2 1172.05 10 1199.9 2 1258.2	6.3 10 14.4 9 38 3 ≈ 11	654.56 563.350 535.595 477.219	11/2 ⁺ 9/2 ⁺ 11/2 ⁻ 9/2 ⁺				
1737.86	17/2 ⁻	584.8 [@] 3	86 [@] 42	1153.35	13/2 ⁻	E2		0.00679 10	$\alpha(\text{K})=0.00573$ 8; $\alpha(\text{L})=0.000842$ 12; $\alpha(\text{M})=0.0001763$ 25; $\alpha(\text{N}+..)=4.50\times 10^{-5}$ 7 $\alpha(\text{N})=3.85\times 10^{-5}$ 6; $\alpha(\text{O})=6.11\times 10^{-6}$ 9; $\alpha(\text{P})=4.11\times 10^{-7}$ 6
		757.89 [@] 17	100 [@] 9	979.94	15/2 ⁻	M1+E2	-1.5 12	0.0041 10	$\alpha(\text{K})=0.0035$ 9; $\alpha(\text{L})=0.00047$ 10; $\alpha(\text{M})=9.7\times 10^{-5}$ 19; $\alpha(\text{N}+..)=2.5\times 10^{-5}$ 5 $\alpha(\text{N})=2.1\times 10^{-5}$ 5; $\alpha(\text{O})=3.4\times 10^{-6}$ 7; $\alpha(\text{P})=2.6\times 10^{-7}$ 8
1748.29	7/2,9/2	702.37 11 963.6 4 1207.04 11	20 3 26 7 100 6	1045.937 784.541 541.20	9/2 ⁻ 7/2 ⁻ 7/2 ⁺				
1753.63	7/2 ⁻ ,9/2,11/2 ⁺	1190.33 10 1217.7 3 1623.0 2	100 6 24 6 20 5	563.350 535.595 130.803	9/2 ⁺ 11/2 ⁻ 7/2 ⁺				
1778.23?	7/2,9/2,11/2 ⁺	1187.1 2 1301.2 3 1646.9 3	100 20 75 20 86 20	591.25 477.219 130.803	7/2,9/2 ⁺ 9/2 ⁺ 7/2 ⁺				
1784.19	(9/2 ⁺ ,11/2 ⁺)	419.16 5 1129.7 2 1221.2 3	98 5 ≈ 10 50 12	1365.02 654.56 563.350	11/2 ⁻ 11/2 ⁺ 9/2 ⁺				

Adopted Levels, Gammas (continued)

$\gamma(^{133}\text{La})$ (continued)								
E_i (level)	J_i^π	E_γ^{\ddagger}	I_γ^{\ddagger}	E_f	J_f^π	Mult. #	α^\dagger	Comments
1784.19	(9/2 ⁺ ,11/2 ⁺)	1653.4 2	100 7	130.803	7/2 ⁺			
1784.75?	7/2 ⁻ ,9/2,11/2 ⁻	692.36 12	60 19	1092.37	7/2 ⁺ ,9/2 ⁺			
		739.0 3	47 20	1045.937	9/2 ⁻			
		1000.2 3	51 14	784.541	7/2 ⁻			
		1249.1 3	100 14	535.595	11/2 ⁻			
1806.61	(9/2 ⁻ ,11/2 ⁻)	1152.05 11	100 7	654.56	11/2 ⁺	(E1)	0.000629 9	$\alpha(\text{K})=0.000535$ 8; $\alpha(\text{L})=6.58\times 10^{-5}$ 10; $\alpha(\text{M})=1.353\times 10^{-5}$ 19; $\alpha(\text{N+..})=1.506\times 10^{-5}$ 2 $\alpha(\text{N})=2.97\times 10^{-6}$ 5; $\alpha(\text{O})=4.85\times 10^{-7}$ 7; $\alpha(\text{P})=3.85\times 10^{-8}$ 6; $\alpha(\text{IPF})=1.156\times 10^{-5}$ 17
1815.8	(15/2 ⁻)	1270.95 14	84 7	535.595	11/2 ⁻			
		662.5 [@] 5	100 [@]	1153.35	13/2 ⁻	(M1+E2)	0.0061 11	$\alpha(\text{K})=0.0052$ 10; $\alpha(\text{L})=0.00070$ 10; $\alpha(\text{M})=0.000144$ 20; $\alpha(\text{N+..})=3.7\times 10^{-5}$ 6 $\alpha(\text{N})=3.2\times 10^{-5}$ 5; $\alpha(\text{O})=5.1\times 10^{-6}$ 8; $\alpha(\text{P})=3.9\times 10^{-7}$ 9
1850.90	(9/2 ⁻)	72.67 10		1778.23?	7/2,9/2,11/2 ⁺			
		102.6 1		1748.29	7/2,9/2			
		135.5 2		1715.41	7/2 ⁻ ,9/2 ⁻			
		1066.3 3	7 3	784.541	7/2 ⁻			
		1085.43 13	37 4	765.37	(5/2 ⁺)			
		1196.28 11	49 3	654.56	11/2 ⁺			
		1287.58 7	67 3	563.350	9/2 ⁺			
		1309.7 2	15 3	541.20	7/2 ⁺			
		1720.2 2	100 3	130.803	7/2 ⁺	(E1)	0.000693 10	$\alpha(\text{K})=0.000269$ 4; $\alpha(\text{L})=3.27\times 10^{-5}$ 5; $\alpha(\text{M})=6.72\times 10^{-6}$ 10; $\alpha(\text{N+..})=0.000385$ 6 $\alpha(\text{N})=1.477\times 10^{-6}$ 21; $\alpha(\text{O})=2.41\times 10^{-7}$ 4; $\alpha(\text{P})=1.94\times 10^{-8}$ 3; $\alpha(\text{IPF})=0.000383$ 6
1857.40	7/2 ⁻	460.5 5	≈ 10	1396.42	5/2 ⁻			
		669.0 ^c 2	12.5 16	1188.57	13/2 ⁺			
		811.2 3	24 5	1045.937	9/2 ⁻			
		1019.24 14	9.7 19	838.24	9/2 ⁺			
		1073.20 12	23 3	784.541	7/2 ⁻			
		1091.7 ^b 2	$\approx 39^b$	765.37	(5/2 ⁺)			
		1294.07 11	24 2	563.350	9/2 ⁺			
		1316.1 2	15 5	541.20	7/2 ⁺			
		1362.41 9	50 2	495.02	7/2 ⁺			
		1380.19 11	20.6 23	477.219	9/2 ⁺			
		1726.7 3	16.1 19	130.803	7/2 ⁺			
		1769.36 8	100.0 23	87.940	5/2 ⁺	E1	0.000717 10	$\alpha(\text{K})=0.000257$ 4; $\alpha(\text{L})=3.12\times 10^{-5}$ 5; $\alpha(\text{M})=6.41\times 10^{-6}$ 9; $\alpha(\text{N+..})=0.000422$ 6 $\alpha(\text{N})=1.410\times 10^{-6}$ 20; $\alpha(\text{O})=2.30\times 10^{-7}$ 4; $\alpha(\text{P})=1.85\times 10^{-8}$ 3; $\alpha(\text{IPF})=0.000421$ 6

Adopted Levels, Gammas (continued)

$\gamma(^{133}\text{La})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ^\ddagger	I_γ^\ddagger	E_f	J_f^π	Mult. #	α^\dagger	Comments
1857.40	7/2 ⁻	1858.0 ^c 3	6.4 16	0.0	5/2 ⁺			
1912.81	9/2 ⁻	867.2 5	5.7 12	1045.937	9/2 ⁻			
		1128.0 2	14 2	784.541	7/2 ⁻			
		1258.2 5	≈23	654.56	11/2 ⁺			
		1377.22 7	100 2	535.595	11/2 ⁻	M1,E2	0.00118 16	$\alpha(\text{K})=0.00099$ 14; $\alpha(\text{L})=0.000125$ 17; $\alpha(\text{M})=2.6\times 10^{-5}$ 4; $\alpha(\text{N}+..)=4.61\times 10^{-5}$ 10 $\alpha(\text{N})=5.7\times 10^{-6}$ 8; $\alpha(\text{O})=9.3\times 10^{-7}$ 13; $\alpha(\text{P})=7.3\times 10^{-8}$ 11; $\alpha(\text{IPF})=3.94\times 10^{-5}$ 6
		1435.6 3	3.0 14	477.219	9/2 ⁺			
		1782.03 7	40.0 18	130.803	7/2 ⁺	E1	0.000723 11	$\alpha(\text{K})=0.000254$ 4; $\alpha(\text{L})=3.09\times 10^{-5}$ 5; $\alpha(\text{M})=6.34\times 10^{-6}$ 9; $\alpha(\text{N}+..)=0.000432$ 6 $\alpha(\text{N})=1.393\times 10^{-6}$ 20; $\alpha(\text{O})=2.28\times 10^{-7}$ 4; $\alpha(\text{P})=1.83\times 10^{-8}$ 3; $\alpha(\text{IPF})=0.000430$ 6
1954.00	(15/2 ⁺)	1824.4 4	5.5 18	87.940	5/2 ⁺			
		576.0& 8		1377.93	15/2 ⁺			
		693.5& 8		1260.61	13/2 ⁺			
		734.1@ 3	<100@	1219.97	(11/2 ⁺)			
1958.67	9/2 ⁻ ,11/2	805.4 2	100 15	1153.35	13/2 ⁻			
		1395.1 3	56 18	563.350	9/2 ⁺			
		1423.1 4	28 13	535.595	11/2 ⁻			
1967.77	7/2 ⁻ ,9/2 ⁻	498.72 8	16.7 16	1468.87	9/2 ⁻			
		602.5 3	19.5 23	1365.02	11/2 ⁻			
		1183.33 9	92 3	784.541	7/2 ⁻	M1,E2	0.00159 25	$\alpha(\text{K})=0.00137$ 22; $\alpha(\text{L})=0.000175$ 25; $\alpha(\text{M})=3.6\times 10^{-5}$ 6; $\alpha(\text{N}+..)=1.37\times 10^{-5}$ 13 $\alpha(\text{N})=7.9\times 10^{-6}$ 12; $\alpha(\text{O})=1.29\times 10^{-6}$ 19; $\alpha(\text{P})=1.02\times 10^{-7}$ 18; $\alpha(\text{IPF})=4.40\times 10^{-6}$ 9
		1404.51 11	18 2	563.350	9/2 ⁺			
		1432.22 7	100 3	535.595	11/2 ⁻	M1,E2	0.00111 14	$\alpha(\text{K})=0.00091$ 12; $\alpha(\text{L})=0.000115$ 15; $\alpha(\text{M})=2.4\times 10^{-5}$ 3; $\alpha(\text{N}+..)=6.18\times 10^{-5}$ 12 $\alpha(\text{N})=5.2\times 10^{-6}$ 7; $\alpha(\text{O})=8.5\times 10^{-7}$ 11; $\alpha(\text{P})=6.8\times 10^{-8}$ 10; $\alpha(\text{IPF})=5.56\times 10^{-5}$ 8
1983.38	7/2 ⁻ ,9/2,11/2 ⁺	1837.3 3	10.1 23	130.803	7/2 ⁺			
		1419.9 3	21 5	563.350	9/2 ⁺			
		1447.7 4	6 3	535.595	11/2 ⁻			
		1506.28 12	38 5	477.219	9/2 ⁺			
		1852.3 2	100 5	130.803	7/2 ⁺			
2018.27	7/2 ⁻	264.70 10	5.2 12	1753.63	7/2 ⁻ ,9/2,11/2 ⁺	(M1,E2)	0.0719 20	$\alpha(\text{K})=0.059$ 4; $\alpha(\text{L})=0.0098$ 15; $\alpha(\text{M})=0.0021$ 4; $\alpha(\text{N}+..)=0.00052$ 8 $\alpha(\text{N})=0.00045$ 7; $\alpha(\text{O})=7.0\times 10^{-5}$ 9; $\alpha(\text{P})=4.3\times 10^{-6}$ 6

Adopted Levels, Gammas (continued)

E _i (level)	J _i ^π	γ(¹³³ La) (continued)						α [†]	Comments
		E _γ [‡]	I _γ [‡]	E _f	J _f ^π	Mult.#			
2018.27	7/2 ⁻	621.8 5	40 17	1396.42	5/2 ⁻				α(K)=0.0021 4; α(L)=0.00027 5; α(M)=5.7×10 ⁻⁵ 9; α(N+..)=1.46×10 ⁻⁵ 23 α(N)=1.24×10 ⁻⁵ 19; α(O)=2.0×10 ⁻⁶ 4; α(P)=1.6×10 ⁻⁷ 3
		972.34 9	71 3	1045.937	9/2 ⁻	M1,E2	0.0025 5		
		1233.64 11	36.8 23	784.541	7/2 ⁻	M1(+E2)	0.00146 22	α(K)=0.00125 19; α(L)=0.000159 23; α(M)=3.3×10 ⁻⁵ 5; α(N+..)=1.89×10 ⁻⁵ 11 α(N)=7.2×10 ⁻⁶ 11; α(O)=1.18×10 ⁻⁶ 17; α(P)=9.3×10 ⁻⁸ 16; α(IPF)=1.044×10 ⁻⁵ 19	
		1455.3 ^b 5	3.2 ^b 9	563.350	9/2 ⁺				
2029.85	7/2,9/2 ⁺	1887.5 3	74.4 23	130.803	7/2 ⁺				
		2018.23 11	100.0 23	0.0	5/2 ⁺				
		983.9 ^b 2	100 ^b 4	1045.937	9/2 ⁻				
		1245.1 2	28 5	784.541	7/2 ⁻				
		1465.3 ^{bc}	≈10 ^b	563.350	9/2 ⁺				
		1899.1 2	22 3	130.803	7/2 ⁺				
		1941.83 15	38 3	87.940	5/2 ⁺				
		2030.4 3	13.1 21	0.0	5/2 ⁺				
2035.21	(7/2 ⁻ ,9/2 ⁻ ,11/2 ⁻)	228.59 6	100 5	1806.61	(9/2 ⁻ ,11/2 ⁻)	M1,E2	0.111 3	α(K)=0.0911 25; α(L)=0.016 4; α(M)=0.0034 8; α(N+..)=0.00085 19 α(N)=0.00073 17; α(O)=0.000114 22; α(P)=6.5×10 ⁻⁶ 8	
		566.5	≈18	1468.87	9/2 ⁻				
		1472.08 11	73 8	563.350	9/2 ⁺				
2036.05	7/2 ⁻ ,9/2 ⁻	1557.82 10	95 13	477.219	9/2 ⁺				
		178.65 3	25.6 8	1857.40	7/2 ⁻	M1,E2	0.237 25	α(K)=0.189 8; α(L)=0.038 14; α(M)=0.008 3; α(N+..)=0.0020 8 α(N)=0.0017 7; α(O)=0.00027 9; α(P)=1.30×10 ⁻⁵ 12	
		282.42 5	6.1 4	1753.63	7/2 ⁻ ,9/2,11/2 ⁺				
		287.73 8	3.6 5	1748.29	7/2,9/2				
		300.54 10	5.0 8	1735.45	(9/2) ⁻	M1,E2	0.050 3	α(K)=0.041 4; α(L)=0.0065 6; α(M)=0.00137 14; α(N+..)=0.00035 3 α(N)=0.00030 3; α(O)=4.7×10 ⁻⁵ 3; α(P)=3.0×10 ⁻⁶ 5	
		320.72 10	2.8 6	1715.41	7/2 ⁻ ,9/2 ⁻				
		639.3 2	5.5 8	1396.42	5/2 ⁻				
		943.70 9	12.1 8	1092.37	7/2 ⁺ ,9/2 ⁺				
		990.13 5	62.0 17	1045.937	9/2 ⁻	M1(+E2)	0.0024 4	α(K)=0.0020 4; α(L)=0.00026 4; α(M)=5.4×10 ⁻⁵ 9; α(N+..)=1.40×10 ⁻⁵ 22 α(N)=1.19×10 ⁻⁵ 19; α(O)=1.9×10 ⁻⁶ 3; α(P)=1.5×10 ⁻⁷ 3	

