Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 154, 1 (2018)	20-Nov-2018

Q(β^-)=3760.2 *17*; S(n)=5160.98 *4*; S(p)=6691.1 *20*; Q(α)=−402.1 *27* 2017Wa10

Production cross-sections by: ^{139}La(n_{th},γ) (1997Ka47), ^{139}La(n,γ) (E_n=1 MeV, 1953Hu86), ^{139}La(n,γ) (E_n from Maxwellian spectrum with thermal energy kT=25.0(5) keV, 2003Ob03, and kT=5.1 keV, 2005He19) ^{140}Ce(n,p) (E_n=14.7 MeV, 1997Ko44, 1996Si34); ^{241}Am(p,xpyn) (E_p=660 MeV, 2002Ad12).

10% reduction in $T_{1/2}$ of ^{140}La by ionization: 1999BaZL.

(pol n,γ) data on 0.734 eV resonance neutrons: 1989Be45, 1989Ma51, 2004Mi14 (supersedes 2004MiZZ).

Most of the data come from the two (n,γ), E=th and Two γ Cascade datasets. The greatest difficulty in building this Adopted dataset came from the unresolved multiplets in Two γ dataset. This can be easily seen from the huge difference between the normalized χ^2's of level fit (GTOL): 0.0041 for E=th, and 4.6 for Two γ (1.2 for χ^2 critical). As shown in the general comments of Two γ dataset, each intermediate level was obtained from groups of two to eight measured primary γ's, differing by 2 to 8 keV, the average of which was subtracted from the energy of the n-capture state. There are cases when a couple of primary γ's in a group match better the ones in neighboring groups, or primary γ's from E=th dataset; even when no comparison is possible, the data suggest that they could be regrouped in thinner groups.

Overall, the main difficulty comes from the fact that the Two γ dataset did not report uncertainties for measured primary γ's, which are expected to be large (they are 2-4 MeV in energy, measured in coin with small Ge detectors, and the branching from the n-capture state is huge). The evaluation process found many cases when resolving the multiplets was possible while for other cases resolving them seemed rather speculative, and were not resolved. Thus when a Two γ level had a relatively narrowly defined uncertainty it was generally evaluated as an individual level either as standalone (letter "C" on XREF column) or as multiply observed (XREF a combination of letters including "C"). However when a Two γ level had a relatively large uncertainty, then it was tentatively split (based on subgroups of close lying primary gammas) and the resulting levels marked with the letter "c" (alone or in combination, with the original level that was split indicated in the XREF comment). For the situations when the estimated uncertainty of the Two γ level was not quite large and the defining primary gammas were relatively homogeneous such levels were taken into the first category (no attempt was done to split them). The effect is an overall improvement of the normalized χ^2, 1.6 (1.2 for χ^2 critical). For more specific arguments (including how the uncertainty of the intermediary levels was estimated) see the general comments on the Two γ Cascade datasets.

^{140}La Levels

Cross Reference (XREF) Flags

A	^{140}Ba β^- decay
B	^{139}La(n,γ) E=th
C	^{139}La(n,γ) E=th: two γ cascade
D	^{139}La(d,p)

E(level)[†]	J$^\pi$	$T_{1/2}$	XREF	Comments
0.0	3$^-$ [@]	1.67858 d *21*	ABCD	%β^-=100 μ=+0.730 *15* (2011StZZ) Q=+0.094 *10* (2011StZZ) $T_{1/2}$: or 40.286 h *5*, weighted average of values (most of which reported in hours, with unc equal with smallest measured unc): 40.224 h *20* (1954Ki08), 40.31 h *6* (1954Ya02), 40.27 h *5* (1957Pe09), 40 h *2* (1960Wi10), 40.23 h *3* (1965Si17), 40.2 h *2* (1967Ka12), 40.2 h *2* (1968Re04), 40.232 h *67* (1978Da21), 40.280 h *6* (1980Ho17), 40.295 h *5* (1980Ol03), 40.270 h *17* (1983Wa26), 40.284 h *5* (1989Ab18), 40.34 h *4* (2002Ad04), 40.294 h *7* (2014Un01). Other values: 40.272 h *7* (1977DeYO, superseded by 1983Wa26), 40.279 h *17* (1982HoZJ, superseded by 1992Un01), 40.293 h *12* (1992Un01 and 2002Un02, superseded by 2014Un01). J$^\pi$: atomic beam (1976Fu06), L=3 in (d,p). μ: by atomic beam magnetic resonance − thermal beam (1969HuZY).

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Adopted Levels, Gammas (continued)

^{140}La Levels (continued)

E(level)†	Jπ	$T_{1/2}$	XREF	Comments
				Q: by atomic beam magnetic resonance – thermal beam, and static nuclear orientation with γ detection (1971Ch02). Q: μ/Q>0 (1969Pi15); Q=0.127 *13* (1966Bl05), 0.2 *1* (1969Pi15).
29.9641 *6*	2⁻@	0.25 ns *4*	AB D	$T_{1/2}$: from ^{140}Ba β^- decay (1982Ad02). Other: ≤0.42 ns (1965Bu07). Jπ: γ to 3⁻ is M1(+E2), log $f^{1u}t$=8.83 via 0⁺ parent.
34.6463 *8*	5⁻#@		BCD	
43.844 *18*	1⁻	0.52 ns *14*	AB	$T_{1/2}$: from ^{140}Ba β^- decay (1965Bu07). Jπ: γ to 2⁻ is M1, γ from 0⁻ is M1.
48.8843 *20*	6⁻#		BCD	
63.1790 *7*	4⁻#@		ABCD	Jπ: 2⁻, 3⁻, 4⁻ from M1 γ to 3⁻; 4⁻ from analysis of level population in (d,p).
92.8? *15*			D	
103.8285 *20*	6⁻#		BC	
106.1 *7*			CD	
162.6591 *19*	2⁻@	≤10 ps	ABCD	$T_{1/2}$: from ^{140}Ba β decay (1965Bu07). Jπ: γ to 3⁻ is M1+(E2), γ to 1⁻ is M1.
272.3060 *20*	4⁻@		BC	Jπ: M1 γ's to 3⁻ and 5⁻.
284.656 *6*	7⁻#		B D	Jπ: 5⁻, 6⁻, 7⁻ from M1 γ to 6⁻; 7⁻ from analysis of level population in (d,p).
318.219 *3*	3⁻@		BcD	XREF: c(320.1). Jπ: M1 γ's to 2⁻ and 4⁻.
320.23? *15*			c	XREF: c(320.1).
322.054 *10*	5⁻,6⁻		Bc	XREF: c(320.1). Jπ: M1 γ's to 6⁻ and M1,E2 γ to 4⁻.
467.63 *3*	1⁻	≤7.7 ps	AB D	Jπ: γ to 162.7, 2⁻ is M1, log *ft*=7.83 (log $f^{1u}t$=7.99) via 0⁺ parent. $T_{1/2}$: from ^{140}Ba β^- decay (1965Bu07).
575.9 *3*	2⁻,3⁻#		B	
581.106 *18*	0⁻		AB D	Jπ: 0⁻, 1⁻, 2⁻ from M1 γ to 467.5, 1⁻; 0⁻ from analysis of level population in (d,p).
591.50 *7*	2⁻#		B	
602.033 *4*	4⁻#@		BCD	
658.279‡ *5*	3⁻		BCD	Jπ: M1 γ's to 162.7, 2⁻ and 602.0, 4⁻; two γ's to 6⁻ can suggest a multiplet level.
671.1 *5*	3,4,5@		C	Jπ: primary γ from 3⁺,4⁺ and γ to 4⁻.
672.977 *15*	4⁻#		B	
711.671 *15*	3⁻#@		B D	
744.711 *11*	4⁻#@		BCD	
755.07 *14*	1⁻,2⁻#		B	
771.425 *6*	4⁻,5⁻,6⁻@		BCD	Jπ: 4⁻,5⁻,6⁻ from M1,E2 γ's to 4⁻ and 6⁻.
776.6 *6*	4⁻@		C	Jπ: γ's to 162.7, 2⁻ and 103.8, 6⁻.
796.270 *24*	2⁻#@		B D	
831.20 *23*	2⁻,3⁻#		B	
905.9 *8*	2⁻#		B	
912.172 *13*	3⁻,4⁻#@		B D	
914.11 *11*	3⁻,4,5⁻		B	Jπ: γ's to 3⁻ and 5⁻.
917.67 *11*	1⁻,2,3,4⁻		B	Jπ: γ's to 2⁻ and 3⁻.
930.3 *8*			D	
941.80 *12*			B	Jπ: both γ's to 3⁻.
968.66 *6*	3⁻,4⁻#@		B	
986.700 *19*	4⁻,5⁻#		B	
1031.6 *5*	4⁻@		C	Jπ: γ's to 162.7, 2⁻ and 48.9, 6⁻.

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Adopted Levels, Gammas (continued)

^{140}La Levels (continued)

E(level)[†]	J^π	XREF	Comments
1035.630[‡] *17*	4^-[#@]	B D	
1037.6 *5*	$3^-,4,5^-$[@]	C	J^π: γ's g.s., 3^- and 34.6, 5^-.
1055.042 *8*	$4^-,5^-$[#@]	BCD	
1076.9 *14*	$2^-,3^-,4^-,5^-$[#]	D	
1093.58 *8*		B	J^π: γ to 3^-.
1097.27 *15*	[@]	B	
1100.934 *20*	$3^-,4^-$[#]	BCD	
1109.77 *3*	$3^-,4^-$[@]	B	
1116.758 *21*	$2^-,3^-,4^-,5^-$[#@]	BCD	
1137.5 *7*	$3^-,4,5^-$[@]	CD	J^π: γ's g.s., 3^- and 34.6, 5^-.
1147.42 *20*	[@]	B D	
1161.06 *12*	$2^-,3,4^-$[@]	BC	J^π: γ's 162.7, 2^- and 63.2, 4^-.
1169.1 *10*		D	
1187.39 *4*	$2^-,3,4,5^-$[@]	BC	J^π: γ's g.s, 3^- and 563.2, 4^-.
1190.50 *12*	[@]	B D	
1201.0[‡] *4*	$4^-,5^-$[@]	C	J^π: γ's to g.s., 3^-, 63.2, 4^-, and 103.8, 6^-.
1207.35 *9*	[@]	B	
1209.80 *3*	[@]	BCD	
1227.1 *17*		D	
1245.6 *6*		D	
1254.78 *13*	[@]	B	
1259.970[‡] *24*	$4^-,5^-$[@]	BC	J^π: γ's to g.s., 3^- and 48.9, 6^-.
1264.6 *5*	$3^-,4,5$[@]	CD	J^π: primary γ from $3^+,4^+$; γ's to 63.2, 4^- and 34.6, 5^-.
1279.9 *8*		D	
1284.12 *7*	[@]	B	
1288.2[‡] *5*	$3^-,4,5$[@]	C	J^π: primary γ from $3^+,4^+$; γ's to 63.2, 4^- and 34.6, 5^-.
1295.48 *11*	[@]	B D	
1312.5 *14*		D	
1328.0 *22*		D	
1339.55 *4*	[@]	Bc	XREF: c(1340.0). J^π: γ to 5^-.
1340.72 *7*	$3^-,4^{(-)},5^-$[#@]	BcD	XREF: c(1340.0). J^π: $3^-,4,5^-$ from γ's to 3^- and 5^-; π=(−) from L(d,p).
1352.2 *10*	$(^-)$[#]	D	
1370.2 *9*		D	
1389.1 *7*	$2,3,4^-$[@]	CD	J^π: primary γ from $3^+,4^+$; γ's 2^- and 3^-.
1403.3 *6*	$^-$[#]	D	
1416.08? *4*	$3^-,4,5,6^+$[#@]	BC	J^π: γ from $3^+,4^+$; γ to 5^-.
1418.4 *9*	$^-$[#]	D	
1422.39 *4*	[@]	B	
1423.87 *16*	$4^-,5$[@]	C	J^π: primary γ from $3^+,4^+$; γ's to 4^- and 6^-.
1425.65 *4*	[@]	B	
1427.9 *6*	$3^-,4^-$[@]	C	J^π: γ's 2^- and 5^-.
1430.3 *10*	[@]	c	XREF: c(1433.8).
1433.291[‡] *24*	$4^-,5^-$[#@]	BcD	XREF: c(1433.8). J^π: primary γ from $3^+,4^+$; γ's to 5^- and 6^-; π=− from L(d,p)=3.
1436.6 *4*	[@]	c	XREF: c(1433.8).

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Adopted Levels, Gammas (continued)

^{140}La Levels (continued)

E(level)†	Jπ	XREF	Comments
			Jπ: γ to 4−.
1442.630 *24*	−#@	B	
1444.4 *3*	2−,3−,4−#@	CD	Jπ: primary γ from 3+,4+; γ from 4−; π=− from L(d,p).
1448.9 *9*	4−,5,6+@	C	Jπ: primary γ from 3+,4+; γ to 6−.
1461.1 *8*	−#	D	
1469.60 *3*	@	B	
1477.06 *3*	@	Bc	XREF: c(1478.4). Jπ: γ to 4−.
1479.3 *9*	−#@	cD	XREF: c(1478.4). Jπ: γ to 4−.
1481.330‡ *24*	@	Bc	XREF: c(1482.0). Jπ: γ to 5−.
1482.53? *20*	2−,3,4,5−@	c	XREF: c(1482.0). Jπ: γ's to 3− and 4−.
1483.25? *17*	@	c	XREF: c(1482.0).
1486.40? *24*	4−@	c	XREF: c(1482.0,1487.5). Jπ: γ's to 2− and 6−.
1493.5 *9*	−#@	cD	XREF: c(1495.6). Jπ: γ to 6−.
1495.342‡ *24*	4−@	Bc	XREF: c(1495.6). Jπ: γ's to 2− and 6−.
1499.3? *9*	@	C	
1508.2 *22*	−#	D	
1519.3 *9*	−#	D	
1527.5 *3*	−#@	B D	
1532.29 *10*	@	B	
1547.67 *6*	4−,5@	Bc	XREF: c(1551.6). Jπ: primary γ from 3+,4+; γ's to 4− and 6−.
1550.936‡ *24*	4−@	Bc	XREF: c(1551.6). Jπ: γ's to 2− and 6−.
1554.505‡ *24*	4−,5−#@	BCD	Jπ: primary γ from 3+,4+; and γ's to 272, 4−, and 49, 6− and 104; π=− from L(d,p).
1564.50‡ *4*	3−,4,5@	BC	Jπ: primary γ from 3+,4+; γ's 4− and 5−.
1568.9 *7*	−#	D	
1577.6 *5*	@	B	
1580.06 *4*	@	Bc	XREF: c(1581.5). Jπ: γ to 3−.
1581.5 *6*	−#@	cD	XREF: c(1581.5).
1596.09 *4*	@	BC	Jπ: γ to 6−.
1600.1 *9*		D	
1617.97 *6*	(−)#@	B D	
1621.69 *8*	@	B	
1630.2 *10*	(−)#	D	
1635.99 *4*	@	BC	
1643.6 *11*	(−)#	D	
1651.79 *4*	@	BC	
1655.39 *20*	2−,3(−),4(−),5(−)#@	BcD	XREF: c(1658.0). Jπ: 2−,3,4,5 from primary γ from 3+,4+ and γ to 4−; π=(−) from L(d,p).

