^{123}Sb(^{48}Ca,4nγ) E=203 MeV 2015Ro27

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 191,1 (2023)	22-Aug-2023

Includes ^{159}Tb(^{12}C,4nγ) for lifetime measurements from 2019Ro13.

2015Ro27 (also 2005Am02, 2003Am01): E(^{48}Ca)=203 MeV. Target=520 μg/cm^2 thick 97.7% enriched self-supporting ^{123}Sb foil. The nuclei ^{166}Lu, ^{167}Lu and ^{168}Lu were populated in the ratio of 1:5:2. Measured Eγ, Iγ, $\gamma\gamma$-coin, $\gamma\gamma(\theta)$(DCO) at LBNL cyclotron facility using Gammasphere with 100 Compton-suppressed Ge detectors. Deduced high-spin levels, J^π, multipolarities, bands, triaxial strongly-deformed (TSD) bands, multiquasiparticle configurations, alignments, and band interactions. Comparison with cranked shell-model calculations.

2008Gu02 (also 2007Be33, 2005Gu28): E(^{48}Ca)=203 MeV. Measured Eγ, Iγ, $\gamma\gamma$- and γ(ce)-coin using Gammasphere array of 101 Compton-suppressed Ge detectors for γ rays and ICE Ball consisting of six mini-orange electron spectrometers for conversion electrons.

2005Am02 and 2003Am01 from the same group as 2015Ro27, with partial analysis of data from apparently the same experiment as described in 2015Ro27, but mainly focusing on triaxial strongly-deformed (TSD) bands. 2015Ro27 provide a more complete analysis of many normal-deformed structures, together with two TSD bands. A third TSD band reported in 2005Am02 has been reassigned to a normal-deformed structure (Band #4) in 2015Ro27.

2019Ro13: ^{159}Tb(^{12}C,4nγ),E=74 MeV. Measured Eγ. Target was self-supporting ≈1.2 mg/cm^2 thick foil of ^{159}Tb foil, with a ≈8 mg/cm^2 thick gold stopper. Measured lifetimes of five levels in the π1/2[541] band using recoil-distance Doppler shift method with a plunger and using GDA array for γ detection at the IUAC-New Delhi tandem accelerator facility. Deduced B(E2) and transition quadrupole moments. Comparison with cranked Hartree-Fock-Bogoliubov model based, total Routhian surface (TRS) calculations.

^{167}Lu Levels

Nomenclature for quasiparticle orbitals:

a: $\pi g_{7/2}$, 7/2[404],α=+1/2.
b: $\pi g_{7/2}$, 7/2[404],α=−1/2.
c: $\pi d_{3/2}$, 1/2[411],α=+1/2.
d: $\pi d_{3/2}$, 1/2[411],α=−1/2.
e: $\pi h_{11/2}$, 9/2[514],α=+1/2.
f: $\pi h_{11/2}$, 9/2[514],α=−1/2.
g: $\pi h_{9/2}$, 1/2[541],α=+1/2.
h: $\pi h_{9/2}$, 1/2[541],α=−1/2.
i: $\pi d_{5/2}$, 5/2[402],α=+1/2.
j: $\pi d_{5/2}$, 5/2[402],α=−1/2.
m: $\pi i_{13/2}$, 1/2[660],α=+1/2.
A: $\nu i_{13/2}$, 5/2[642],α=+1/2.
B: $\nu i_{13/2}$, 5/2[642],α=−1/2.
C: $\nu i_{13/2}$, 3/2[651],α=+1/2.
D: $\nu i_{13/2}$, 3/2[651],α=−1/2.
E: $\nu f_{7/2}$, 5/2[523],α=+1/2.
F: $\nu f_{7/2}$, 5/2[523],α=−1/2.
G: $\nu h_{9/2}$, 3/2[521],α=+1/2.
H: $\nu h_{9/2}$, 3/2[521],α=−1/2.