Adopted Levels, Gammas (continued)

$\gamma(^{133}\text{La})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ^\ddagger	I_γ^\ddagger	E_f	J_f^π	Mult. #	α^\ddagger	Comments	
2036.05	7/2 ⁻ , 9/2 ⁻	1168.76 14	3.7 7	867.16	7/2 ⁺	E1	0.000605 9	$\alpha(\text{K})=0.000339$ 5; $\alpha(\text{L})=4.14\times 10^{-5}$ 6; $\alpha(\text{M})=8.51\times 10^{-6}$ 12; $\alpha(\text{N}+..)=0.000216$ 3	
		1251.68 15	7.0 6	784.541	7/2 ⁻				$\alpha(\text{N})=1.87\times 10^{-6}$ 3; $\alpha(\text{O})=3.06\times 10^{-7}$ 5; $\alpha(\text{P})=2.44\times 10^{-8}$ 4; $\alpha(\text{IPF})=0.000214$ 3
		1494.85 5	67.8 17	541.20	7/2 ⁺				
2039.66	17/2 ⁺	1500.41 ^b 6	100 ^b 3	535.595	11/2 ⁻	M1,E2	0.00103 12	$\alpha(\text{K})=0.00082$ 11; $\alpha(\text{L})=0.000104$ 13; $\alpha(\text{M})=2.1\times 10^{-5}$ 3; $\alpha(\text{N}+..)=8.38\times 10^{-5}$ 15	
		1905.1 3	1.4 4	130.803	7/2 ⁺	E2	0.00273 4	$\alpha(\text{K})=0.00233$ 4; $\alpha(\text{L})=0.000317$ 5; $\alpha(\text{M})=6.59\times 10^{-5}$ 10; $\alpha(\text{N}+..)=1.692\times 10^{-5}$ 24	
		779.7 [@] 8	89 [@] 40	1260.61	13/2 ⁺				$\alpha(\text{N})=1.443\times 10^{-5}$ 21; $\alpha(\text{O})=2.32\times 10^{-6}$ 4; $\alpha(\text{P})=1.701\times 10^{-7}$ 24
2062.17	9/2 ⁻	850.84 [@] 19	100 [@] 11	1188.57	13/2 ⁺	(E1)	0.01452	$\alpha(\text{K})=0.01248$ 18; $\alpha(\text{L})=0.001619$ 23; $\alpha(\text{M})=0.000334$ 5; $\alpha(\text{N}+..)=8.56\times 10^{-5}$ 12	
		278.0 1	≈9.5	1784.19	(9/2 ⁺ , 11/2 ⁺)	M1(+E2)	0.0022 4	$\alpha(\text{K})=0.00116$ 17; $\alpha(\text{L})=0.000147$ 21; $\alpha(\text{M})=3.0\times 10^{-5}$ 5; $\alpha(\text{N}+..)=2.51\times 10^{-5}$ 10	
		697.19 6	15.6 8	1365.02	11/2 ⁻				$\alpha(\text{N})=7.30\times 10^{-5}$ 11; $\alpha(\text{O})=1.171\times 10^{-5}$ 17; $\alpha(\text{P})=8.52\times 10^{-7}$ 12
2075.47	17/2 ⁺	1016.22 9	19.5 10	1045.937	9/2 ⁻	(M1,E2)	0.00136 20	$\alpha(\text{K})=0.0019$ 4; $\alpha(\text{L})=0.00025$ 4; $\alpha(\text{M})=5.1\times 10^{-5}$ 8; $\alpha(\text{N}+..)=1.32\times 10^{-5}$ 21	
		1277.47 10	25.4 18	784.541	7/2 ⁻	E2(+M1)	0.00101 12	$\alpha(\text{K})=0.00079$ 10; $\alpha(\text{L})=0.000100$ 12; $\alpha(\text{M})=2.07\times 10^{-5}$ 25; $\alpha(\text{N}+..)=9.30\times 10^{-5}$ 17	
		1407.5 ^c 5	1.9 10	654.56	11/2 ⁺				$\alpha(\text{N})=1.12\times 10^{-5}$ 17; $\alpha(\text{O})=1.8\times 10^{-6}$ 3; $\alpha(\text{P})=1.4\times 10^{-7}$ 3
2075.47	17/2 ⁺	1498.9 3	11.7 8	563.350	9/2 ⁺	E2	0.00302 5	$\alpha(\text{K})=0.00257$ 4; $\alpha(\text{L})=0.000352$ 5; $\alpha(\text{M})=7.33\times 10^{-5}$ 11; $\alpha(\text{N}+..)=1.88\times 10^{-5}$ 3	
		1521.03 10	23.0 14	541.20	7/2 ⁺				$\alpha(\text{N})=4.5\times 10^{-6}$ 6; $\alpha(\text{O})=7.4\times 10^{-7}$ 9; $\alpha(\text{P})=5.9\times 10^{-8}$ 8; $\alpha(\text{IPF})=8.76\times 10^{-5}$ 13
		1526.56 6	100 3	535.595	11/2 ⁻				$\alpha(\text{N})=6.7\times 10^{-6}$ 10; $\alpha(\text{O})=1.09\times 10^{-6}$ 16; $\alpha(\text{P})=8.6\times 10^{-8}$ 14; $\alpha(\text{IPF})=1.73\times 10^{-5}$ 3
2075.47	17/2 ⁺	1931.4 2	12.1 18	130.803	7/2 ⁺	E2	0.00302 5	$\alpha(\text{K})=0.00257$ 4; $\alpha(\text{L})=0.000352$ 5; $\alpha(\text{M})=7.33\times 10^{-5}$ 11; $\alpha(\text{N}+..)=1.88\times 10^{-5}$ 3	
		698.1 [@] 8	100 [@] 11	1377.93	15/2 ⁺				$\alpha(\text{N})=1.603\times 10^{-5}$ 23; $\alpha(\text{O})=2.58\times 10^{-6}$ 4; $\alpha(\text{P})=1.87\times 10^{-7}$ 3
		814.85 [@] 23	33 [@] 4	1260.61	13/2 ⁺				

Adopted Levels, Gammas (continued)

$\gamma(^{133}\text{La})$ (continued)								
$E_i(\text{level})$	J_i^π	E_γ^{\ddagger}	I_γ^{\ddagger}	E_f	J_f^π	Mult. #	α^\ddagger	Comments
2075.47	17/2 ⁺	886.93 @ 17	61 @ 6	1188.57	13/2 ⁺	E2	0.00249 4	$\alpha(\text{K})=0.00213$ 3; $\alpha(\text{L})=0.000287$ 4; $\alpha(\text{M})=5.96\times 10^{-5}$ 9; $\alpha(\text{N}+..)=1.532\times 10^{-5}$ 22 $\alpha(\text{N})=1.306\times 10^{-5}$ 19; $\alpha(\text{O})=2.10\times 10^{-6}$ 3; $\alpha(\text{P})=1.552\times 10^{-7}$ 22
2122.56	11/2 ⁻	968.7 5 1076.6 2 1143.0 4	≈ 79 100 18 34 16	1153.35 1045.937 979.94	13/2 ⁻ 9/2 ⁻ 15/2 ⁻			
2132.08	7/2,9/2 ⁺	2001.9 3 2044.09 7 2132.1 3	10.1 23 100 4 5.6 6	130.803 87.940 0.0	7/2 ⁺ 5/2 ⁺ 5/2 ⁺			
2137.19	9/2 ⁻	740.84 12 983.9 ^b 2 1091.7 ^b 2 1352.9 ^c 5 1573.65 10 1601.3 ^c 5	37 4 $\approx 7.9^b$ 100 ^b 16 6.3 40 43 3 ≈ 9.5	1396.42 1153.35 1045.937 784.541 563.350 535.595	5/2 ⁻ 13/2 ⁻ 9/2 ⁻ 7/2 ⁻ 9/2 ⁺ 11/2 ⁻			
2155.42	(9/2 ⁻)	759.04 13 790.2 2 1109.44 14 1500.41 ^b 1620.0 2 1678.3 3	64 11 33 9 37 6 $\approx 15^b$ 70 11 100 18	1396.42 1365.02 1045.937 654.56 535.595 477.219	5/2 ⁻ 11/2 ⁻ 9/2 ⁻ 11/2 ⁺ 11/2 ⁻ 9/2 ⁺			
2175.63	(11/2 ⁻)	359.3 @ 8 511.0 & 8 1022.24 12 1129.7 ^b 2	39 @ 19 80 7 100 ^b 8	1815.8 1663.9 1153.35 1045.937	(15/2 ⁻) 13/2 ⁻ 9/2 ⁻	(D) (M1,E2)	0.0018 3	$\alpha(\text{K})=0.00151$ 25; $\alpha(\text{L})=0.00019$ 3; $\alpha(\text{M})=4.0\times 10^{-5}$ 6; $\alpha(\text{N}+..)=1.14\times 10^{-5}$ 15 $\alpha(\text{N})=8.8\times 10^{-6}$ 13; $\alpha(\text{O})=1.43\times 10^{-6}$ 22; $\alpha(\text{P})=1.13\times 10^{-7}$ 20; $\alpha(\text{IPF})=1.057\times 10^{-6}$ 23
2199.96	(9/2 ⁻)	1225.4 3 1612.3 2 1640.2 3 342.65 9 834.77 15	15 5 31 5 30 5 16 3 57 3	950.34 563.350 535.595 1857.40 1365.02	(9/2 ⁺) 9/2 ⁺ 11/2 ⁻ 7/2 ⁻ 11/2 ⁻	M1,E2	0.0035 7	$\alpha(\text{K})=0.0030$ 6; $\alpha(\text{L})=0.00039$ 6; $\alpha(\text{M})=8.1\times 10^{-5}$ 13; $\alpha(\text{N}+..)=2.1\times 10^{-5}$ 4 $\alpha(\text{N})=1.8\times 10^{-5}$ 3; $\alpha(\text{O})=2.9\times 10^{-6}$ 5; $\alpha(\text{P})=2.2\times 10^{-7}$ 5 Mult.: see comment in ^{133}Ce ε decay (5.1 h) data set.
		1154.68 ^c 10 1636.7 2 1658.9 3 1664.4 2	88 5 60 3 22 3 100 4	1045.937 563.350 541.20 535.595	9/2 ⁻ 9/2 ⁺ 7/2 ⁺ 11/2 ⁻			Mult.: see comment in ^{133}Ce ε decay (5.1 h) data set.

Adopted Levels, Gammas (continued)

E _i (level)	J _i ^π	γ(¹³³ La) (continued)						Comments
		E _γ [‡]	I _γ [‡]	E _f	J _f ^π	Mult. #	α [†]	
2199.96	(9/2 ⁻)	1722.7 3	23 4	477.219	9/2 ⁺			
		2069.2 3	3.4 5	130.803	7/2 ⁺			
		2111.84 13	79 5	87.940	5/2 ⁺			
2201.32	(19/2 ⁻)	540.3 & 3		1661.23	19/2 ⁻			
		1221.1 @ 3	<100 @	979.94	15/2 ⁻			
2220.1		842.1 @ 3	100 @	1377.93	15/2 ⁺			
2249.98	7/2 ⁺ , 9/2 ⁺	1465.3 ^b 2	53 ^b 3	784.541	7/2 ⁻			
		1595.43 11	22 2	654.56	11/2 ⁺			
		2119.2 2	100 6	130.803	7/2 ⁺			
		2249.9 8	0.59 16	0.0	5/2 ⁺			
2261.4	(13/2 ⁻ , 15/2, 17/2)	523.2 @ 8	≤100 @	1737.86	17/2 ⁻			
		598.0 & 8		1663.9				
2262.48	19/2 ⁺	1281.5 @ 3	≥12 @	979.94	15/2 ⁻	D		
		884.51 @ 19	100 @	1377.93	15/2 ⁺	E2	0.00250 4	α(K)=0.00214 3; α(L)=0.000289 4; α(M)=6.00×10 ⁻⁵ 9; α(N+..)=1.541×10 ⁻⁵ 22 α(N)=1.314×10 ⁻⁵ 19; α(O)=2.12×10 ⁻⁶ 3; α(P)=1.562×10 ⁻⁷ 22
2289.26		1028.7 @ 3	88 @ 50	1260.61	13/2 ⁺			
2298.5	7/2, 9/2 ⁺	1100.7 @ 3	100 @ 50	1188.57	13/2 ⁺			
		2167.6 4	89 10	130.803	7/2 ⁺			
2359.89	(7/2, 9/2, 11/2) ⁻	2210.6 4	100 8	87.940	5/2 ⁺			
		392.16 8	100 6	1967.77	7/2 ⁻ , 9/2 ⁻	M1, E2	0.024 3	α(K)=0.020 3; α(L)=0.00290 8; α(M)=0.000608 12; α(N+..)=0.000155 5 α(N)=0.000133 4; α(O)=2.12×10 ⁻⁵ 10; α(P)=1.5×10 ⁻⁶ 3
2367.34	(7/2, 9/2) ⁺	669.0 2	48 6	1690.66	(9/2) ⁻			
		798.59 15	42 7	1561.19	(11/2) ⁻			
		1314.1 2	60 12	1045.937	9/2 ⁻			
		1712.4 3	100 19	654.56	11/2 ⁺			
		1872.4 4	25 13	495.02	7/2 ⁺			
		1890.3 3	56 20	477.219	9/2 ⁺			
		2237.0 5	11 2	130.803	7/2 ⁺			
		2279.1 6	41 3	87.940	5/2 ⁺			
2368.33	17/2 ⁺	2367.6 10	6.3 16	0.0	5/2 ⁺			
		79.6 & 8		2289.26				
		147.8 & 8		2220.1				
		328.2 @ 3	3.8 @ 19	2039.66	17/2 ⁺			
		414.4 @ 3	32 @ 3	1954.00	(15/2) ⁺			