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Adopted Levels, Gammas (continued)

^{140}La Levels (continued)

E(level)†	J$^{\pi}$	XREF	Comments
1660.86 *8*	@	Bc	XREF: c(1658.0). J$^{\pi}$: γ to 2$^-$.
1663.00 *4*	@	B	
1672.19 *3*	(3$^-$,4$^-$,5$^-$)#@	BCD	J$^{\pi}$: 2$^+$,3,4,5,6$^+$ from primary γ from 3$^+$,4$^+$; (2$^-$,3$^-$,4$^-$,5$^-$) from L(d,p)=(1).
1676.68 *16*	@	B	
1683.82‡ *3*	3$^-$,4,5$^-$ @	Bc	XREF: c(1685.2). J$^{\pi}$: γ's to 3$^-$ and 5$^-$.
1686.7 *3*	($^-$)#@	cD	XREF: c(1685.2). J$^{\pi}$: γ to 5$^-$.
1688.01 *16*	@	BC	
1701.05 *3*	4$^-$#@	BCD	J$^{\pi}$: γ's to 2$^-$ and 6$^-$.
1709.4 *3*	@	B	
1718.76 *3*	4$^-$,5$^-$#@	BcD	XREF: c(1720.9). J$^{\pi}$: primary γ from 3$^+$,4$^+$; π=− from L(d,p); γ from π=− to 6$^-$.
1723.14‡ *4*	3$^-$,4$^-$ @	Bc	XREF: c(1720.9). J$^{\pi}$: γ's to 2$^-$ and 5$^-$.
1730.1 *16*		D	
1735.583‡ *24*	4$^-$ @	BC	J$^{\pi}$: γ's to 2$^-$ and 6$^-$.
1736.67 *3*	@	B	
1743.72‡ *4*	2$^-$,3,4,5$^-$ @	BCD	J$^{\pi}$: γ's to 3$^-$ and 4$^-$.
1748.02 *6*	@	B	
1756.15 *4*	@	B D	
1765.52 *4*	@	B	
1774.59 *16*	@	B	
1777.57 *3*	2$^-$,3$^-$,4$^-$,5$^-$#@	B D	J$^{\pi}$: 2$^-$,3$^-$,4$^-$,5$^-$ from L(d,p)=1.
1789.10 *10*	@	B	
1792.67 *1*	2$^-$,3$^-$,4$^-$,5$^-$#@	B D	J$^{\pi}$: 2$^-$,3$^-$,4$^-$,5$^-$ from L(d,p)=1.
1801.08 *3*	@	B	
1804.95 *6*	@	B	
1810.4 *8*		D	
1813.95 *10*	@	B	
1819.47‡ *4*	4$^-$,5,6$^+$ @	Bc	XREF: c(1816.0,1822.4). J$^{\pi}$: primary γ from 3$^+$,4$^+$; γ's to 5$^-$ and 6$^-$.
1823.14 *6*	3$^-$,4,5$^-$ @	BcD	XREF: c(1822.4). J$^{\pi}$: γ's to 3$^-$ and 5$^-$.
1838.90 *13*	@	Bc	XREF: c(1842.3).
1841.98 *4*	4$^-$ @	BcD	XREF: c(1842.3). J$^{\pi}$: γ's to 2$^-$ and 6$^-$.
1848.65 *10*	2$^-$,3,4,5$^-$ @	BC	J$^{\pi}$: γ's to 3$^-$ and 4$^-$.
1854.09 *12*	@	B	
1859.66 *6*	@	BCD	
1866.43 *6*	@	B	
1871.57 *9*	@	B	
1875.32 *8*	@	B	
1879.715 *24*	4$^-$,5$^-$ @	BC	J$^{\pi}$: γ's to 3$^-$ and 6$^-$.
1895.700 *24*	@	BC	
1902.087 *24*	@	B	

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Adopted Levels, Gammas (continued)

^{140}La Levels (continued)

E(level)[†]	J^π	XREF	Comments
1941.16 *3*	[@]	B	
1947.61 *4*	[@]	B	
1954.74 *18*	[@]	BC	J^π: two γ's to 5^-.
1963.45 *6*	2,3,4^-[@]	BC	J^π: primary γ from 3^+,4^+; γ's to 2^- and 3^-.
1971.89 *3*	4^-,5[@]	BC	J^π: primary γ from 3^+,4^+; γ's to 4^- and 6^-.
1986.20 *4*	[@]	B	
1989.28 *7*	[@]	B	
1997.177 *24*	4^-,5,6^+[@]	BC	J^π: primary γ from 3^+,4^+; γ's to 5^- and 6^-.
2005.91 *6*	[@]	BC	
2018.22 *3*	3^-,4^-[@]	BC	J^π: γ's to 2^- and 5^-.
2023.76 *4*	[@]	B	
2040.13 *11*	[@]	B	
2041.92 *4*	[@]	Bc	XREF: c(2046.0).
2045.03 *3*	4^-,5^-[@]	Bc	XREF: c(2046.0). J^π: γ's to 3^- and 6^-.
2048.59 *3*	[@]	B	
2065.47 *4*	[@]	B	
2069.67 *6*	[@]	B	
2078.009[‡] *24*	4^-,5^-[@]	BC	J^π: γ's to 3^- and 6^-.
2082.17 *6*	[@]	B	
2092.01 *20*	[@]	B	
2094.23 *15*	[@]	B	
2103.31 *6*		B	
2109.48 *5*	[@]	B	
2116.72 *10*	[@]	B	
2120.03 *4*	2^-,3,4^-[@]	Bc	XREF: c(2120.6,2122.7). J^π: γ's to 2^- and 4^-.
2125.41 *3*	4^-[@]	Bc	XREF: c(2122.7,2126.9). J^π: γ's to 2^- and 6^-.
2129.70 *4*	2^-,3,4,5^-[@]	Bc	XREF: c(2126.9). J^π: γ's to 3^- and 4^-.
2143.899 *24*	[@]	B	
2146.5? *12*		c	XREF: c(2147.8).
2148.96 *11*	4^-,5[@]	Bc	XREF: c(2147.8). J^π: primary γ from 3^+,4^+; γ's to 4^- and 6^-.
2159.80 *13*	[@]	B	
2162.61 *5*	[@]	B	
2172.44 *3*	2^-,3,4,5^-[@]	Bc	XREF: c(2172.9). J^π: γ's to 3^- and 4^-.
2175.95 *6*	3^-,4,5,6^+[@]	Bc	XREF: c(2172.9). J^π: primary γ from 3^+,4^+; γ to 5^-.
2183.62 *5*	[@]	B	
2191.70 *4*	[@]	B	
2196.5[‡] *3*	4^-,5^-[@]	BC	J^π: γ's to 3^- and 6^-.
2199.63 *4*	[@]	B	
2203.2 *8*	4^-,5^-[@]	C	J^π: γ's to 3^- and 6^-.
2218.13 *5*	[@]	B	

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Adopted Levels, Gammas (continued)

^{140}La Levels (continued)

E(level)†	J^π	XREF	Comments
2219.73 *6*	@	B	
2231.53 *9*	@	B	
2235.97 *3*	@	B	
2241.24 *6*	@	B	
2244.08 *4*	@	Bc	XREF: c(2245.3). J^π: γ to 4^-.
2247.81 *4*	@	Bc	XREF: c(2245.3).
2257.32 *5*	@	B	
2264.34 *6*	@	B	
2273.50 *13*	@	B	
2277.43 *11*	@	B	
2280.37 *6*	@	B	
2291.83 *13*	@	B	
2297.92 *3*	$4^-,5$@	BC	J^π: primary γ from $3^+,4^+$; γ's to 4^- and 6^-.
2308.42 *4*	@	B	
2311.72 *11*	@	B	
2321.65 *9*	@	B	
2323.47 *4*	$4^-,5,6^+$@	BC	J^π: primary γ from $3^+,4^+$; γ's to 5^- and 6^-.
2332.39 *7*	@	B	
2340.29 *6*	@	B	
2346.09 *15*	@	B	
2351.15 *9*	@	B	
2356.15 *4*	@	B	
2361.32 *6*	@	B	
2369.10 *10*	@	B	
2393.40 *4*	$4^-,5$@	BC	J^π: primary γ from $3^+,4^+$; γ's to 4^- and 6^-.
2396.46 *4*	@	B	
2403.249 *24*	$2^-,3,4^-$@	BC	J^π: γ's to 2^- and 4^-.
2413.33 *4*	@	BC	
2421.98 *4*	@	B	
2425.85 *4*	@	B	
2434.68 *20*	@	B	
2436.72 *4*	@	B	
2446.35 *3*	@	B	
2450.36 *4*	@	B	
2458.60 *6*	@	B	
2462.79 *4*	@	B	
2468.68 *6*	@	B	
2472.89 *3*	@	B	
2483.35 *12*	@	B	
2484.85 *7*	@	B	
2492.98 *4*	@	B	
2499.43 *4*	@	B	
2520.98 *3*	@	B	
2523.01 *6*	@	B	

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Adopted Levels, Gammas (continued)

^{140}La Levels (continued)

E(level)[†]	J$^{\pi}$	XREF	Comments
2539.67 *20*	[@]	B	
2543.22 *4*	[@]	B	
2549.4 *3*	[@]	B	
2553.81 *3*	[@]	B	
2562.82 *4*	[@]	B	
2566.53 *15*	[@]	B	
2596.19 *3*	[@]	B	
2599.13 *3*	[@]	B	
2605.22 *4*	[@]	B	
2622.16 *7*		B	
2628.59 *4*		B	
2643.94 *8*	[@]	B	
2648.43 *17*	[@]	B	
2815.77 *6*	[@]	B	
2939.2 *6*	$3^-,4,5^-$ [@]	C	J$^{\pi}$: γ's to 3^- and 5^-.
3010.1 *7*	[@]	C	
(5161.004 *6*)	$3^+,4^+$ [&]	BC	

[†] From level fit (with primary γ's from (n,γ) E=th and (n,γ) Two γ datasets).
[‡] Possible multiplet levels.
[#] From analysis of level population in (n,γ) (1970Ju04) and (d,p) (1967Ke02). Negative π from L=3 or L=1 in (d,p) (1967Ke02).
[@] Level populated from n-capture state through primary γ.
[&] From s-wave capture on $J^{\pi}=7/2^+$ target.

γ(^{140}La)

Datasets containing unplaced γ's: β- decay, (n,γ) E=th, (n,γ) Two γ.

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[‡&]	α[@]	Comments
29.9641	2⁻	29.9641 *6*	100	0.0	3⁻	M1(+E2)	≤0.009	5.37	B(M1)(W.u.)=0.51 +*11*−*8*; B(E2)(W.u.)<33.2 α(L)=4.26 *6*; α(M)=0.886 *13* α(N)=0.194 *3*; α(O)=0.0315 *5*; α(P)=0.00242 *4* B(M1)(W.u.): 0.51 *9* if pure M1.
34.6463	5⁻	34.6465 *10*	100	0.0	3⁻	E2		116.3	α(L)=91.1 *13*; α(M)=20.3 *3* α(N)=4.27 *6*; α(O)=0.588 *9*; α(P)=0.000664 *10*
43.844	1⁻	13.89 *4*	100 *14*	29.9641	2⁻	M1+E2	0.0100 *55*	53.9 *18*	B(M1)(W.u.)=0.29 +*12*−*7*; B(E2)(W.u.)=9×10^{1} +*21*−*8* α(L)=42.7 *14*; α(M)=8.9 *3* α(N)=1.95 *7*; α(O)=0.315 *10*; α(P)=0.0237 *4*
		43.8[b]	<0.16	0.0	3⁻	[E2]		44.0	α(K)=7.08 *10*; α(L)=28.9 *4*; α(M)=6.46 *9* α(N)=1.360 *19*; α(O)=0.188 *3*; α(P)=0.000465 *7* B(E2)(W.u.)=4.6 +*37*−*18*
48.8843	6⁻	14.2385 *25*	100	34.6463	5⁻	[M1,E2]		4.9×10^{3} *49*	α(L)=3.9×10^{3} *39*; α(M)=8.5×10^{2} *84* α(N)=1.8×10^{2} *18*; α(O)=24 *24*; α(P)=0.0163 *57*
63.1790	4⁻	28.5326 *13*	5.0 *5*	34.6463	5⁻	[M1,E2]		1.5×10^{2} *15*	α(L)=1.2×10^{2} *12*; α(M)=27 *26* α(N)=5.7 *55*; α(O)=0.78 *75*; α(P)=0.00181 *99*
		63.1791 *8*	100 *4*	0.0	3⁻	M1		4.06	α(K)=3.46 *5*; α(L)=0.473 *7*; α(M)=0.0983 *14* α(N)=0.0216 *3*; α(O)=0.00351 *5*; α(P)=0.000270 *4*
103.8285	6⁻	54.9443 *11*	100 *5*	48.8843	6⁻	M1		6.10	α(K)=5.20 *8*; α(L)=0.711 *10*; α(M)=0.1479 *21* α(N)=0.0325 *5*; α(O)=0.00527 *8*; α(P)=0.000406 *6*
		69.1828 *24*	9.6 *4*	34.6463	5⁻	[M1,E2]		5.3 *23*	α(K)=3.0 *4*; α(L)=1.8 *15*; α(M)=0.40 *33* α(N)=0.085 *69*; α(O)=0.0121 *94*; α(P)=0.000191 *18*
162.6591	2⁻	99.49 *2*	0.00031 *20*	63.1790	4⁻	(E2)		2.02	B(E2)(W.u.)≥0.108 α(K)=1.234 *18*; α(L)=0.620 *9*; α(M)=0.1370 *20* α(N)=0.0291 *4*; α(O)=0.00414 *6*; α(P)=6.65×10^{-5} *10* Mult.: D,E2 from comparison to RUL; ≠D from ΔJ=2.
		118.81 *4*	0.98 *12*	43.844	1⁻	M1		0.663	B(M1)(W.u.)≥0.0083 α(K)=0.566 *8*; α(L)=0.0765 *11*; α(M)=0.01591 *23* α(N)=0.00350 *5*; α(O)=0.000568 *8*; α(P)=4.41×10^{-5} *7*
		132.695 *3*	3.25 *8*	29.9641	2⁻	M1		0.485	B(M1)(W.u.)≥0.022 α(K)=0.415 *6*; α(L)=0.0560 *8*; α(M)=0.01163 *17* α(N)=0.00256 *4*; α(O)=0.000416 *6*; α(P)=3.23×10^{-5} *5*
		162.659 *3*	100.0 *12*	0.0	3⁻	M1(+E2)	≤0.08	0.276	B(M1)(W.u.)≥0.377 α(K)=0.236 *4*; α(L)=0.0318 *5*; α(M)=0.00660 *10* α(N)=0.001451 *22*; α(O)=0.000236 *4*; α(P)=1.83×10^{-5} *3*
272.3060	4⁻	209.127 *4*	8.6 *3*	63.1790	4⁻	M1		0.1384	α(K)=0.1184 *17*; α(L)=0.01581 *23*; α(M)=0.00328 *5* α(N)=0.000722 *11*; α(O)=0.0001175 *17*; α(P)=9.19×10^{-6} *13*
		237.660 *4*	63.7 *24*	34.6463	5⁻	M1		0.0980	α(K)=0.0840 *12*; α(L)=0.01117 *16*; α(M)=0.00232 *4* α(N)=0.000510 *8*; α(O)=8.30×10^{-5} *12*; α(P)=6.50×10^{-6} *10*
		242.342 *4*	1.18 *4*	29.9641	2⁻	[E2]		0.0937	α(K)=0.0739 *11*; α(L)=0.01555 *22*; α(M)=0.00334 *5* α(N)=0.000718 *10*; α(O)=0.0001084 *16*; α(P)=4.77×10^{-6} *7*