E(level)[†]	J^π[‡]	$T_{1/2}$[#]	Comments
0.0[a]	7/2$^+$	51.46 min *15*	
33.7[f] *4*	1/2$^+$	≥1 min	%IT=?; %ε+%β^+=?
48.6[g] *4*	3/2$^+$		
67.1[j] *4*	5/2$^+$		

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^{123}Sb(^{48}Ca,4nγ) E=203 MeV 2015Ro27 (continued)

^{167}Lu Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	$T_{1/2}$[#]	Comments
136.3[s] *4*	1/2$^-$		
140.0[&] *2*	9/2$^+$		
155.9[s] *4*	5/2$^-$		
178.3[f] *4*	5/2$^+$		
184.5[k] *4*	7/2$^+$		
218.4[g] *4*	7/2$^+$		
258.7[t] *4*	3/2$^-$		
267.6[s] *4*	9/2$^-$		
305.3[a] *2*	11/2$^+$		
329.5[j] *4*	9/2$^+$		
331.9[n] *2*	9/2$^-$		
432.8[f] *4*	9/2$^+$		
433.6[o] *2*	11/2$^-$		
435.4[t] *4*	7/2$^-$		
479.9[s] *4*	13/2$^-$	81.3 ps *+73−81*	$T_{1/2}$: measured mean lifetime τ=117.3 ps *+105−117* (2019Ro13, RDDS). Transition quadrupole moment Q(t)=7.3 eb *7* (2019Ro13).
494.2[&] *2*	13/2$^+$		
499.0[k] *4*	11/2$^+$		
507.8[g] *4*	11/2$^+$		
576.9[n] *2*	13/2$^-$		
692.8[t] *4*	11/2$^-$		
693.9[j] *4*	13/2$^+$		
704.2[a] *2*	15/2$^+$		
744.09[o] *20*	15/2$^-$		
783.7[f] *4*	13/2$^+$		
794.5[s] *4*	17/2$^-$	12.1 ps *+15−13*	$T_{1/2}$: measured mean lifetime τ=17.4 ps *+21−19* (2019Ro13, RDDS). Transition quadrupole moment Q(t)=6.9 eb *8* (2019Ro13).
887.3[g] *4*	15/2$^+$		
916.2[k] *4*	15/2$^+$		
934.2[&] *2*	17/2$^+$		
947.7[n] *2*	17/2$^-$		
1034.4[t] *4*	15/2$^-$		
1141.4[j] *4*	17/2$^+$		
1159.4[o] *2*	19/2$^-$		
1181.0[a] *2*	19/2$^+$		
1205.3[s] *4*	21/2$^-$	3.19 ps *+56−28*	$T_{1/2}$: measured mean lifetime τ=4.6 ps *+8−4* (2019Ro13, RDDS). Transition quadrupole moment Q(t)=6.8 eb *+6−12* (2019Ro13).
1217.1[f] *4*	17/2$^+$		
1346.5[g] *4*	19/2$^+$		
1406.6[k] *4*	19/2$^+$		
1411.5[n] *2*	21/2$^-$		
1444.4[&] *2*	21/2$^+$		
1458.9[t] *4*	19/2$^-$		
1649.9[j] *4*	21/2$^+$		
1655.8[o] *3*	23/2$^-$		
1677.0[v] *3*	(17/2$^-$)		*J*$^{\pi}$=17/2$^-$ in Fig. 2 of 2015Ro27. No deexciting transitions given by authors.
1703.3[s] *4*	25/2$^-$	1.18 ps *+28−14*	$T_{1/2}$: measured mean lifetime τ=1.7 ps *+4−2* (2019Ro13, RDDS). Transition quadrupole moment Q(t)=6.8 eb *15* (2019Ro13).