Adopted Levels, Gammas (continued)

$\gamma(^{133}\text{La})$ (continued)									
$E_i(\text{level})$	J_i^π	E_γ^{\ddagger}	I_γ^{\ddagger}	E_f	J_f^π	Mult.#	$\delta^\#$	α^\dagger	Comments
2368.33	17/2 ⁺	553.1 @ 8	17.0 @ 19	1815.8	(15/2 ⁻)	(D)			
		990.5 @ 2	100 @ 10	1377.93	15/2 ⁺	M1+E2	-0.33 10	0.00268 6	$\alpha(\text{K})=0.00231$ 6; $\alpha(\text{L})=0.000294$ 7; $\alpha(\text{M})=6.07\times 10^{-5}$ 13; $\alpha(\text{N}+..)=1.57\times 10^{-5}$ 4 $\alpha(\text{N})=1.33\times 10^{-5}$ 3; $\alpha(\text{O})=2.18\times 10^{-6}$ 5; $\alpha(\text{P})=1.74\times 10^{-7}$ 5
		1107.6 @ 2	25 @ 3	1260.61	13/2 ⁺	E2		0.001539 22	$\alpha(\text{K})=0.001321$ 19; $\alpha(\text{L})=0.0001729$ 25; $\alpha(\text{M})=3.58\times 10^{-5}$ 5; $\alpha(\text{N}+..)=9.72\times 10^{-6}$ $\alpha(\text{N})=7.85\times 10^{-6}$ 11; $\alpha(\text{O})=1.272\times 10^{-6}$ 18; $\alpha(\text{P})=9.68\times 10^{-8}$ 14; $\alpha(\text{IPF})=5.03\times 10^{-7}$ 8
2424.7	23/2 ⁻	249.1 @ 3	100 @	2175.63	(11/2 ⁻)				
		788.6 @ 2	100 @	1661.23	19/2 ⁻	E2		0.00325 5	$\alpha(\text{K})=0.00277$ 4; $\alpha(\text{L})=0.000382$ 6; $\alpha(\text{M})=7.95\times 10^{-5}$ 12; $\alpha(\text{N}+..)=2.04\times 10^{-5}$ 3 $\alpha(\text{N})=1.739\times 10^{-5}$ 25; $\alpha(\text{O})=2.79\times 10^{-6}$ 4; $\alpha(\text{P})=2.02\times 10^{-7}$ 3
		1179.8 @ 2	48 @ 5	1188.57	13/2 ⁺	E2		0.001354 19	$\alpha(\text{K})=0.001160$ 17; $\alpha(\text{L})=0.0001507$ 22; $\alpha(\text{M})=3.12\times 10^{-5}$ 5; $\alpha(\text{N}+..)=1.216\times 10^{-5}$ $\alpha(\text{N})=6.84\times 10^{-6}$ 10; $\alpha(\text{O})=1.109\times 10^{-6}$ 16; $\alpha(\text{P})=8.51\times 10^{-8}$ 12; $\alpha(\text{IPF})=4.13\times 10^{-6}$ 6
2501.31	9/2 ⁻ , 11/2 ⁺	1135.9 3 1348.02 12 1455.3 ^b 5 1846.5 4 1960.3 5	24 8 100 10 $\approx 17^b$ 15 7 ≈ 25	1365.02 1153.35 1045.937 654.56 541.20	11/2 ⁻ 13/2 ⁻ 9/2 ⁻ 11/2 ⁺ 7/2 ⁺				
2503.61	19/2 ⁺	135.1 @ 3 428.3 @ 3 1125.73 @ 17	100 @ 50 38 @ 19 23 @ 2	2368.33 2075.47 1377.93	17/2 ⁺ 17/2 ⁺ 15/2 ⁺	D			
2535.06	21/2 ⁻	797.7 @ 4 873.72 @ 19	100 @ 10 94 @ 10	1737.86 1661.23	17/2 ⁻ 19/2 ⁻	E2 M1+E2	-1.5 12	0.00317 5 0.0029 7	$\alpha(\text{K})=0.00270$ 4; $\alpha(\text{L})=0.000371$ 6; $\alpha(\text{M})=7.72\times 10^{-5}$ 11; $\alpha(\text{N}+..)=1.98\times 10^{-5}$ 3 $\alpha(\text{N})=1.690\times 10^{-5}$ 24; $\alpha(\text{O})=2.72\times 10^{-6}$ 4; $\alpha(\text{P})=1.97\times 10^{-7}$ 3 $\alpha(\text{K})=0.0025$ 6; $\alpha(\text{L})=0.00033$ 7; $\alpha(\text{M})=6.9\times 10^{-5}$ 14; $\alpha(\text{N}+..)=1.8\times 10^{-5}$ 4 $\alpha(\text{N})=1.5\times 10^{-5}$ 3; $\alpha(\text{O})=2.4\times 10^{-6}$ 6; $\alpha(\text{P})=1.9\times 10^{-7}$ 5
2572.76?	(7/2 ⁺)	1705.5 3 2095.8 4 2441.8 11	100 17 11.7 19 3.1 12	867.16 477.219 130.803	7/2 ⁺ 9/2 ⁺ 7/2 ⁺				

Adopted Levels, Gammas (continued)

$\gamma(^{133}\text{La})$ (continued)									
$E_i(\text{level})$	J_i^π	E_γ^\ddagger	I_γ^\ddagger	E_f	J_f^π	Mult.#	$\delta^\#$	α^\dagger	Comments
2572.76?	(7/2 ⁺)	2474.8 11	7.4 17	97.259	3/2 ⁺				
2581.14	(21/2 ⁻)	920.05@ 23	100@	1661.23	19/2 ⁻	M1+E2	-1.7 15	0.0025 7	$\alpha(\text{K})=0.0022$ 6; $\alpha(\text{L})=0.00029$ 7; $\alpha(\text{M})=6.0\times 10^{-5}$ 14; $\alpha(\text{N}+..)=1.5\times 10^{-5}$ 4
2682.2	21/2 ⁺	178.7@ 3	100@ 50	2503.61	19/2 ⁺	M1+E2	-0.10 3	0.213 4	$\alpha(\text{N})=1.3\times 10^{-5}$ 3; $\alpha(\text{O})=2.1\times 10^{-6}$ 6; $\alpha(\text{P})=1.6\times 10^{-7}$ 5 $\alpha(\text{K})=0.182$ 3; $\alpha(\text{L})=0.0246$ 4; $\alpha(\text{M})=0.00512$ 9; $\alpha(\text{N}+..)=0.001322$ 22 $\alpha(\text{N})=0.001125$ 19; $\alpha(\text{O})=0.000183$ 3; $\alpha(\text{P})=1.410\times 10^{-5}$ 21
		313.8@ 8	5@ 3	2368.33	17/2 ⁺				
		419.6@ 8	15@ 8	2262.48	19/2 ⁺				
2716.1		1054.9@ 3	100@	1661.23	19/2 ⁻				
2727.3	(19/2 ⁺)	1066.2@ 8	100@	1661.23	19/2 ⁻				
2734.8?	7/2 ⁻ ,9/2 ⁺	1369.9 4	100 50	1365.02	11/2 ⁻				
		2604.0 9	25 3	130.803	7/2 ⁺				
		2734.1 11	13 3	0.0	5/2 ⁺				
2851.10	9/2 ⁻ ,11/2 ⁺	1698.0 3	100 8	1153.35	13/2 ⁻				
		2196.4 4	5.0 9	654.56	11/2 ⁺				
		2314.4 8	4.3 7	535.595	11/2 ⁻				
		2373.6 6	6.4 8	477.219	9/2 ⁺				
		2720.5 10	0.9 4	130.803	7/2 ⁺				
2884.8	(21/2 ⁺)	845.1@ 8	100@	2039.66	17/2 ⁺				
2891.3	23/2 ⁺	209.03@ 17	100@	2682.2	21/2 ⁺	M1+E2		0.146 8	$\alpha(\text{K})=0.1185$ 17; $\alpha(\text{L})=0.022$ 6; $\alpha(\text{M})=0.0046$ 14; $\alpha(\text{N}+..)=0.0012$ 3 $\alpha(\text{N})=0.0010$ 3; $\alpha(\text{O})=0.00015$ 4; $\alpha(\text{P})=8.3\times 10^{-6}$ 9
2894.3	(21/2 ⁺)	167.1& 8		2727.3	(19/2 ⁺)				
		391.3& 8		2503.61	19/2 ⁺				
		818.7@ 8	91@ 9	2075.47	17/2 ⁺				
		854.3@ 8	100@ 50	2039.66	17/2 ⁺				
2915.95	(23/2 ⁻)	714.6@ 3	<100@	2201.32	(19/2 ⁻)	E2		0.00411 6	$\alpha(\text{K})=0.00349$ 5; $\alpha(\text{L})=0.000490$ 7; $\alpha(\text{M})=0.0001022$ 15; $\alpha(\text{N}+..)=2.62\times 10^{-5}$ 4 $\alpha(\text{N})=2.23\times 10^{-5}$ 4; $\alpha(\text{O})=3.58\times 10^{-6}$ 5; $\alpha(\text{P})=2.53\times 10^{-7}$ 4
		1254.6& 3		1661.23	19/2 ⁻				
2927.9	23/2 ⁺	245.6@ 3	100@	2682.2	21/2 ⁺	M1+E2	-0.13 4	0.0898	$\alpha(\text{K})=0.0768$ 11; $\alpha(\text{L})=0.01029$ 16; $\alpha(\text{M})=0.00214$ 4; $\alpha(\text{N}+..)=0.000552$ 9 $\alpha(\text{N})=0.000470$ 8; $\alpha(\text{O})=7.64\times 10^{-5}$ 12; $\alpha(\text{P})=5.93\times 10^{-6}$ 9

Adopted Levels, Gammas (continued)

$\gamma(^{133}\text{La})$ (continued)									
$E_i(\text{level})$	J_i^π	E_γ^{\ddagger}	I_γ^{\ddagger}	E_f	J_f^π	Mult.#	$\delta^\#$	α^\dagger	Comments
3003.7	(23/2 ⁻)	742.5@ 8 802.4@ 3	31@ 15 100@ 10	2261.4 2201.32	(13/2 ⁻ ,15/2,17/2) (19/2 ⁻)	E2		0.00313 5	$\alpha(\text{K})=0.00266$ 4; $\alpha(\text{L})=0.000366$ 6; $\alpha(\text{M})=7.61\times 10^{-5}$ 11; $\alpha(\text{N}+..)=1.95\times 10^{-5}$ 3 $\alpha(\text{N})=1.665\times 10^{-5}$ 24; $\alpha(\text{O})=2.68\times 10^{-6}$ 4; $\alpha(\text{P})=1.94\times 10^{-7}$ 3
3104.6	(25/2)	178.0@ 8 213.2@ 3	100@ 50 25@ 13	2927.9 2891.3	23/2 ⁺ 23/2 ⁺	D+Q D+Q			
3111.2	(23/2 ⁺)	217.0@ 3 226.4& 8 428.7@ 8 607.4@ 8	14@ 7 100@ 50 19@ 10	2894.3 2884.8 2682.2 2503.61	(21/2 ⁺) (21/2 ⁺) 21/2 ⁺ 19/2 ⁺	D+Q D+Q			
3258.9	25/2 ⁺	331.03@ 17	100@ 9	2927.9	23/2 ⁺	M1+E2		0.038 4	$\alpha(\text{K})=0.032$ 4; $\alpha(\text{L})=0.00482$ 22; $\alpha(\text{M})=0.00101$ 6; $\alpha(\text{N}+..)=0.000258$ 12 $\alpha(\text{N})=0.000221$ 11; $\alpha(\text{O})=3.50\times 10^{-5}$ 9; $\alpha(\text{P})=2.3\times 10^{-6}$ 4 δ : -0.16 6 or -3.7 6.
3270.0		367.78@ 18 576.8& 8 689.0& 8 1608.6& 8	65@ 6	2891.3 2682.2 2581.14 1661.23	23/2 ⁺ 21/2 ⁺ (21/2 ⁻) 19/2 ⁻	D+Q			
3277.6	23/2 ⁺	1014.5@ 8	100@	2262.48	19/2 ⁺				
3278.3	25/2 ⁺	350.50@ 17	100@ 10	2927.9	23/2 ⁺	M1+E2	-3.7 10	0.0294 6	$\alpha(\text{K})=0.0241$ 5; $\alpha(\text{L})=0.00412$ 6; $\alpha(\text{M})=0.000872$ 13; $\alpha(\text{N}+..)=0.000220$ 4 $\alpha(\text{N})=0.000189$ 3; $\alpha(\text{O})=2.94\times 10^{-5}$ 5; $\alpha(\text{P})=1.67\times 10^{-6}$ 5
3292.5	27/2 ⁻	842.7@ 3	100@	2449.86	23/2 ⁻	E2		0.00279 4	$\alpha(\text{K})=0.0234$ 4; $\alpha(\text{L})=0.00307$ 5; $\alpha(\text{M})=0.000637$ 9; $\alpha(\text{N}+..)=0.0001646$ 24 $\alpha(\text{N})=0.0001400$ 20; $\alpha(\text{O})=2.28\times 10^{-5}$ 4; $\alpha(\text{P})=1.80\times 10^{-6}$ 3
3382.4	(25/2 ⁺)	271.0@ 8 454.3@ 3	59@ 6 100@ 9	3111.2 2927.9	(23/2 ⁺) 23/2 ⁺	D+Q (D+Q)			$\alpha(\text{K})=0.00238$ 4; $\alpha(\text{L})=0.000325$ 5; $\alpha(\text{M})=6.74\times 10^{-5}$ 10; $\alpha(\text{N}+..)=1.732\times 10^{-5}$ 25 $\alpha(\text{N})=1.477\times 10^{-5}$ 21; $\alpha(\text{O})=2.38\times 10^{-6}$ 4; $\alpha(\text{P})=1.738\times 10^{-7}$ 25