272.306 *4*	100 *4*	0.0	3^-	M1	0.0682	α(K)=0.0585 *9*; α(L)=0.00774 *11*; α(M)=0.001607 *23* α(N)=0.000353 *5*; α(O)=5.76×10^{-5} *8*; α(P)=4.52×10^{-6} *7*

$^{140}_{57}La_{83}$-10

$\gamma(^{140}La)$ (continued)

E_i(level)	J^π_i	E_γ †	I_γ †	E_f	J^π_f	Mult. ‡	δ ‡&	α @	Comments
284.656	7⁻	180.827 *8*	5.8 *19*	103.8285	6⁻	[M1,E2]		0.228 *23*	α(K)=0.182 *7*; α(L)=0.036 *13*; α(M)=0.0077 *29* α(N)=0.00167 *60*; α(O)=2.55×10⁻⁴ *80*; α(P)=1.26×10⁻⁵ *11*
		235.771 *8*	100 *4*	48.8843	6⁻	M1		0.1002	α(K)=0.0858 *12*; α(L)=0.01141 *16*; α(M)=0.00237 *4* α(N)=0.000521 *8*; α(O)=8.48×10⁻⁵ *12*; α(P)=6.64×10⁻⁶ *10*
318.219	3⁻	45.913 *6*	1.6 *1*	272.3060	4⁻	M1		10.27	α(K)=8.75 *13*; α(L)=1.205 *17*; α(M)=0.251 *4* α(N)=0.0550 *8*; α(O)=0.00893 *13*; α(P)=0.000687 *10*
		155.560 *5*	26 *1*	162.6591	2⁻	M1		0.312	α(K)=0.266 *4*; α(L)=0.0358 *5*; α(M)=0.00744 *11* α(N)=0.001636 *23*; α(O)=0.000266 *4*; α(P)=2.07×10⁻⁵ *3*
		255.040 *5*	2.3 *6*	63.1790	4⁻	[M1,E2]		0.0802 *15*	α(K)=0.066 *4*; α(L)=0.0110 *19*; α(M)=0.0023 *5* α(N)=0.00051 *9*; α(O)=7.9×10⁻⁵ *11*; α(P)=4.7×10⁻⁶ *7*
		288.255 *5*	100 *4*	29.9641	2⁻	M1		0.0587	α(K)=0.0503 *7*; α(L)=0.00665 *10*; α(M)=0.001380 *20* α(N)=0.000304 *5*; α(O)=4.95×10⁻⁵ *7*; α(P)=3.89×10⁻⁶ *6*
322.054	5⁻,6⁻	49.748 *22*	0.64 *8*	272.3060	4⁻	[M1,E2]		17.3 *92*	α(K)=6.72 *24*; α(L)=8.3 *74*; α(M)=1.8 *17* α(N)=0.39 *35*; α(O)=0.054 *48*; α(P)=0.00045 *9*
		218.225 *22*	100 *4*	103.8285	6⁻	M1		0.1233	α(K)=0.1056 *15*; α(L)=0.01408 *20*; α(M)=0.00292 *4* α(N)=0.000643 *9*; α(O)=0.0001046 *15*; α(P)=8.19×10⁻⁶ *12*
		258.875 *22*	2.99 *12*	63.1790	4⁻	M1,E2		0.0767 *17*	α(K)=0.063 *4*; α(L)=0.0105 *17*; α(M)=0.0022 *4* α(N)=0.00048 *8*; α(O)=7.5×10⁻⁵ *10*; α(P)=4.5×10⁻⁶ *7*
		287.408 *22*	1.7 *5*	34.6463	5⁻				
467.63	1⁻	305.04 *8*	100.0 *11*	162.6591	2⁻	M1(+E2)	≤+0.1	0.0506	α(K)=0.0433 *6*; α(L)=0.00573 *8*; α(M)=0.001189 *17* α(N)=0.000261 *4*; α(O)=4.26×10⁻⁵ *6*; α(P)=3.34×10⁻⁶ *5* B(M1)(W.u.)≥0.0439
		423.84 *8*	72.2 *6*	43.844	1⁻	M1		0.0217	α(K)=0.0186 *3*; α(L)=0.00243 *4*; α(M)=0.000503 *7* α(N)=0.0001107 *16*; α(O)=1.81×10⁻⁵ *3*; α(P)=1.429×10⁻⁶ *20* B(M1)(W.u.)≥0.0119
		437.73 *8*	44.94 *23*	29.9641	2⁻	M1		0.0200	α(K)=0.01715 *24*; α(L)=0.00224 *4*; α(M)=0.000463 *7* α(N)=0.0001019 *15*; α(O)=1.663×10⁻⁵ *24*; α(P)=1.316×10⁻⁶ *19* B(M1)(W.u.)≥0.00673
		467.5[b]	≤0.01	0.0	3⁻				
575.9	2⁻,3⁻	413.2 *5*	100	162.6591	2⁻				
581.106	0⁻	113.51 *3*	0.066 *5*	467.63	1⁻	M1		0.754	α(K)=0.644 *9*; α(L)=0.0871 *13*; α(M)=0.0181 *3* α(N)=0.00398 *6*; α(O)=0.000647 *9*; α(P)=5.02×10⁻⁵ *7*
		418.44 *4*	0.015 *1*	162.6591	2⁻				
		537.261 *9*	100.0 *3*	43.844	1⁻	M1		0.01196	α(K)=0.01028 *15*; α(L)=0.001332 *19*; α(M)=0.000276 *4* α(N)=6.06×10⁻⁵ *9*; α(O)=9.90×10⁻⁶ *14*; α(P)=7.86×10⁻⁷ *11*
		551.08 *4*	0.0128 *8*	29.9641	2⁻				
591.50	2⁻	123.82 *13*	9.2 *5*	467.63	1⁻	[M1,E2]		0.76 *18*	α(K)=0.57 *7*; α(L)=0.153 *85*; α(M)=0.033 *19* α(N)=0.0071 *40*; α(O)=0.00105 *55*; α(P)=3.74×10⁻⁵ *20*
		528.34 *11*	100 *4*	63.1790	4⁻				
		547.67 *12*		43.844	1⁻				

Adopted Levels, Gammas (continued)

$\gamma(^{140}La)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[@]	Comments
602.033	4⁻	279.979 22	19.1 7	322.054	5⁻,6⁻	M1,E2	0.061 3	α(K)=0.051 4; α(L)=0.0081 10; α(M)=0.00172 23 α(N)=0.00037 5; α(O)=5.9×10^{-5} 6; α(P)=3.7×10^{-6} 6
		329.727 12	4.18 15	272.3060	4⁻			
		538.854 12	13.6 5	63.1790	4⁻	M1,E2	0.0101 18	α(K)=0.0086 16; α(L)=0.00119 13; α(M)=0.00025 3 α(N)=5.4×10^{-5} 6; α(O)=8.8×10^{-6} 11; α(P)=6.4×10^{-7} 14
		553.148 12	18.0 7	48.8843	6⁻	E2	0.00786	α(K)=0.00661 10; α(L)=0.000987 14; α(M)=0.000207 3 α(N)=4.51×10^{-5} 7; α(O)=7.14×10^{-6} 10; α(P)=4.72×10^{-7} 7
		567.386 12	100 4	34.6463	5⁻	M1	0.01045	α(K)=0.00899 13; α(L)=0.001162 17; α(M)=0.000240 4 α(N)=5.29×10^{-5} 8; α(O)=8.64×10^{-6} 12; α(P)=6.87×10^{-7} 10
		602.032 12	15.6 6	0.0	3⁻			
658.279	3⁻	56.246 7	4.5 5	602.033	4⁻	M1	5.69	α(K)=4.86 7; α(L)=0.664 10; α(M)=0.1381 20 α(N)=0.0303 5; α(O)=0.00492 7; α(P)=0.000380 6
		190.59 8		467.63	1⁻	[E2]	0.210	α(K)=0.1594 23; α(L)=0.0395 6; α(M)=0.00854 12 α(N)=0.00183 3; α(O)=0.000272 4; α(P)=9.83×10^{-6} 14
		495.620 13	79 3	162.6591	2⁻	M1	0.01462	α(K)=0.01256 18; α(L)=0.001631 23; α(M)=0.000338 5 α(N)=7.43×10^{-5} 11; α(O)=1.212×10^{-5} 17; α(P)=9.62×10^{-7} 14
		554.9[b] 7	10 3	103.8285	6⁻			
		595.099 12	100 4	63.1790	4⁻	M1,E2	0.0079 14	α(K)=0.0067 13; α(L)=0.00092 12; α(M)=0.000191 23 α(N)=4.2×10^{-5} 6; α(O)=6.7×10^{-6} 10; α(P)=5.0×10^{-7} 11
		611.3[b] 12	13 6	48.8843	6⁻			
		623.632 12	50.2 19	34.6463	5⁻	E2	0.00576	α(K)=0.00487 7; α(L)=0.000705 10; α(M)=0.0001473 21 α(N)=3.22×10^{-5} 5; α(O)=5.12×10^{-6} 8; α(P)=3.51×10^{-7} 5
		628.314 12	27.6 11	29.9641	2⁻	M1	0.00814	α(K)=0.00700 10; α(L)=0.000902 13; α(M)=0.000187 3 α(N)=4.11×10^{-5} 6; α(O)=6.71×10^{-6} 10; α(P)=5.34×10^{-7} 8
		658.278 12	100 4	0.0	3⁻	M1	0.00727	α(K)=0.00626 9; α(L)=0.000805 12; α(M)=0.0001664 24 α(N)=3.66×10^{-5} 6; α(O)=5.98×10^{-6} 9; α(P)=4.77×10^{-7} 7
671.1	3,4,5	565.0 8	55 19	106.1				
		608.3 6	100 28	63.1790	4⁻			
672.977	4⁻	97.1 5		575.9	2⁻,3⁻	[M1,E2]	1.69 52	α(K)=1.17 17; α(L)=0.41 28; α(M)=0.091 63 α(N)=0.019 14; α(O)=0.0028 18; α(P)=7.5×10^{-5} 4
		638.33 3	100	34.6463	5⁻			
711.671	3⁻	38.6948 15		672.977	4⁻	[M1,E2]	35 33	α(L)=27 26; α(M)=6.1 57 α(N)=1.3 12; α(O)=0.18 17; α(P)=8.5×10^{-4} 29
		549.01 3	100 4	162.6591	2⁻	M1	0.01134	α(K)=0.00975 14; α(L)=0.001261 18; α(M)=0.000261 4 α(N)=5.74×10^{-5} 8; α(O)=9.38×10^{-6} 14; α(P)=7.45×10^{-7} 11
		681.71 3	7 4	29.9641	2⁻			
744.711	4⁻	86.43 3		658.279	3⁻	[M1,E2]	2.50 86	α(K)=1.63 24; α(L)=0.68 49; α(M)=0.15 11 α(N)=0.032 24; α(O)=0.0046 32; α(P)=0.000104 6
		422.66 4	100 4	322.054	5⁻,6⁻			
		426.49 3	11.8 4	318.219	3⁻			
		582.05 3	0.70 3	162.6591	2⁻			
		640.88 4	14.4 5	103.8285	6⁻			

Adopted Levels, Gammas (continued)

γ(^{140}La) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	α[@]	Comments
744.711	4^-	681.53 *3*	3.5 *11*	63.1790	4^-			
		710.07 *3*	18.1 *7*	34.6463	5^-			
		744.71 *3*	2.7 *11*	0.0	3^-			
755.07	$1^-,2^-$	179.2 *5*		575.9	$2^-,3^-$			
		711.22 *20*	100 *4*	43.844	1^-			
		725.11 *20*	76 *3*	29.9641	2^-			
771.425	$4^-,5^-,6^-$	169.392 *10*	18.0 *7*	602.033	4^-	M1,E2	0.28 *4*	α(K)=0.222 *12*; α(L)=0.046 *18*; α(M)=0.0098 *40* α(N)=0.00212 *84*; α(O)=3.2×10^{-4} *12*; α(P)=1.52×10^{-5} *12*
		608.4 *6*	7.2 *19*	162.6591	2^-			
		667.594 *14*	27.4 *10*	103.8285	6^-	M1,E2	0.0059 *11*	α(K)=0.0051 *10*; α(L)=0.00068 *10*; α(M)=0.000142 *20* α(N)=3.1×10^{-5} *5*; α(O)=5.0×10^{-6} *8*; α(P)=3.8×10^{-7} *9*
		708.244 *14*	63.2 *24*	63.1790	4^-	M1,E2	0.0051 *10*	α(K)=0.0044 *9*; α(L)=0.00059 *9*; α(M)=0.000122 *18* α(N)=2.7×10^{-5} *4*; α(O)=4.3×10^{-6} *7*; α(P)=3.3×10^{-7} *7*
		722.538 *14*	100 *4*	48.8843	6^-	M1+E2	0.0049 *9*	α(K)=0.0042 *8*; α(L)=0.00056 *9*; α(M)=0.000116 *17* α(N)=2.5×10^{-5} *4*; α(O)=4.1×10^{-6} *7*; α(P)=3.1×10^{-7} *7*
		736.777 *14*	18.3 *7*	34.6463	5^-			
776.6	4^-	613.9 *8*	100 *33*	162.6591	2^-			
		673.5 *11*	51 *21*	103.8285	6^-			
796.270	2^-	215.02[b] *16*	61 *15*	581.106	0^-	[E2]	0.1394	α(K)=0.1082 *16*; α(L)=0.0246 *4*; α(M)=0.00529 *8* α(N)=0.001137 *17*; α(O)=0.0001703 *25*; α(P)=6.83×10^{-6} *10*
		478.05 *5*	100 *4*	318.219	3^-			
		766.30 *5*	31.2 *12*	29.9641	2^-			
		796.27 *5*	39.8 *15*	0.0	3^-			
831.20	$2^-,3^-$	34.61[b] *4*		796.270	2^-	[M1,E2]	60 *57*	α(L)=47 *45*; α(M)=10 *10* α(N)=2.2 *21*; α(O)=0.31 *29*; α(P)=0.00112 *46*
		172.9 *4*		658.279	3^-	[M1,E2]	0.26 *3*	α(K)=0.209 *10*; α(L)=0.043 *16*; α(M)=0.0091 *36* α(N)=0.00197 *75*; α(O)=3.0×10^{-4} *11*; α(P)=1.43×10^{-5} *12*
		558.9 *4*		272.3060	4^-			
		787.3[b] *4*		43.844	1^-			
		831.2 *4*		0.0	3^-			
905.9	2^-	150.93		755.07	$1^-,2^-$	[M1,E2]	0.40 *7*	α(K)=0.313 *25*; α(L)=0.071 *32*; α(M)=0.0152 *72* α(N)=0.0033 *15*; α(O)=4.9×10^{-4} *21*; α(P)=2.12×10^{-5} *14*
		194.04		711.671	3^-	[M1,E2]	0.183 *14*	α(K)=0.148 *4*; α(L)=0.0281 *87*; α(M)=0.0060 *20* α(N)=0.00130 *41*; α(O)=1.99×10^{-4} *55*; α(P)=1.03×10^{-5} *10*
912.172	$3^-,4^-$	115.90 *6*	6.5 *2*	796.270	2^-	[M1,E2]	0.94 *24*	α(K)=0.69 *9*; α(L)=0.20 *12*; α(M)=0.043 *27* α(N)=0.0093 *56*; α(O)=0.00137 *76*; α(P)=4.52×10^{-5} *23*
		167.46 *4*	8.4 *4*	744.711	4^-	[M1,E2]	0.29 *4*	α(K)=0.229 *13*; α(L)=0.048 *19*; α(M)=0.0103 *42* α(N)=0.00221 *89*; α(O)=3.4×10^{-4} *12*; α(P)=1.57×10^{-5} *13*
		310.14 *3*	33.0 *13*	602.033	4^-			
		848.99 *5*	52.0 *20*	63.1790	4^-			
		863.28 *3*	26.7 *11*	48.8843	6^-			
		868.32 *5*	100 *4*	43.844	1^-			

