^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. W. Reich, Balraj Singh	NDS 111, 1211 (2010)	12-Apr-2010

Includes ^{123}Sb(^{44}Ca,4nγ) from 2004Go14 and ^{124}Sn(^{45}Sc,6nγ) from 2002Sc47.

2004Je03 (also 2004JeZZ, 2004Ha21,2002Je10): E=157 MeV. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma(\theta)$, $\gamma\gamma(\theta)$(DCO), $\gamma\gamma$(lin pol) with Euroball detector array which consisted of 15 Cluster, 25 Clover, and 27 Tapered Ge detectors. The numerical data are from the RADWARE file in 2004JeZZ,

2002Je05, 2002Od01, 2001Od03 (also 2001Od02,2001Ha54): E=152 MeV. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma(\theta)$, $\gamma\gamma(\theta)$(DCO), γ(lin pol) using the EUROBALL IV array with 15 Cluster detectors, 25 Clover detectors and 26 tapered single-element Ge detectors. Deduced four SD bands in addition to other normal deformed bands. In 2002Od01, the data were analyzed to investigate properties of the nucleus at excitations above the energy of the resolvable discrete bands using fluctuation analysis of Eγ-Eγ spectrum. About 40 two-step paths were found for triaxial strongly deformed bands, about half of which feed normal-deformed structures.

Others:

2004Go14: ^{123}Sb(^{44}Ca,4nγ) E=190 MeV. Measured Eγ, Iγ, $\gamma\gamma$, lifetimes by DSAM for two TSD bands; deduced Q_t.

2002Sc11: E=145 MeV. Measured lifetimes of members in SD-1 band by Doppler-shift attenuation method, deduced transition quadrupole moment.

2002Sc47: ^{124}Sn(^{45}Sc,^{6}nγ) E=217 MeV. Measured Eγ, Iγ, $\gamma\gamma$ using GAMMASPHERE array with 100 Compton-suppressed Ge detectors. Measured lifetimes by DSA for (yrast) SD-1 band and deduced transition quadrupole moment.

1999Do34: E=145 MeV. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma g(\theta)$(DCO) using EUROBALL array with 13 Cluster detectors, 25 Clover detectors and 28 tapered single-element Ge detectors. Deduced two SD bands and several normal deformed bands.

All data are from 2004Je03 unless otherwise stated. The experiments reported In 2004Je03 and 2002Je05 are by the same group using the same reaction and detector arrangement, but the counting statistics In 2004Je03 is about 2.5 times higher than In 2002Je05 with the result that several new bands have been found In 2004Je03 In addition to extending some of the bands by several transitions to higher spins.

^{163}Lu Levels

Q_t values are from 2004Go14, unless otherwise stated.

Labelling Scheme for the Quasiparticle Orbitals (2004Je03):

A: ν5/2[642], α=+1/2.
B: ν5/2[642], α=−1/2.
C: ν3/2[651], α=+1/2.
D: ν3/2[651], α=−1/2.
E: ν5/2[523], α=+1/2.
F: ν5/2[523], α=−1/2.
G: ν3/2[521], α=+1/2.
H: ν3/2[521], α=−1/2.
a: π1/2[411], α=+1/2.
b: π1/2[411], α=−1/2.
c: π7/2[404], α=+1/2.
d: π7/2[404], α=−1/2.
e: π7/2[523], α=+1/2.
f: π7/2[523], α=−1/2.
g: π9/2[514], α=+1/2.
h: π9/2[514], α=−1/2.
k: π5/2[402], α=+1/2.
l: π5/2[402], α=−1/2.
m: π1/2[660], α=+1/2.
n: π1/2[541], α=+1/2.

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^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05 (continued)

^{163}Lu Levels (continued)

E(level)†	Jπ‡	E(level)†	Jπ‡
0.0[c]	1/2+	2399.3[a] 6	25/2+
16.95[d] 23	3/2+	2409.7[g] 10	21/2+
61.2[n] 7	5/2+	2435.9[h] 6	23/2+
123.1[b] 6	7/2+	2487.5 9	25/2+
190.83[c] 20	5/2+	2514.0[q] 4	25/2+
193.9[&] 9	7/2−	2539.7[g] 6	25/2+
209.0[@] 6	9/2−	2613.4[b] 6	27/2+
223.4[o] 9	7/2+	2680.0[h] 6	27/2+
249.7[d] 3	7/2+	2684.5 8	27/2+
294.3[&] 6	11/2−	2747.1[@] 6	29/2−
309.3[a] 6	9/2+	2773.0[d] 4	27/2+
413.3[n] 7	9/2+	2802.5[a] 6	29/2+
490.9[@] 6	13/2−	2854.2[e] 8	29/2−
519.3[b] 6	11/2+	2860.1[g] 6	29/2+
520.64[c] 23	9/2+	2900.3[q] 4	29/2+
620.6[d] 3	11/2+	2923.8[&] 6	31/2−
641.3[o] 9	11/2+	3002.9[b] 6	31/2+
643.6[&] 6	15/2−	3020.3[f] 8	31/2−
753.7[a] 6	13/2+	3077.2[h] 6	31/2+
874.2[n] 9	13/2+	3078.8[r] 9	27/2+
936.2[@] 6	17/2−	3122.2[@] 6	33/2−
967.58[c] 25	13/2+	3129.8[d] 8	31/2+
1007.0[b] 6	15/2+	3244.0[a] 6	33/2+
1106.5[d] 3	15/2+	3319.6[&] 6	35/2−
1114.1[&] 6	19/2−	3322.7[g] 6	33/2+
1151.4[o] 9	15/2+	3350.6[q] 5	33/2+
1281.3[a] 6	17/2+	3417.6[e] 8	33/2−
1285.0? 10	(13/2+)	3482.7[b] 6	35/2+
1416.0[n] 8	17/2+	3486.2[r] 7	31/2+
1484.6[@] 6	21/2−	3550.6[@] 6	37/2−
1501.4[c] 3	17/2+	3570.9[h] 6	35/2+
1560.9[b] 6	19/2+	3634.7[j] 8	35/2+
1669.5[d] 3	19/2+	3666.7[f] 8	35/2−
1676.2[&] 6	23/2−	3788.7[a] 6	37/2+
1729.1[o] 8	19/2+	3821.5[&] 6	39/2−
1738.9[q] 11	13/2+	3863.2[s] 8	33/2+
1866.6[a] 6	21/2+	3865.9[q] 5	37/2+
1935.7[q] 8	17/2+	3891.4[g] 8	37/2+
2008.0 7	21/2+	3957.8[r] 7	35/2+
2019.5[n] 9	21/2+	3994.8[e] 9	37/2−
2087.3[c] 3	21/2+	4067.1[b] 7	39/2+
2103.2[@] 6	25/2−	4102.7[@] 6	41/2−
2138.6[b] 6	23/2+	4149.7[h] 6	39/2+
2199.2[q] 4	21/2+	4252.7[f] 9	39/2−
2227.2 8	23/2+	4254.5[j] 8	39/2+
2276.3[d] 3	23/2+	4308.1[l] 8	37/2−
2306.4[&] 6	27/2−	4368.7[s] 7	37/2+
2338.6[o] 11	23/2+	4404.8[a] 7	41/2+

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^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05 (continued)

^{163}Lu Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	T$_{1/2}$[#]	Comments
4430.2[&] 6	43/2$^-$		
4444.6[q] 5	41/2$^+$	0.25 ps +5−7	Q$_t$=9.9 +11−10.
4492.1[r] 7	39/2$^+$		
4528.4[g] 8	41/2$^+$		
4555.4[e] 9	41/2$^-$		
4577.7[m] 8	39/2$^-$		
4718.6[b] 7	43/2$^+$		
4759.5[@] 6	45/2$^-$		
4816.1[h] 6	43/2$^+$		
4830.0[l] 8	41/2$^-$		
4847.8[f] 9	43/2$^-$		
4903.0[j] 8	43/2$^+$		
4936.8[s] 7	41/2$^+$		
5056.4[a] 7	45/2$^+$		
5083.5[q] 5	45/2$^+$	173 fs +24−27	Q$_t$=9.3 +7−6.
5087.9[r] 7	43/2$^+$		
5114.9[m] 8	43/2$^-$		
5130.6[&] 6	47/2$^-$		
5167.6[e] 9	45/2$^-$		
5208.5[i] 8	45/2$^+$		
5242.2[g] 11	45/2$^+$		
5386.8[b] 7	47/2$^+$		
5418.3[l] 9	45/2$^-$		
5495.0[f] 9	47/2$^-$		
5503.9[@] 6	49/2$^-$		
5556.3[j] 8	47/2$^+$		
5558.3[h] 6	47/2$^+$		
5563.7[s] 6	45/2$^+$		
5719.0[a] 7	49/2$^+$		
5742.5[r] 8	47/2$^+$	149 fs +26−33	Q$_t$=8.5 +10−7.
5755.8[m] 9	47/2$^-$		
5780.5[q] 5	49/2$^+$	140 fs +15−16	Q$_t$=8.3 +5−4.
5851.9[e] 9	49/2$^-$		
5897.1[i] 9	49/2$^+$		
5915.7[&] 6	51/2$^-$		
6005.0[g] 9	49/2$^+$		
6064.2[b] 7	51/2$^+$		
6106.9[l] 10	49/2$^-$		
6222.3[f] 11	51/2$^-$		
6245.3[j] 9	51/2$^+$		
6248.8[s] 8	49/2$^+$		
6319.5[t] 9	47/2$^{(-)}$		
6332.9[@] 6	53/2$^-$		
6354.7[h] 10	51/2$^+$		
6414.0[a] 7	53/2$^+$		
6453.7[r] 8	51/2$^+$	100 fs +12−15	Q$_t$=8.7 +7−5.
6501.4[m] 11	51/2$^-$		
6533.1[q] 5	53/2$^+$	82 fs +6−7	T$_{1/2}$: other: 100 fs (2002Sc11). Q$_t$=8.9 4 (2004Go14), 8.1 +10−11 (2002Sc11).

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^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05 (continued)

^{163}Lu Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	Comments
6615.4[i] 11	53/2+		
6616.7[e] 11	53/2−		
6718.0[g] 11	53/2+		
6787.7[b] 7	55/2+		
6788.8[&] 9	55/2−		
6906.2[l] 12	53/2−		
6964.5[t] 9	51/2(−)		
6978.9[j] 11	55/2+		
6990.0[s] 8	53/2+		
7034.2[f] 12	55/2−		
7131.9[h] 12	55/2+		
7173.0[a] 7	57/2+		
7177.9[p] 10	55/2+		
7219.9[r] 9	55/2+	66 fs +9−12	Q_t=8.9 +8−6.
7245.7[@] 10	57/2−		
7338.7[q] 5	57/2+	66 fs 8	$T_{1/2}$: other: 67 fs (2002Sc11). Q_t=8.4 5 (2004Go14), 8.3 +19−18 (2002Sc11).
7350.0[m] 13	55/2−		
7389.8[i] 12	57/2+		
7465.6[e] 13	57/2−		
7505.8[g] 13	57/2+		
7583.3[b] 7	59/2+		
7666.7[t] 9	55/2(−)		
7728.0[&] 11	59/2−		
7784.2[j] 13	59/2+		
7785.9[s] 9	57/2+		
7812.7[l] 14	57/2−		
7902.2[f] 14	59/2−		
7954.7[h] 14	59/2+		
8010.0[a] 7	61/2+		
8039.8[r] 9	59/2+	60 fs +18−26	Q_t=7.8 +17−12.
8044.9[p] 10	59/2+		
8196.4[q] 10	61/2+	61 fs +7−8	Q_t=7.5 +5−4 (2004Go14), 8.0 +16−15 (2002Sc11). $T_{1/2}$: other: 53 fs (2002Sc11).
8221.5[@] 12	61/2−		
8236.2[i] 14	61/2+		
8290.0[m] 15	59/2−		
8378.6[e] 17	61/2−		
8386.1[g] 16	61/2+		
8421.3[t] 10	59/2(−)		
8458.3[b] 9	63/2+		
8635.7[s] 10	61/2+		
8667.5[j] 15	63/2+		
8712.3[&] 13	63/2−		
8789.1[l] 16	61/2−		
8844.4[f] 17	63/2−		
8854.6[h] 17	63/2+		
8912.7[r] 11	63/2+	44 fs +9−15	Q_t=7.9 +13−8.
8925.8[a] 10	65/2+		

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^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05 (continued)

^{163}Lu Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	Comments
8973.0[p] *14*	63/2+		
9106.1[q] *14*	65/2+	46 fs *+7−10*	Q_t=7.4 *+8−6*.
9153.0[i] *15*	65/2+		
9231.4[t] *14*	63/2(−)		
9251.6[@] *14*	65/2−		
9283.4[m] *18*	63/2−		
9329.8[g] *19*	65/2+		
9375.1[e] *19*	65/2−		
9407.6[b] *11*	67/2+		
9538.2[s] *14*	65/2+		
9624.3[j] *16*	67/2+		
9707.7[&] *15*	67/2−		
9804.1[l] *19*	65/2−		
9815.1[h] *20*	67/2+		
9839.2[r] *15*	67/2+	52 fs *+12−17*	Q_t=6.7 *+11−8*.
9915.6[a] *12*	69/2+		
10068.6[q] *14*	69/2+	33 fs *+12−8*	Q_t=7.6 *+15−9*.
10096.7[t] *17*	67/2(−)		
10137.4[i] *17*	69/2+		
10313.5[@] *17*	69/2−		E(level): In 2002Je05, the 69/2− member was proposed At 10265 decaying by a 1012.3γ.
10332.8[g] *22*	69/2+		
10427.1[b] *13*	71/2+		
10494.0[s] *17*	69/2+		
10652.4[j] *17*	71/2+		
10713.7[&] *18*	71/2−		
10819.4[r] *18*	71/2+	39 fs *+12−20*	Q_t=6.7 *+17−10*.
10875.1[l] *21*	69/2−		
10977.2[a] *14*	73/2+		
11017.2[t] *20*	71/2(−)		
11085.2[q] *18*	73/2+		
11185.6[i] *19*	73/2+		
11503.2[s] *20*	73/2+		
11504.2[b] *15*	75/2+		
11728.7[k] *20*	75/2−		
11748.0[j] *20*	75/2+		
11780.2[&] *20*	75/2−		
11854.1[r] *21*	75/2+		
11992.9[t] *22*	75/2(−)		
12096.9[a] *17*	77/2+		
12156.2[q] *20*	77/2+		
12265.7[i] *22*	77/2+		
12566.2[s] *22*	77/2+		
12626.0[b] *18*	79/2+		
12744[k] *3*	79/2−		
12862[j] *11*	79/2+		
12864.8[&] *23*	79/2−		
12943.0[r] *23*	79/2+		
13024.5[t] *25*	79/2(−)		
13197.1[a] *20*	81/2+		

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^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05 (continued)

^{163}Lu Levels (continued)

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
13282.5[q] 23	81/2+	14110[t] 3	83/2(−)	15689[q] 3	89/2+	18261[q] 3	97/2+
13678.6[s] 25	81/2+	14461.8[q] 25	85/2+	16023[k] 4	91/2−	18435[k] 4	99/2−
13745.7[b] 21	83/2+	14826[s] 5	85/2+	16531[r] 3	91/2+		
13797[k] 3	83/2−	14889[k] 4	87/2−	16958[q] 3	93/2+		
14086.0[r] 25	83/2+	15283[r] 3	87/2+	17203[k] 4	95/2−		

† From least-squares fit to Eγ's. The levels at 10265, (69/2−) decaying by a 1012.3γ and 10346, (69/2−) decaying by a 1062.0γ proposed in 2002Je05 have been omitted here since they are not confirmed by 2004Je03.

‡ The assignments are As proposed by 2004Je03 based on band assignments and γγ(θ) data (2004Je03,2002Je05,1999Do34) for selected transitions. In the 'Adopted Levels', the assignments are the same except that parentheses are added by the evaluators since Jπ's of some of the bandheads are not defined by strong rules for spin-parity assignments.

From DSAM (2004Go14), unless otherwise stated.

@ Band(A): π7/2[523], α=+1/2. Strongly-coupled band (1993Sc13,1999Do34,2002Je05,2004Je03). Of the two possible choices (1992Sc03), π7/2[523] and π9/2[514], π7/2[523] is preferred (1993Sc13,1999Do34), based on the experimental Q_t pattern with K=7/2 or 9/2 and a comparison of experimental and calculated B(M1) values. AB crossing at ħω≈0.26 MeV.

& Band(a): π7/2[523], α=−1/2. Strongly-coupled band (1993Sc13,1999Do34,2002Je05,2004Je03). See also the comment for the signature=+1/2 component of this band. AB crossing at ħω≈0.26 MeV.

[a] Band(B): π7/2[404], α=+1/2. Strongly-coupled band (1992Sc03,1999Do34,2002Je05,2004Je03). AB crossing at ħω≈0.26 MeV; changes to (π7/2[523])⊗AEBC after AB crossing.

[b] Band(b): π7/2[404], α=−1/2. Strongly-coupled band (1992Sc03,1999Do34,2002Je05,2004Je03). AB crossing at ħω≈0.26 MeV; changes to π7/2[523]⊗AEBC after AB crossing.

[c] Band(C): π1/2[411], α=+1/2. (1999Do34,2002Je05,2004Je03).

[d] Band(c): π1/2[411], α=−1/2. (1999Do34,2002Je05,2004Je03).

[e] Band(D): Band based on (29/2−), α=+1/2. Possible continuation of the π7/2[523] band into (π7/2[523])⊗BC. EF and AD could also be involved at higher spins (2004Je03).

[f] Band(d): Band based on (31/2−), α=−1/2. Possible continuation of the π7/2[523] band into (π7/2[523])⊗BC. EF and AD could also be involved at higher spins (2004Je03).