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$^{123}Sb(^{48}Ca,4n\gamma)$ E=203 MeV 2015Ro27 (continued)

^{167}Lu Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	Comments
1716.7[f] 4	21/2+		
1720.1[a] 2	23/2+		
1789.1[w] 3	19/2−		
1856.7[g] 4	23/2+		
1940.5[v] 2	21/2−		
1947.3[n] 3	25/2−		
1954.7[k] 4	23/2+		
1959.7[t] 4	23/2−		
1964.0 8	(21/2+)		Level from Fig. 1 in 2015Ro27.
2008.1[&] 3	25/2+		
2100.3[w] 2	23/2−		
2165.0[u] 4	21/2−		
2187.1[j] 4	25/2+		
2214.9[o] 3	27/2−		
2260.7[f] 4	25/2+		
2278.0[s] 4	29/2−	<0.5 ps	$T_{1/2}$: measured mean lifetime τ<0.7 ps (2019Ro13, RDDS). Transition quadrupole moment Q(t)>7.1 eb.
2278.5[l] 5	25/2+		
2285.55[v] 23	25/2−		
2299.3[a] 3	27/2+		
2350.0 4	(25/2+)		Level from Fig. 1 in 2015Ro27.
2378.8[x] 3	25/2−		
2398.1[g] 4	27/2+		
2483.5[u] 4	25/2−		
2491.0[w] 3	27/2−		
2506.5[k] 4	27/2+		
2508.8[c] 3	25/2+		
2526.6[t] 4	27/2−		
2531.7[n] 3	29/2−		
2580.6[&] 3	29/2+		
2665.3 4	27/2+		
2694.6[j] 4	29/2+		
2697.0[d] 4	27/2+		
2715.7[v] 3	29/2−		
2728.4[@] 3	29/2+		
2749.3[l] 4	29/2+		
2776.7[f] 4	29/2+		
2800.4[o] 3	31/2−		
2822.8[a] 3	31/2+		
2883.7[x] 4	29/2−		
2893.0[c] 4	29/2+		
2894.4[u] 4	29/2−		
2918.5[s] 4	33/2−		
2938.9[g] 4	31/2+		
2958.8[w] 3	31/2−		
2958.9[k] 4	31/2+		
3014.6[b] 4	31/2+		
3043.7[&] 3	33/2+		

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$^{123}Sb(^{48}Ca,4n\gamma)$ E=203 MeV 2015Ro27 (continued)

^{167}Lu Levels (continued)