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Adopted Levels, Gammas (continued)

γ(^{140}La) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f
912.172	$3^-,4^-$	882.21 *3*	61.5 *23*	29.9641	2^-
914.11	$3^-,4,5^-$	169.39 *19*		744.711	4^-
		202.44 *19*		711.671	3^-
		592.05 *18*		322.054	$5^-,6^-$
917.67	$1^-,2,3,4^-$	341.8 *5*	13.5 *5*	575.9	$2^-,3^-$
		887.70 *11*	100 *4*	29.9641	2^-
941.80		283.52 *17*		658.279	3^-
		941.79 *17*		0.0	3^-
968.66	$3^-,4^-$	968.66[b] *8*	100	0.0	3^-
986.700	$4^-,5^-$	986.696[b] *19*	100	0.0	3^-
1031.6	4^-	869.6 *7*	100 *27*	162.6591	2^-
		924.8 *12*	42 *21*	106.1	
		983.1 *10*	88 *31*	48.8843	6^-
1035.630	4^-	290.92 *3*	100 *4*	744.711	4^-
		323.96 *4*	27.5 *12*	711.671	3^-
		986.74 *3*	48 *24*	48.8843	6^-
1037.6	$3^-,4,5^-$	1004.9 *8*	82 *24*	34.6463	5^-
		1036.5 *6*	100 *25*	0.0	3^-
1055.042	$4^-,5^-$	283.617 *16*	76 *3*	771.425	$4^-,5^-,6^-$
		782.733 *20*	74 *3*	272.3060	4^-
		991.859 *20*	91 *4*	63.1790	4^-
		1006.153 *20*	64.9 *24*	48.8843	6^-
		1020.392 *20*	100 *4*	34.6463	5^-
		1055.038 *20*	28 *9*	0.0	3^-
1093.58		1093.58[b] *8*	100	0.0	3^-
1100.934	$3^-,4^-$	937.6 *9*	62 *22*	162.6591	2^-
		1038.8 *10*	63 *25*	63.1790	4^-
		1101.3 *7*	100 *27*	0.0	3^-
1116.758	$2^-,3^-,4^-,5^-$	1054.0 *7*	41 *12*	63.1790	4^-
		1116.4 *3*	100 *13*	0.0	3^-
1137.5	$3^-,4,5^-$	1101.8 *10*	100 *38*	34.6463	5^-
		1139.2 *13*	84 *39*	0.0	3^-
1161.06	$2^-,3,4^-$	1000.9 *9*	56 *21*	162.6591	2^-
		1097.6 *6*	100 *25*	63.1790	4^-
1187.39	$2^-,3,4,5^-$	1125.2 *5*	100 *20*	63.1790	4^-
		1187.9 *10*	56 *21*	0.0	3^-
1201.0	$4^-,5^-$	883.7 *8*	100 *31*	318.219	3^-
		1096.1 *5*	62 *13*	103.8285	6^-
		1137.5 *8*	84 *25*	63.1790	4^-
		1203.9 *11*	65 *26*	0.0	3^-
1209.80		890.4[b] *5*	100	320.23?	
1259.970	$4^-,5^-$	939.7 *2*	100 *11*	320.23?	
1259.970	$4^-,5^-$	986.0 *8*	9 *3*	272.3060	4^-
		1213.3 *8*	22 *7*	48.8843	6^-
		1225.2 *5*	55 *43*	34.6463	5^-
		1260.2 *2*	95 *10*	0.0	3^-
1264.6	$3^-,4,5$	1202.1 *12*	73 *31*	63.1790	4^-
		1229.7 *10*	100 *36*	34.6463	5^-
1288.2	$3^-,4,5$	1224.0 *7*	100 *27*	63.1790	4^-
		1255.0 *8*	72 *22*	34.6463	5^-
1339.55		1304.7 *7*	100	34.6463	5^-
1340.72	$3^-,4^{(-)},5^-$	1291.8 *7*	100 *29*	48.8843	6^-
		1340.71 *9*	49 *20*	0.0	3^-
1389.1	$2,3,4^-$	1228.6 *15*	87 *48*	162.6591	2^-
		1388.3 *10*	100 *36*	0.0	3^-
1416.08?	$3^-,4,5,6^+$	1379.4[b] *9*	100	34.6463	5^-
1423.87	$4^-,5$	1103.5 *3*	100 *14*	320.23?	
		1152.1 *11*	9 *4*	272.3060	4^-
		1320.3 *7*	24 *6*	103.8285	6^-
		1360.5 *8*	30 *9*	63.1790	4^-
		1375.6 *7*	29 *8*	48.8843	6^-
1427.9	$3^-,4^-$	1267.4 *12*	71 *32*	162.6591	2^-
		1392.5 *7*	100 *25*	34.6463	5^-
1430.3		1367.3[ab] *11*	100[a]	63.1790	4^-
1433.291	$4^-,5^-$	1330.0[#] *1*	86 *6*	103.8285	6^-
		1367.3[ab] *11*	19[a] *7*	63.1790	4^-
		1385.0[#] *2*	100 *9*	48.8843	6^-
		1398.7 *3*	59 *7*	34.6463	5^-
1436.6		1164.3 *4*	100	272.3060	4^-
1444.4	$2^-,3^-,4^-$	1124.1 *6*	100 *23*	320.23?	
		1381.7 *12*	42 *20*	63.1790	4^-
1448.9	$4^-,5,6^+$	1400.1 *12*	100	48.8843	6^-
1477.06		1207.1[ab] *4*	34[a] *7*	272.3060	4^-
		1414.6 *6*	100 *23*	63.1790	4^-
1479.3	$^-$	1207.1[ab] *4*	100[a]	272.3060	4^-
1481.330		1447.0[#] *1*	100	34.6463	5^-
1482.53?	$2^-,3,4,5^-$	1419.2[b] *3*	100 *12*	63.1790	4^-
		1483.0[b] *6*	18 *4*	0.0	3^-
1483.25?		1163.2[b] *3*	100 *13*	320.23?	
		1379.8[b] *9*	18 *6*	103.8285	6^-
1486.40?	4^-	1168.1[b] *6*	100 *23*	318.219	3^-
		1213.4[b] *5*	37 *9*	272.3060	4^-
		1324.1[b] *10*	48 *18*	162.6591	2^-
		1437.8[b] *8*	51 *14*	48.8843	6^-

Adopted Levels, Gammas (continued)

γ(^{140}La) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f
1486.40?	4^-	1452.4[b] *6*	80 *17*	34.6463	5^-
1493.5	$^-$	1332.3[ab] *8*	60[a] *19*	162.6591	2^-
		1444.8[ab] *5*	100[a] *16*	48.8843	6^-
1495.342	4^-	1222.8 *5*	5.2 *14*	272.3060	4^-
		1332.3[ab] *8*	10[a] *3*	162.6591	2^-
		1395.0 *14*	3.7 *18*	103.8285	6^-
		1432.5 *2*	51 *5*	63.1790	4^-
		1444.8[ab] *5*	16[a] *3*	48.8843	6^-
		1495.6 *1*	100 *5*	0.0	3^-
1499.3?		1464.9[ab] *7*	100[a]	34.6463	5^-
1547.67	4^-,5	1276.7 *8*	57 *18*	272.3060	4^-
		1499.0 *10*	100 *35*	48.8843	6^-
1550.936	4^-	1232.5 *3*	100 *13*	318.219	3^-
		1388.6 *9*	18 *6*	162.6591	2^-
		1446.1 *8*	17 *5*	103.8285	6^-
		1489.0[#] *3*	82 *10*	63.1790	4^-
		1516.6 *3*	42 *6*	34.6463	5^-
1554.505	4^-,5^-	1283.6 *5*	21 *5*	272.3060	4^-
		1452.1[#] *4*	56 *7*	103.8285	6^-
		1506.3[#] *2*	100 *16*	48.8843	6^-
1564.50	3^-,4,5	1291.4 *11*	38 *16*	272.3060	4^-
		1502.6 *14*	97 *45*	63.1790	4^-
		1527.2 *9*	100 *32*	34.6463	5^-
1580.06		1420.1[ab] *4*	100[a] *17*	162.6591	2^-
		1580.4 *8*	47 *14*	0.0	3^-
1581.5	$^-$	1420.1[ab] *4*	100[a]	162.6591	2^-
1596.09		1493.1[b] *8*	100	103.8285	6^-
1635.99		1637.2[b] *12*	100	0.0	3^-
1651.79		1330.8[b] *9*	100	320.23?	
1655.39	2^-,$3^{(-)}$,$4^{(-)}$,$5^{(-)}$	1384.7 *16*	100	272.3060	4^-
1660.86		1496.8 *7*	100	162.6591	2^-
1672.19	(3^-,4^-,5^-)	1621.7[b] *8*	100	48.8843	6^-
1683.82	3^-,4,5^-	1361.3 *15*	52 *27*	322.054	5^-,6^-
		1413.3 *8*	22 *7*	272.3060	4^-
		1620.4 *4*	100 *15*	63.1790	4^-
		1684.7 *5*	68 *13*	0.0	3^-
1686.7	($^-$)	1652.1 *3*	100	34.6463	5^-
1688.01		1368.2[b] *11*	100	320.23?	
1701.05	4^-	1538.2 *11*	46 *18*	162.6591	2^-
		1598.5 *13*	33 *16*	103.8285	6^-
		1701.1 *5*	100 *18*	0.0	3^-
1718.76	4^-,5^-	1397.6[b] *4*	100 *16*	322.054	5^-,6^-
		1615.1 *3*	67 *7*	103.8285	6^-
1723.14	3^-,4^-	1405.5 *8*	100 *31*	318.219	3^-
		1451.1 *6*	32 *8*	272.3060	4^-
		1562.5 *11*	40 *16*	162.6591	2^-
		1691.5 *11*	40 *15*	34.6463	5^-
1735.583	4^-	1418.1 *6*	37 *9*	318.219	3^-
		1464.6 *15*	4.1 *21*	272.3060	4^-
		1573.1 *7*	16 *5*	162.6591	2^-
		1632.0 *1*	100 *7*	103.8285	6^-
		1673.2 *5*	29 *5*	63.1790	4^-
		1702.3[#] *4*	27 *4*	34.6463	5^-
		1735.5 *12*	14 *5*	0.0	3^-
1743.72	2^-,3,4,5^-	1471.3 *12*	30 *13*	272.3060	4^-
		1681.4 *8*	100 *29*	63.1790	4^-
		1740.7 *13*	76 *31*	0.0	3^-
1756.15		1653.9[b] *5*	100	103.8285	6^-
1765.52		1730.9[b] *10*	100	34.6463	5^-
1777.57	2^-,3^-,4^-,5^-	1777.1[b] *7*	100	0.0	3^-
1792.67	2^-,3^-,4^-,5^-	1793.3[b] *11*	100	0.0	3^-
1819.47	4^-,5,6^+	1495.3 *8*	100 *29*	322.054	5^-,6^-
		1714.9 *16*	23 *12*	103.8285	6^-
		1753.7 *10*	48 *16*	63.1790	4^-
1823.14	3^-,4,5^-	1501.9 *13*	100 *42*	322.054	5^-,6^-
		1826.3 *15*	42 *21*	0.0	3^-
1838.90		1840.8[ab] *14*	100[a]	0.0	3^-
1841.98	4^-	1570.1 *8*	33 *10*	272.3060	4^-
		1680.9 *11*	55 *21*	162.6591	2^-
		1738.7 *4*	100 *17*	103.8285	6^-
		1840.8[ab] *14*	40[a] *19*	0.0	3^-
1848.65	2^-,3,4,5^-	1787.3 *12*	87 *35*	63.1790	4^-
		1849.5 *9*	100 *33*	0.0	3^-
1859.66		1756.2[b] *9*	100	103.8285	6^-
1879.715	4^-,5^-	1777.4 *9*	27 *8*	103.8285	6^-
		1817.0 *8*	37 *11*	63.1790	4^-
		1845.0 *9*	32 *10*	34.6463	5^-
		1879.6 *2*	100 *10*	0.0	3^-

Adopted Levels, Gammas (continued)