Adopted Levels, Gammas (continued)

$\gamma(^{133}\text{La})$ (continued)									
$E_i(\text{level})$	J_i^π	E_γ^\ddagger	I_γ^\ddagger	E_f	J_f^π	Mult. #	$\delta^\#$	α^\dagger	Comments
3382.4	(25/2 ⁺)	700.5@ 3	26@ 12	2682.2	21/2 ⁺				
3431.5	25/2 ⁻	896.5@ 3	100@ 10	2535.06	21/2 ⁻	E2		0.00243 4	$\alpha(\text{K})=0.00208$ 3; $\alpha(\text{L})=0.000280$ 4; $\alpha(\text{M})=5.81\times 10^{-5}$ 9; $\alpha(\text{N}+..)=1.493\times 10^{-5}$ 21 $\alpha(\text{N})=1.273\times 10^{-5}$ 18; $\alpha(\text{O})=2.05\times 10^{-6}$ 3; $\alpha(\text{P})=1.516\times 10^{-7}$ 22
		981.2@ 4	53@ 5	2449.86	23/2 ⁻	M1+E2	-1.3 10	0.0023 5	$\alpha(\text{K})=0.0020$ 4; $\alpha(\text{L})=0.00026$ 5; $\alpha(\text{M})=5.3\times 10^{-5}$ 10; $\alpha(\text{N}+..)=1.37\times 10^{-5}$ 24 $\alpha(\text{N})=1.17\times 10^{-5}$ 21; $\alpha(\text{O})=1.9\times 10^{-6}$ 4; $\alpha(\text{P})=1.5\times 10^{-7}$ 4
3448.63	25/2 ⁻	867.7& 3		2581.14	(21/2 ⁻)				
		913.56@ 17	≤ 100 @	2535.06	21/2 ⁻	(Q)			
		998.62@ 19	88@ 8	2449.86	23/2 ⁻	M1+E2	-1.5 13	0.0022 6	$\alpha(\text{K})=0.0019$ 5; $\alpha(\text{L})=0.00024$ 6; $\alpha(\text{M})=5.0\times 10^{-5}$ 11; $\alpha(\text{N}+..)=1.3\times 10^{-5}$ 3 $\alpha(\text{N})=1.10\times 10^{-5}$ 24; $\alpha(\text{O})=1.8\times 10^{-6}$ 4; $\alpha(\text{P})=1.4\times 10^{-7}$ 4
3551.9		1102.0@ 8	100@	2449.86	23/2 ⁻				
3600.2	(27/2 ⁻)	151.4@ 3	55@ 30	3448.63	25/2 ⁻	D+Q			
		168.5@ 3	100@ 55	3431.5	25/2 ⁻	D			
		307.7@ 3	55@ 30	3292.5	27/2 ⁻	D+Q			
		1150.6@ 3	55@ 5	2449.86	23/2 ⁻				
3614.7	27/2 ⁺	336.1@ 3	100@ 10	3278.3	25/2 ⁺	M1+E2	-4.4 13	0.0332 6	$\alpha(\text{K})=0.0272$ 5; $\alpha(\text{L})=0.00475$ 7; $\alpha(\text{M})=0.001008$ 15; $\alpha(\text{N}+..)=0.000254$ 4 $\alpha(\text{N})=0.000218$ 4; $\alpha(\text{O})=3.38\times 10^{-5}$ 5; $\alpha(\text{P})=1.86\times 10^{-6}$ 5
		355.70@ 19	≤ 68 @	3258.9	25/2 ⁺	D			
		686.8@ 3	58@ 6	2927.9	23/2 ⁺	(E2)		0.00453 7	$\alpha(\text{K})=0.00384$ 6; $\alpha(\text{L})=0.000544$ 8; $\alpha(\text{M})=0.0001135$ 16; $\alpha(\text{N}+..)=2.90\times 10^{-5}$ 4 $\alpha(\text{N})=2.48\times 10^{-5}$ 4; $\alpha(\text{O})=3.96\times 10^{-6}$ 6; $\alpha(\text{P})=2.78\times 10^{-7}$ 4
3647.2	(27/2)	542.44@ 17	100@	3104.6	(25/2)	M1+E2	-0.13 7	0.01162 18	$\alpha(\text{K})=0.00999$ 16; $\alpha(\text{L})=0.001296$ 19; $\alpha(\text{M})=0.000268$ 4; $\alpha(\text{N}+..)=6.94\times 10^{-5}$ 11 $\alpha(\text{N})=5.90\times 10^{-5}$ 9; $\alpha(\text{O})=9.63\times 10^{-6}$ 15; $\alpha(\text{P})=7.63\times 10^{-7}$ 13
3762.5	(27/2 ⁻)	846.4& 3		2915.95	(23/2 ⁻)				
		1312.9& 3		2449.86	23/2 ⁻				
3778.5	(27/2 ⁺)	396.0@ 3	100@ 10	3382.4	(25/2 ⁺)	D			
		667.3@ 8	62@ 30	3111.2	(23/2 ⁺)				
3948.8	(29/2 ⁻)	187.3@ 8	65@ 30	3762.5	(27/2 ⁻)	D			
		348.4@ 3	100@ 10	3600.2	(27/2 ⁻)	D			

Adopted Levels, Gammas (continued)

$\gamma(^{133}\text{La})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ^\ddagger	I_γ^\ddagger	E_f	J_f^π	Mult. #	α^\ddagger	Comments
4012.3	(29/2)	364.7@ 3	≤ 26 @	3647.2	(27/2)	(M1+E2)	0.029 4	$\alpha(\text{K})=0.024$ 4; $\alpha(\text{L})=0.00360$ 6; $\alpha(\text{M})=0.000754$ 16; $\alpha(\text{N}+..)=0.000193$ 3
		907.76@ 17	100@ 11	3104.6	(25/2)	(E2)	0.00236 4	$\alpha(\text{K})=0.00202$ 3; $\alpha(\text{L})=0.000272$ 4; $\alpha(\text{M})=5.64 \times 10^{-5}$ 8; $\alpha(\text{N}+..)=1.450 \times 10^{-5}$ 21
4030.9	29/2 ⁺	415.9@ 3	<100@	3614.7	27/2 ⁺	(M1)	0.0227	$\alpha(\text{K})=0.0195$ 3; $\alpha(\text{L})=0.00255$ 4; $\alpha(\text{M})=0.000528$ 8; $\alpha(\text{N}+..)=0.0001367$ 20
		772.3& 3		3258.9	25/2 ⁺			$\alpha(\text{N})=1.236 \times 10^{-5}$ 18; $\alpha(\text{O})=1.99 \times 10^{-6}$ 3; $\alpha(\text{P})=1.476 \times 10^{-7}$ 21
4055.3		440.7@ 3	<100@	3614.7	27/2 ⁺			$\alpha(\text{K})=0.00190$ 3; $\alpha(\text{L})=0.000254$ 4; $\alpha(\text{M})=5.27 \times 10^{-5}$ 8; $\alpha(\text{N}+..)=1.354 \times 10^{-5}$ 19
		777.0& 8		3277.6	23/2 ⁺			$\alpha(\text{N})=1.154 \times 10^{-5}$ 17; $\alpha(\text{O})=1.86 \times 10^{-6}$ 3; $\alpha(\text{P})=1.385 \times 10^{-7}$ 20
4072.2		779.7@ 3	100@	3292.5	27/2 ⁻			
4134.3	(29/2 ⁺)	355.5@ 8	100@ 9	3778.5	(27/2 ⁺)	D		
		751.9@ 3	36@ 18	3382.4	(25/2 ⁺)			
4227.0	31/2 ⁻	934.5@ 3	100@	3292.5	27/2 ⁻	E2	0.00222 4	$\alpha(\text{K})=0.00190$ 3; $\alpha(\text{L})=0.000254$ 4; $\alpha(\text{M})=5.27 \times 10^{-5}$ 8; $\alpha(\text{N}+..)=1.354 \times 10^{-5}$ 19
								$\alpha(\text{N})=1.154 \times 10^{-5}$ 17; $\alpha(\text{O})=1.86 \times 10^{-6}$ 3; $\alpha(\text{P})=1.385 \times 10^{-7}$ 20
4359.5	(29/2)	1067.0@ 8	100@	3292.5	27/2 ⁻			
4397.1	(31/2 ⁻)	448.26@ 17	100@	3948.8	(29/2 ⁻)			
4475.4	31/2 ⁺	444.5@ 3	100@ 10	4030.9	29/2 ⁺			
		860.7@ 8	3.2@ 16	3614.7	27/2 ⁺			
4511.1	(31/2)	498.9@ 3	100@ 50	4012.3	(29/2)			
		863.6@ 8	39@ 18	3647.2	(27/2)			
4512.9		286.1@ 8	<100@	4227.0	31/2 ⁻	D+Q		
		564.1& 3		3948.8	(29/2 ⁻)			
4569.0		496.8@ 8	100@	4072.2				
4831.6	(33/2 ⁻)	434.5@ 3	100@	4397.1	(31/2 ⁻)	(D)		
4871.5		474.4@ 3	100@	4397.1	(31/2 ⁻)			
4926.7	(33/2)	914.4@ 3	100@	4012.3	(29/2)	(Q)		
4938.5	33/2 ⁺	463.1@ 3	100@	4475.4	31/2 ⁺	(M1+E2)	0.0150 23	$\alpha(\text{K})=0.0128$ 22; $\alpha(\text{L})=0.00181$ 14; $\alpha(\text{M})=0.00038$ 3; $\alpha(\text{N}+..)=9.7 \times 10^{-5}$ 8
								$\alpha(\text{N})=8.2 \times 10^{-5}$ 6; $\alpha(\text{O})=1.32 \times 10^{-5}$ 12; $\alpha(\text{P})=9.5 \times 10^{-7}$ 20
5004.6		491.7@ 3	100@	4512.9				

Adopted Levels, Gammas (continued) $\gamma(^{133}\text{La})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ^{\ddagger}	I_γ^{\ddagger}	E_f	J_f^π	Mult. #	α^\dagger	Comments
5038.9		641.8 [@] 3	100 [@]	4397.1	(31/2 ⁻)			
5198.5	35/2 ⁻	971.5 [@] 3	100 [@]	4227.0	31/2 ⁻	E2	0.00203 3	$\alpha(\text{K})=0.001742$ 25; $\alpha(\text{L})=0.000232$ 4; $\alpha(\text{M})=4.81 \times 10^{-5}$ 7; $\alpha(\text{N+..})=1.238 \times 10^{-5}$ 18 $\alpha(\text{N})=1.055 \times 10^{-5}$ 15; $\alpha(\text{O})=1.704 \times 10^{-6}$ 24; $\alpha(\text{P})=1.275 \times 10^{-7}$ 18
5219.9		650.9 [@] 8	100 [@]	4569.0				
5221.3	(35/2 ⁻)	389.7 [@] 3	100 [@]	4831.6	(33/2 ⁻)			
5319.6		280.3 ^{&} 8		5038.9				
		923.0 ^{&} 8		4397.1	(31/2 ⁻)			
5352.0	35/2 ⁺	876.6 [@] 3	100 [@]	4475.4	31/2 ⁺			
6144.7	(39/2 ⁻)	946.2 [@] 3	100 [@]	5198.5	35/2 ⁻			
6283.3	(39/2 ⁺)	931.3 [@] 3	100 [@]	5352.0	35/2 ⁺			

[†] Additional information 1.

[‡] From ^{133}Ce ε decay (5.1 h), unless otherwise stated.

From $\alpha(\text{K})\text{exp}$ in ^{133}Ce ε decay, $\gamma(\theta)$ measurements in (HI,xn γ), and the apparent band structure.

@ From (HI,xn γ).

& From (HI,xn γ).

^a From ^{133}Ce ε decay (97 min).

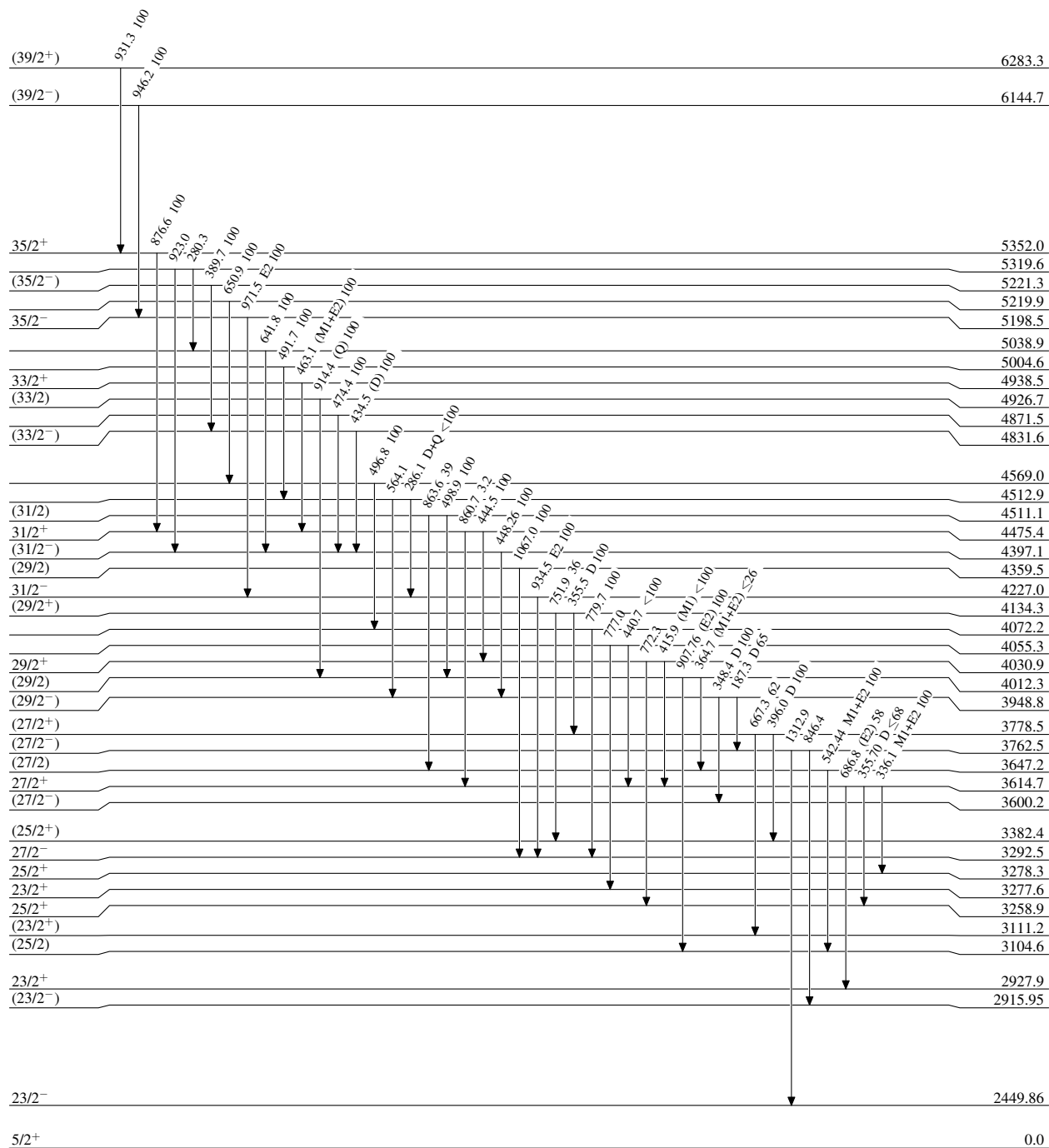
^b Multiply placed with intensity suitably divided.