E(level)[†]	J^π[‡]	E(level)[†]	J^π[‡]	E(level)[†]	J^π[‡]	E(level)[†]	J^π[‡]
3069.9[n] *3*	$33/2^-$	4307.7[f] *4*	$41/2^+$	5783.7[m] *5*	$47/2^+$	7403.0[e] *7*	$57/2^+$
3121.2[d] *4*	$31/2^+$	4339.2[o] *4*	$43/2^-$	5833.2[a] *4*	$51/2^+$	7410.6[s] *9*	$57/2^-$
3133.7[j] *4*	$33/2^+$	4373.5[s] *4*	$41/2^-$	5859.6[x] *5*	$49/2^-$	7449.8[c] *8*	$57/2^+$
3138.4[t] *4*	$31/2^-$	4385.9[v] *4*	$41/2^-$	5873.9[c] *6*	$49/2^+$	7461.2[p] *8*	(J1+8)
3210.8[f] *4*	$33/2^+$	4417.0[a] *4*	$43/2^+$	5894.8[@] *6*	$49/2^+$	7471.1[a] *4*	$59/2^+$
3217.3[v] *3*	$33/2^-$	4421.6[l] *4*	$41/2^+$	5907.4[s] *6*	$49/2^-$	7543.2[i] *4*	$59/2^+$
3254.3[l] *4*	$33/2^+$	4496.0[c] *5*	$41/2^+$	5912.9[p] *6*	(J1+4)	7662.6[w] *5*	$59/2^-$
3285.1[a] *3*	$35/2^+$	4521.2[m] *4*	$39/2^+$	5982.1[i] *4*	$51/2^+$	7684.8[g] *5*	$59/2^+$
3288.7[o] *4*	$35/2^-$	4544.8[x] *4*	$41/2^-$	6015.4[g] *4*	$51/2^+$	7775.7[d] *6*	$59/2^+$
3293.9[u] *4*	$33/2^-$	4554.1[p] *5*	(J1)	6077.5[w] *4*	$51/2^-$	7779.5[t] *6*	$59/2^-$
3322.3[@] *3*	$33/2^+$	4578.1[g] *4*	$43/2^+$	6116.9[n] *5*	$53/2^-$	7824.3[y] *6*	$59/2^-$
3356.9[c] *4*	$33/2^+$	4594.8[@] *4*	$41/2^+$	6202.5[d] *5*	$51/2^+$	7855.3[n] *5*	$61/2^-$
3413.9[g] *4*	$35/2^+$	4597.4[k] *4*	$43/2^+$	6206.0[t] *5*	$51/2^-$	7877.1[&] *4*	$61/2^+$
3417.8 *4*	$35/2^+$	4655.9[n] *4*	$45/2^-$	6212.7[&] *4*	$53/2^+$	7967.8[h] *4*	$61/2^+$
3418.1[x] *4*	$33/2^-$	4704.8[w] *4*	$43/2^-$	6242.3[y] *5*	$51/2^-$	8075.8[m] *8*	$59/2^+$
3437.3[k] *4*	$35/2^+$	4734.9[&] *4*	$45/2^+$	6332.7[h] *4*	$53/2^+$	8087.5[u] *5*	$61/2^-$
3477.5 *5*	$35/2^-$	4815.5[d] *4*	$43/2^+$	6388.3[j] *4*	$53/2^+$	8095.9[v] *5*	$61/2^-$
3491.7[w] *3*	$35/2^-$	4838.6[t] *4*	$43/2^-$	6397.5[u] *5*	$53/2^-$	8099.4[b] *6*	$(59/2^+)$
3523.1[n] *4*	$37/2^-$	4861.3[j] *4*	$45/2^+$	6405.7[b] *5*	$51/2^+$	8143.6[j] *5*	$61/2^+$
3531.9[&] *3*	$37/2^+$	4880.8[y] *4*	$43/2^-$	6447.7[v] *4*	$53/2^-$	8182.9[l] *5*	$61/2^+$
3589.4[b] *4*	$35/2^+$	4898.4[b] *4*	$43/2^+$	6490.5[o] *5*	$55/2^-$	8227.4[x] *6*	$61/2^-$
3613.7[s] *4*	$37/2^-$	4941.9[u] *4*	$45/2^-$	6494.8[m] *5*	$51/2^+$	8228.9[e] *7*	$61/2^+$
3625.8[d] *4*	$35/2^+$	4954.7[h] *4*	$45/2^+$	6529.6[l] *5*	$53/2^+$	8236.2[o] *5*	$63/2^-$
3628.5[j] *4*	$37/2^+$	4985.9[o] *4*	$47/2^-$	6592.6[x] *5*	$53/2^-$	8255.7[s] *11*	$61/2^-$