$\gamma(^{140}La)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f
1895.700		1623.2[b] 3	100	272.3060	4^-
1954.74		1632.7 6	100 24	322.054	5^-,6^-
		1919.6 10	44 16	34.6463	5^-
1963.45	2,3,4^-	1803.1 14	67 33	162.6591	2^-
		1965.5 15	100 45	0.0	3^-
1971.89	4^-,5	1650.6 5	69 14	322.054	5^-,6^-
		1700.4 10	10 4	272.3060	4^-
		1868.4 2	100 8	103.8285	6^-
		1909.4 9	30 9	63.1790	4^-
1989.28		1955.4[b] 10	100	34.6463	5^-
1997.177	4^-,5,6^+	1949.8[#] 5	100 18	48.8843	6^-
		1962.3 6	93 20	34.6463	5^-
2005.91		1960.3[b] 14	100	43.844	1^-
2018.22	3^-,4^-	1697.1 12	63 25	320.23?	
		1855.7 13	34 15	162.6591	2^-
		1912.8 10	33 12	106.1	
		1954.9 5	100 17	63.1790	4^-
		1983.6 13	36 16	34.6463	5^-
2041.92		1993.0[ab] 6	100[a]	48.8843	6^-
2045.03	4^-,5^-	1727.2 3	100 14	318.219	3^-
		1941.4 10	20 7	103.8285	6^-
		1993.0[ab] 6	40[a] 8	48.8843	6^-
		2044.4 15	19 10	0.0	3^-
2069.67		1797.5[b] 10	100	272.3060	4^-
2078.009	4^-,5^-	1758.7 4	39 5	318.219	3^-
		1804.8 6	5.5 14	272.3060	4^-
		1974.6[#] 1	100 5	103.8285	6^-
		2030.4 8	9.3 25	48.8843	6^-
2120.03	2^-,3,4^-	1800.7 13	100 42	320.23?	
		1848.9 11	27 10	272.3060	4^-
		1958.7 12	69 27	162.6591	2^-
2125.41	4^-	1806.6 6	100 20	318.219	3^-
		1963.9 20	19 12	162.6591	2^-
		2075.4 9	30 9	48.8843	6^-
		2090.9 7	45 10	34.6463	5^-
2129.70	2^-,3,4,5^-	1856.0 10	34 12	272.3060	4^-
		2129.9 10	100 31	0.0	3^-
2143.899		1872.0[b] 7	100	272.3060	4^-
2146.5?		2112.1[ab] 6	100[a]	34.6463	5^-
2148.96	4^-,5	1878.7 12	20 8	272.3060	4^-
		2100.2 16	30 16	48.8843	6^-
2148.96	4^-,5	2112.1[ab] 6	100[a] 18	34.6463	5^-
2172.44	2^-,3,4,5^-	1898.8 8	19 6	272.3060	4^-
		2172.7 4	100 14	0.0	3^-
2175.95	3^-,4,5,6^+	2140.7 7	100	34.6463	5^-
2196.5	4^-,5^-	1877.9 5	100 19	318.219	3^-
		1926.6 10	13 5	272.3060	4^-
		2148.2 13	23 10	48.8843	6^-
		2160.0 9	41 12	34.6463	5^-
		2194.8 9	41 12	0.0	3^-
2203.2	4^-,5^-	2156.7 15	73 37	48.8843	6^-
		2165.5 18	79 42	34.6463	5^-
		2203.3 13	100 45	0.0	3^-
2244.08		1924.2 8	100 29	320.23?	
		1974.1[ab] 5	33[a] 8	272.3060	4^-
2247.81		1974.1[ab] 5	100[a]	272.3060	4^-
2297.92	4^-,5	1976.0 4	100 17	322.054	5^-,6^-
		2027.2 6	19 5	272.3060	4^-
		2249.4 3	100 14	48.8843	6^-
		2262.0 9	32 10	34.6463	5^-
2323.47	4^-,5,6^+	2274.9 11	100 38	48.8843	6^-
		2288.2 15	82 39	34.6463	5^-
2356.15		2357.1[b] 9	100	0.0	3^-
2393.40	4^-,5	2122.5 10	47 18	272.3060	4^-
		2344.9 13	100 43	48.8843	6^-
2403.249	2^-,3,4^-	2131.1 11	22 8	272.3060	4^-
		2240.8 5	100 22	162.6591	2^-
2413.33		2093.6[b] 11	100	320.23?	
2939.2	3^-,4,5^-	2905.2 7	100 26	34.6463	5^-
		2937.8 13	72 32	0.0	3^-
3010.1		2688.7 9	100 32	322.054	5^-,6^-
(5161.004)	3^+,4^+	2345.21 6	2.41 9	2815.77	
		2512.55 17	2.85 10	2648.43	
		2517.04 8	5.19 19	2643.94	
		2532.39 4	2.76 10	2628.59	
		2538.82 7	1.75 7	2622.16	
		2555.76 4	3.40 13	2605.22	
		2561.85 3	3.81 15	2599.13	
		2564.79 3	5.49 21	2596.19	
		2594.45 15	0.81 7	2566.53	
		2598.16 4	3.40 13	2562.82	
		2607.17 3	5.06 19	2553.81	

Adopted Levels, Gammas (continued)

$\gamma(^{140}La)$ (continued)

E_i(level)	E_γ†	I_γ†	E_f	J^π_f
(5161.004)	2611.6 *3*	1.26 *4*	2549.4	
	2617.76 *4*	2.19 *9*	2543.22	
	2621.31 *20*	0.22 *4*	2539.67	
	2637.97 *6*	1.24 *7*	2523.01	
	2640.00 *3*	2.35 *9*	2520.98	
	2661.55 *4*	3.87 *15*	2499.43	
	2668.00 *4*	3.63 *13*	2492.98	
	2676.13 *7*		2484.85	
	2677.63 *12*	1.47 *6*	2483.35	
	2688.09 *3*	3.74 *15*	2472.89	
	2692.30 *6*	1.69 *10*	2468.68	
	2698.19 *4*	2.72 *10*	2462.79	
	2702.38 *6*	1.60 *6*	2458.60	
	2710.62 *4*	1.72 *6*	2450.36	
	2714.63 *3*	2.07 *7*	2446.35	
	2724.26 *4*	2.22 *9*	2436.72	
	2726.30 *20*	0.44 *1*	2434.68	
	2735.13 *4*	2.76 *10*	2425.85	
	2739.00 *4*	2.94 *12*	2421.98	
	2747.65 *4*	2.91 *12*	2413.33	
	2757.726 *24*	7.57 *28*	2403.249	$2^-,3,4^-$
	2764.51 *4*	4.25 *16*	2396.46	
	2767.58 *4*	4.22 *16*	2393.40	$4^-,5$
	2791.87 *10*	0.69 *3*	2369.10	
	2799.65 *6*	1.60 *6*	2361.32	
	2804.82 *4*	2.99 *12*	2356.15	
	2809.82 *9*	0.97 *4*	2351.15	
	2814.88 *15*	0.47 *6*	2346.09	
	2820.68 *6*	0.93 *6*	2340.29	
	2828.58 *7*	0.75 *6*	2332.39	
	2837.50 *4*	2.87 *10*	2323.47	$4^-,5,6^+$
	2839.32 *9*	0.94 *9*	2321.65	
	2849.25 *11*	0.59 *6*	2311.72	
	2852.55 *4*	2.04 *7*	2308.42	
	2863.06 *3*	10.7 *5*	2297.92	$4^-,5$
	2869.14 *13*	0.26 *4*	2291.83	
	2880.60 *6*	1.49 *6*	2280.37	
	2883.54 *11*	0.74 *7*	2277.43	
	2887.47 *13*	0.66 *3*	2273.50	
	2896.63 *6*	1.19 *7*	2264.34	
	2903.65 *5*	1.65 *6*	2257.32	
	2913.16 *4*	1.82 *7*	2247.81	
	2916.89 *4*	1.91 *12*	2244.08	
	2919.73 *6*	1.26 *4*	2241.24	
(5161.004)	2925.00 *3*	6.40 *24*	2235.97	
	2929.44 *9*	0.88 *3*	2231.53	
	2941.24 *6*	0.41 *3*	2219.73	
	2942.84 *5*	0.54 *4*	2218.13	
	2961.34 *4*	3.85 *15*	2199.63	
	2963.9 *4*	1.13 *9*	2196.5	$4^-,5^-$
	2969.27 *4*	6.01 *22*	2191.70	
	2977.35 *5*	2.41 *9*	2183.62	
	2985.02 *6*	1.47 *6*	2175.95	$3^-,4,5,6^+$
	2988.53 *3*	6.74 *25*	2172.44	$2^-,3,4,5^-$
	2998.36 *5*	2.00 *7*	2162.61	
	3001.17 *13*	0.32 *3*	2159.80	
	3012.03 *11*	0.49 *10*	2148.96	$4^-,5$
	3017.070 *24*	9.9 *4*	2143.899	
	3031.27 *4*	4.85 *18*	2129.70	$2^-,3,4,5^-$
	3035.56 *3*	7.62 *29*	2125.41	4^-
	3040.94 *4*	4.32 *16*	2120.03	$2^-,3,4^-$
	3044.25 *10*	0.56 *7*	2116.72	
	3051.49 *5*	2.69 *10*	2109.48	
	3057.66 *6*	2.85 *10*	2103.31	
	3066.74 *15*	0.84 *9*	2094.23	
	3068.96 *20*	0.62 *3*	2092.01	
	3078.80 *6*	1.91 *7*	2082.17	
	3082.979 *24*	20.6 *7*	2078.009	$4^-,5^-$
	3091.30 *6*	1.68 *6*	2069.67	
	3095.50 *4*	2.81 *10*	2065.47	
	3112.38 *3*	4.71 *18*	2048.59	
	3115.94 *3*	2.59 *10*	2045.03	$4^-,5^-$
	3119.05 *4*	1.74 *12*	2041.92	
	3120.84 *11*	0.49 *6*	2040.13	
	3137.21 *4*	3.51 *13*	2023.76	
	3142.75 *3*	4.71 *18*	2018.22	$3^-,4^-$
	3155.06 *6*	1.32 *4*	2005.91	
	3163.792 *24*	4.76 *18*	1997.177	$4^-,5,6^+$
	3171.69 *7*	1.07 *7*	1989.28	
	3174.77 *4*	1.99 *7*	1986.20	
	3189.09 *3*	7.9 *3*	1971.89	$4^-,5$
	3197.52 *6*	3.13 *12*	1963.45	$2,3,4^-$
	3206.21 *19*	0.65 *3*	1954.74	
	3213.35 *4*	2.12 *7*	1947.61	
	3219.80 *3*	4.41 *16*	1941.16	
	3258.876 *24*	1.00 *6*	1902.087	
	3265.263 *24*	7.8 *3*	1895.700	
	3281.248 *24*	7.4 *3*	1879.715	$4^-,5^-$

$^{140}_{57}La_{83}$-17

Adopted Levels, Gammas (continued)

γ(^{140}La) (continued)

E_i(level)	E_γ†	I_γ†	E_f	J^π_f
(5161.004)	3285.64 8	0.62 4	1875.32	
	3289.39 9	0.44 3	1871.57	
	3294.53 6	0.82 6	1866.43	
	3301.30 6	0.56 4	1859.66	
	3306.87 12	0.24 1	1854.09	
	3312.34 10	0.56 4	1848.65	2⁻,3,4,5⁻
	3318.99 4	4.69 18	1841.98	4⁻
	3322.06 13	0.24 3	1838.90	
	3337.83 6	0.94 3	1823.14	3⁻,4,5⁻
	3341.48 4	1.32 7	1819.47	4⁻,5,6⁺
	3347.01 10	0.41 3	1813.95	
	3356.01 6	0.82 3	1804.95	
	3359.88 3	1.76 10	1801.08	
	3368.29 13	0.32 4	1792.67	2⁻,3⁻,4⁻,5⁻
	3371.86 10	0.47 4	1789.10	
	3383.39 3	3.56 13	1777.57	2⁻,3⁻,4⁻,5⁻
	3386.37 16	0.46 6	1774.59	
	3395.44 4	2.37 9	1765.52	
	3404.81 4	2.51 9	1756.15	
	3412.94 6	1.00 6	1748.02	
	3417.24 4	2.66 10	1743.72	2⁻,3,4,5⁻
	3424.29 3	3.41 21	1736.67	
	3425.399 24	8.5 4	1735.583	4⁻
	3437.83 4	3.63 13	1723.14	3⁻,4⁻
	3442.20 3	6.03 22	1718.76	4⁻,5⁻
	3451.6 3	0.21 4	1709.4	
	3459.91 3	2.93 12	1701.05	4⁻
	3472.95 16	0.40 6	1688.01	
	3477.14 3	6.53 25	1683.82	3⁻,4,5⁻
	3484.28 16	0.40 6	1676.68	
	3488.77 3	2.50 9	1672.19	(3⁻,4⁻,5⁻)
	3497.96 4	0.82 6	1663.00	
	3500.08 8	0.34 4	1660.86	
	3505.59 20	0.19 4	1655.39	2⁻,3$^{(-)}$,4$^{(-)}$,5$^{(-)}$
	3509.17 4	1.06 7	1651.79	
	3524.97 4	0.94 6	1635.99	
	3539.27 8	0.49 4	1621.69	
	3542.99 6	0.62 4	1617.97	(⁻)
	3564.87 4	1.91 7	1596.09	
	3580.90 4	1.90 7	1580.06	
	3583.4 5	0.06 3	1577.6	
	3596.45 4	2.31 9	1564.50	3⁻,4,5
	3606.467 24	8.2 3	1554.505	4⁻,5⁻
	3610.026 24	8.1 3	1550.936	4⁻

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f
(5161.004)	3⁺,4⁺	3613.29 6	0.81 6	1547.67	4⁻,5
		3628.66 10	0.54 4	1532.29	
		3633.5 3	0.24 3	1527.5	⁻
		3665.631 24	19.9 7	1495.342	4⁻
		3679.641 24	20.4 7	1481.330	
		3683.89 3	4.7 3	1477.06	
		3691.35 3	5.15 19	1469.60	
		3718.321 24	5.65 22	1442.630	⁻
		3727.700 24	10.7 4	1433.291	4⁻,5⁻
		3735.30 4	2.50 9	1425.65	
		3738.56 4	5.18 19	1422.39	
		3744.87 4	3.44 13	1416.08?	3⁻,4,5,6⁺
		3820.23 9	0.69 7	1340.72	3⁻,4$^{(-)}$,5⁻
		3821.40 4	1.93 13	1339.55	
		3865.47 11	0.43 1	1295.48	
		3876.83 7	0.82 10	1284.12	
		3900.979 24	7.8 3	1259.970	4⁻,5⁻
		3906.17 13	0.09 6	1254.78	
		3951.14 3	2.91 12	1209.80	
		3953.59 9	0.38 3	1207.35	
		3970.44 12	0.25 3	1190.50	
		3973.56 4	1.76 7	1187.39	2⁻,3,4,5⁻
		3999.92 12	0.32 3	1161.06	2⁻,3,4⁻
		4013.52 20	0.15 3	1147.42	
		4044.182 21	4.37 16	1116.758	2⁻,3⁻,4⁻,5⁻
		4060.007 20	4.37 15	1100.934	3⁻,4⁻
		4063.67 15	0.16 4	1097.27	
		4105.897 20	3.50 13	1055.042	4⁻,5⁻
		4125.31 3	2.69 10	1035.630	4⁻
		4192.28 8	0.04 3	968.66	3⁻,4⁻
		4248.76 3	0.16 3	912.172	3⁻,4⁻
		4364.66 5	0.63 3	796.270	2⁻
		4389.505 14	37.5 15	771.425	4⁻,5⁻,6⁻
		4416.22 3	36.3 13	744.711	4⁻
		4449.26 3	1.10 9	711.671	3⁻
		4502.647 13	24.1 9	658.279	3⁻
		4558.891 13	7.18 26	602.033	4⁻
		4842.695 7	97 4	318.219	3⁻
		4888.606 7	22.1 9	272.3060	4⁻
		4998.250 6	2.13 12	162.6591	2⁻
		5097.726 6	100 4	63.1790	4⁻
		5126.257 6	16.8 6	34.6463	5⁻
		5130.939 6	2.34 13	29.9641	2⁻
		5160.902 6	13.1 7	0.0	3⁻

$^{140}_{57}La_{83}$-18

Adopted Levels, Gammas (continued)

$\gamma(^{140}La)$ (continued)