[g] Band(E): (π7/2[404])⊗AB at low spins, α=+1/2. (π9/2[514])⊗AEBC at high spins (2004Je03,2002Je05).

[h] Band(e): (π7/2[404])⊗AB at low spins, α=−1/2. 9/2[514]⊗AEBC at high spins (2004Je03,2002Je05).

[i] Band(F): (π7/2[523])⊗AHBC, α=+1/2. (2004Je03).

[j] Band(f): (π7/2[523])⊗AHBC, α=−1/2. (2004Je03).

[k] Band(G): (π1/2[660])⊗AEBC,α=−1/2. (2004Je03).

[l] Band(H): (π9/2[514])⊗AB, α=+1/2. (2004Je03,2002Je05). This band has spins less by one unit in 2002Je05 than in 2004Je03.

[m] Band(h): (π9/2[514])⊗AB, α=−1/2. (2004Je03,2002Je05). This band has spins less by one unit in 2002Je05 than in 2004Je03.

[n] Band(I): π5/2[402], α=+1/2. (2002Je05,2004Je03).

[o] Band(i): π5/2[402], α=−1/2. (2002Je05,2004Je03).

[p] Band(J): Band based on 55/2+, α=−1/2.

[q] Band(K): Triaxial SD-1 band (2004Je03,2004Go14,2002Je05,2002Sc11, 2001Od03,1999Do34,1995Sc39). Q_t varies from 9.9 to 7.6 (2004Go14) from the 41/2 to the 69/2 levels. Others: Q_t over the entire band: 8.2 *+10−6* (2002Sc11); 7.4 *+7−4* or 7.7 *+23−13* (2002Sc47); 10.7 *7* (1993Sc13). Possible configuration=π$i_{13/2}$, 1/2[660], α=+1/2; β_2≈0.42 (1993Sc13,1992Sc03). Percent population (relative to normal-deformed yrast band)≈10 (2004Je03,1999Do34), 14 (2002Je05).

[r] Band(L): One-phonon wobbling-mode Triaxial SD-2 band (2004Je03,2004Go14,2002Je05,2001Od03,1999Do34). One-phonon wobbling mode excitation built on yrast π$i_{13/2}$ triaxial SD-1 band. Q_t varies from 8.5 to 6.7 (2004Go14) from the 47/2 to the 71/2 levels. Percent population (relative to normal-deformed yrast band)≈3 (2004Je03), ≈2.0 (2002Je05), ≈2.5 (1999Do34).

[s] Band(M): Two-phonon wobbling-mode Triaxial SD-3 band, α=+1/2 (2004Je03,2002Je05). Two-phonon wobbling mode excitation built on yrast triaxial SD-1 band. Percent population (relative to normal-deformed yrast band)≈1.2 (2004Je03), ≈0.7 (2002Je05).

[t] Band(N): Triaxial SD-4 band, α=−1/2 (2004Je03,2002Je05). Possibly negative-parity yrast band. This band cannot be interpreted

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^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05 (continued)

^{163}Lu Levels (continued)

as a wobbling phonon excitation since its nature is different from SD-1 to SD-3 bands. Probable configuration= $\pi i_{13/2}\otimes(\nu i_{13/2},\alpha=-1/2)\otimes(\nu h_{9/2},\alpha=-1/2)$ Percent population (relative to normal-deformed yrast band)≈0.9 (2004Je03), ≈0.35 (2002Je05).

$\gamma(^{163}Lu)$

POL=$(I_{vertical}-I_{horizontal})/(I_{vertical}+I_{horizontal})$ (2004Je03).
DCO=$I^{\gamma_1}{}_{25^\circ}(gate^{\gamma_2}{}_{90^\circ})/I^{\gamma_1}{}_{90^\circ}(gate^{\gamma_2}{}_{25^\circ})$ (2004Je03).

E_γ †	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
(45.39 *8*)		61.2	$5/2^+$	16.95	$3/2^+$		E_γ: from the 'Adopted Gammas'.
62.1 *10*	5.6 *20*	123.1	$7/2^+$	61.2	$5/2^+$		E_γ: 61.5 (1999Do34).
70.7 *10*	4.3 *30*	193.9	$7/2^-$	123.1	$7/2^+$		
85.4 *10*	5.5 *12*	294.3	$11/2^-$	209.0	$9/2^-$		
85.9 *10*	13.5 *27*	209.0	$9/2^-$	123.1	$7/2^+$		
102.0 *10*	2.5 *3*	3122.2	$33/2^-$	3020.3	$31/2^-$		
103.76@ *10*	0.70 *10*	2539.7	$25/2^+$	2435.9	$23/2^+$		
106.2 *10*	4.9 *5*	519.3	$11/2^+$	413.3	$9/2^+$		
117.9 *10*	0.7 *3*	2802.5	$29/2^+$	2684.5	$27/2^+$		
130.0 *10*	0.90 *20*	2539.7	$25/2^+$	2409.7	$21/2^+$		
132.8 *10*	6.5 *22*	193.9	$7/2^-$	61.2	$5/2^+$		
140.26@ *10*	5.7 *7*	2680.0	$27/2^+$	2539.7	$25/2^+$		
140.3 *10*	1.00 *10*	2539.7	$25/2^+$	2399.3	$25/2^+$		
152.7 *10*	40 *3*	643.6	$15/2^-$	490.9	$13/2^-$		
162.2 *10*	10.2 *22*	223.4	$7/2^+$	61.2	$5/2^+$		E_γ: 161.6 (1999Do34).
166.1 *10*	1.6 *4*	3020.3	$31/2^-$	2854.2	$29/2^-$		
172.2 *10*	4.9 *6*	2399.3	$25/2^+$	2227.2	$23/2^+$		
173.87 *10*	7.7 *18*	190.83	$5/2^+$	16.95	$3/2^+$	D	DCO=0.38 *8* (1999Do34) Iγ(174)/Iγ(191)=8.4 *13*/3.4 *4* (1999Do34) is in disagreement.
176.85@ *10*	12.1 *14*	2923.8	$31/2^-$	2747.1	$29/2^-$		
177.97@ *10*	19.0 *22*	1114.1	$19/2^-$	936.2	$17/2^-$		
180.2 *10*	9.8 *9*	2860.1	$29/2^+$	2680.0	$27/2^+$		
186.15@ *10*	18.4 *26*	309.3	$9/2^+$	123.1	$7/2^+$		
188.2 *10*	5.0 *9*	249.7	$7/2^+$	61.2	$5/2^+$	D	DCO=0.60 *9* (1999Do34). Iγ(188)/Iγ(233)=6.9 *10*/18.0 *18* (1999Do34) is in disagreement.
188.99@ *10*	18.6 *26*	2802.5	$29/2^+$	2613.4	$27/2^+$		
189.8 *10*	8.8 *31*	413.3	$9/2^+$	223.4	$7/2^+$		
190.90 *20*	18.2 *12*	190.83	$5/2^+$	0.0	$1/2^+$		
191.54@ *10*	16.0 *14*	1676.2	$23/2^-$	1484.6	$21/2^-$		
196.6 *10*	49 *4*	490.9	$13/2^-$	294.3	$11/2^-$		
196.7 *10*	9# *5*	1935.7	$17/2^+$	1738.9	$13/2^+$	(Q)	DCO=0.8 *4* (1999Do34) I_γ: Iγ(197)/Iγ(386)=3.4 *4*/100 (1999Do34).
197.29@ *10*	48 *8*	3319.6	$35/2^-$	3122.2	$33/2^-$		
198.56@ *10*	40 *5*	3122.2	$33/2^-$	2923.8	$31/2^-$		
200.42@ *10*	31 *3*	3002.9	$31/2^+$	2802.5	$29/2^+$		
203.23@ *10*	13.7 *20*	2306.4	$27/2^-$	2103.2	$25/2^-$		
207.0 *10*	1.1 *8*	620.6	$11/2^+$	413.3	$9/2^+$		Iγ(207)/Iγ(371)=4.2 *8*/9.4 *14* (1999Do34) is in disagreement.
210.0 *10*	17.2 *17*	519.3	$11/2^+$	309.3	$9/2^+$		

Continued on next page (footnotes at end of table)

^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05 (continued)

$\gamma(^{163}Lu)$ (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
214.00[@] *10*	29.4 *28*	2613.4	27/2$^+$	2399.3	25/2$^+$		
217.17[@] *10*	13.6 *13*	3077.2	31/2$^+$	2860.1	29/2$^+$		
228.0 *10*	7.1 *17*	641.3	11/2$^+$	413.3	9/2$^+$		
231.04[@] *10*	87 *6*	3550.6	37/2$^-$	3319.6	35/2$^-$		
232.9 *10*	8.7 *22*	249.7	7/2$^+$	16.95	3/2$^+$	(Q)	DCO=0.75 *11* (1999Do34).
233.0 *10*	8.0 *13*	874.2	13/2$^+$	641.3	11/2$^+$		
234.3 *10*	16.5 *15*	753.7	13/2$^+$	519.3	11/2$^+$		
238.6 *10*	18.4 *15*	3482.7	35/2$^+$	3244.0	33/2$^+$		
241.1 *10*	26.8 *21*	3244.0	33/2$^+$	3002.9	31/2$^+$		
244.02[@] *10*	1.8 *3*	2680.0	27/2$^+$	2435.9	23/2$^+$		
245.48[@] *10*	3.8 *9*	3322.7	33/2$^+$	3077.2	31/2$^+$		
246.7 *10*	1.00 *10*	2860.1	29/2$^+$	2613.4	27/2$^+$		
247.6[&b] *5*	1.0 *4*	309.3	9/2$^+$	61.2	5/2$^+$		I_γ: deduced from Iγ(248)/Iγ(488)=1.6 *6*/100 (1999Do34).
248.20[@] *10*	1.8 *4*	3570.9	35/2$^+$	3322.7	33/2$^+$		
249.0 *10*	5.5 *11*	3666.7	35/2$^-$	3417.6	33/2$^-$		
252.2 *10*	5.2 *13*	4830.0	41/2$^-$	4577.7	39/2$^-$		
253.37[@] *10*	16.9 *14*	1007.0	15/2$^+$	753.7	13/2$^+$		
257.8 *10*	2.8 *4*	4252.7	39/2$^-$	3994.8	37/2$^-$		
258.2 *10*	2.0 *8*	4149.7	39/2$^+$	3891.4	37/2$^+$		
260.84[@] *10*	23.9 *19*	2399.3	25/2$^+$	2138.6	23/2$^+$		
263.3 *10*	3.8[#] *20*	2199.2	21/2$^+$	1935.7	17/2$^+$	(Q)	DCO=0.78 *11* (1999Do34) Iγ(263)/Iγ(386)=18.7 *19*/100 (1999Do34).
264.6 *10*	2.5 *9*	1416.0	17/2$^+$	1151.4	15/2$^+$		
268.1 *10*	4.0 *11*	3122.2	33/2$^-$	2854.2	29/2$^-$		
269.7 *10*	4.3 *10*	4577.7	39/2$^-$	4308.1	37/2$^-$		
270.87 *17*	12.9 *20*	520.64	9/2$^+$	249.7	7/2$^+$	D	DCO=0.59 *8* (1999Do34). Iγ(271)/Iγ(330)=9.3 *11*/16.3 *16* (1999Do34).
270.87[@] *10*	63 *4*	3821.5	39/2$^-$	3550.6	37/2$^-$		
272.02[@] *10*	9.3 *11*	2138.6	23/2$^+$	1866.6	21/2$^+$		
274.31[@] *10*	9.7 *10*	1281.3	17/2$^+$	1007.0	15/2$^+$		
277.2 *10*	6.5 *12*	1151.4	15/2$^+$	874.2	13/2$^+$		
278.40[@] *10*	23.0 *17*	4067.1	39/2$^+$	3788.7	37/2$^+$		
279.58[@] *10*	18.9 *16*	1560.9	19/2$^+$	1281.3	17/2$^+$		
280.5 *10*	1.00 *10*	2680.0	27/2$^+$	2399.3	25/2$^+$		
281.18[@] *10*	57 *4*	4102.7	41/2$^-$	3821.5	39/2$^-$		
282.00[@] *10*	19.1 *22*	490.9	13/2$^-$	209.0	9/2$^-$		
285.1 *10*	2.3 *6*	5114.9	43/2$^-$	4830.0	41/2$^-$		
287.7 *10*	1.0 *4*	4816.1	43/2$^+$	4528.4	41/2$^+$		
290.5[b] *10*	0.5 *4*	2019.5	21/2$^+$	1729.1	19/2$^+$		
292.4 *10*	2.2 *3*	4847.8	43/2$^-$	4555.4	41/2$^-$		
292.64[@] *10*	45 *3*	936.2	17/2$^-$	643.6	15/2$^-$		
296.1[&b] *5*	1.3 *4*	519.3	11/2$^+$	223.4	7/2$^+$		I_γ: deduced from Iγ(296)/Iγ(488)=2.1 *7*/100 (1999Do34).
296.5[&b] *5*	4.5 *9*	520.64	9/2$^+$	223.4	7/2$^+$		I_γ: deduced from Iγ(296)/Iγ(330)=3.6 *7*/16.3 *16* and Iγ(296)/Iγ(271)=3.6 *7*/9.3 *11* (1999Do34).
299.3 *10*	0.4 *3*	3319.6	35/2$^-$	3020.3	31/2$^-$		
302.8 *10*	2.4 *4*	4555.4	41/2$^-$	4252.7	39/2$^-$		
303.3 *10*	2.7 *7*	5418.3	45/2$^-$	5114.9	43/2$^-$		
304.6 *10*	3.8 *4*	3077.2	31/2$^+$	2773.0	27/2$^+$		
305.6 *10*	0.8 *6*	5208.5	45/2$^+$	4903.0	43/2$^+$		
305.65[@] *10*	9.1 *13*	1866.6	21/2$^+$	1560.9	19/2$^+$		

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^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05 (continued)

$\gamma(^{163}Lu)$ (continued)

E_γ †	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
306.06@ *10*	27.1 *21*	3788.7	37/2$^+$	3482.7	35/2$^+$		
312.0 *10*	3.0 *5*	3634.7	35/2$^+$	3322.7	33/2$^+$		
313.1 *10*	1.2 *9*	1729.1	19/2$^+$	1416.0	17/2$^+$		
313.68@ *10*	15.9 *12*	4718.6	43/2$^+$	4404.8	41/2$^+$		
314.85 *10*	77# *10*	2514.0	25/2$^+$	2199.2	21/2$^+$	(Q)	DCO=0.88 *13* (1999Do34) I_γ: Iγ(315)/Iγ(386)=68 *7*/100 (1999Do34).
314.9 *10*	1.7 *4*	2802.5	29/2$^+$	2487.5	25/2$^+$		
318.4 *10*	0.5 *4*	3002.9	31/2$^+$	2684.5	27/2$^+$		
319.1b *10*	0.4 *3*	2338.6	23/2$^+$	2019.5	21/2$^+$		
319.8 *10*	1.7 *4*	5167.6	45/2$^-$	4847.8	43/2$^-$		
320.4 *10*	2.2 *6*	3891.4	37/2$^+$	3570.9	35/2$^+$		
320.44@ *10*	4.1 *9*	2860.1	29/2$^+$	2539.7	25/2$^+$		
327.5 *10*	1.4 *4*	5495.0	47/2$^-$	5167.6	45/2$^-$		
327.58@ *10*	24.0 *24*	4430.2	43/2$^-$	4102.7	41/2$^-$		
328.2 *10*	4.3 *6*	3994.8	37/2$^-$	3666.7	35/2$^-$		
329.22@ *10*	13.3 *20*	4759.5	45/2$^-$	4430.2	43/2$^-$		
329.85@ *10*	18.7 *26*	520.64	9/2$^+$	190.83	5/2$^+$	(Q)	DCO=0.79 *17* (1999Do34)
330.37 *15*	14.3 *15*	5386.8	47/2$^+$	5056.4	45/2$^+$		
332.1 *10*	9.9 *10*	5719.0	49/2$^+$	5386.8	47/2$^+$		
337.4 *10*	2.5 *6*	5755.8	47/2$^-$	5418.3	45/2$^-$		
337.7 *10*	16 *4*	4404.8	41/2$^+$	4067.1	39/2$^+$		
337.83@ *10*	19 *4*	5056.4	45/2$^+$	4718.6	43/2$^+$		
338.8 *10*	1.20 *20*	5897.1	49/2$^+$	5558.3	47/2$^+$		
340.8 *10*	1.0 *6*	5897.1	49/2$^+$	5556.3	47/2$^+$		
345.44@ *10*	9.1 *10*	6064.2	51/2$^+$	5719.0	49/2$^+$		
347.08 *17*	7.4 *15*	967.58	13/2$^+$	620.6	11/2$^+$	D	DCO=0.76 *16* (1999Do34). I_γ: Iγ(347)/Iγ(447)=7.1 *11*/36 *4* (1999Do34).
347.9 *10*	1.8 *12*	5556.3	47/2$^+$	5208.5	45/2$^+$		
348.3 *10*	4.5 *17*	6245.3	51/2$^+$	5897.1	49/2$^+$		
349.21@ *10*	72 *4*	643.6	15/2$^-$	294.3	11/2$^-$		
349.62@ *10*	10.6 *10*	6414.0	53/2$^+$	6064.2	51/2$^+$		
349.7 *10*	1.5 *7*	6354.7	51/2$^+$	6005.0	49/2$^+$		
351.2 *10*	2.4 *6*	6106.9	49/2$^-$	5755.8	47/2$^-$		
352.0 *10*	4.6 *12*	413.3	9/2$^+$	61.2	5/2$^+$		
356.9 *10*	1.1 *4*	5851.9	49/2$^-$	5495.0	47/2$^-$		
357.1 *10*	2.7 *6*	3129.8	31/2$^+$	2773.0	27/2$^+$		
363.0 *10*	2.0 *8*	4254.5	39/2$^+$	3891.4	37/2$^+$		
363.3 *10*	0.5 *3*	6718.0	53/2$^+$	6354.7	51/2$^+$		
363.6 *10*	0.9 *3*	6978.9	55/2$^+$	6615.4	53/2$^+$		
370.0 *10*	1.1 *6*	6615.4	53/2$^+$	6245.3	51/2$^+$		
370.4 *10*	0.9 *3*	6222.3	51/2$^-$	5851.9	49/2$^-$		
370.50@ *10*	24.8 *24*	1484.6	21/2$^-$	1114.1	19/2$^-$		
370.93@ *10*	25.0 *35*	620.6	11/2$^+$	249.7	7/2$^+$	(Q)	DCO=0.83 *12* (1999Do34).
370.95@ *10*	17.2 *21*	5130.6	47/2$^-$	4759.5	45/2$^-$		
373.35 *14*	16.0 *14*	5503.9	49/2$^-$	5130.6	47/2$^-$		
373.74@ *10*	6.0 *6*	6787.7	55/2$^+$	6414.0	53/2$^+$		
373.9 *10*	0.5 *4*	7505.8	57/2$^+$	7131.9	55/2$^+$		
374.5 *10*	3.0 *9*	4903.0	43/2$^+$	4528.4	41/2$^+$		
374.74@ *10*	8.0 *10*	3122.2	33/2$^-$	2747.1	29/2$^-$		E_γ: poor fit; level-energy difference=375.08.
377.0b *10*	0.5# *4*	3863.2	33/2$^+$	3486.2	31/2$^+$		
378.8 *10*	2.0 *7*	4528.4	41/2$^+$	4149.7	39/2$^+$		