^c Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme

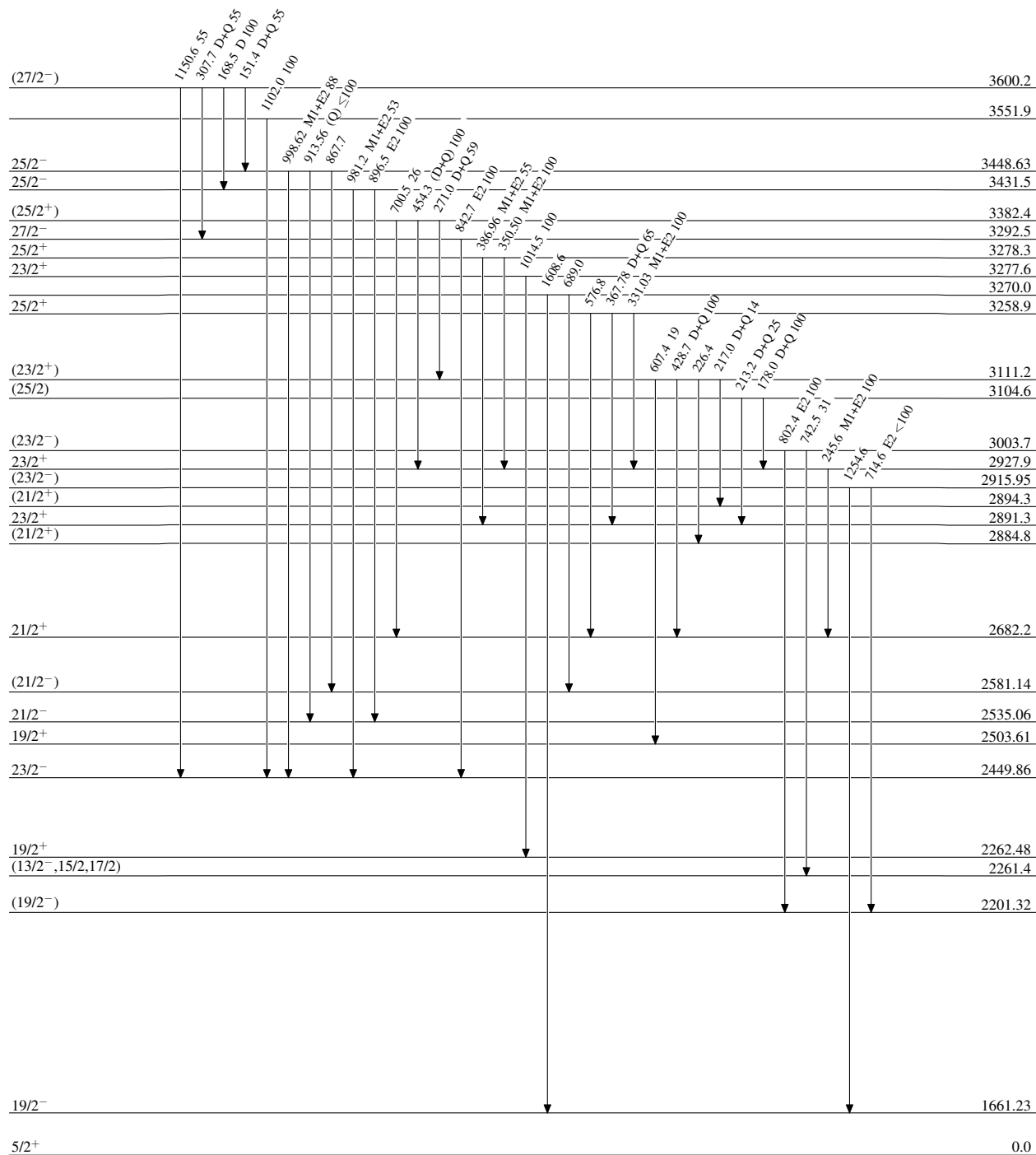
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