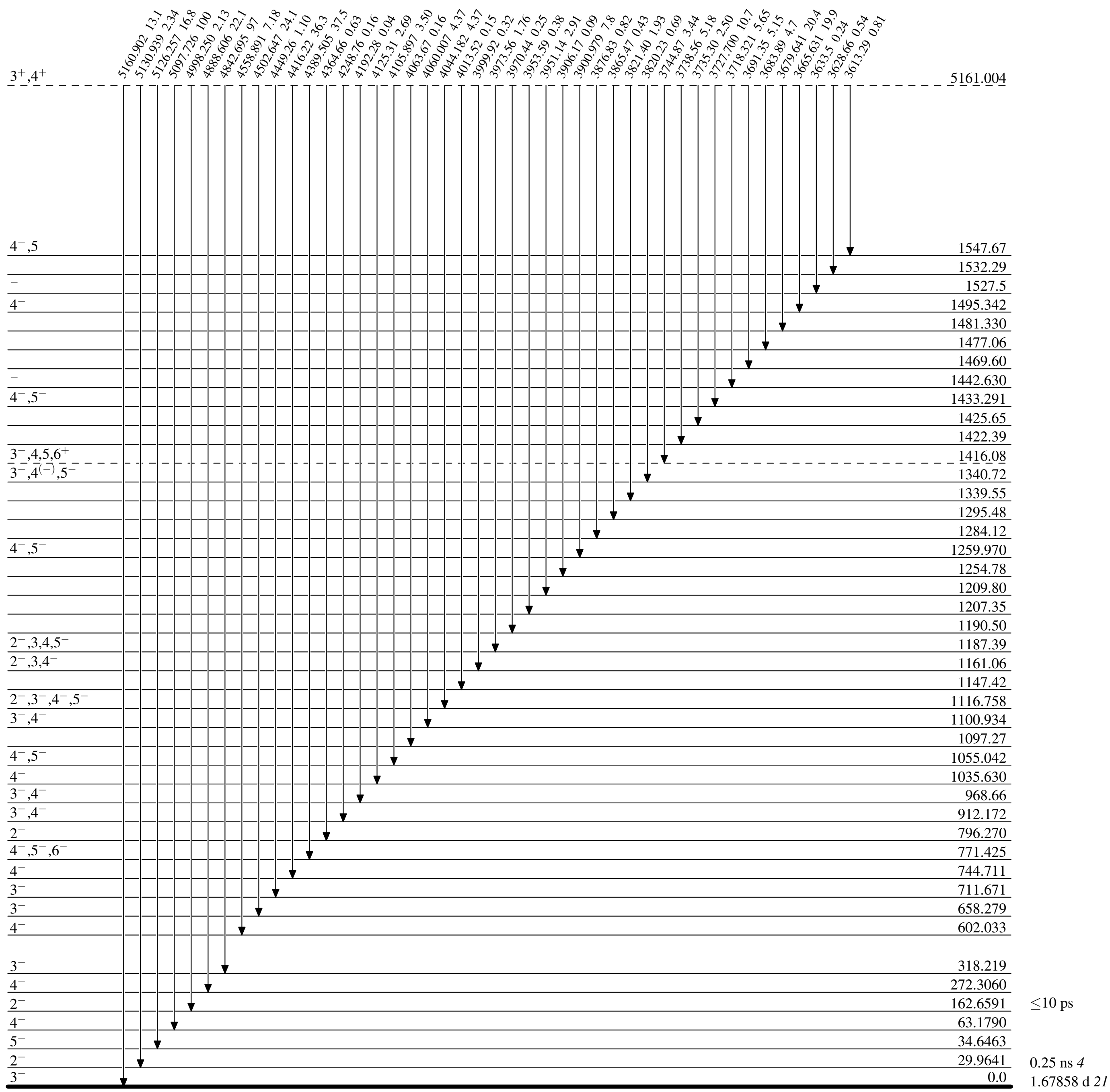
† Most of the data are from (n,γ) E=th and (n,γ) Two γ datasets; fewer from β- decay (when not present in (n,γ) E=th).
‡ From (n,γ) E=th and β- decay datasets.
# Differ by 3σ or more from calculated value.
@ Additional information 1.
& If no value given it was assumed δ=1.00 for E2/M1, δ=1.00 for E3/M2 and δ=0.10 for the other multipolarities.
[a] Multiply placed with undivided intensity.
[b] Placement of transition in the level scheme is uncertain.

$^{140}_{57}La_{83}$-19

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

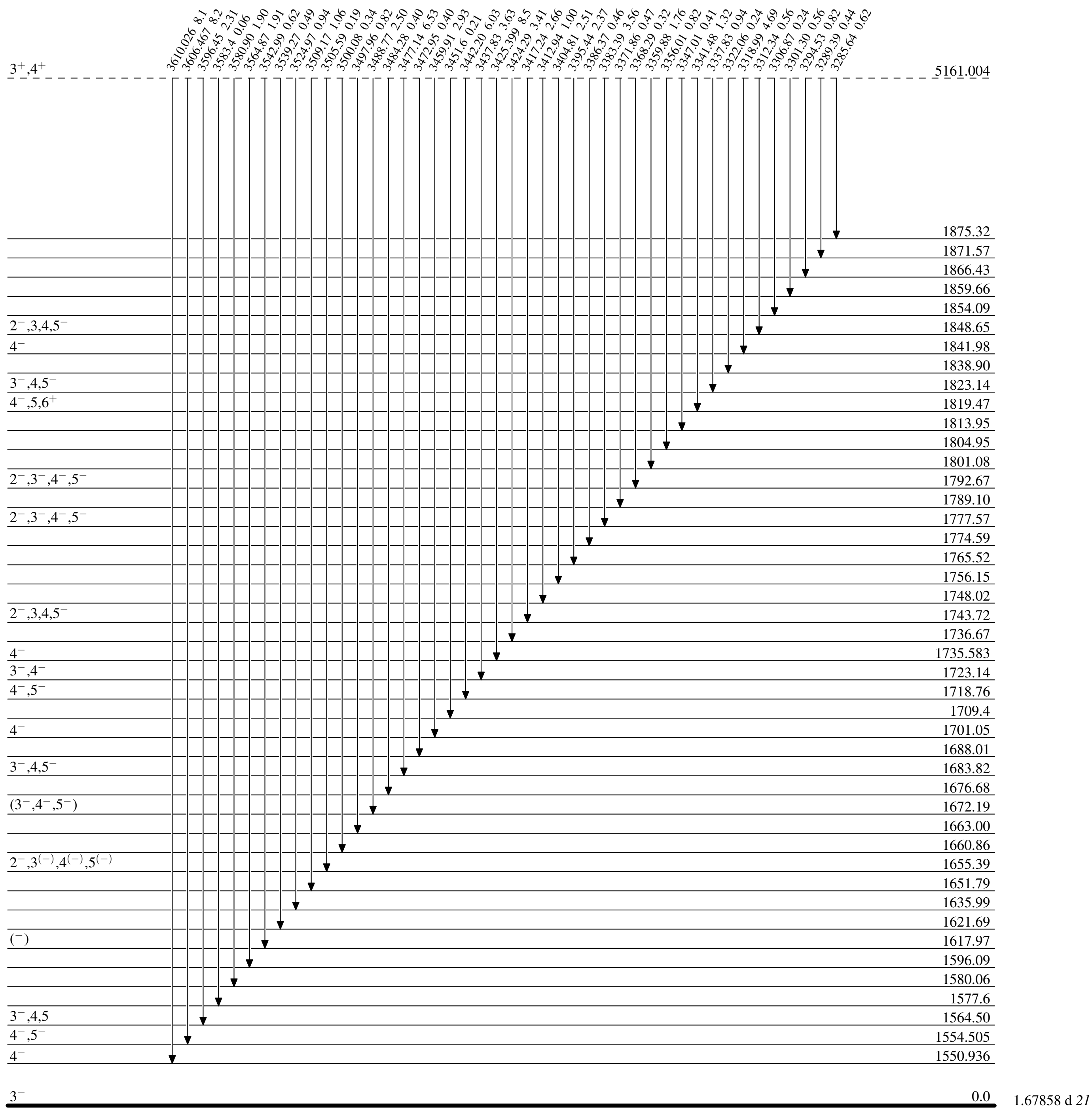


$^{140}_{57}La_{83}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

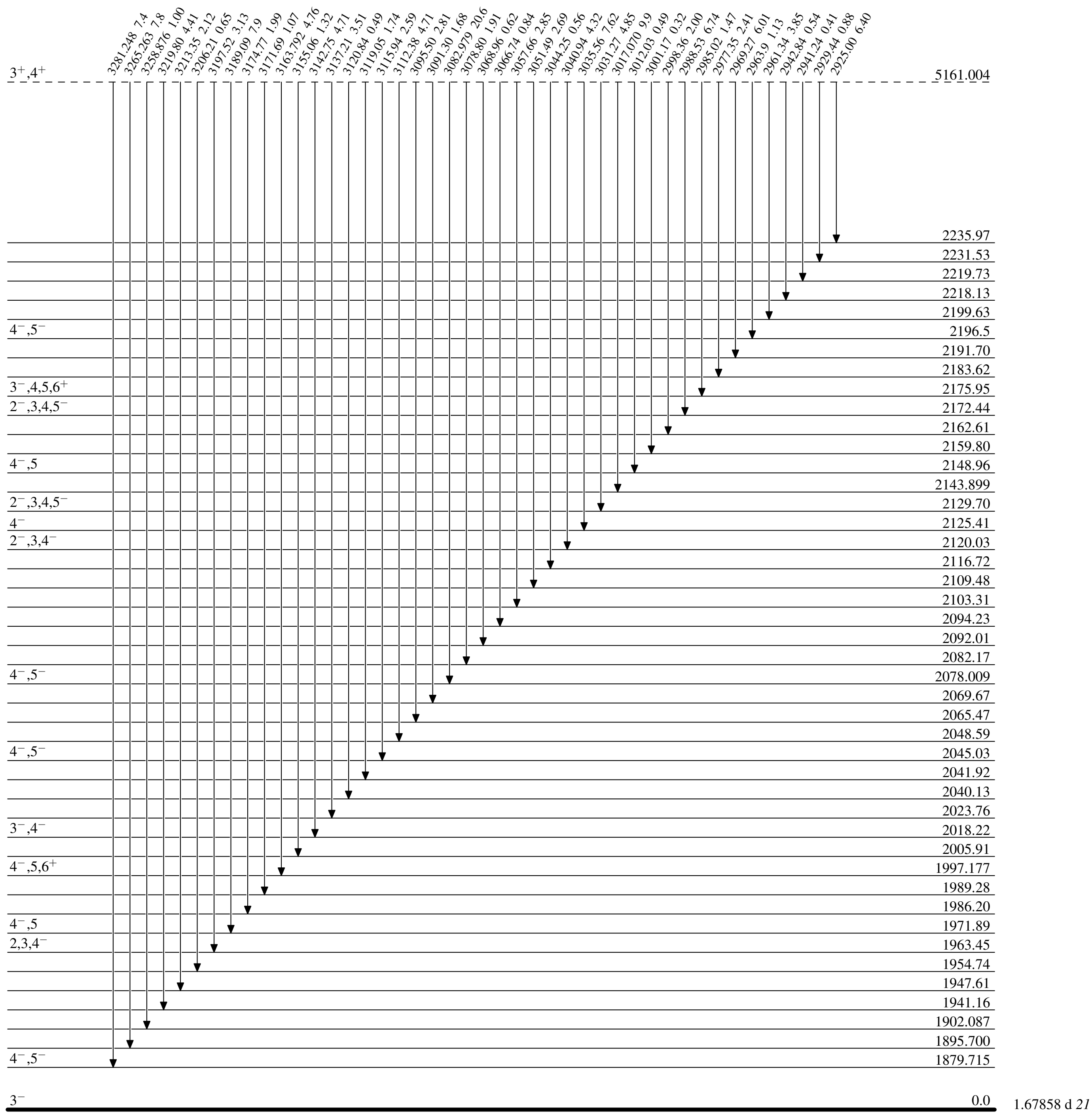


$^{140}_{57}La_{83}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

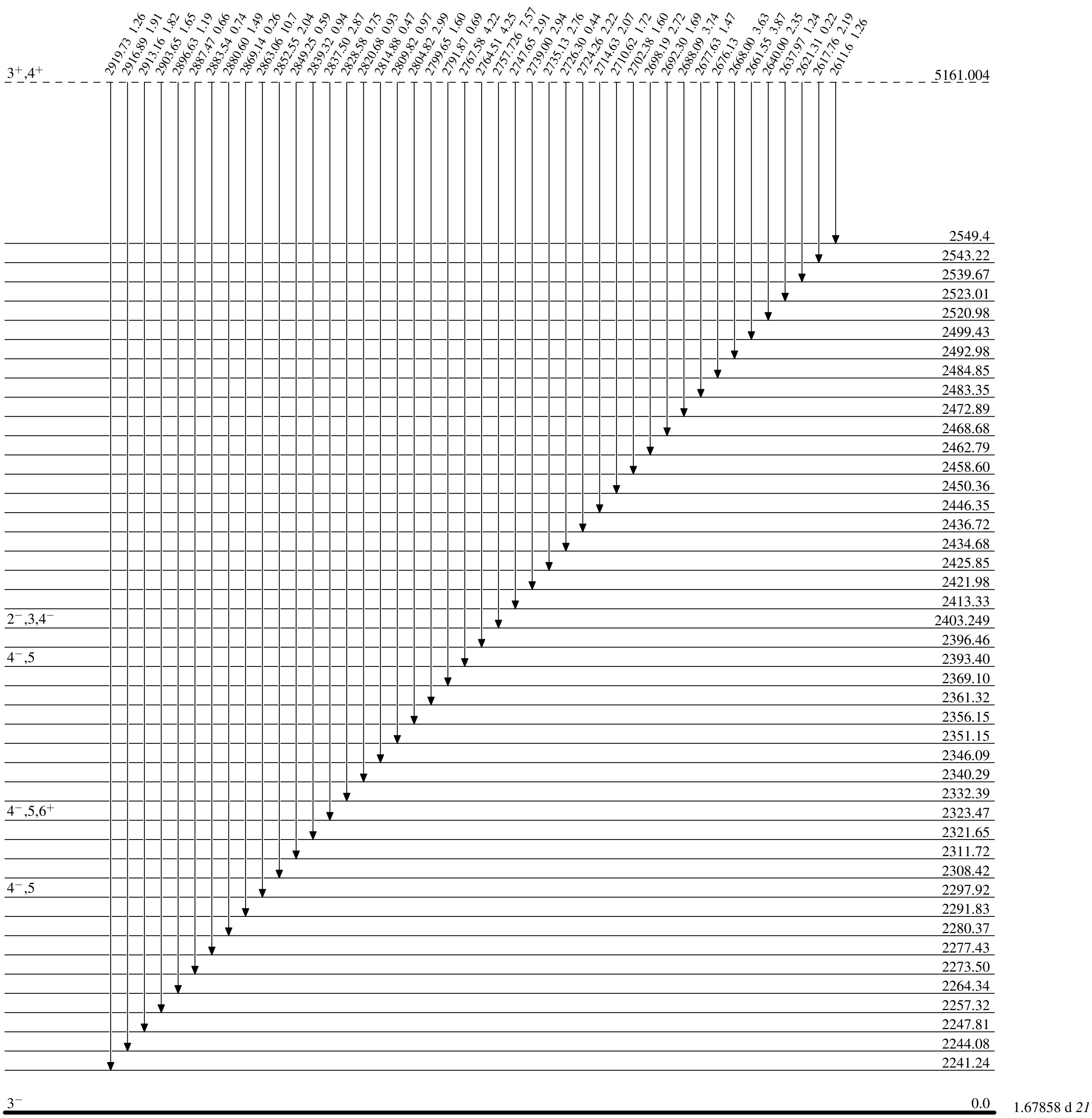


$^{140}_{57}La_{83}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{140}_{57}La_{83}$