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^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05 (continued)

$\gamma(^{163}Lu)$ (continued)

E_γ †	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
379.9 *10*	7.3 *8*	2399.3	25/2$^+$	2019.5	21/2$^+$		
385.54@ *10*	4.9 *10*	7173.0	57/2$^+$	6787.7	55/2$^+$		
386.2 *10*	3.4 *5*	2613.4	27/2$^+$	2227.2	23/2$^+$		
386.31 *10*	100 *5*	2900.3	29/2$^+$	2514.0	25/2$^+$	Q	DCO=0.95 *13* (1999Do34)
389.66 *11*	14.4 *14*	3002.9	31/2$^+$	2613.4	27/2$^+$		
391.5 *10*	2.9 *6*	2399.3	25/2$^+$	2008.0	21/2$^+$		
392.4 *10*	2.7 *8*	5208.5	45/2$^+$	4816.1	43/2$^+$		
394.3 *10*	1.4 *4*	7784.2	59/2$^+$	7389.8	57/2$^+$		
394.5 *10*	3.4 *9*	6501.4	51/2$^-$	6106.9	49/2$^-$		
394.5 *10*	0.7 *3*	6616.7	53/2$^-$	6222.3	51/2$^-$		
394.90 *16*	7.5 *11*	1501.4	17/2$^+$	1106.5	15/2$^+$		I_γ: Iγ(395)/Iγ(534)=4.1 *6*/37 *4* (1999Do34) is in disagreement.
395.99@ *10*	9.5 *15*	3319.6	35/2$^-$	2923.8	31/2$^-$		
396.3&b *5*	16 *4*	620.6	11/2$^+$	223.4	7/2$^+$		I_γ: deduced from Iγ(396)/Iγ(371)=6.1 *9*/9.4 *14* (1999Do34).
396.5 *10*	29.7 *28*	519.3	11/2$^+$	123.1	7/2$^+$		
397.3 *10*	5.2 *8*	3417.6	33/2$^-$	3020.3	31/2$^-$		
397.34@ *10*	12.7 *13*	3077.2	31/2$^+$	2680.0	27/2$^+$		
403.20@ *10*	13.1 *12*	2802.5	29/2$^+$	2399.3	25/2$^+$		
404.7 *10*	1.1 *3*	6906.2	53/2$^-$	6501.4	51/2$^-$		
407.4 *10*	5.0# *19*	3486.2	31/2$^+$	3078.8	27/2$^+$		
410.21 *11*	4.5 *4*	7583.3	59/2$^+$	7173.0	57/2$^+$		
410.9b *10*	0.5# *4*	4368.7	37/2$^+$	3957.8	35/2$^+$		
410.9 *10*	1.5 *3*	7389.8	57/2$^+$	6978.9	55/2$^+$		
411.55@ *10*	8.5 *9*	5915.7	51/2$^-$	5503.9	49/2$^-$		
414.0 *10*	0.5 *3*	7131.9	55/2$^+$	6718.0	53/2$^+$		
417.20@ *10*	6.7 *8*	6332.9	53/2$^-$	5915.7	51/2$^-$		
417.5 *10*	0.7 *4*	7034.2	55/2$^-$	6616.7	53/2$^-$		
417.8 *10*	10.6 *14*	641.3	11/2$^+$	223.4	7/2$^+$		
426.45 *14*	3.5 *4*	8010.0	61/2$^+$	7583.3	59/2$^+$		
426.8 *3*	18# *3*	2514.0	25/2$^+$	2087.3	21/2$^+$	(Q)	DCO=0.84 *12* (1999Do34) I_γ: Iγ(427)/Iγ(386)=12.5 *19*/100 (1999Do34).
426.95@ *10*	37.8 *26*	2103.2	25/2$^-$	1676.2	23/2$^-$		
428.44@ *10*	24.2 *19*	3550.6	37/2$^-$	3122.2	33/2$^-$		
431.4 *10*	0.4 *3*	7465.6	57/2$^-$	7034.2	55/2$^-$		
431.4 *10*	1.2 *3*	8667.5	63/2$^+$	8236.2	61/2$^+$		
436.6 *10*	0.4 *3*	7902.2	59/2$^-$	7465.6	57/2$^-$		
440.61@ *10*	14.4 *15*	2747.1	29/2$^-$	2306.4	27/2$^-$		
441.3 *10*	2.8 *5*	3570.9	35/2$^+$	3129.8	31/2$^+$		
441.54@ *10*	27.0 *21*	3244.0	33/2$^+$	2802.5	29/2$^+$		
443.8 *10*	1.0 *5*	7350.0	55/2$^-$	6906.2	53/2$^-$		
444.35@ *10*	44 *3*	753.7	13/2$^+$	309.3	9/2$^+$		
444.6 *10*	0.60# *20*	4936.8	41/2$^+$	4492.1	39/2$^+$		
445.30@ *10*	37.4 *21*	936.2	17/2$^-$	490.9	13/2$^-$		
446.6 *10*	1.0 *6*	6005.0	49/2$^+$	5558.3	47/2$^+$		
446.91@ *10*	22.9 *25*	967.58	13/2$^+$	520.64	9/2$^+$	(Q)	DCO=0.82 *18* (1999Do34)
447.9@ *10*	2.3 *6*	8458.3	63/2$^+$	8010.0	61/2$^+$		
448.8 *10*	0.4 *4*	7954.7	59/2$^+$	7505.8	57/2$^+$		
450.30 *10*	96# *9*	3350.6	33/2$^+$	2900.3	29/2$^+$		
452.0 *10*	1.3 *3*	8236.2	61/2$^+$	7784.2	59/2$^+$		
453.9b *10*	0.20# *20*	1738.9	13/2$^+$	1285.0?	(13/2$^+$)		

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^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05 (continued)

$\gamma(^{163}Lu)$ (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	Comments
456.0 *10*	8.5 *9*	6788.8	$55/2^-$	6332.9	$53/2^-$			
456.2 *10*	0.20 *10*	9707.7	$67/2^-$	9251.6	$65/2^-$			
456.8 *10*	1.2 *6*	7245.7	$57/2^-$	6788.8	$55/2^-$			
461.0 *10*	8.8 *18*	874.2	$13/2^+$	413.3	$9/2^+$			
462.66[@] *10*	3.1 *11*	3322.7	$33/2^+$	2860.1	$29/2^+$			
462.7 *10*	0.5 *3*	7812.7	$57/2^-$	7350.0	$55/2^-$			
467.7 *10*	2.5 *6*	8925.8	$65/2^+$	8458.3	$63/2^+$			
470.63[@] *10*	79 *6*	1114.1	$19/2^-$	643.6	$15/2^-$			
471.3 *10*	0.8 *4*	9624.3	$67/2^+$	9153.0	$65/2^+$			
471.60 *17*	10.6[#] *7*	3957.8	$35/2^+$	3486.2	$31/2^+$			
474.73[@] *10*	16.9 *14*	2613.4	$27/2^+$	2138.6	$23/2^+$			
475.9 *10*	0.70[#] *20*	5563.7	$45/2^+$	5087.9	$43/2^+$	(M1+E2)	−3.6 *+10−19*	Mult.,δ: Iγ(25°)/Iγ(90°)=0.49 *10* (2002Je10); δ=−0.19 *+8−12* is also possible but less likely from model considerations.
477.3 *10*	0.5 *4*	8290.0	$59/2^-$	7812.7	$57/2^-$			
479.5[b] *10*	0.9 *8*	2487.5	$25/2^+$	2008.0	$21/2^+$			
479.68[@] *10*	26.2 *22*	3482.7	$35/2^+$	3002.9	$31/2^+$			
481.7 *10*	2.0 *7*	9407.6	$67/2^+$	8925.8	$65/2^+$			
482.4 *10*	0.5 *4*	7728.0	$59/2^-$	7245.7	$57/2^-$			
485.5 *10*	1.0 *4*	9153.0	$65/2^+$	8667.5	$63/2^+$			
486.00[@] *10*	15.8 *20*	1106.5	$15/2^+$	620.6	$11/2^+$	(Q)		DCO=0.78 *11* (1999Do34)
487.69[@] *10*	63 *5*	1007.0	$15/2^+$	519.3	$11/2^+$			
490.8 *10*	0.5 *4*	8712.3	$63/2^-$	8221.5	$61/2^-$			
493.5 *10*	0.5 *4*	8221.5	$61/2^-$	7728.0	$59/2^-$			
493.68[@] *10*	4.9 *7*	3570.9	$35/2^+$	3077.2	$31/2^+$			
496.72 *19*	3.4 *8*	2773.0	$27/2^+$	2276.3	$23/2^+$			
499.1 *10*	0.4 *3*	8789.1	$61/2^-$	8290.0	$59/2^-$			
501.93[@] *10*	26.0 *19*	3821.5	$39/2^-$	3319.6	$35/2^-$			
505.0 *10*	2.0 *4*	3634.7	$35/2^+$	3129.8	$31/2^+$			
505.5 *10*	2.6[#] *10*	4368.7	$37/2^+$	3863.2	$33/2^+$			
505.8 *10*	3.9[#] *20*	2514.0	$25/2^+$	2008.0	$21/2^+$			
508.0 *10*	0.5 *3*	9915.6	$69/2^+$	9407.6	$67/2^+$			
510.1 *10*	7.9 *8*	2613.4	$27/2^+$	2103.2	$25/2^-$			
510.2 *10*	7.1 *12*	1151.4	$15/2^+$	641.3	$11/2^+$			
511.6 *10*	0.5 *4*	10427.1	$71/2^+$	9915.6	$69/2^+$			
513.0 *10*	0.5 *3*	10137.4	$69/2^+$	9624.3	$67/2^+$			
515.0 *10*	0.5 *5*	10652.4	$71/2^+$	10137.4	$69/2^+$			
515.30 *10*	87[#] *8*	3865.9	$37/2^+$	3350.6	$33/2^+$			
522.0 *10*	3.8 *9*	4830.0	$41/2^-$	4308.1	$37/2^-$			
527.0 *10*	0.4 *3*	11504.2	$75/2^+$	10977.2	$73/2^+$			
527.77[@] *10*	40 *4*	1281.3	$17/2^+$	753.7	$13/2^+$			
529.8 *10*	0.5[#] *4*	2199.2	$21/2^+$	1669.5	$19/2^+$	(D)		DCO=0.97 *14* (1999Do34) I$_\gamma$: Iγ(530)/Iγ(386)=5.4 *8*/100 (1999Do34).
532.82[@] *10*	12.7 *12*	2399.3	$25/2^+$	1866.6	$21/2^+$			
533.81[@] *10*	13.9 *18*	1501.4	$17/2^+$	967.58	$13/2^+$	(Q)		DCO=0.85 *12* (1999Do34)
534.3 *10*	11.5[#] *8*	4492.1	$39/2^+$	3957.8	$35/2^+$			
537.3 *10*	2.1 *5*	5114.9	$43/2^-$	4577.7	$39/2^-$			
539.2 *10*	0.4 *3*	9251.6	$65/2^-$	8712.3	$63/2^-$			
541.4 *10*	1.00 *10*	2680.0	$27/2^+$	2138.6	$23/2^+$			

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^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05 (continued)

$\gamma(^{163}Lu)$ (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	Comments
541.8 *10*	9.2 *14*	1416.0	17/2$^+$	874.2	13/2$^+$			
544.72[@] *10*	23.5 *18*	3788.7	37/2$^+$	3244.0	33/2$^+$			
545.9 *10*	13.6 *16*	2684.5	27/2$^+$	2138.6	23/2$^+$			
548.49[@] *10*	29.5 *22*	1484.6	21/2$^-$	936.2	17/2$^-$			
550.1 *10*	0.5 *4*	10977.2	73/2$^+$	10427.1	71/2$^+$			
552.09[@] *10*	33.8 *25*	4102.7	41/2$^-$	3550.6	37/2$^-$			
553.85[@] *10*	73 *5*	1560.9	19/2$^+$	1007.0	15/2$^+$			
557.4 *10*	2.5 *6*	3634.7	35/2$^+$	3077.2	31/2$^+$			
560.6 *10*	2.3 *4*	4555.4	41/2$^-$	3994.8	37/2$^-$			
562.00[@] *10*	117 *8*	1676.2	23/2$^-$	1114.1	19/2$^-$			
562.96 *10*	16.4 *22*	1669.5	19/2$^+$	1106.5	15/2$^+$			
563.4 *10*	2.0 *5*	3417.6	33/2$^-$	2854.2	29/2$^-$			
564.8 *10*	5.3[#] *20*	3078.8	27/2$^+$	2514.0	25/2$^+$			
568.0 *10*	3.2[#] *6*	4936.8	41/2$^+$	4368.7	37/2$^+$			
568.6 *10*	0.9 *3*	3891.4	37/2$^+$	3322.7	33/2$^+$			
577.2 *10*	3.8 *6*	3994.8	37/2$^-$	3417.6	33/2$^-$			
577.7 *10*	2.7 *15*	1729.1	19/2$^+$	1151.4	15/2$^+$			
577.73[@] *10*	61 *5*	2138.6	23/2$^+$	1560.9	19/2$^+$			
578.65 *10*	79[#] *8*	4444.6	41/2$^+$	3865.9	37/2$^+$			
578.71[@] *10*	18.2 *23*	4149.7	39/2$^+$	3570.9	35/2$^+$			
581.2 *10*	1.8 *10*	2684.5	27/2$^+$	2103.2	25/2$^-$			
584.45[@] *10*	36 *3*	4067.1	39/2$^+$	3482.7	35/2$^+$			
585.17[@] *10*	35 *3*	1866.6	21/2$^+$	1281.3	17/2$^+$			
585.86 *17*	18.3 *21*	2087.3	21/2$^+$	1501.4	17/2$^+$			
585.9 *10*	7.2[#] *25*	3486.2	31/2$^+$	2900.3	29/2$^+$			
586.0 *10*	5.3 *8*	4252.7	39/2$^-$	3666.7	35/2$^-$			
588.4 *10*	3.2 *8*	5418.3	45/2$^-$	4830.0	41/2$^-$			
592.0 *10*	2.8 *8*	2008.0	21/2$^+$	1416.0	17/2$^+$			
595.2 *10*	3.0 *5*	4847.8	43/2$^-$	4252.7	39/2$^-$			
595.8 *10*	12.0[#] *8*	5087.9	43/2$^+$	4492.1	39/2$^+$			
603.5 *10*	6.0 *10*	2019.5	21/2$^+$	1416.0	17/2$^+$			
606.85[@] *10*	9.7 *14*	2276.3	23/2$^+$	1669.5	19/2$^+$			
607.1 *10*	8.8[#] *6*	3957.8	35/2$^+$	3350.6	33/2$^+$	(E2+M1)	−3.1 *4*	Mult.,δ: from Iγ(25°)/Iγ(90°)=0.42 *2*, DCO=0.34 *6*, POL=+0.05 *5* (2002Je05,2001Od03).
608.77[@] *10*	23.8 *19*	4430.2	43/2$^-$	3821.5	39/2$^-$			
609.6 *10*	0.8 *7*	2338.6	23/2$^+$	1729.1	19/2$^+$			
612.1 *10*	2.1 *4*	5167.6	45/2$^-$	4555.4	41/2$^-$			
616.17[@] *10*	27.7 *22*	4404.8	41/2$^+$	3788.7	37/2$^+$			
617.48[@] *10*	86 *6*	2923.8	31/2$^-$	2306.4	27/2$^-$			
618.72[@] *10*	39 *3*	2103.2	25/2$^-$	1484.6	21/2$^-$			
619.8 *10*	2.5 *12*	4254.5	39/2$^+$	3634.7	35/2$^+$			
620.9 *10*	10.7 *14*	2487.5	25/2$^+$	1866.6	21/2$^+$			
626.2 *10*	5.6[#] *4*	4492.1	39/2$^+$	3865.9	37/2$^+$	(E2+M1)	−3.1 *4*	Mult.,δ: from Iγ(25°)/Iγ(90°)=0.47 *2*, DCO=0.33 *6*, POL=+0.12 *5* (2002Je05,2001Od03).
626.8 *10*	5.1[#] *10*	5563.7	45/2$^+$	4936.8	41/2$^+$			
630.14[@] *10*	100 *5*	2306.4	27/2$^-$	1676.2	23/2$^-$			
636.8 *10*	3.8 *8*	4528.4	41/2$^+$	3891.4	37/2$^+$			
638.96 *10*	63[#] *6*	5083.5	45/2$^+$	4444.6	41/2$^+$			