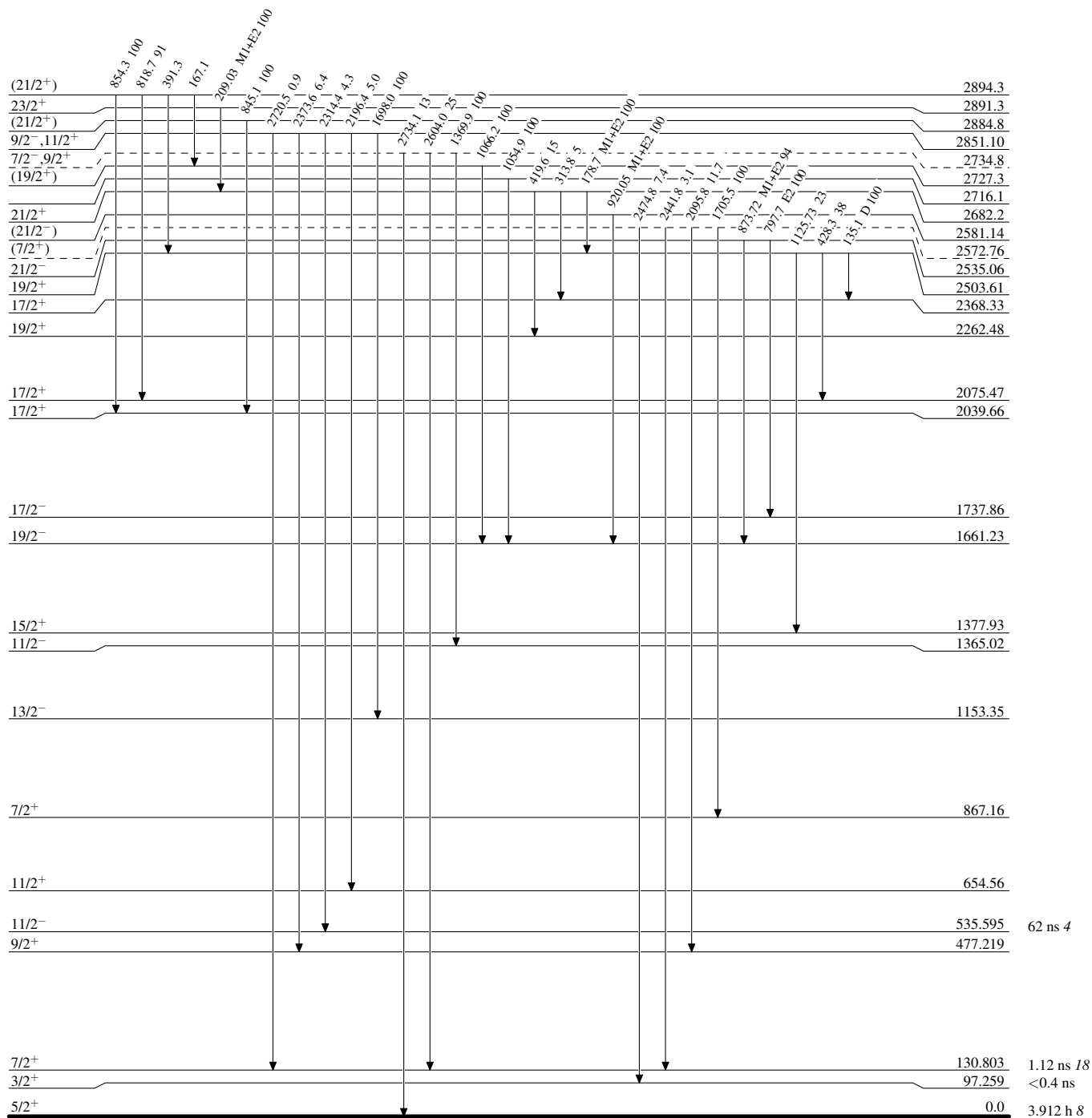


3.912 h 8

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

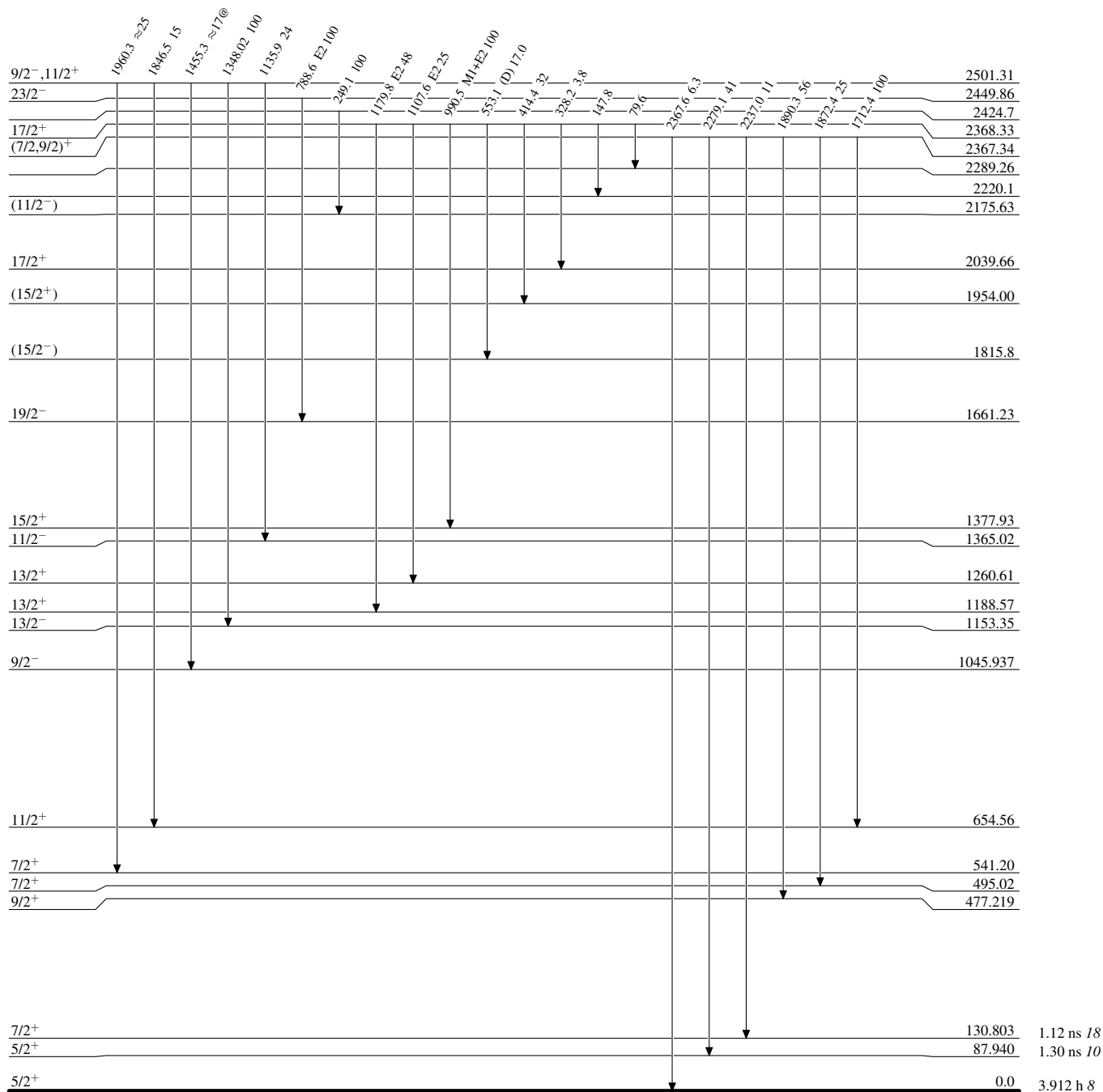


¹³³₅₇La₇₆

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided

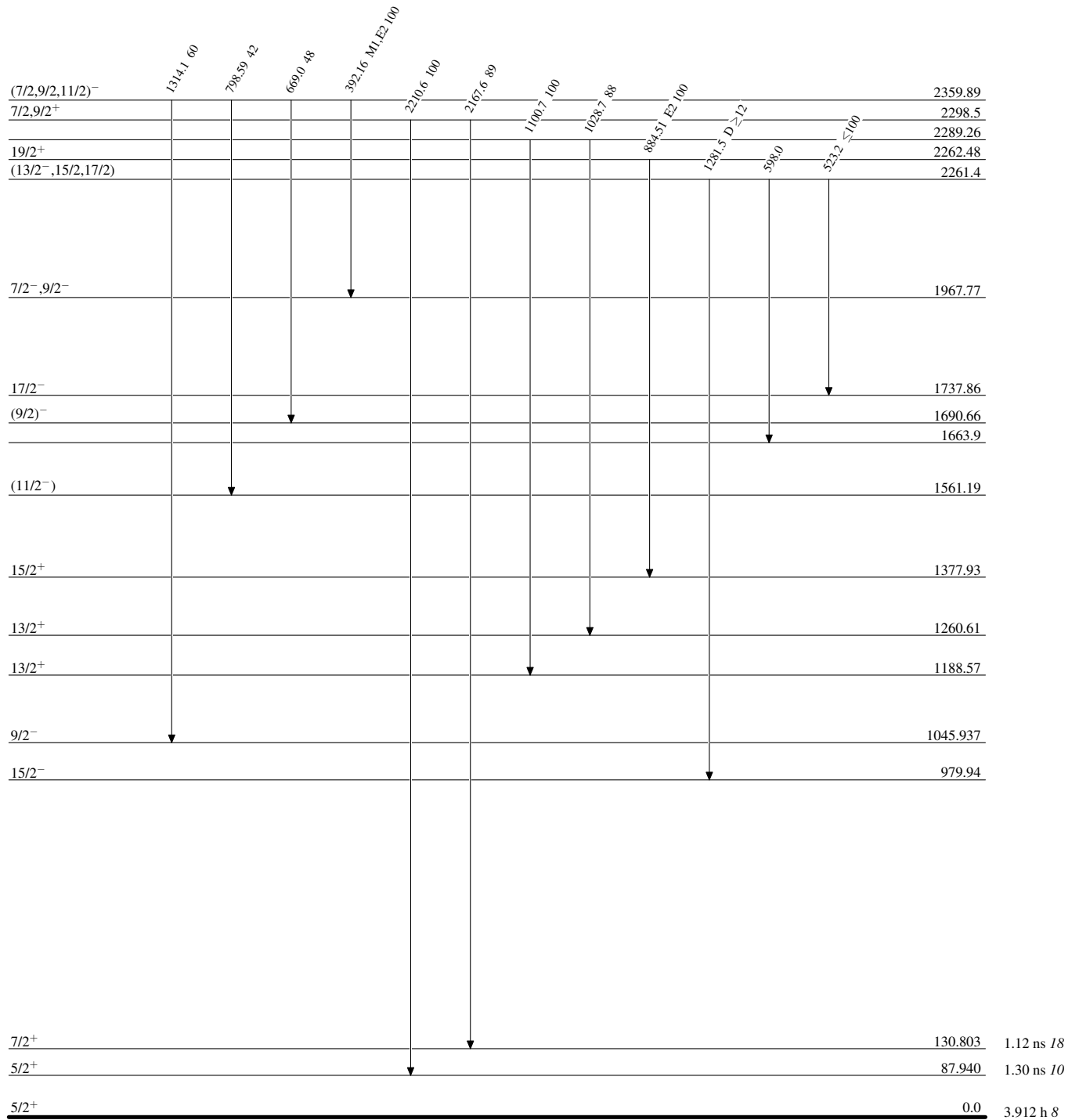


¹³³₅₇La₇₆

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
 @ Multiply placed: intensity suitably divided



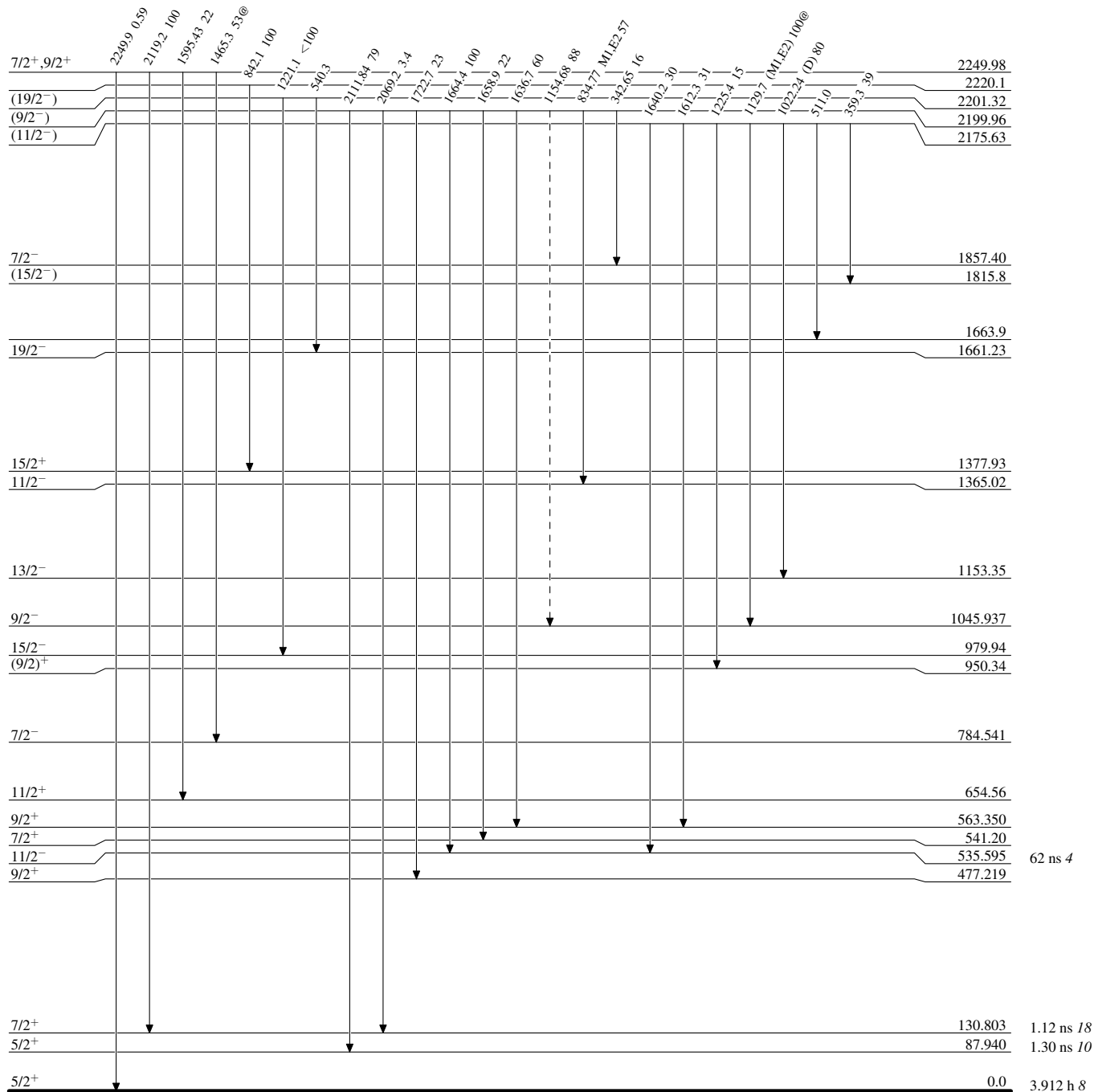
Adopted Levels, Gammas

Level Scheme (continued)

Legend

Intensities: Relative photon branching from each level
 @ Multiply placed: intensity suitably divided

-----▶ γ Decay (Uncertain)



¹³³La₇₆

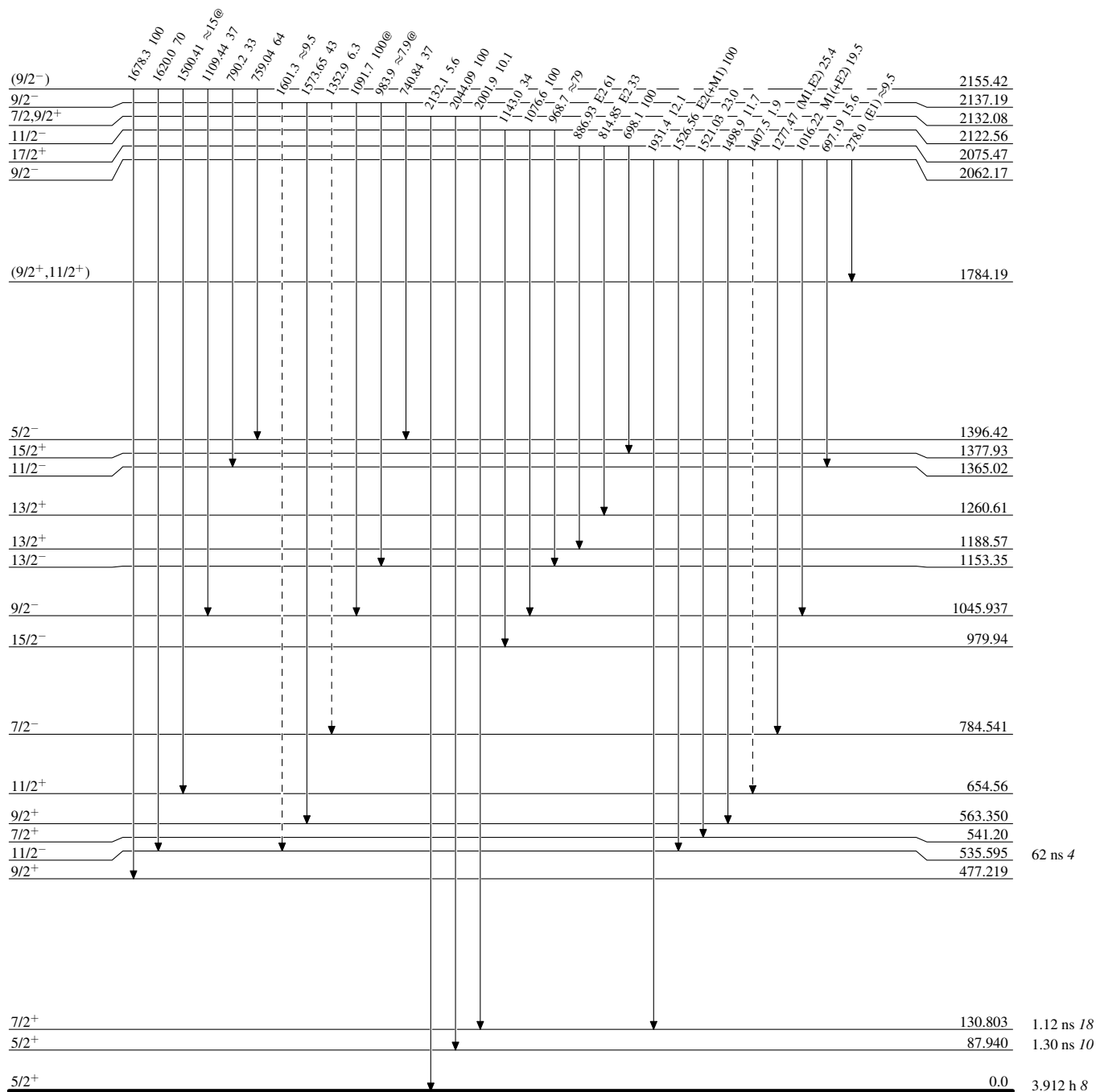
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
 @ Multiplied: intensity suitably divided

-----▶ γ Decay (Uncertain)