3678.3[y] *4*	$35/2^-$	5030.7[v] *4*	$45/2^-$	6599.8[@] *7*	$53/2^+$	8299.2[c] *9*	$(61/2^+)$
3721.3[f] *4*	$37/2^+$	5076.2[l] *5*	$45/2^+$	6628.3[c] *7*	$53/2^+$	8320.4[p] *10*	(J1+10)
3729.7[t] *4*	$35/2^-$	5093.0[a] *4*	$47/2^+$	6631.2[a] *4*	$55/2^+$	8342.4[a] *5*	$63/2^+$
3770.0[u] *4*	$37/2^-$	5125.6[m] *5*	$43/2^+$	6634.0[s] *8*	$53/2^-$	8455.8[i] *5*	$63/2^+$
3774.0[o] *4*	$39/2^-$	5142.3[s] *4*	$45/2^-$	6659.3[p] *7*	(J1+6)	8549.5[w] *5*	$63/2^-$
3778.6[v] *4*	$37/2^-$	5160.4[c] *6*	$45/2^+$	6661.9[e] *7*	$53/2^+$	8600.0[g] *6*	$63/2^+$
3812.6[a] *3*	$39/2^+$	5184.7[x] *5*	$45/2^-$	6726.6[i] *4*	$55/2^+$	8644.5[t] *6*	$63/2^-$
3814.8[l] *4*	$37/2^+$	5230.4[p] *6*	(J1+2)	6820.1[g] *5*	$55/2^+$	8646.7[d] *8*	$63/2^+$
3892.5[c] *5*	$37/2^+$	5230.8[@] *5*	$45/2^+$	6839.2[w] *4*	$55/2^-$	8711.3[y] *6*	$63/2^-$
3948.7[x] *4*	$37/2^-$	5265.1[g] *4*	$47/2^+$	6953.1[n] *5*	$57/2^-$	8749.0[&] *5*	$65/2^+$
3957.9[g] *4*	$39/2^+$	5279.4[i] *4*	$47/2^+$	6965.7[d] *6*	$55/2^+$	8824.2[n] *5*	$65/2^-$
3972.4[@] *4*	$37/2^+$	5349.0[n] *4*	$49/2^-$	6969.2[t] *5*	$55/2^-$	8924.8[h] *5*	$65/2^+$
3974.1[m] *4*	$35/2^+$	5369.5[w] *4*	$47/2^-$	7001.3[y] *5*	$55/2^-$	8946.0[m] *9*	$63/2^+$
3978.9[k] *4*	$39/2^+$	5442.6[&] *4*	$49/2^+$	7036.1[&] *4*	$57/2^+$	9003.6[b] *6*	$(63/2^+)$
4045.5[n] *4*	$41/2^-$	5486.4[d] *5*	$47/2^+$	7100.9[h] *4*	$57/2^+$	9014.0[u] *5*	$65/2^-$
4078.1[w] *4*	$39/2^-$	5491.2[t] *5*	$47/2^-$	7215.0[u] *5*	$57/2^-$	9016.0[v] *6*	$65/2^-$
4096.0[&] *4*	$41/2^+$	5540.1[y] *5*	$47/2^-$	7235.0[b] *5*	$55/2^+$	9037.8[j] *5*	$65/2^+$
4193.1[d] *4*	$39/2^+$	5586.5[j] *4*	$49/2^+$	7239.8[v] *4*	$57/2^-$	9109.0[l] *6*	$65/2^+$
4205.9[j] *4*	$41/2^+$	5625.1[b] *5*	$47/2^+$	7241.7[j] *4*	$57/2^+$	9120.5[x] *6*	$(65/2^-)$
4222.8[b] *4*	$39/2^+$	5630.7[h] *4*	$49/2^+$	7259.8[m] *6*	$55/2^+$	9173.2[s] *12*	$(65/2^-)$
4224.9 *4*	$39/2^-$	5638.0[u] *4*	$49/2^-$	7328.3[l] *5*	$57/2^+$	9192.6[o] *5*	$67/2^-$
4244.6[y] *4*	$39/2^-$	5705.4[o] *4*	$51/2^-$	7334.8[o] *5*	$59/2^-$	9210.5[c] *10*	$(65/2^+)$
4266.1[t] *4*	$39/2^-$	5714.6[v] *4*	$49/2^-$	7374.9[@] *8*	$57/2^+$	9232.4[p] *11*	(J1+12)
4306.1[u] *4*	$41/2^-$	5778.0[l] *5*	$49/2^+$	7383.6[x] *5*	$57/2^-$	9269.9[a] *5*	$67/2^+$