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^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05 (continued)

$\gamma(^{163}Lu)$ (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	Comments
640.7 *10*	3.4 *9*	5755.8	47/2$^-$	5114.9	43/2$^-$			
643.3 *10*	4.3[#] *3*	5087.9	43/2$^+$	4444.6	41/2$^+$	(E2+M1)	−3.1 *4*	Mult.,δ: from DCO=0.32 *6*, POL=+0.11 *5* (2002Je05,2001Od03).
643.81[@] *10*	21.0 *18*	2747.1	29/2$^-$	2103.2	25/2$^-$			
645.0 *10*	1.5[#] *4*	6964.5	51/2$^{(-)}$	6319.5	47/2$^{(-)}$			
646.3 *10*	22 *3*	3666.7	35/2$^-$	3020.3	31/2$^-$			
647.2 *10*	2.1 *4*	5495.0	47/2$^-$	4847.8	43/2$^-$			
648.5 *10*	3.0 *8*	4903.0	43/2$^+$	4254.5	39/2$^+$			
651.30[@] *10*	46 *3*	4718.6	43/2$^+$	4067.1	39/2$^+$			
652.59 *21*	31.4 *24*	5056.4	45/2$^+$	4404.8	41/2$^+$			E_γ: Poor fit. Level-energy difference=651.6.
653.4 *10*	2.1 *5*	5556.3	47/2$^+$	4903.0	43/2$^+$			
653.8 *10*	9.3 *12*	2138.6	23/2$^+$	1484.6	21/2$^-$			
654.6 *10*	14.0[#] *9*	5742.5	47/2$^+$	5087.9	43/2$^+$			
655.4 *10*	0.8 *5*	5558.3	47/2$^+$	4903.0	43/2$^+$			
656.60[@] *10*	22.2 *18*	4759.5	45/2$^-$	4102.7	41/2$^-$			
658.8 *10*	0.5 *5*	5418.3	45/2$^-$	4759.5	45/2$^-$			
658.9 *10*	3.4[#] *3*	5742.5	47/2$^+$	5083.5	45/2$^+$	(E2+M1)	−3.1 *4*	Mult.,δ: from Iγ(25°)/Iγ(90°)=0.47 *2*, DCO=0.30 *6*, POL=+0.17 *9* (2002Je05,2001Od03).
662.85[@] *10*	17.5 *20*	5719.0	49/2$^+$	5056.4	45/2$^+$			
666.3 *10*	4.0 *15*	2227.2	23/2$^+$	1560.9	19/2$^+$			
666.54[@] *10*	11.9 *14*	4816.1	43/2$^+$	4149.7	39/2$^+$			
667.97[@] *10*	22.5 *22*	5386.8	47/2$^+$	4718.6	43/2$^+$			
670.7 *10*	5.0 *8*	3417.6	33/2$^-$	2747.1	29/2$^-$			
673.2 *10*	3.4[#] *10*	6453.7	51/2$^+$	5780.5	49/2$^+$	(E2+M1)	−3.1 *4*	Mult.,δ: from Iγ(25°)/Iγ(90°)=0.46 *2*, DCO=0.38 *6*, POL=+0.18 *9* (2002Je05,2001Od03).
677.14[@] *10*	14.7 *15*	6064.2	51/2$^+$	5386.8	47/2$^+$			
680.1 *10*	1.7 *5*	5208.5	45/2$^+$	4528.4	41/2$^+$			
680.7 *10*	1.4 *11*	2409.7	21/2$^+$	1729.1	19/2$^+$			
683.6[b] *10*	1.2 *8*	4254.5	39/2$^+$	3570.9	35/2$^+$			
684.3 *10*	0.5 *4*	5114.9	43/2$^-$	4430.2	43/2$^-$			Iγ(25°)/Iγ(90°)=1.73 *35* (2004Je03). Mult.: ΔJ=0 transition.
684.3 *10*	1.7 *4*	5851.9	49/2$^-$	5167.6	45/2$^-$			
685.1 *10*	6.2[#] *12*	6248.8	49/2$^+$	5563.7	45/2$^+$			
686.8 *10*	1.0 *8*	6245.3	51/2$^+$	5558.3	47/2$^+$			
686.8 *10*	1.7[#] *5*	7219.9	55/2$^+$	6533.1	53/2$^+$			
688.5 *10*	1.6 *7*	5897.1	49/2$^+$	5208.5	45/2$^+$			
688.7 *10*	4.8 *12*	6106.9	49/2$^-$	5418.3	45/2$^-$			
689.1 *10*	5.8 *13*	6245.3	51/2$^+$	5556.3	47/2$^+$			
694.96 *10*	16.4 *17*	6414.0	53/2$^+$	5719.0	49/2$^+$			
696.97 *11*	48[#] *5*	5780.5	49/2$^+$	5083.5	45/2$^+$			
697.8 *10*	1.8[#] *10*	2199.2	21/2$^+$	1501.4	17/2$^+$			I_γ: Iγ(697)/Iγ(386)=23 *5*/100 (1999Do34) for an unresolved 697 peak.
700.67[@] *10*	15.3 *14*	5130.6	47/2$^-$	4430.2	43/2$^-$			
701.1 *10*	1.1[#] *4*	8039.8	59/2$^+$	7338.7	57/2$^+$			
702.2 *10*	2.5[#] *16*	7666.7	55/2$^{(-)}$	6964.5	51/2$^{(-)}$			
706.9 *10*	0.8 *7*	2435.9	23/2$^+$	1729.1	19/2$^+$			
711.2 *10*	13.4[#] *20*	6453.7	51/2$^+$	5742.5	47/2$^+$			
713.0 *10*	0.7 *4*	6718.0	53/2$^+$	6005.0	49/2$^+$			
713.8 *10*	1.0 *6*	5242.2	45/2$^+$	4528.4	41/2$^+$			

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^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05 (continued)

γ(^{163}Lu) (continued)

E_γ †	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
714.0 *10*	22 *3*	3020.3	31/2$^-$	2306.4	27/2$^-$		
716.3 *10*	0.6# *3*	8912.7	63/2$^+$	8196.4	61/2$^+$		
718.4 *10*	1.5 *4*	6615.4	53/2$^+$	5897.1	49/2$^+$		
723.1 *10*	13.7 *13*	2399.3	25/2$^+$	1676.2	23/2$^-$		
723.69@ *10*	14.0 *14*	6787.7	55/2$^+$	6064.2	51/2$^+$		
727.3 *10*	2.5 *5*	4830.0	41/2$^-$	4102.7	41/2$^-$	(M1)	DCO=0.99 *18*, POL=−0.22 *4*, Iγ(25°)/Iγ(90°)=1.61 *31* (2004Je03). Mult.: ΔJ=0 transition.
727.3 *10*	1.6 *4*	6222.3	51/2$^-$	5495.0	47/2$^-$		E_γ: 1999Do34 erroneously placed this γ from 43/2$^-$ member of this band defining a level At 4981.
733.5 *10*	1.4 *3*	6978.9	55/2$^+$	6245.3	51/2$^+$		
740.0 *10*	3.1 *5*	5556.3	47/2$^+$	4816.1	43/2$^+$		
741.2 *10*	4.7# *9*	6990.0	53/2$^+$	6248.8	49/2$^+$		
742.20@ *10*	4.7 *9*	5558.3	47/2$^+$	4816.1	43/2$^+$		
742.5 *10*	3.2 *8*	2227.2	23/2$^+$	1484.6	21/2$^-$		
742.9 *10*	8.1 *12*	3666.7	35/2$^-$	2923.8	31/2$^-$		
744.31@ *10*	18.7 *15*	5503.9	49/2$^-$	4759.5	45/2$^-$		
745.7 *10*	6.6 *17*	6501.4	51/2$^-$	5755.8	47/2$^-$		
751.2 *10*	6.2 *12*	2854.2	29/2$^-$	2103.2	25/2$^-$		
752.61 *10*	37# *4*	6533.1	53/2$^+$	5780.5	49/2$^+$		
754.6 *10*	3.0# *15*	8421.3	59/2$^{(-)}$	7666.7	55/2$^{(-)}$		
756.4 *10*	3.9 *9*	4577.7	39/2$^-$	3821.5	39/2$^-$	(M1)	DCO=1.22 *24*; POL=−0.12 *3* for 757.6+756.4 (2004Je03). Iγ(25°)/Iγ(90°)=1.68 *34* for doublet (2004Je03). Mult.: ΔJ=0 transition.
757.6 *10*	5.6 *4*	4308.1	37/2$^-$	3550.6	37/2$^-$	(M1)	DCO=1.22 *24*; POL=−0.12 *3* for 757.6+756.4 (2004Je03). Iγ(25°)/Iγ(90°)=1.68 *34* for doublet (2004Je03). Mult.: ΔJ=0 transition.
758.85 *12*	10.0 *11*	7173.0	57/2$^+$	6414.0	53/2$^+$		
762.7 *10*	0.30 *20*	6005.0	49/2$^+$	5242.2	45/2$^+$		
764.9 *10*	1.4 *4*	6616.7	53/2$^-$	5851.9	49/2$^-$		
766.2 *10*	11.1# *20*	7219.9	55/2$^+$	6453.7	51/2$^+$		
774.5 *10*	2.2 *3*	7389.8	57/2$^+$	6615.4	53/2$^+$		
777.3 *10*	0.8 *7*	7131.9	55/2$^+$	6354.7	51/2$^+$		
785.18 *10*	9.3 *10*	5915.7	51/2$^-$	5130.6	47/2$^-$		
787.9 *10*	0.5 *3*	7505.8	57/2$^+$	6718.0	53/2$^+$		
795.48 *15*	8.9 *9*	7583.3	59/2$^+$	6787.7	55/2$^+$		
795.9 *10*	4.1# *8*	7785.9	57/2$^+$	6990.0	53/2$^+$		
796.4 *10*	4.7 *15*	6005.0	49/2$^+$	5208.5	45/2$^+$		
796.4 *10*	4.7 *9*	6354.7	51/2$^+$	5558.3	47/2$^+$		
799.2 *10*	2.6 *6*	6906.2	53/2$^-$	6106.9	49/2$^-$		
805.3 *10*	3.0 *4*	7784.2	59/2$^+$	6978.9	55/2$^+$		
805.57 *10*	29# *3*	7338.7	57/2$^+$	6533.1	53/2$^+$		
810.1 *10*	2.5 *10*	9231.4	63/2$^{(-)}$	8421.3	59/2$^{(-)}$		
811.9 *10*	1.5 *5*	7034.2	55/2$^-$	6222.3	51/2$^-$		
819.9 *10*	9.0# *14*	8039.8	59/2$^+$	7219.9	55/2$^+$		
822.7 *10*	0.5 *4*	7954.7	59/2$^+$	7131.9	55/2$^+$		
823.19@ *10*	1.3 *6*	7177.9	55/2$^+$	6354.7	51/2$^+$		
829.00@ *10*	10.4 *10*	6332.9	53/2$^-$	5503.9	49/2$^-$		
837.45 *22*	7.3 *7*	8010.0	61/2$^+$	7173.0	57/2$^+$		
846.3 *10*	2.3 *3*	8236.2	61/2$^+$	7389.8	57/2$^+$		
848.5 *10*	1.9 *5*	7350.0	55/2$^-$	6501.4	51/2$^-$		

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^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05 (continued)

$\gamma(^{163}Lu)$ (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π
848.9 *10*	1.1 *3*	7465.6	57/2$^-$	6616.7	53/2$^-$
849.8 *10*	3.6[#] *8*	8635.7	61/2$^+$	7785.9	57/2$^+$
857.7 *10*	16.9[#] *23*	8196.4	61/2$^+$	7338.7	57/2$^+$
863.38[@] *10*	1.3 *6*	2539.7	25/2$^+$	1676.2	23/2$^-$
865.3 *10*	2.0[#] *10*	10096.7	67/2$^{(-)}$	9231.4	63/2$^{(-)}$
867.05[@] *10*	0.4 *3*	8044.9	59/2$^+$	7177.9	55/2$^+$
868.0 *10*	1.1 *3*	7902.2	59/2$^-$	7034.2	55/2$^-$
872.8 *10*	8.5 *9*	6788.8	55/2$^-$	5915.7	51/2$^-$
872.9 *10*	6.0[#] *14*	8912.7	63/2$^+$	8039.8	59/2$^+$
875.5 *10*	4.5 *5*	8458.3	63/2$^+$	7583.3	59/2$^+$
880.2 *10*	0.5 *3*	8386.1	61/2$^+$	7505.8	57/2$^+$
883.4 *10*	2.1 *4*	8667.5	63/2$^+$	7784.2	59/2$^+$
893.7 *10*	1.2 *8*	2008.0	21/2$^+$	1114.1	19/2$^-$
899.9 *10*	0.5 *3*	8854.6	63/2$^+$	7954.7	59/2$^+$
902.5 *10*	2.5[#] *6*	9538.2	65/2$^+$	8635.7	61/2$^+$
906.5 *10*	1.7 *4*	7812.7	57/2$^-$	6906.2	53/2$^-$
909.7 *10*	13.5[#] *19*	9106.1	65/2$^+$	8196.4	61/2$^+$
913.0 *10*	7.3 *8*	7245.7	57/2$^-$	6332.9	53/2$^-$
913.0 *10*	0.9 *4*	8378.6	61/2$^-$	7465.6	57/2$^-$
915.6 *10*	4.5 *11*	8925.8	65/2$^+$	8010.0	61/2$^+$
916.8 *10*	1.4 *4*	9153.0	65/2$^+$	8236.2	61/2$^+$
920.5 *10*	1.5[#] *9*	11017.2	71/2$^{(-)}$	10096.7	67/2$^{(-)}$
926.5 *10*	4.5[#] *12*	9839.2	67/2$^+$	8912.7	63/2$^+$
928.1 *10*	0.4 *3*	8973.0	63/2$^+$	8044.9	59/2$^+$
939.2 *10*	3.5 *10*	7728.0	59/2$^-$	6788.8	55/2$^-$
940.0 *10*	1.3 *3*	8290.0	59/2$^-$	7350.0	55/2$^-$
942.2 *10*	0.7 *4*	8844.4	63/2$^-$	7902.2	59/2$^-$
943.8 *10*	0.20 *10*	9329.8	65/2$^+$	8386.1	61/2$^+$
949.4 *10*	2.1 *7*	9407.6	67/2$^+$	8458.3	63/2$^+$
951.2 *10*	0.5 *5*	2435.9	23/2$^+$	1484.6	21/2$^-$
955.8 *10*	1.7[#] *5*	10494.0	69/2$^+$	9538.2	65/2$^+$
956.8 *10*	0.5 *3*	9624.3	67/2$^+$	8667.5	63/2$^+$
960.5 *10*	0.10 *5*	9815.1	67/2$^+$	8854.6	63/2$^+$
962.53 *14*	7.0[#] *12*	10068.6	69/2$^+$	9106.1	65/2$^+$
962.8 *10*	1.5[#] *7*	3863.2	33/2$^+$	2900.3	29/2$^+$
975.7 *10*	1.2[#] *5*	11992.9	75/2$^{(-)}$	11017.2	71/2$^{(-)}$
975.9 *10*	2.5 *13*	8221.5	61/2$^-$	7245.7	57/2$^-$
976.4 *10*	0.9 *3*	8789.1	61/2$^-$	7812.7	57/2$^-$
980.2 *10*	2.0[#] *8*	10819.4	71/2$^+$	9839.2	67/2$^+$
984.3 *10*	1.4 *6*	8712.3	63/2$^-$	7728.0	59/2$^-$
984.4 *10*	1.0 *5*	10137.4	69/2$^+$	9153.0	65/2$^+$
988.6 *10*	0.5 *4*	4308.1	37/2$^-$	3319.6	35/2$^-$
989.8 *10*	2.1 *7*	9915.6	69/2$^+$	8925.8	65/2$^+$
990.6[b] *10*	0.4[#] *3*	1285.0?	(13/2$^+$)	294.3	11/2$^-$
993.4 *10*	0.5 *4*	9283.4	63/2$^-$	8290.0	59/2$^-$
995.4 *10*	1.0 *5*	9707.7	67/2$^-$	8712.3	63/2$^-$
996.4 *10*	0.5 *4*	5755.8	47/2$^-$	4759.5	45/2$^-$
996.5 *10*	0.6 *4*	9375.1	65/2$^-$	8378.6	61/2$^-$
1002.9 *10*	0.10 *10*	10332.8	69/2$^+$	9329.8	65/2$^+$
1004.8 *10*	1.8 *6*	4555.4	41/2$^-$	3550.6	37/2$^-$
1005.9 *10*	1.0 *6*	10713.7	71/2$^-$	9707.7	67/2$^-$

Continued on next page (footnotes at end of table)

^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05 (continued)