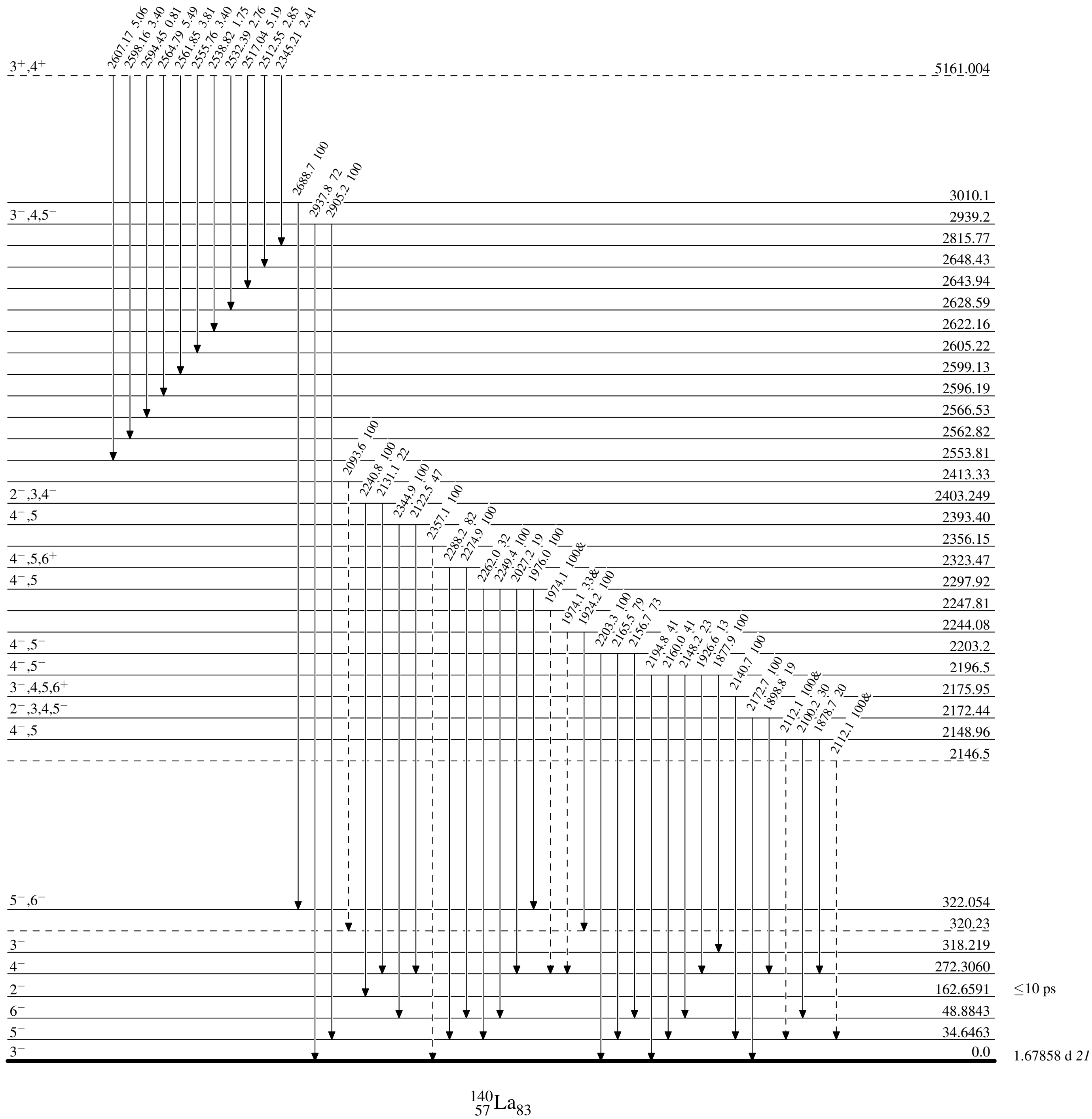
Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

γ Decay (Uncertain)



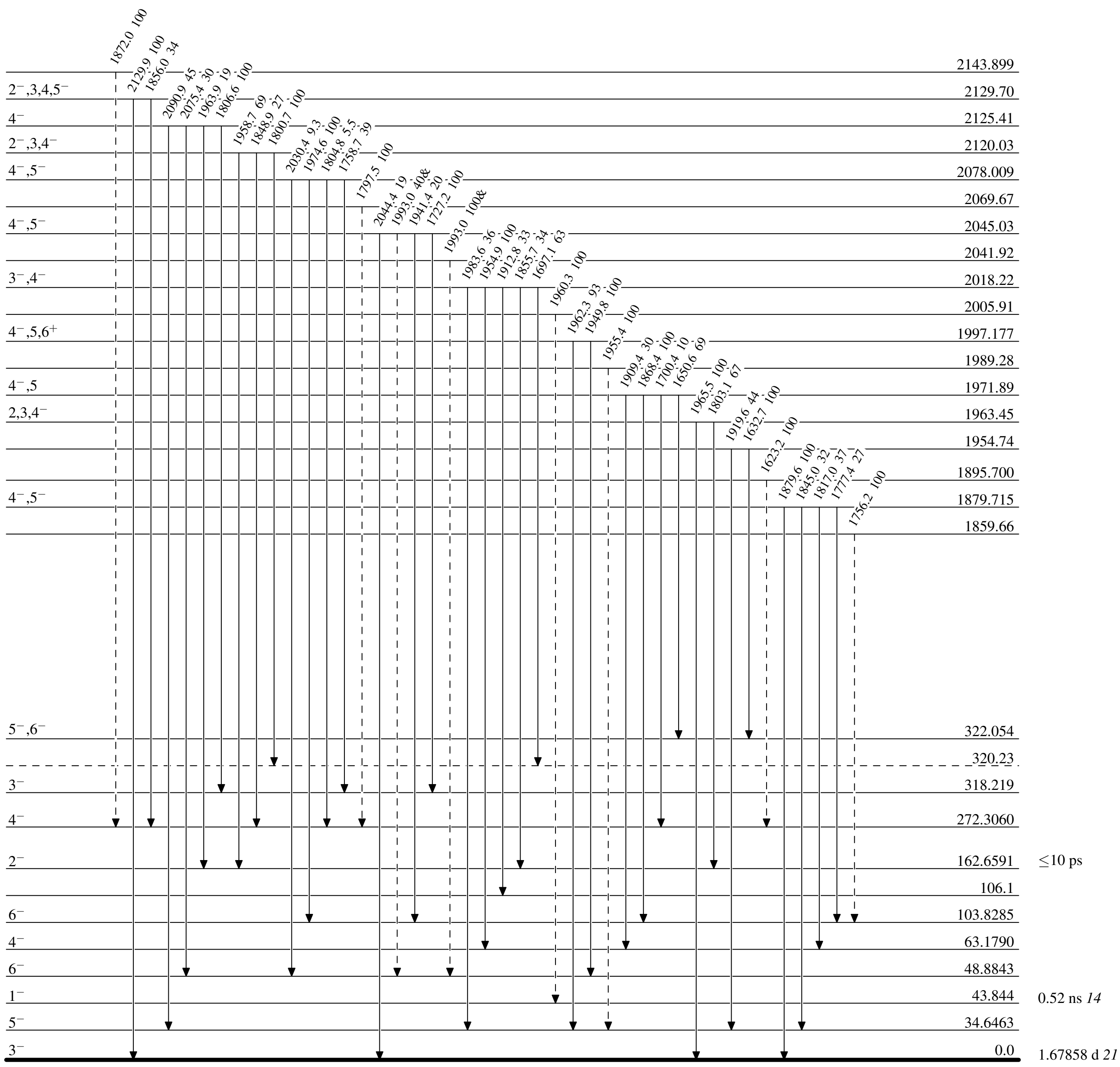
Adopted Levels, Gammas

Legend

Level Scheme (continued)

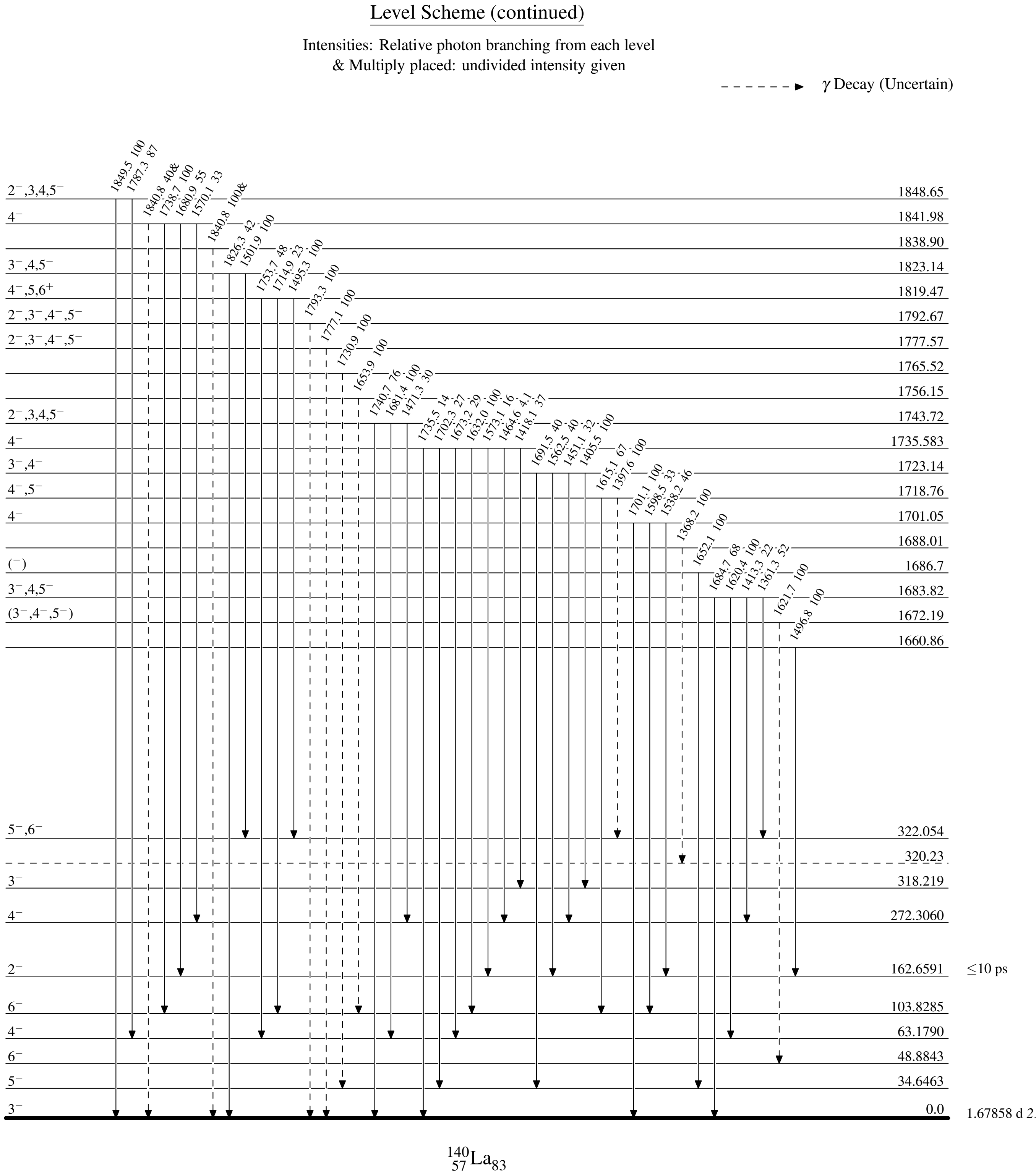
Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

γ Decay (Uncertain)



$^{140}_{57}La_{83}$

Adopted Levels, Gammas



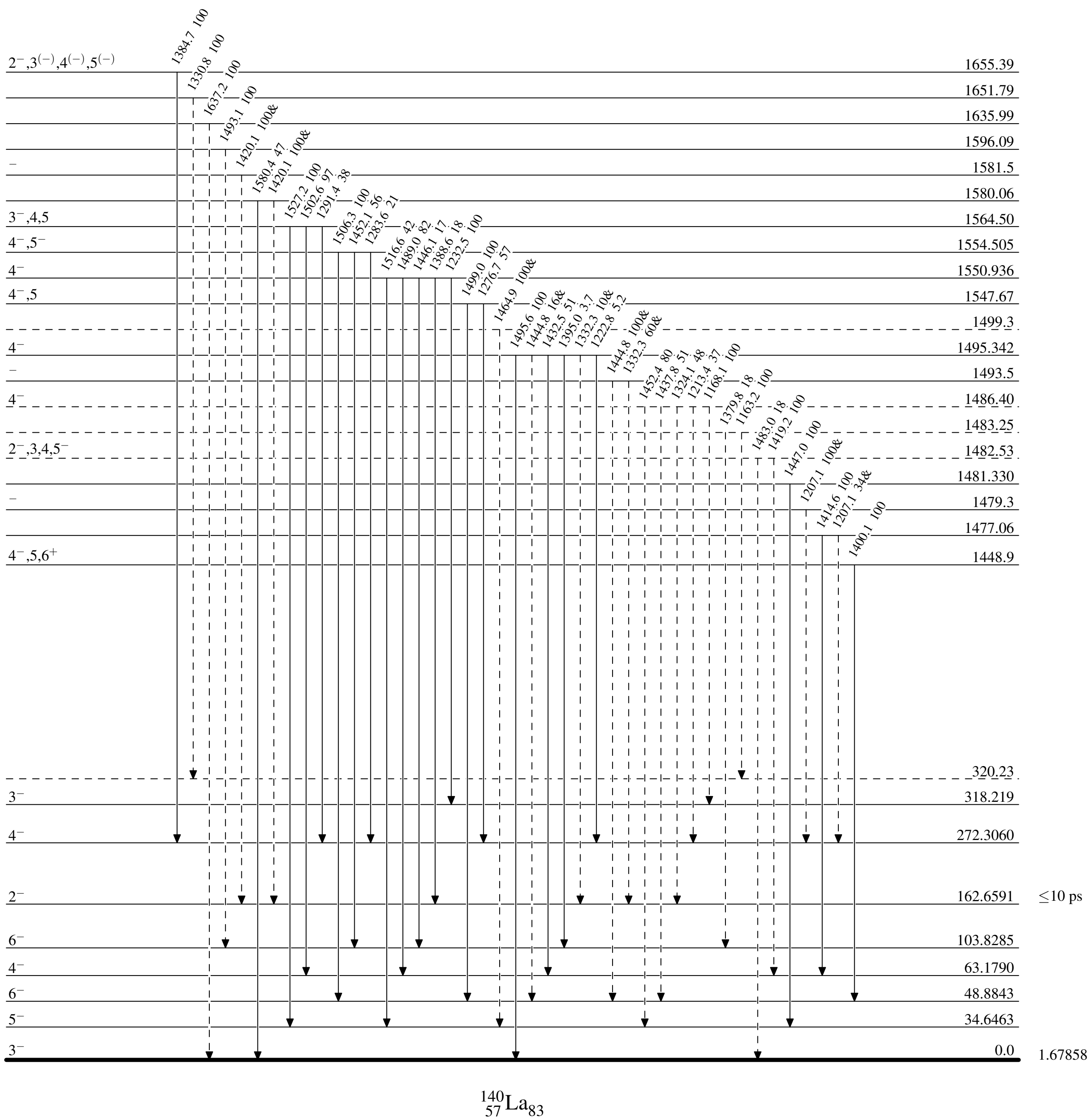
Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

γ Decay (Uncertain)