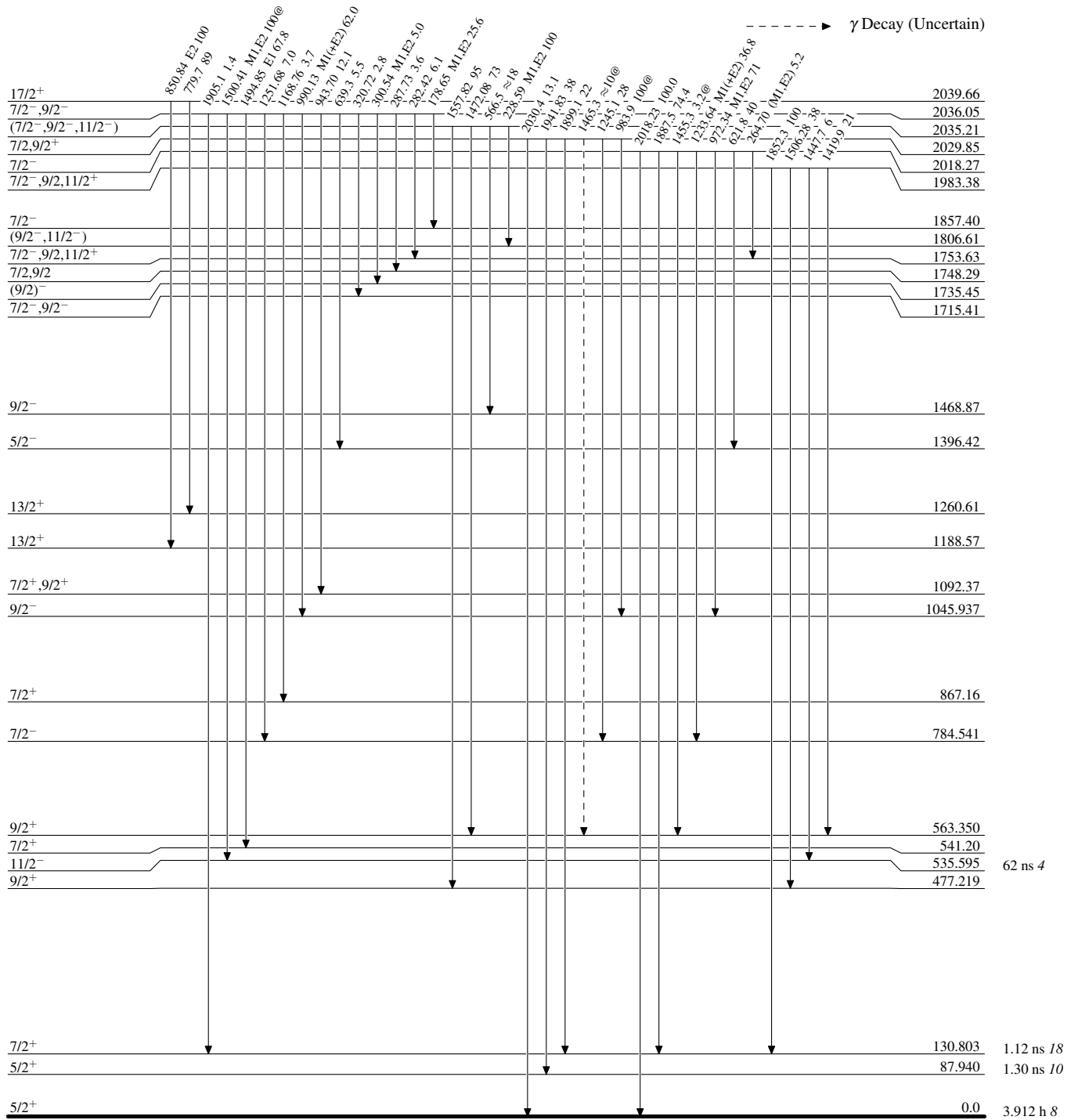
¹³³₅₇La₇₆

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided

Legend



¹³³₅₇La₇₆

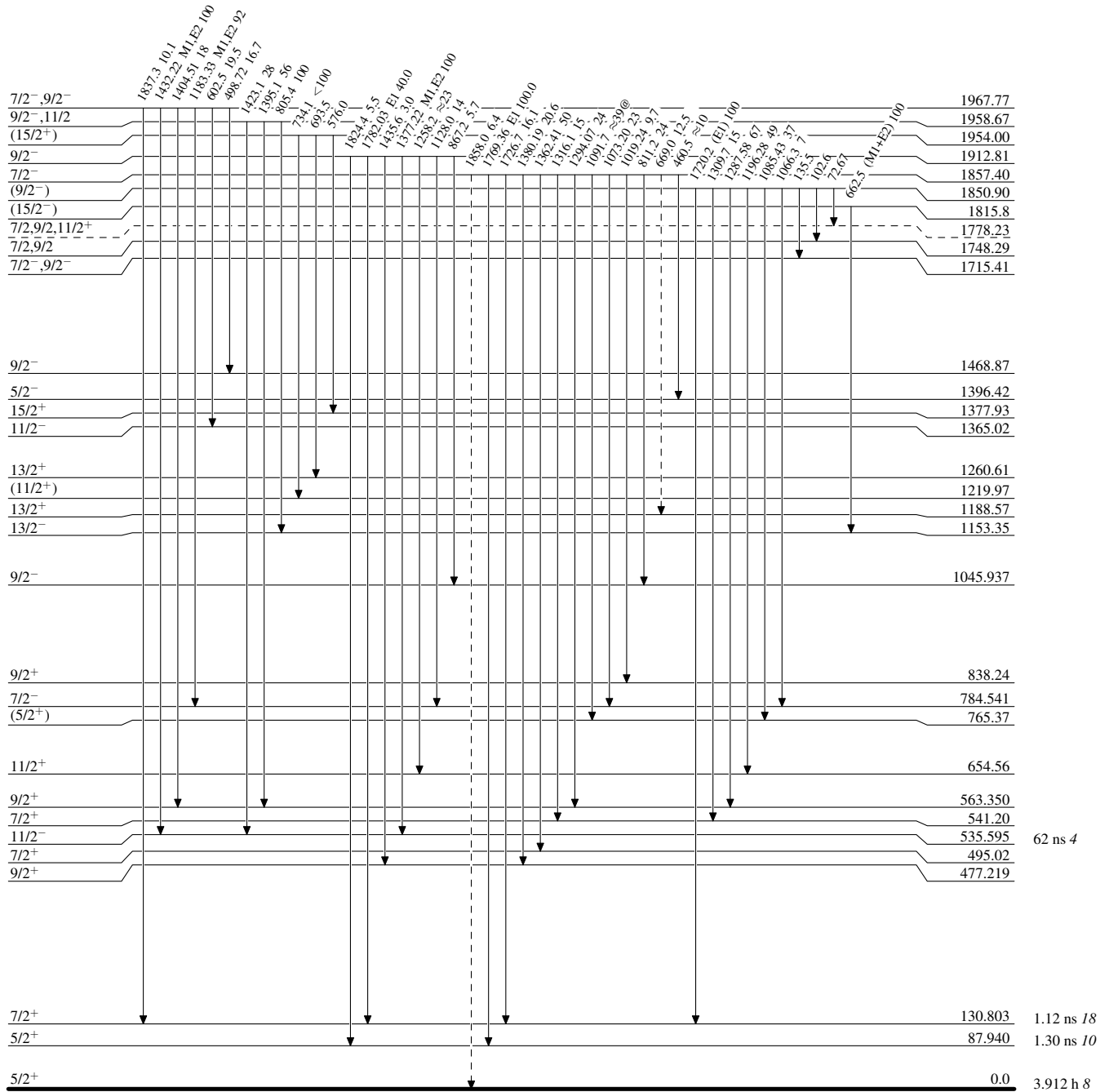
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided

-----▶ γ Decay (Uncertain)

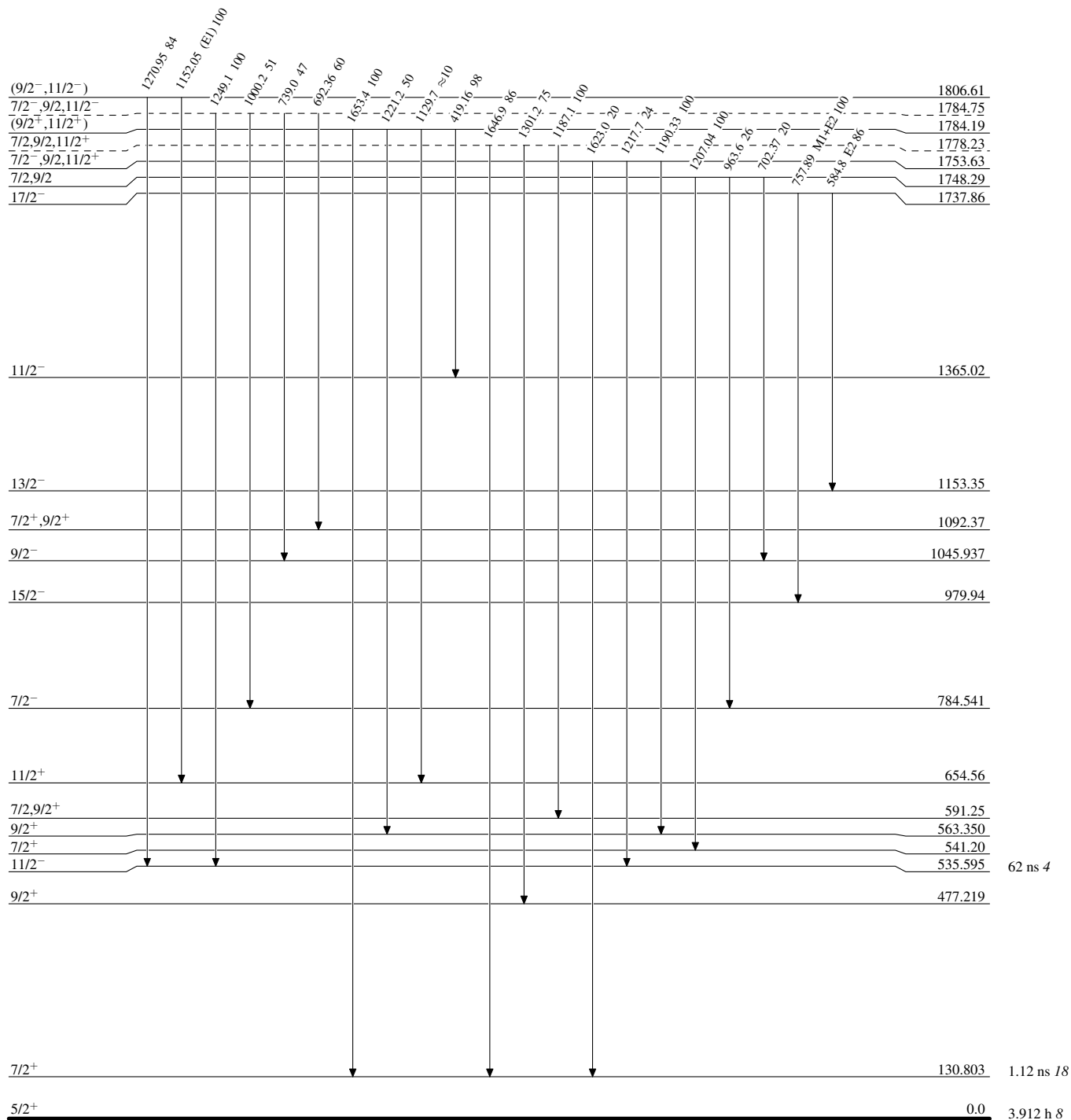


¹³³₅₇La₇₆

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
 @ Multiply placed: intensity suitably divided



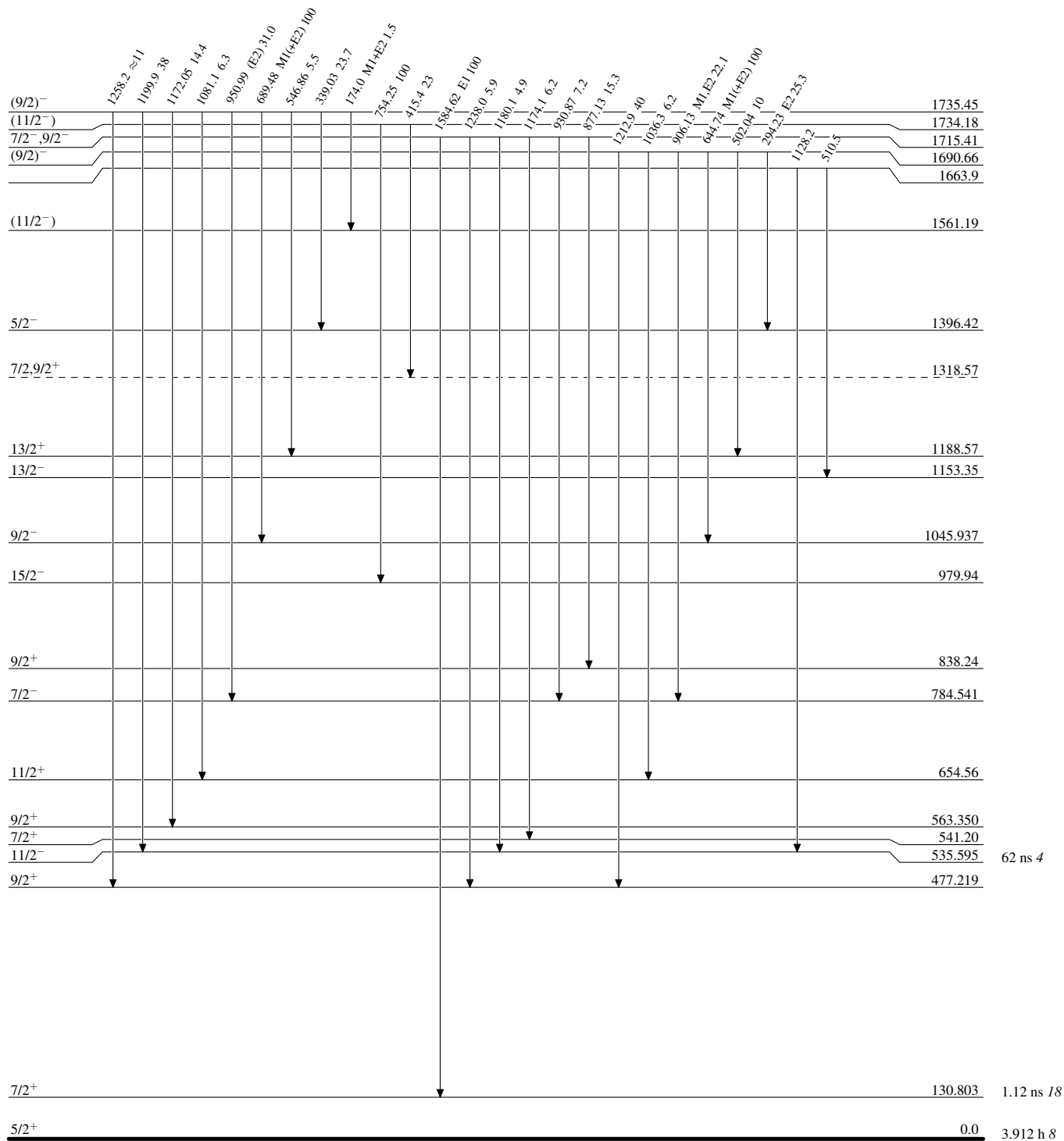
$^{133}_{57}\text{La}_{76}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

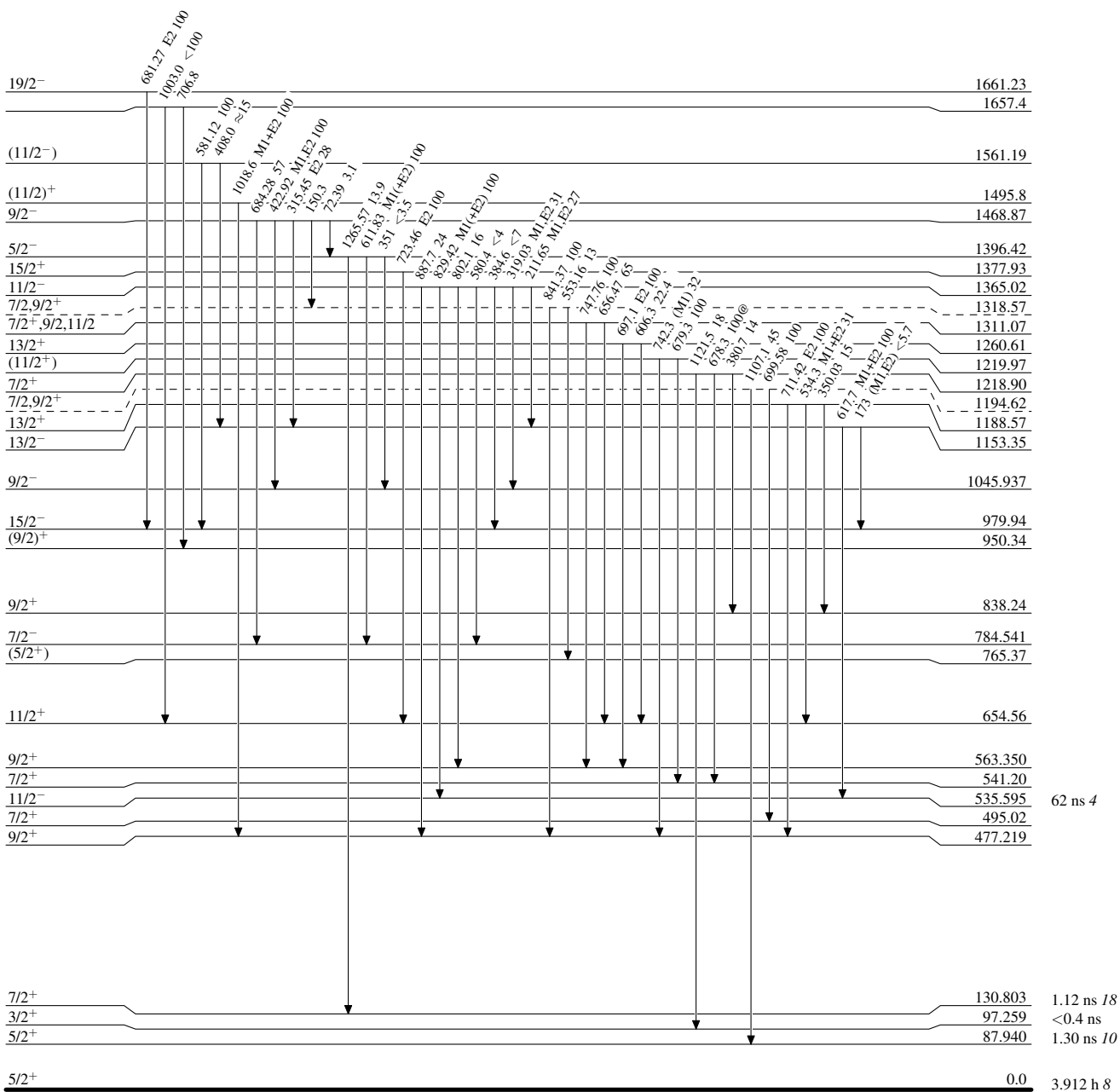
@ Multiply placed: intensity suitably divided