$\gamma(^{163}Lu)$ (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
1009.2 *10*	1.2[#] *4*	11503.2	73/2$^+$	10494.0	69/2$^+$		
1012.2 *10*	0.7 *3*	5114.9	43/2$^-$	4102.7	41/2$^-$	D	DCO=0.72 *20* (2004Je03) Iγ(25°)/Iγ(90°)=1.03 *20* (2004Je03). Mult.: ΔJ=1 transition.
1015.0 *10*	0.5 *4*	9804.1	65/2$^-$	8789.1	61/2$^-$		
1015.0[a] *10*	0.40[a] *20*	11728.7	75/2$^-$	10713.7	71/2$^-$	E2	POL=+0.11 *3*, Iγ(25°)/Iγ(90°)=1.43 *25* (2004Je03). Mult.: ΔJ=2 transition.
1015.0[a] *20*	0.30[a] *20*	12744	79/2$^-$	11728.7	75/2$^-$		
1016.5 *10*	5.0[#] *12*	11085.2	73/2$^+$	10068.6	69/2$^+$		
1018.1 *10*	1.8[#] *6*	4368.7	37/2$^+$	3350.6	33/2$^+$	Q	Mult.: Iγ(25°)/Iγ(90°)=1.41 *15* consistent with ΔJ=2, Q (2002Je10).
1019.6 *10*	1.0 *7*	10427.1	71/2$^+$	9407.6	67/2$^+$		
1026.3 *10*	1.7 *3*	4847.8	43/2$^-$	3821.5	39/2$^-$		
1027.1 *10*	0.7 *3*	4577.7	39/2$^-$	3550.6	37/2$^-$		
1028.0 *10*	1.0 *5*	10652.4	71/2$^+$	9624.3	67/2$^+$		
1030.0 *10*	0.7 *4*	9251.6	65/2$^-$	8221.5	61/2$^-$		
1031.6 *10*	0.7[#] *3*	13024.5	79/2$^{(-)}$	11992.9	75/2$^{(-)}$		
1034.7 *10*	1.2[#] *5*	11854.1	75/2$^+$	10819.4	71/2$^+$		
1048.3 *10*	0.20 *10*	11185.6	73/2$^+$	10137.4	69/2$^+$		
1052.8 *10*	0.30 *10*	13797	83/2$^-$	12744	79/2$^-$		
1061.6 *10*	1.0 *7*	10977.2	73/2$^+$	9915.6	69/2$^+$		
1061.9 *10*	0.30 *10*	10313.5	69/2$^-$	9251.6	65/2$^-$		
1063.0 *10*	1.0[#] *4*	12566.2	77/2$^+$	11503.2	73/2$^+$		
1064.7 *10*	0.7 *3*	5495.0	47/2$^-$	4430.2	43/2$^-$		
1064.9 *10*	1.7 *4*	5167.6	45/2$^-$	4102.7	41/2$^-$		
1066.5 *10*	0.30 *20*	11780.2	75/2$^-$	10713.7	71/2$^-$		
1070.8 *10*	1.0[#] *3*	4936.8	41/2$^+$	3865.9	37/2$^+$		
1071.0 *10*	0.4 *3*	10875.1	69/2$^-$	9804.1	65/2$^-$		
1071.1 *10*	3.5[#] *10*	12156.2	77/2$^+$	11085.2	73/2$^+$		
1077.1 *10*	0.8 *6*	11504.2	75/2$^+$	10427.1	71/2$^+$		
1080.1 *10*	0.10 *5*	12265.7	77/2$^+$	11185.6	73/2$^+$		
1082.6 *10*	0.9[#] *3*	8421.3	59/2$^{(-)}$	7338.7	57/2$^+$	D	Iγ(25°)/Iγ(90°)=0.71 *13* (2004Je03).
1084.6 *10*	0.10 *10*	12864.8	79/2$^-$	11780.2	75/2$^-$		
1085.5[b] *10*	0.20[#] *10*	14110	83/2$^{(-)}$	13024.5	79/2$^{(-)}$		
1088.9 *10*	1.0[#] *5*	12943.0	79/2$^+$	11854.1	75/2$^+$		
1092.2 *10*	0.20 *10*	14889	87/2$^-$	13797	83/2$^-$		
1092.4 *10*	0.20 *10*	5851.9	49/2$^-$	4759.5	45/2$^-$		
1095.5 *10*	0.5 *3*	11748.0	75/2$^+$	10652.4	71/2$^+$		
1100.2[b] *10*	0.20 *10*	13197.1	81/2$^+$	12096.9	77/2$^+$		
1112.4 *10*	0.7[#] *3*	13678.6	81/2$^+$	12566.2	77/2$^+$		
1113.4 *10*	0.30 *10*	12862	79/2$^+$	11748.0	75/2$^+$		
1119.2 *3*	1.3[#] *3*	5563.7	45/2$^+$	4444.6	41/2$^+$	(Q)	Mult.: Iγ(25°)/Iγ(90°)=1.49 *8* (2002Je10) consistent with ΔJ=2.
1119.6 *10*	0.30 *20*	13745.7	83/2$^+$	12626.0	79/2$^+$		
1119.7 *10*	0.5 *4*	12096.9	77/2$^+$	10977.2	73/2$^+$		
1121.8 *10*	0.5 *4*	12626.0	79/2$^+$	11504.2	75/2$^+$		
1126.2 *10*	1.2[#] *5*	13282.5	81/2$^+$	12156.2	77/2$^+$		
1133.6 *10*	1.1[#] *4*	7666.7	55/2$^{(-)}$	6533.1	53/2$^+$	(D)	Iγ(25°)/Iγ(90°)=0.75 *22* (2004Je03).
1134.5 *10*	0.10 *5*	16023	91/2$^-$	14889	87/2$^-$		
1143.0 *10*	0.8[#] *4*	14086.0	83/2$^+$	12943.0	79/2$^+$		
1147 *4*	0.5[#] *4*	14826	85/2$^+$	13678.6	81/2$^+$		

Continued on next page (footnotes at end of table)

^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05 (continued)

$\gamma(^{163}Lu)$ (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
1165.3 *10*	1.5[#] *4*	6248.8	49/2$^+$	5083.5	45/2$^+$	Q	Mult.: DCO=1.01 *15*, Iγ(25°)/Iγ(90°)=1.44 *10* (2002Je10,2002Je05).
1179.3 *10*	1.1[#] *5*	14461.8	85/2$^+$	13282.5	81/2$^+$		
1179.5 *10*	0.10 *5*	17203	95/2$^-$	16023	91/2$^-$		
1184.0 *10*	1.5[#] *5*	6964.5	51/2$^{(-)}$	5780.5	49/2$^+$	D	DCO=0.58 *17*, Iγ(25°)/Iγ(90°)=0.66 *20* (2004Je03).
1197.3 *10*	0.6[#] *3*	15283	87/2$^+$	14086.0	83/2$^+$		
1209.5 *10*	1.2[#] *4*	6990.0	53/2$^+$	5780.5	49/2$^+$	Q	Mult.: DCO=1.04 *15*, Iγ(25°)/Iγ(90°)=1.46 *10* (2002Je10) consistent with ΔJ=2, quadrupole.
1227.0 *10*	1.1[#] *5*	15689	89/2$^+$	14461.8	85/2$^+$		
1232.4 *10*	0.10 *5*	18435	99/2$^-$	17203	95/2$^-$		
1235.9 *10*	0.6[#] *3*	6319.5	47/2$^{(-)}$	5083.5	45/2$^+$	(D)	Iγ(25°)/Iγ(90°)=0.70 *21*.
1247.5 *10*	0.40[#] *20*	16531	91/2$^+$	15283	87/2$^+$		
1252.8 *10*	0.8[#] *3*	7785.9	57/2$^+$	6533.1	53/2$^+$		
1269.0 *10*	0.9[#] *5*	16958	93/2$^+$	15689	89/2$^+$		
1292.0 *10*	0.5[#] *4*	1935.7	17/2$^+$	643.6	15/2$^-$		
1297.0[b] *10*	0.8[#] *5*	8635.7	61/2$^+$	7338.7	57/2$^+$		
1303.5 *10*	0.7[#] *4*	18261	97/2$^+$	16958	93/2$^+$		

[†] From RADWARE file (2004JeZZ) received from the authors of 2004Je03. The energy uncertainties for 105 γ transitions were found to be too small to give an acceptable least-squares fit. A large number of gamma-ray energies deviated from the fitted values by more than two times the quoted uncertainties. The evaluators have assigned a minimum uncertainty of 0.1 keV. This results in a better least-squares fit of the level scheme. Uncertainty of 1.0 keV assigned in the RADWARE file is a default value. Many Eγ values are the same as in 2002Je05.

[‡] From RADWARE file supplied by D.R. Jensen (Feb. 6, 2004) (2004JeZZ). The values are relative to 100 for 630γ from 2307 level for normal-deformed bands and relative to 100 for 386γ from 2900 level for SD band transitions. Many Iγ values are the same as in 2002Je05. To obtain intensities for SD bands relative to 100 for 630γ, divide each intensity by 7.25 (2002Je05).

[#] Relative to 100 for 386γ from 2900 level in SD-1 band. To obtain intensity relative to 100 for 630γ from 2307 level in normal-deformed structure, divide by 7.25 (factor given by 2002Je05).

[@] ΔEγ increased to 0.1 keV (by the evaluators). Uncertainty quoted by 2004Je03 in the authors′ RADWARE file (2004JeZZ) is from 0.03-0.09 keV, which fails to give an acceptable least squares fit to the level scheme.

[&] From 1999Do34 only, treated As uncertain by the evaluators since it is not confirmed In the high-statistics data of 2004Je03.

[a] Multiply placed with intensity suitably divided.

[b] Placement of transition in the level scheme is uncertain.

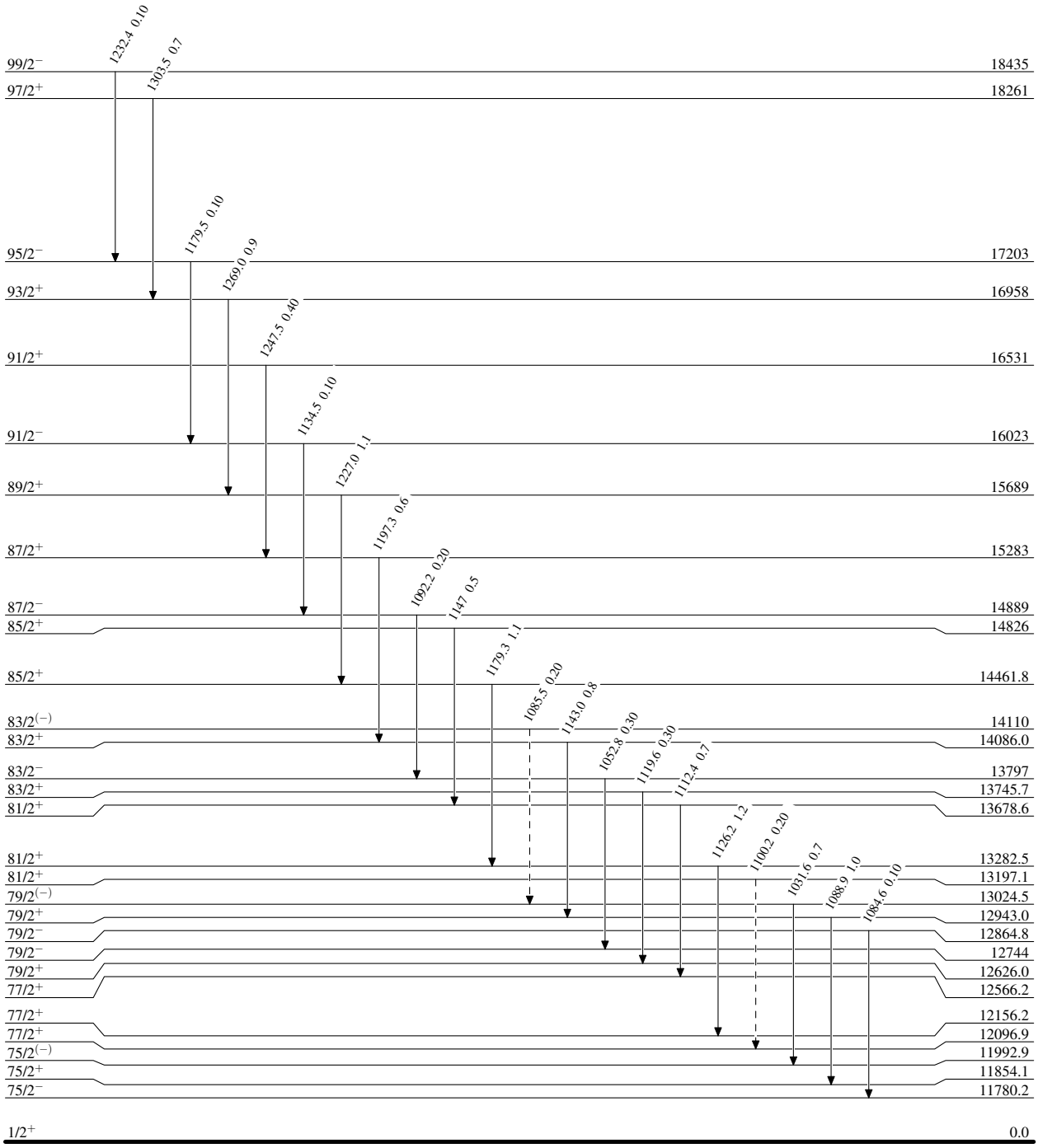
^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05

Level Scheme

Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)



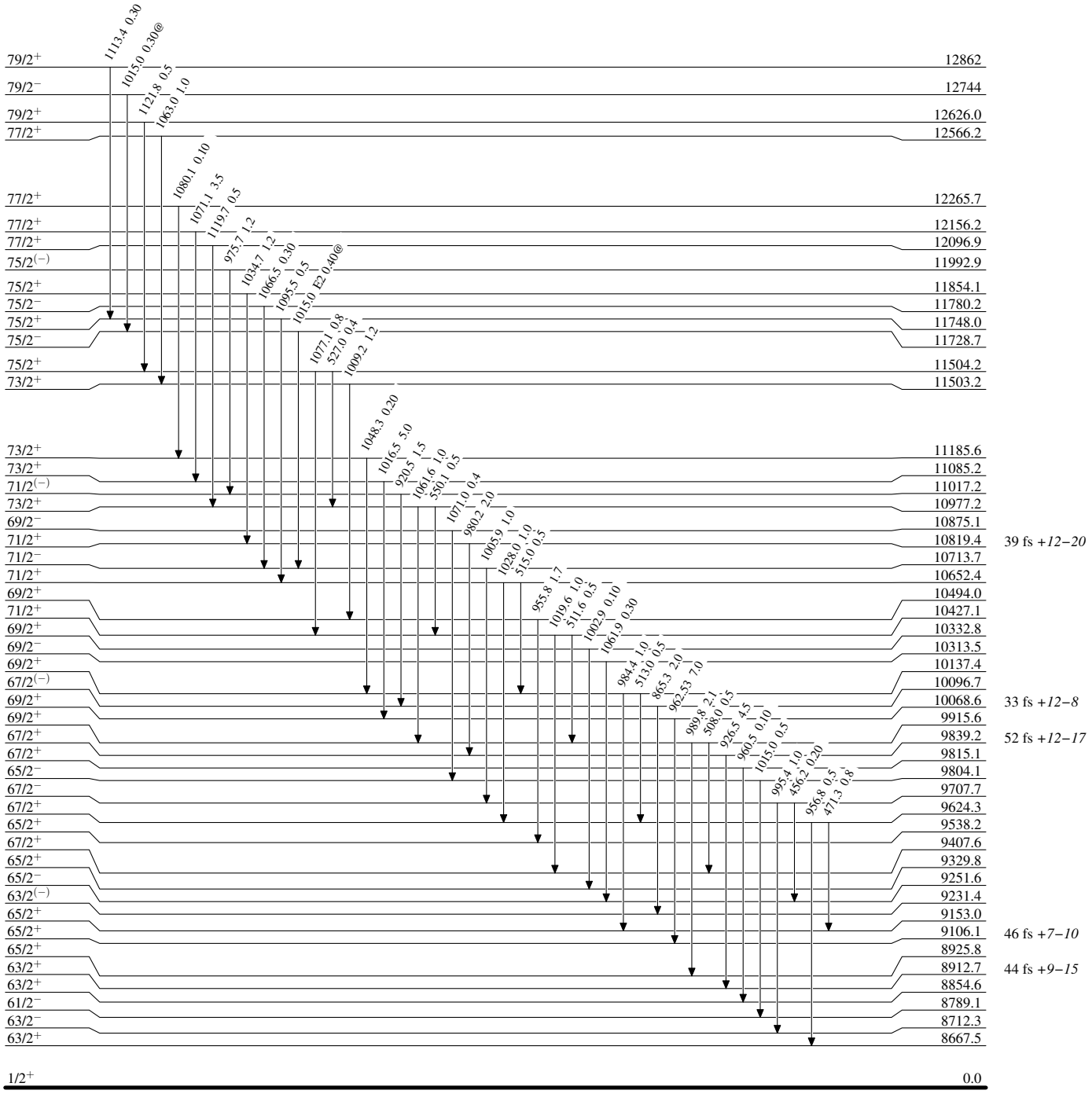
$^{163}_{71}Lu_{92}$

^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05

Level Scheme (continued)

Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



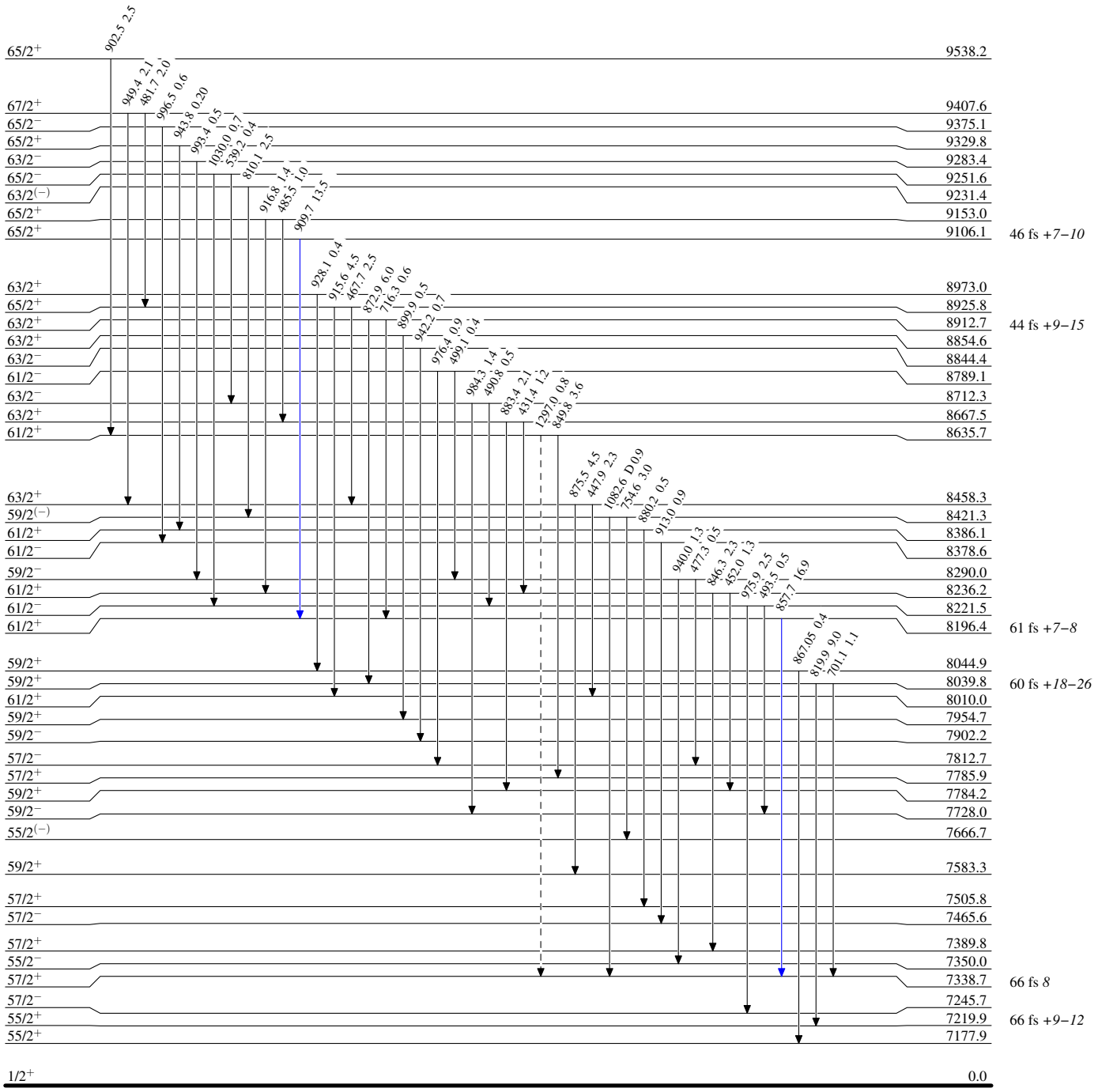
$^{163}_{71}Lu_{92}$

^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05

Level Scheme (continued)

Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)



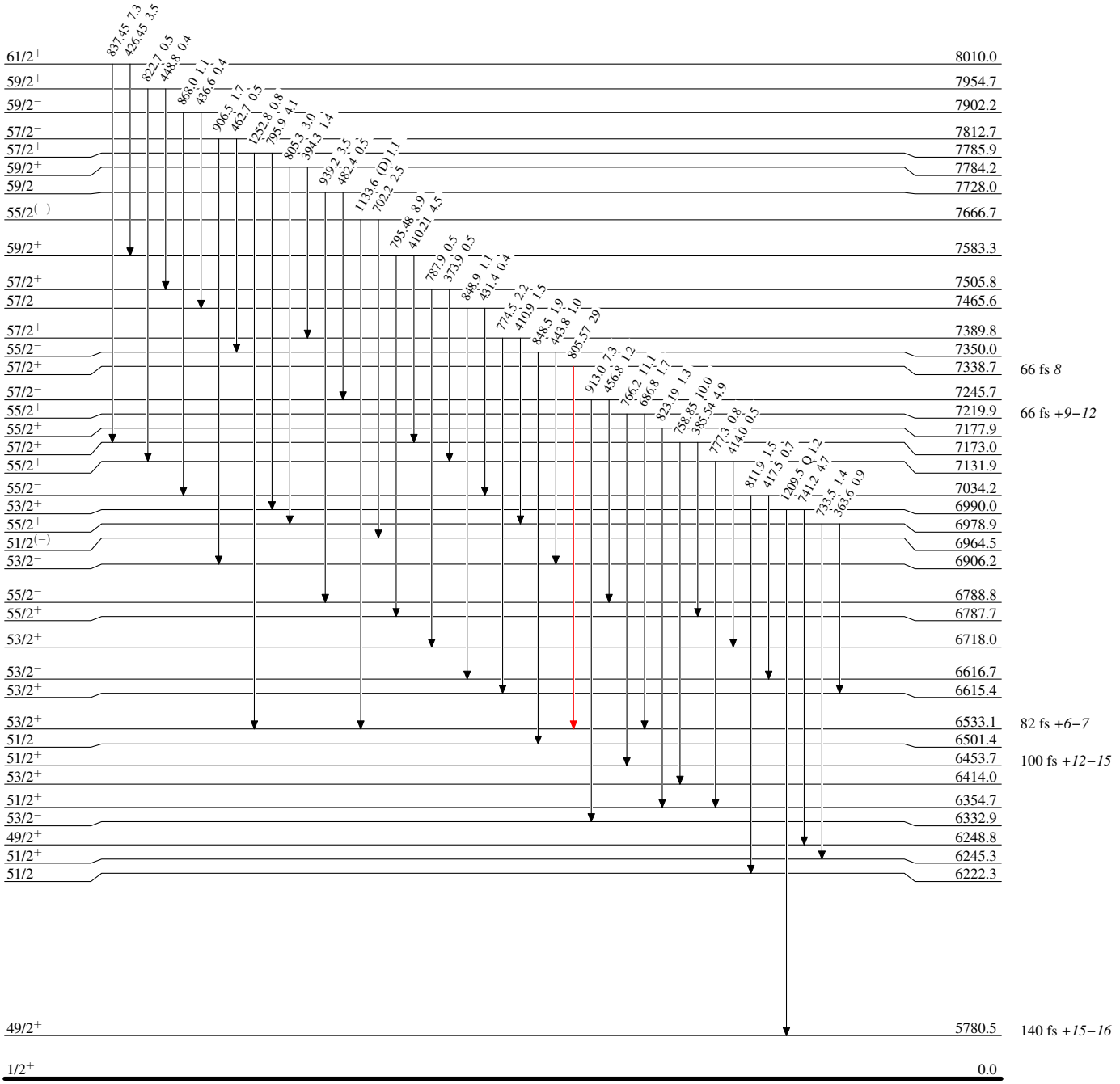
$^{163}_{71}Lu_{92}$

^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05

Level Scheme (continued)

Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



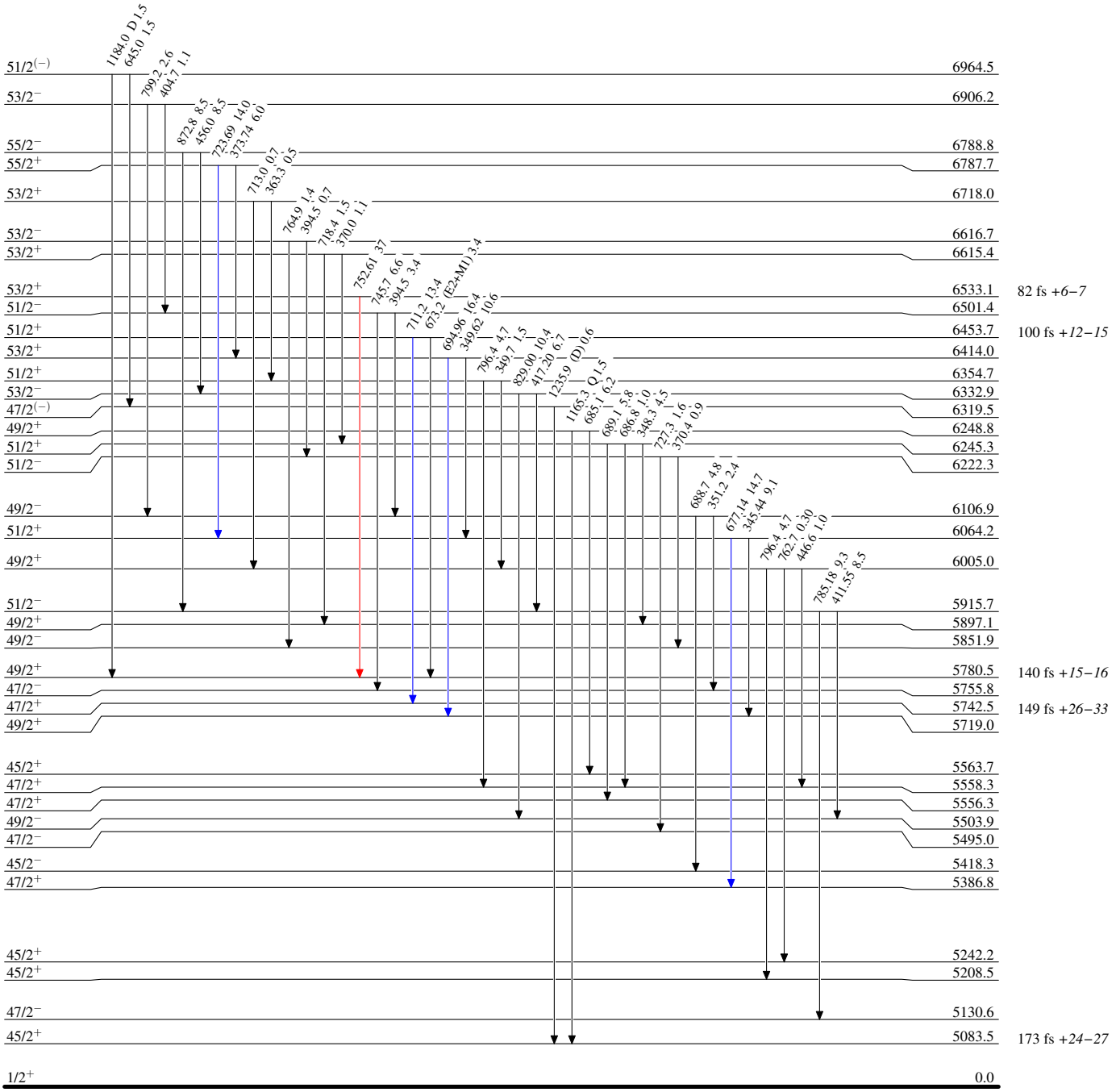
$^{163}_{71}Lu_{92}$

^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05

Level Scheme (continued)

Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



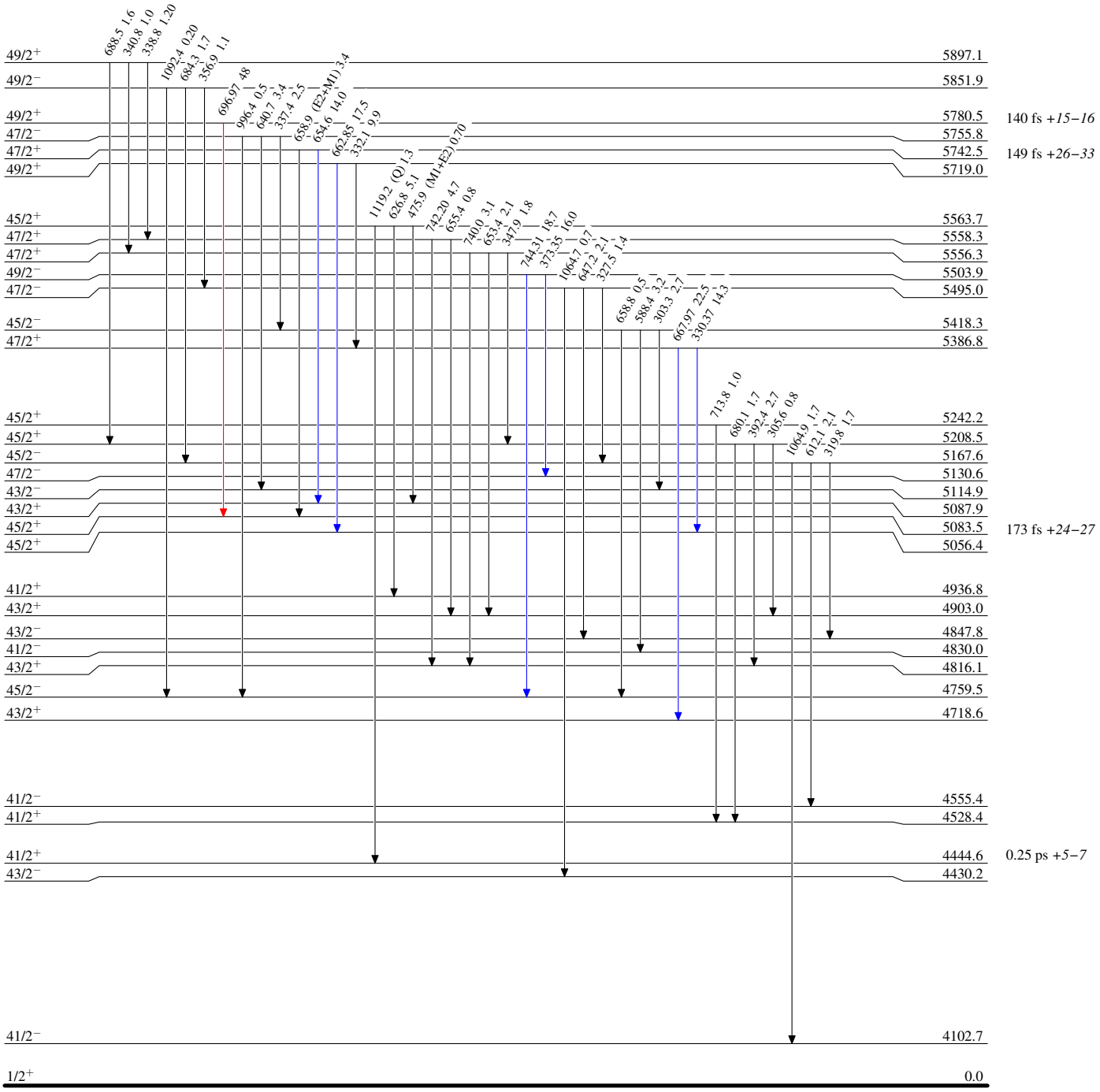
$^{163}_{71}Lu_{92}$

^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05

Level Scheme (continued)

Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



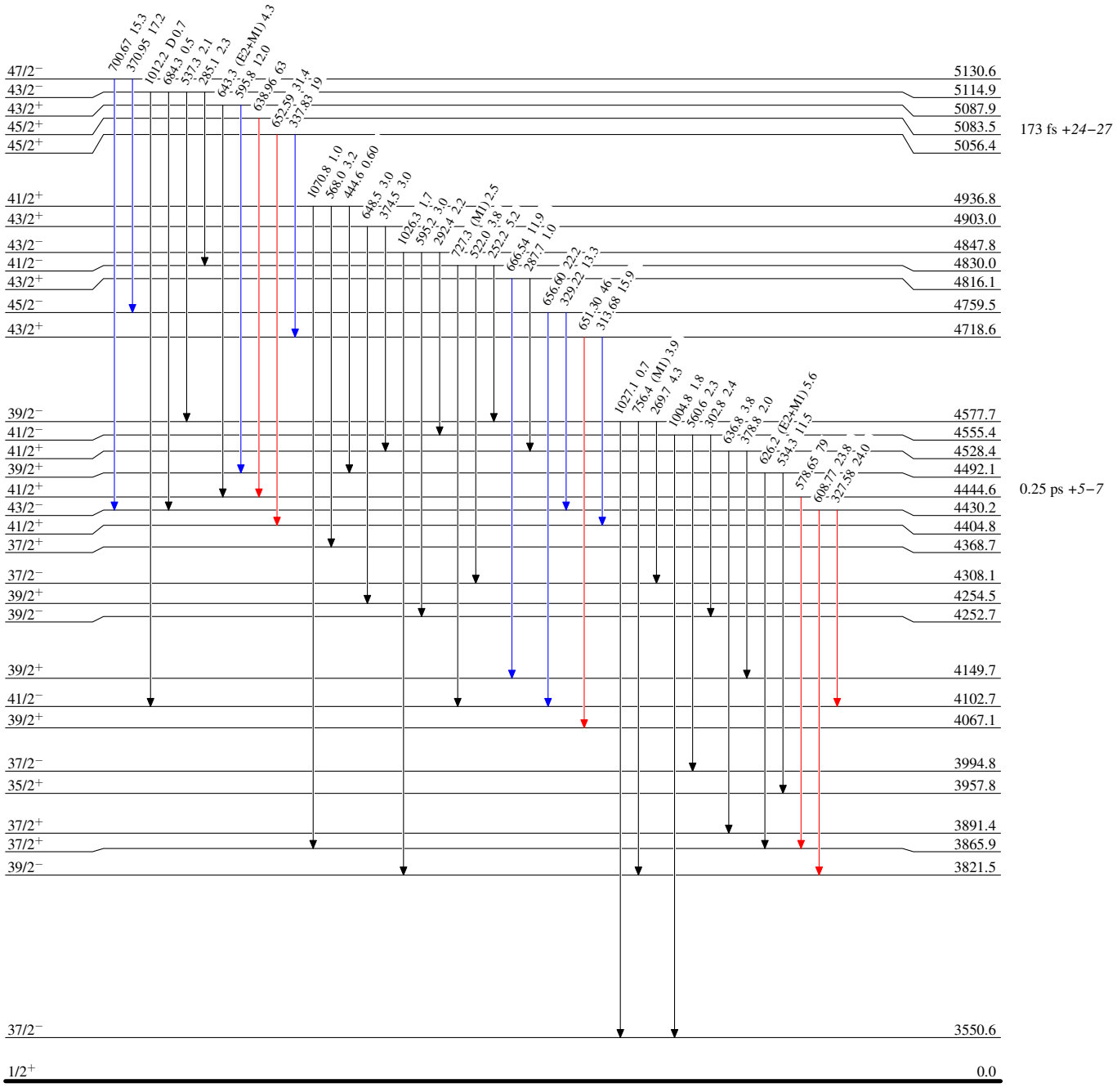
$^{163}_{71}Lu_{92}$

^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05

Level Scheme (continued)

Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



$^{163}_{71}Lu_{92}$

^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05

Level Scheme (continued)

Intensities: Relative I_γ

@ Multiply placed: intensity suitably divided

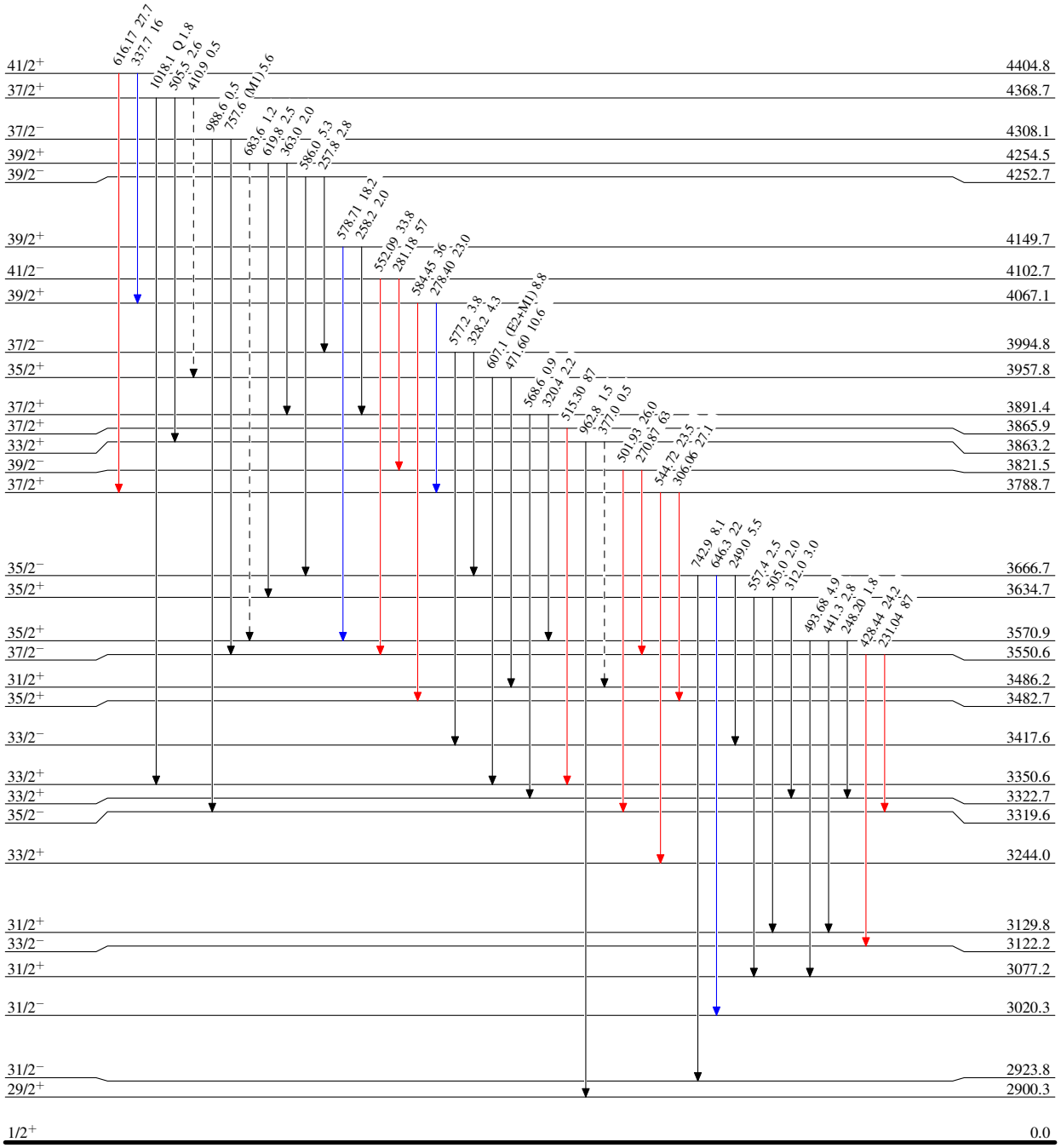
Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$

γ Decay (Uncertain)



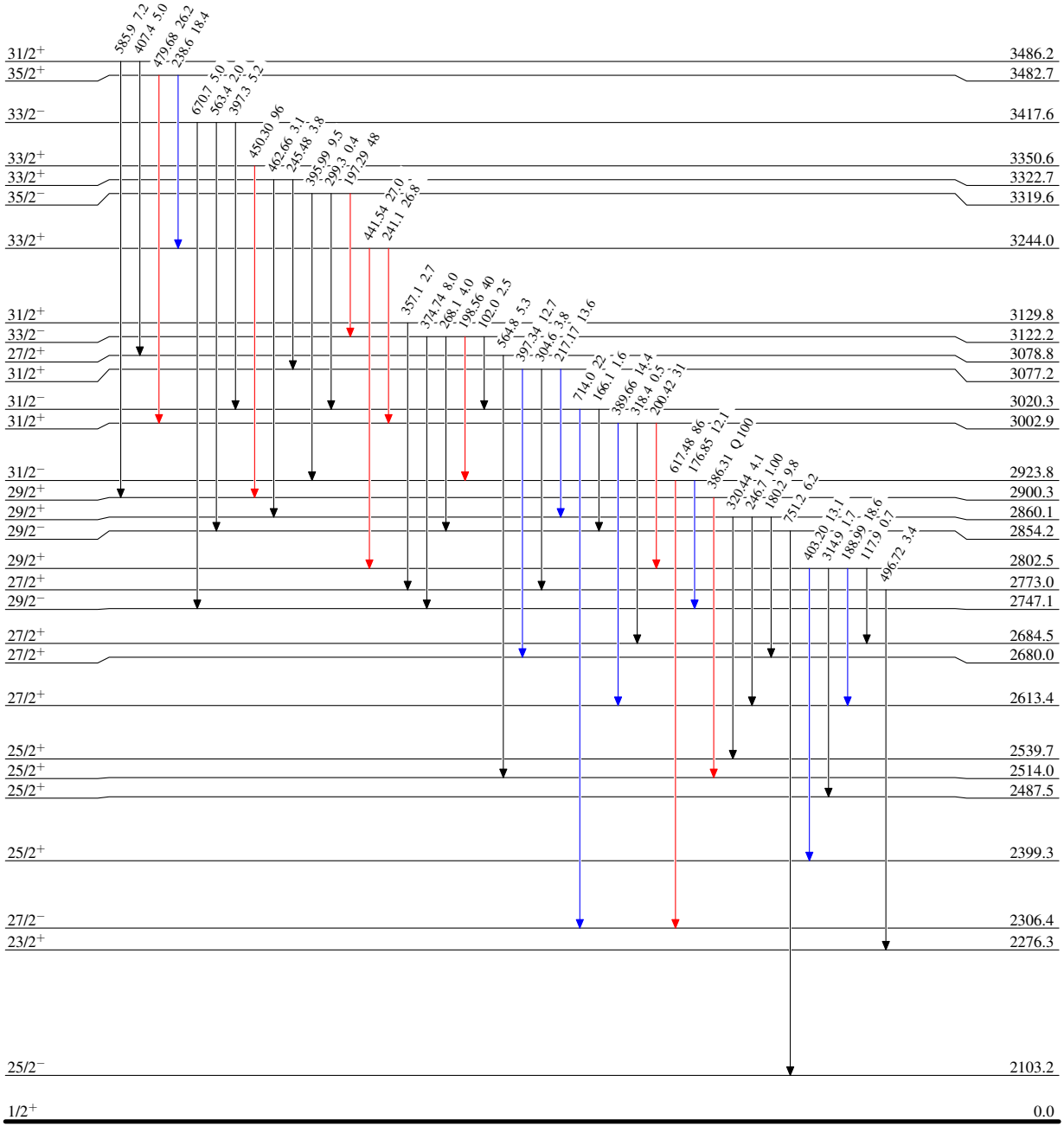
$^{163}_{71}Lu_{92}$

^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05

Level Scheme (continued)

Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



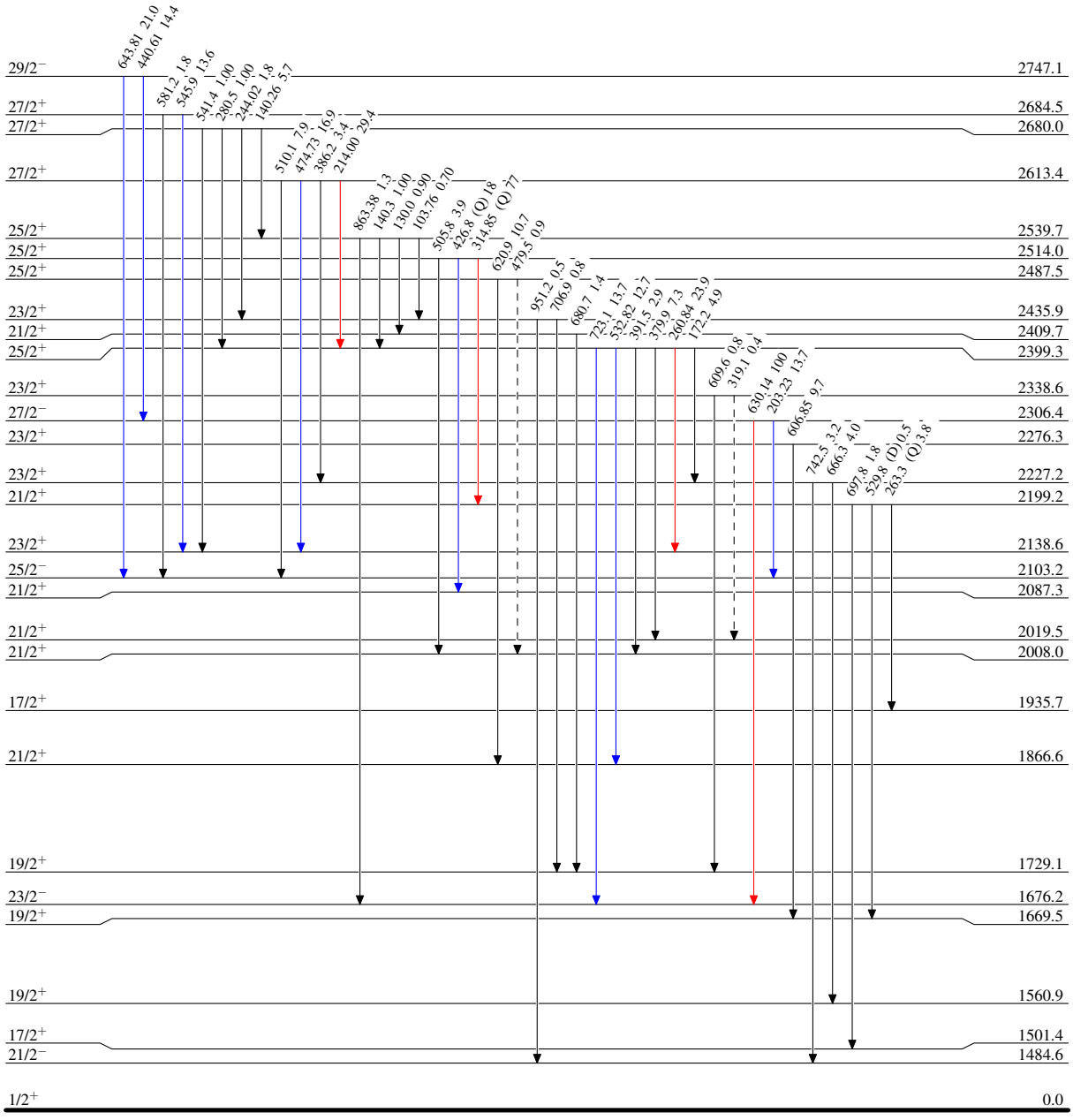
$^{163}_{71}Lu_{92}$

^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05

Level Scheme (continued)

Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)



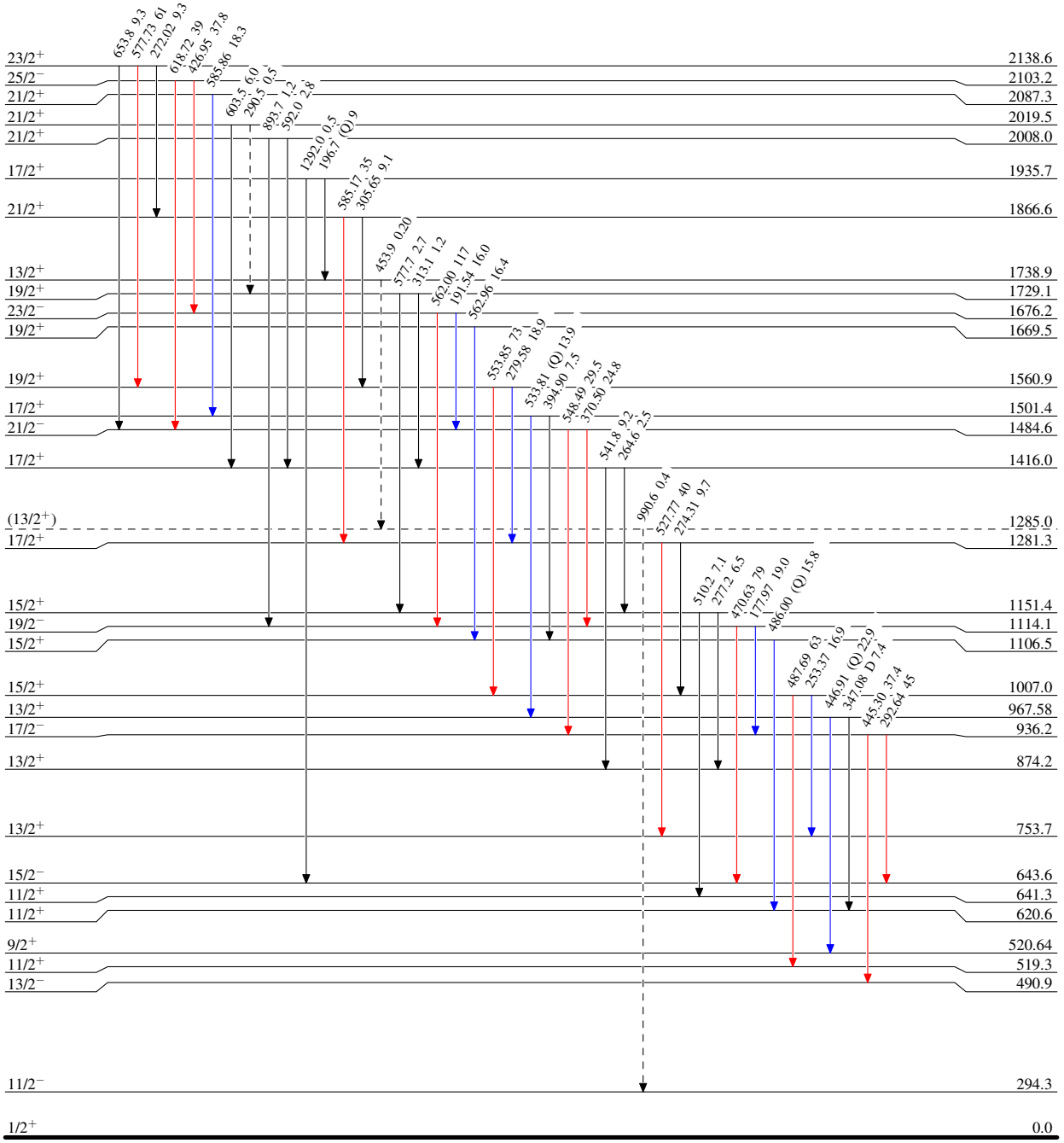
$^{163}_{71}Lu_{92}$

^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05

Level Scheme (continued)

Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)