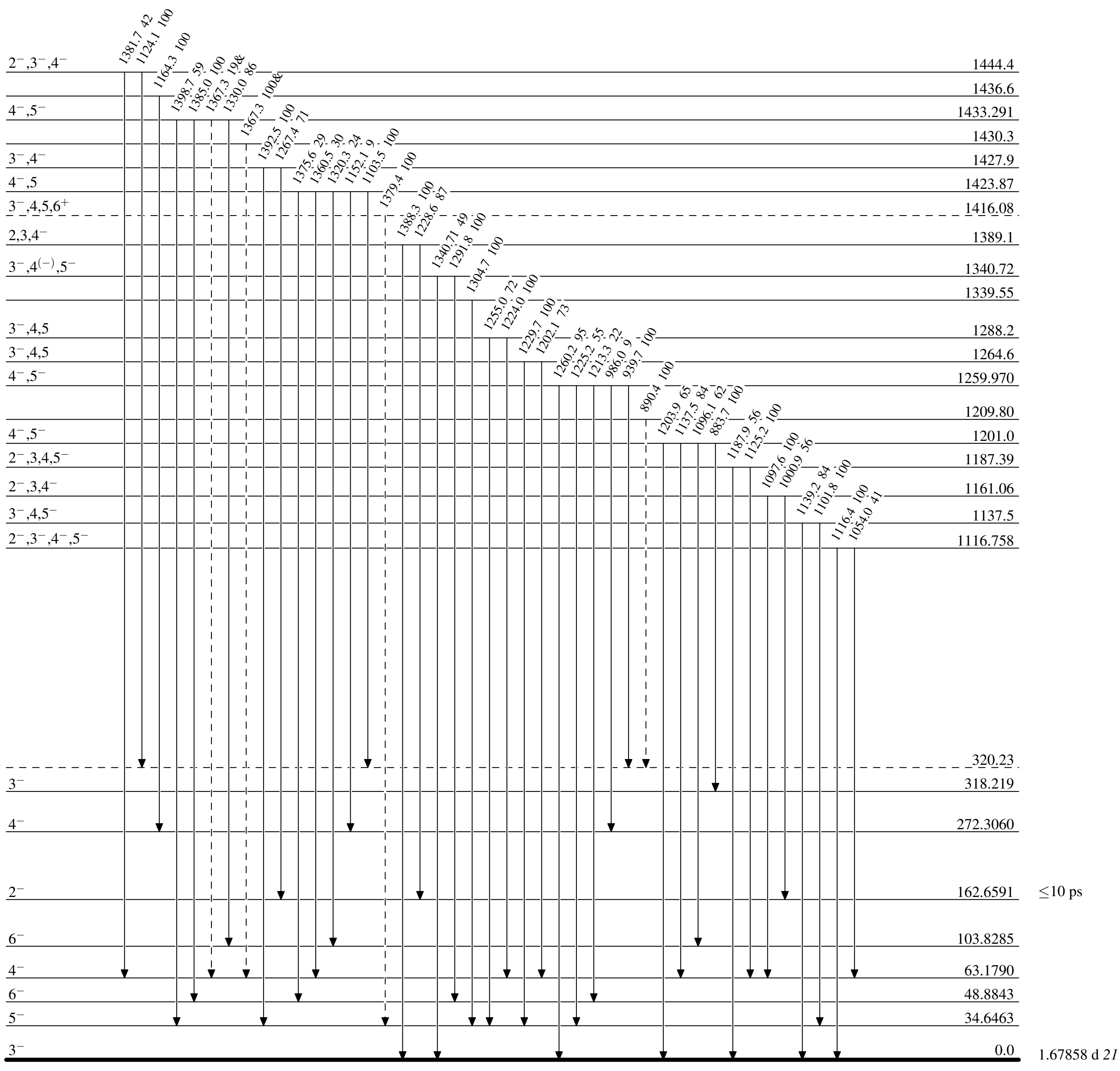
Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

- - - - - -► γ Decay (Uncertain)

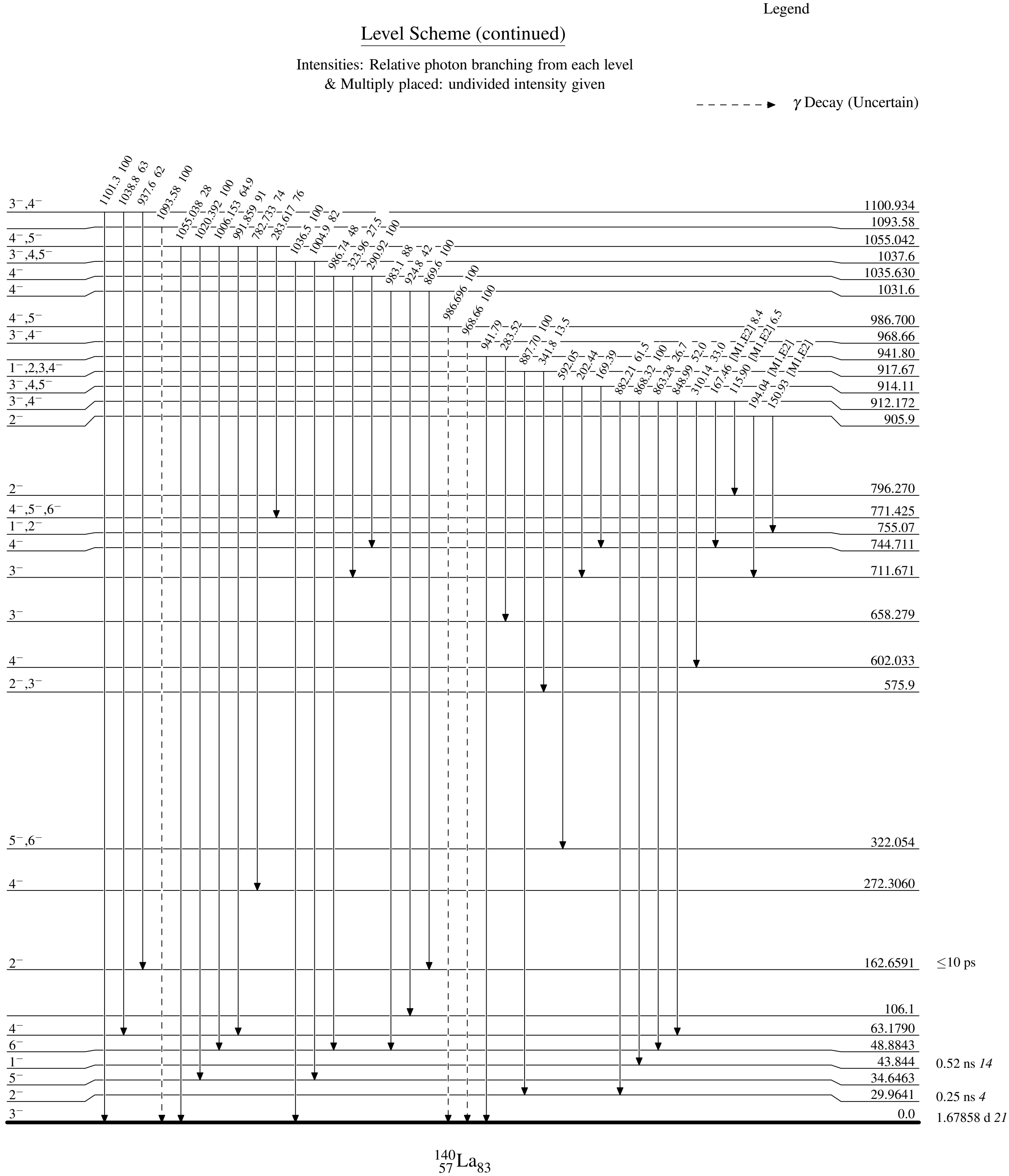


$^{140}_{57}La_{83}$

Adopted Levels, Gammas

Level Scheme (continued)

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



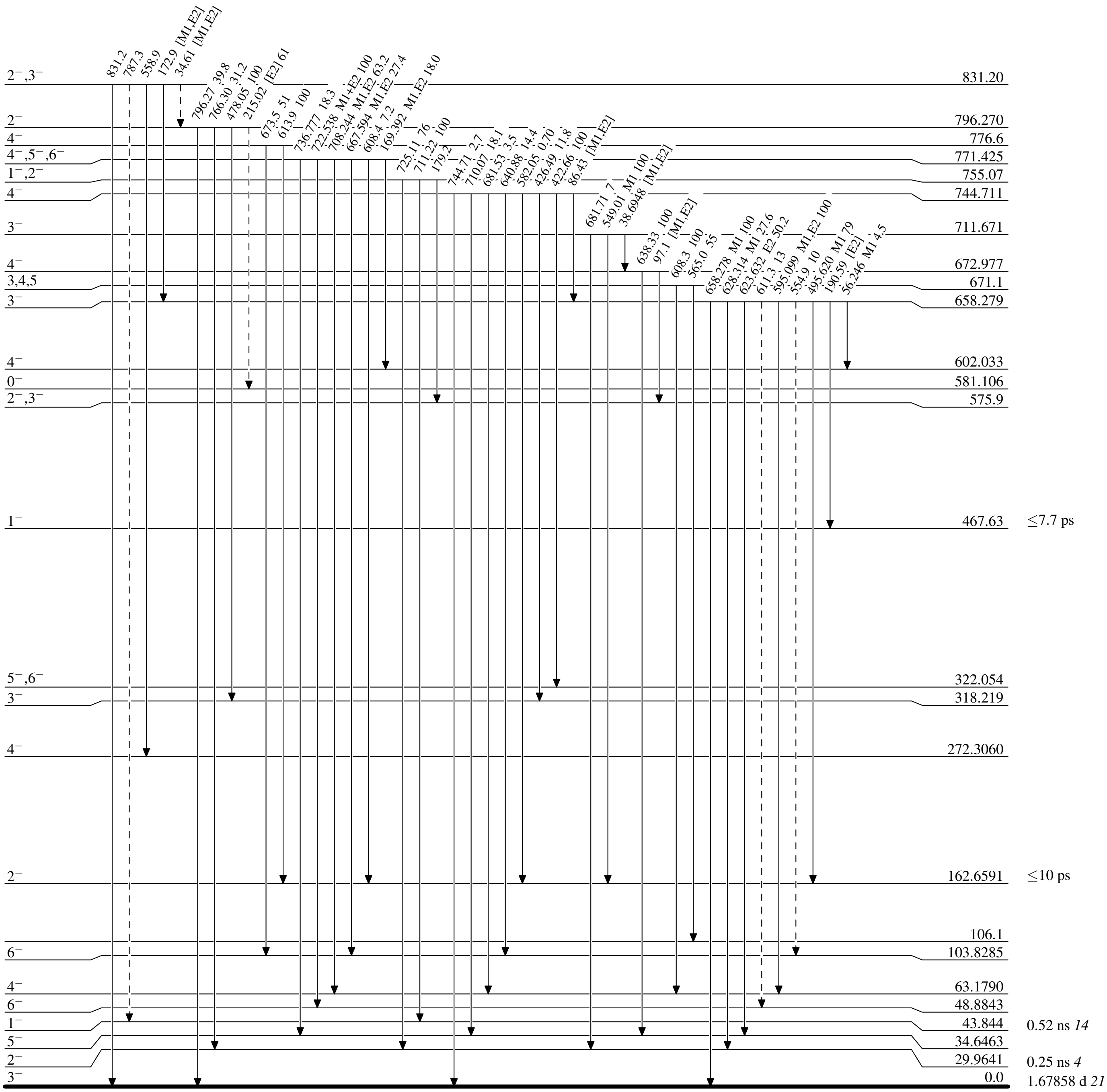
Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

γ Decay (Uncertain)



$^{140}_{57}La_{83}$

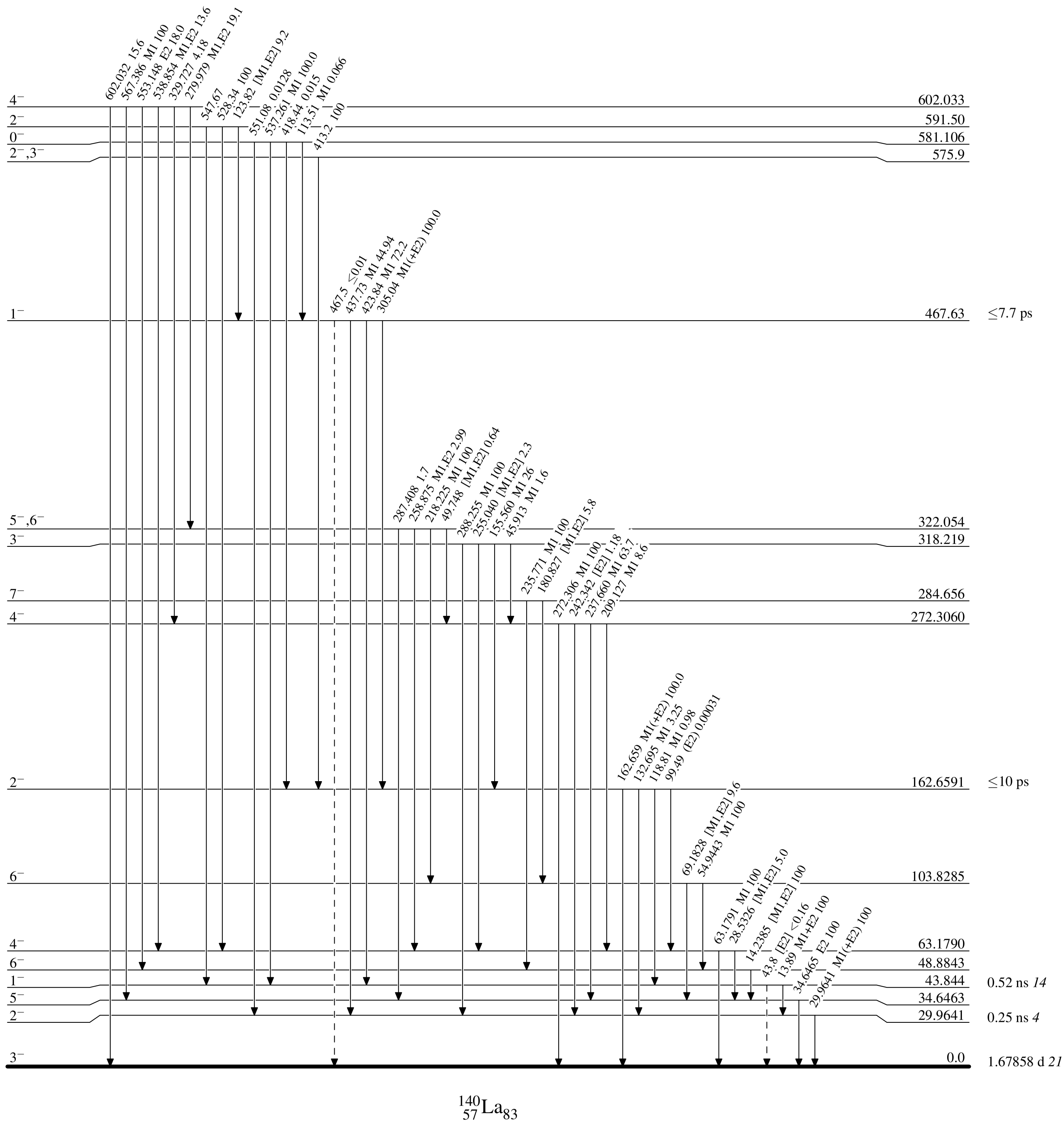
Adopted Levels, Gammas

Legend

Level Scheme (continued)

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

- - - - - -▸ γ Decay (Uncertain)



$^{140}_{57}La_{83}$