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
 @ Multiply placed: intensity suitably divided

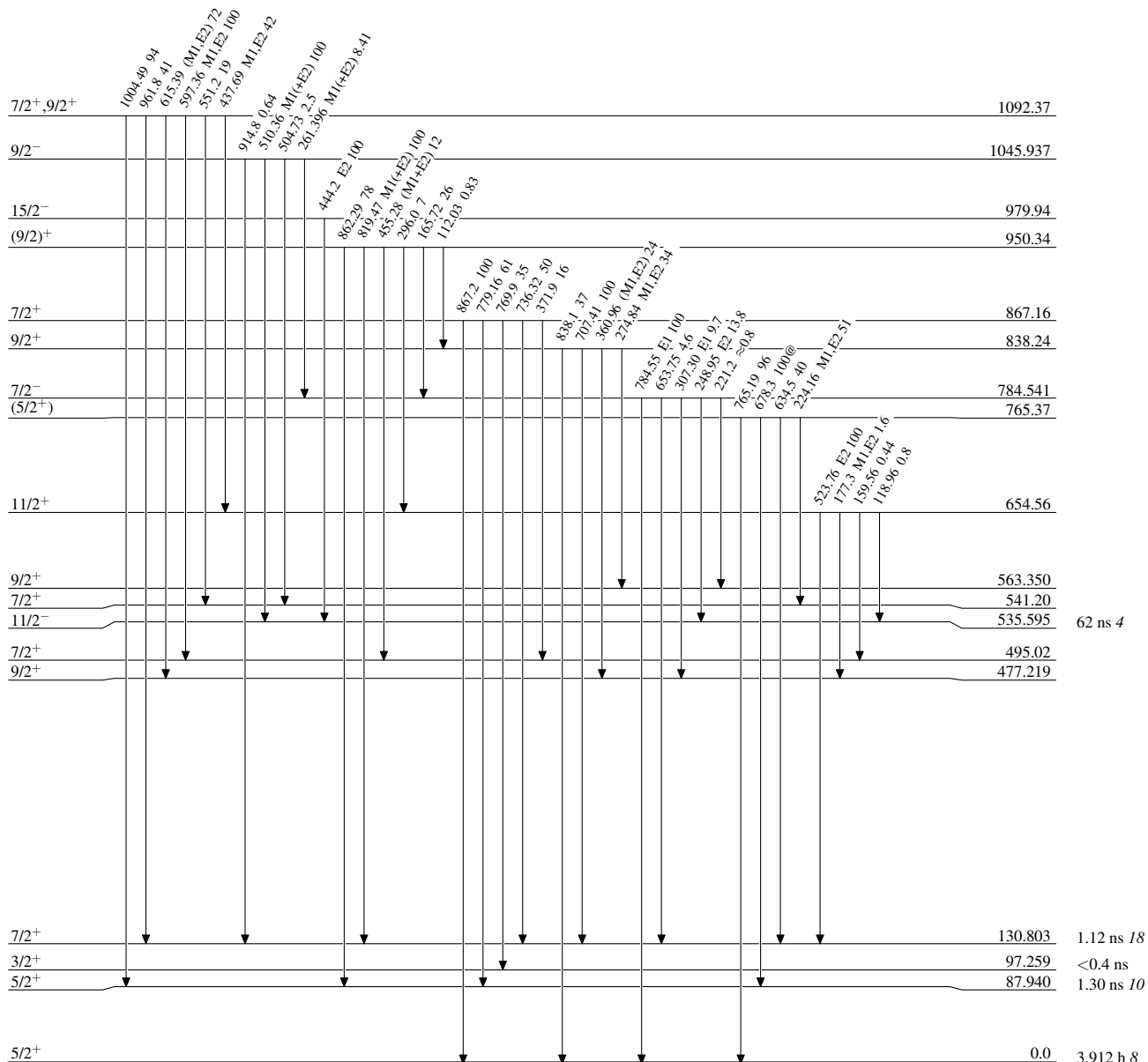


¹³³₅₇La₇₆

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
 @ Multiply placed: intensity suitably divided



¹³³₅₇La₇₆

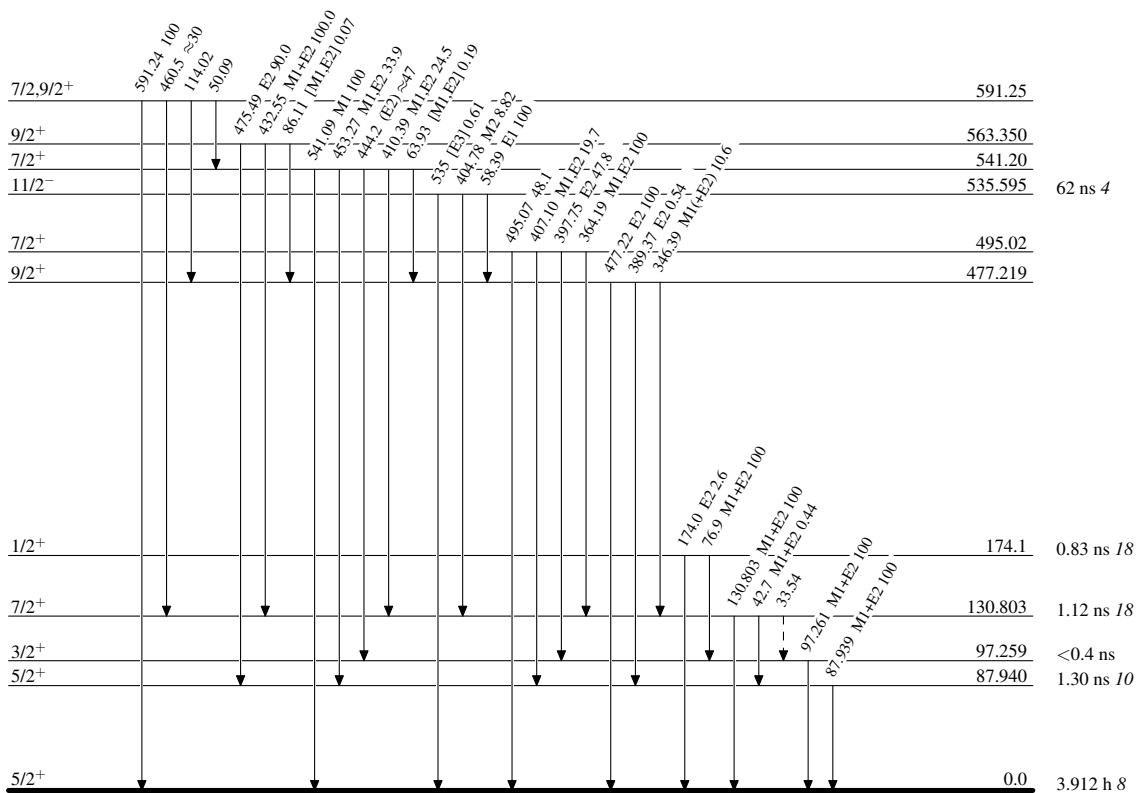
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
 @ Multiply placed: intensity suitably divided

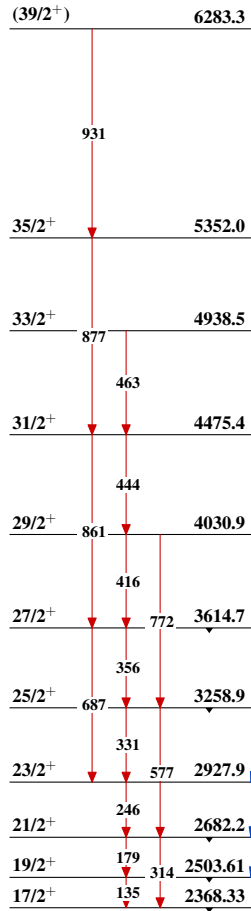
-----▶ γ Decay (Uncertain)



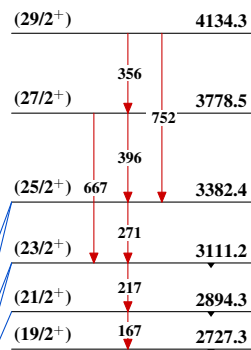
$^{133}_{57}\text{La}_{76}$

Adopted Levels, Gammas

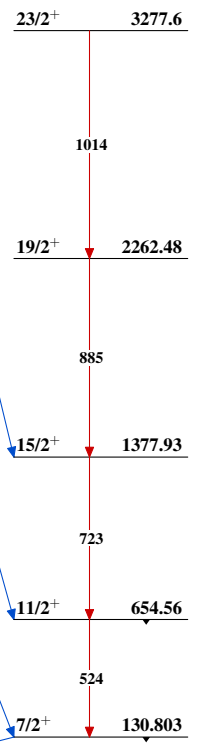
Band(A): Based on $17/2^+$ 2368-keV state, $\Delta J=1$



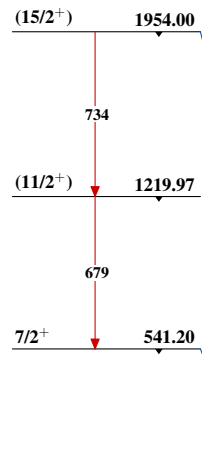
Band(B): Based on $(19/2^+)$ 2727-keV state, $\Delta J=1$



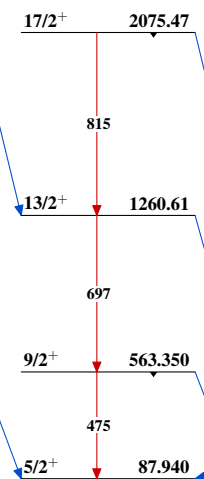
Band(E): Based on $7/2^+$ 131-keV state



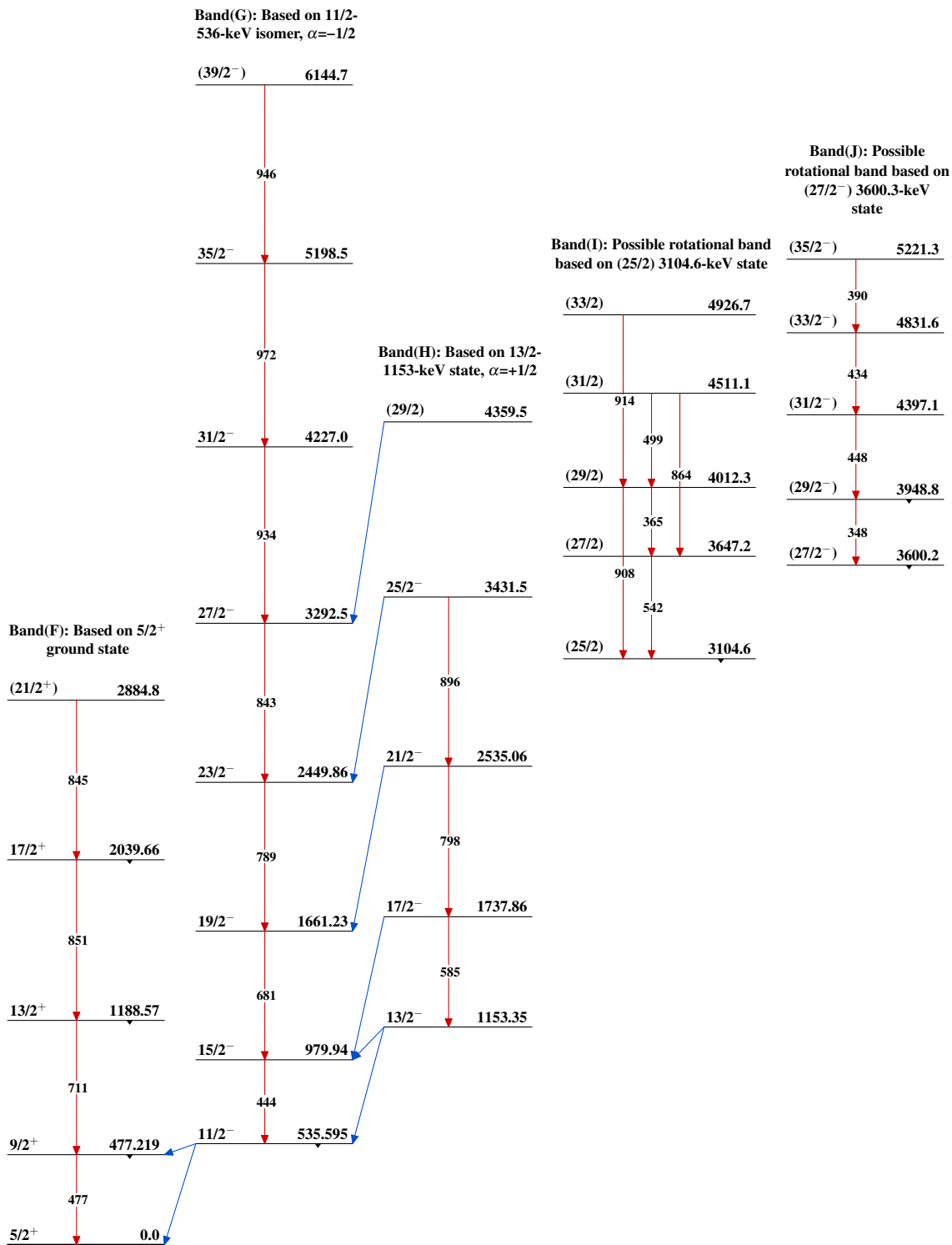
Band(C): Based on $7/2^+$ 541-keV state



Band(D): Based on $5/2^+$ 88-keV state



Adopted Levels, Gammas (continued)



$^{133}_{57}\text{La}_{76}$