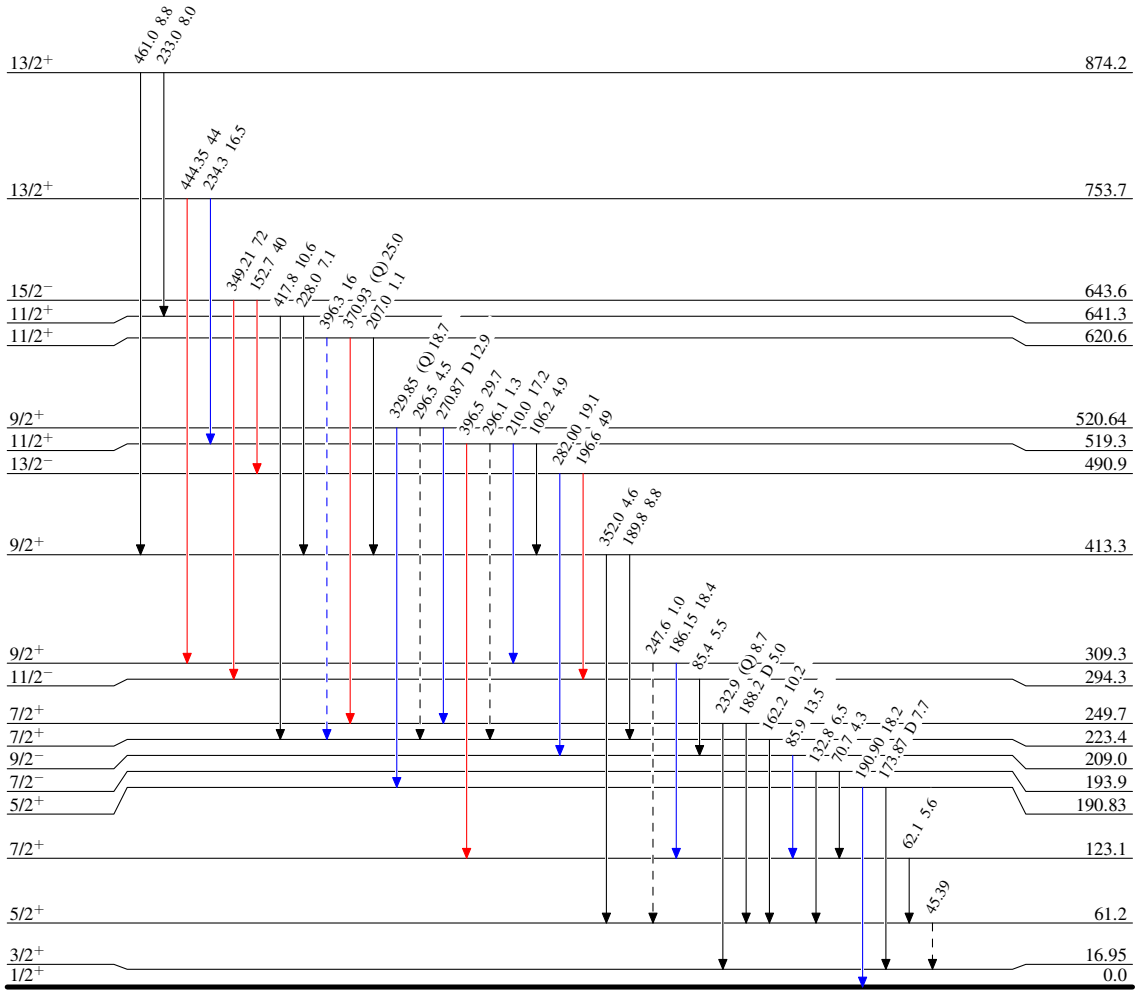
$^{163}_{71}Lu_{92}$

^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05

Level Scheme (continued)

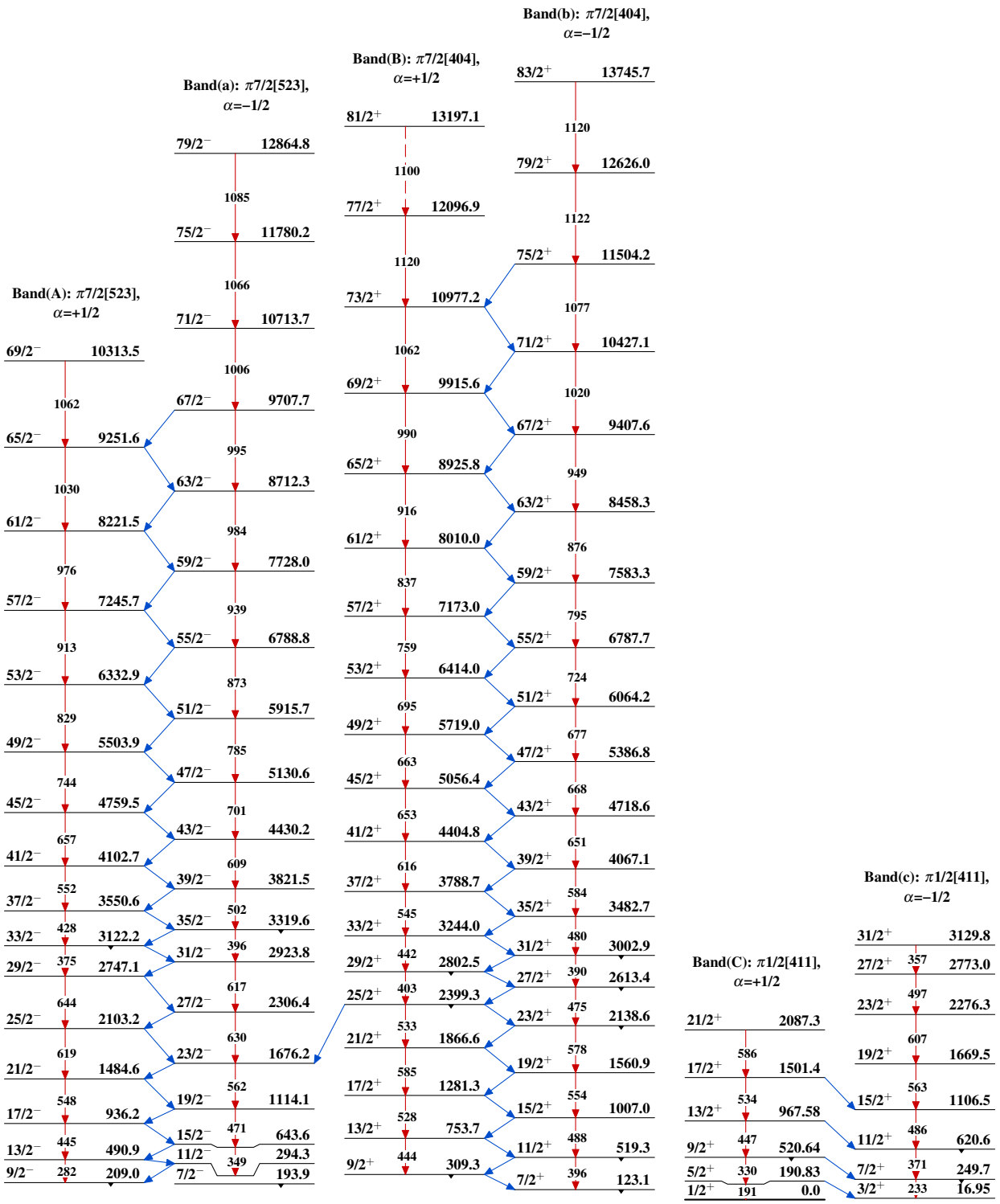
Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)



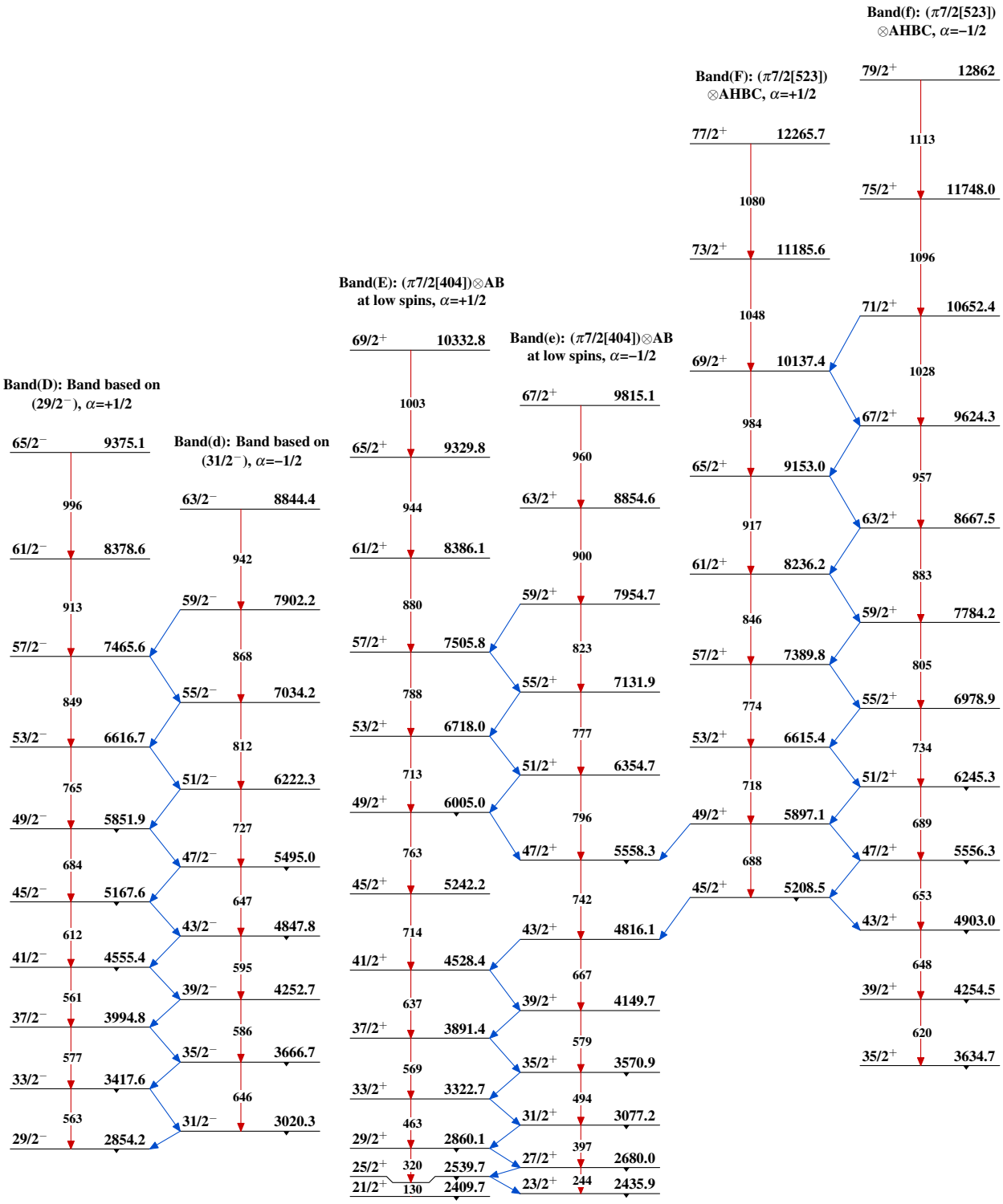
$^{163}_{71}Lu_{92}$

^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05



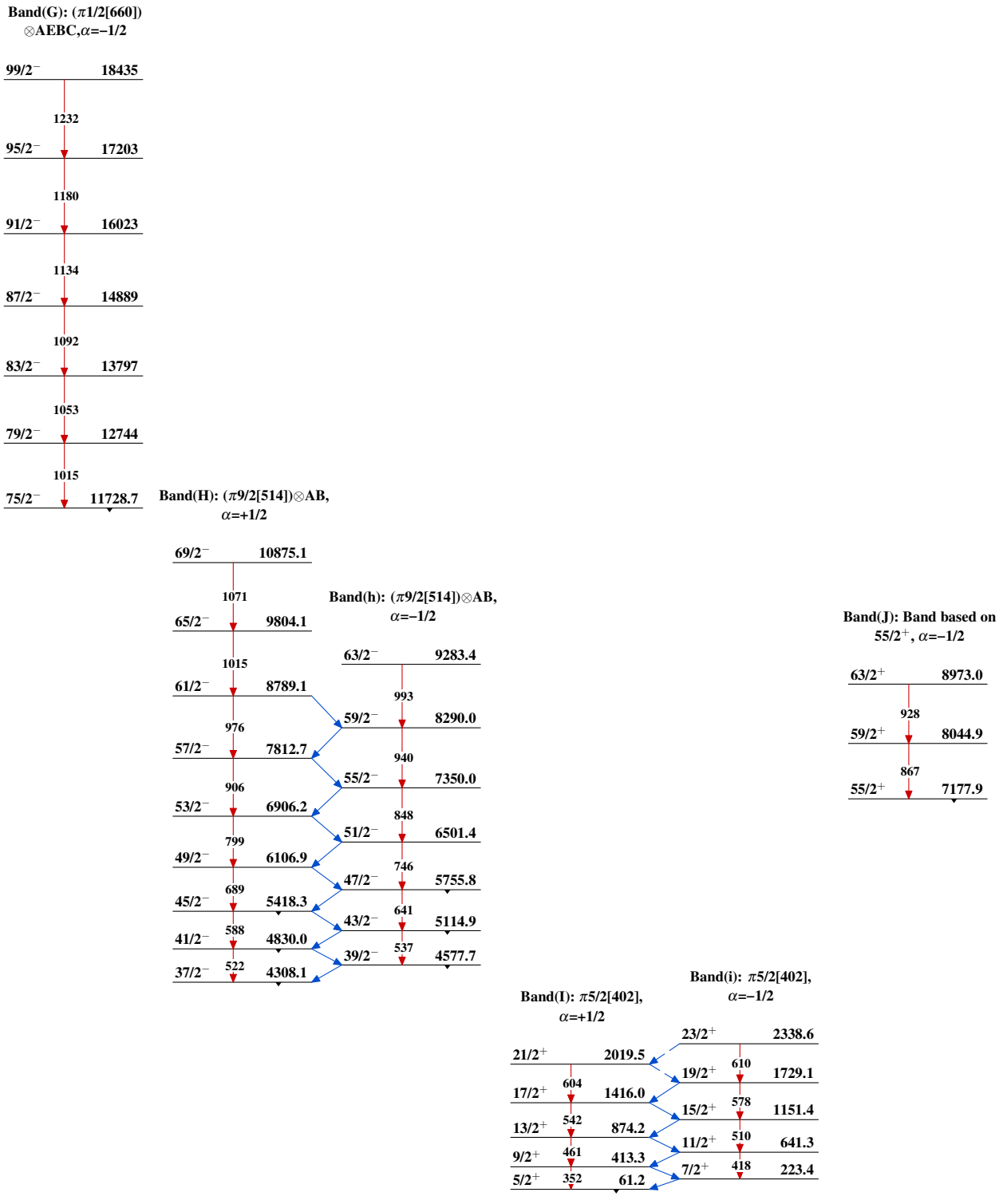
$^{163}_{71}Lu_{92}$

$^{139}La(^{29}Si,5n\gamma)$ 2004Je03,2002Je05 (continued)



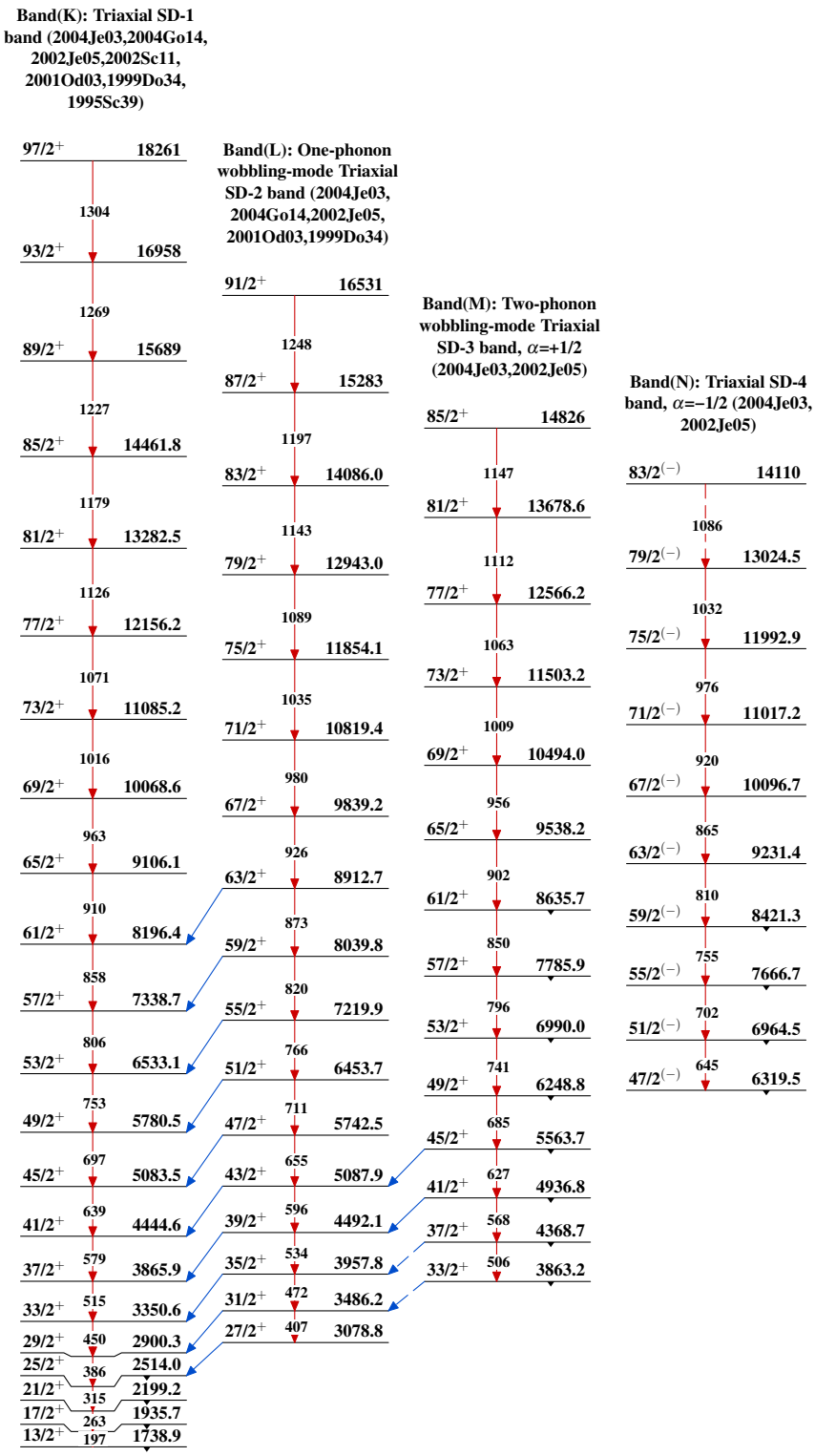
$^{163}_{71}Lu_{92}$

^{139}La(^{29}Si,5nγ) 2004Je03,2002Je05 (continued)



$^{163}_{71}Lu_{92}$

$^{139}La(^{29}Si,5n\gamma)$ 2004Je03,2002Je05 (continued)



$^{163}_{71}Lu_{92}$