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^{123}Sb(^{48}Ca,4nγ) E=203 MeV 2015Ro27 (continued)

^{167}Lu Levels (continued)

E(level)[†]	Jπ[‡]	E(level)[†]	Jπ[‡]	E(level)[†]	Jπ[‡]	E(level)[†]	Jπ[‡]
9442.9[i] 7	67/2+	11027.2[u] 7	73/2−	12780.9[&] 8	81/2+	16681.2[n] 12	(93/2−)
9498.2[w] 7	67/2−	11030.9[h] 5	(73/2+)	12962.7[m] 14	(79/2+)	17048.1?[l] 15	(93/2+)
9542.1[g] 8	67/2+	11037.0[v] 7	73/2−	13131.7[j] 9	81/2+	17229.8[o] 12	(95/2−)
9568.2[t] 6	67/2−	11084.1[x] 7	(73/2−)	13157.8[n] 8	81/2−	17323.4[a] 14	(95/2+)
9571.4[d] 9	67/2+	11084.4[l] 10	73/2+	13278.2[u] 8	(81/2−)	17617.9[&] 13	(97/2+)
9657.3[y] 6	(67/2−)	11151.7[s] 14	(73/2−)	13290.8[x] 9	(81/2−)	17943.3?[n] 13	(97/2−)
9674.1[&] 5	69/2+	11194.1[p] 13	(J1+16)	13291.0[v] 9	(81/2−)	x[r]	J2
9858.3[n] 6	69/2−	11219.4[c] 13	(73/2+)	13295.4[l] 12	(81/2+)	768.0+x[r] 5	(J2+2)
9869.0[m] 11	67/2+	11265.3[o] 6	75/2−	13537.3[o] 8	83/2−	1582.8+x[r] 7	(J2+4)
9946.8[h] 5	69/2+	11321.9[a] 8	75/2+	13611.0[a] 10	83/2+	2459.0+x[r] 9	(J2+6)
9969.6[j] 5	69/2+	11558.9[w] 10	75/2−	13795.4[w] 13	(83/2−)	3389.0+x[r] 10	(J2+8)
9993.8[u] 6	69/2−	11571.4[g] 11	(75/2+)	13813.3[t] 12	(83/2−)	4373.7+x[r] 12	(J2+10)
9997.0[v] 6	69/2−	11587.9[d] 12	75/2+	13851.1[d] 14	(83/2+)	5413.2+x[r] 13	(J2+12)
10068.0[l] 8	69/2+	11594.4[i] 10	75/2+	13921.7[&] 9	85/2+	6509.4+x[r] 14	(J2+14)
10070.9[x] 7	(69/2−)	11601.2[t] 10	(75/2−)	14111.9[m] 15	(83/2+)	7662.5+x[r] 15	(J2+16)
10144.7[s] 13	(69/2−)	11690.5[&] 6	77/2+	14299.7[n] 10	(85/2−)	8872.9+x[r] 15	(J2+18)
10185.0[p] 12	(J1+14)	11878.7[m] 13	(75/2+)	14315.0[j] 11	85/2+	10136.9+x[r] 16	(J2+20)
10193.0[c] 12	(69/2+)	12011.6[j] 8	77/2+	14466.4[u] 9	(85/2−)	11446.2+x[r] 17	(J2+22)
10202.9[o] 6	71/2−	12049.5[n] 6	77/2−	14487.8[l] 13	(85/2+)	12802.3+x[r] 18	(J2+24)
10263.6[a] 6	71/2+	12127.2[u] 7	(77/2−)	14737.5[o] 10	87/2−	y[q]	J3
10489.1[i] 9	71/2+	12139.2[v] 7	77/2−	14823.3[a] 12	87/2+	807.0+y[q] 5	(J3+2)
10504.1[w] 9	71/2−	12154.7[x] 7	(77/2−)	14965.0[w] 14	(87/2−)	1670.1+y[q] 7	(J3+4)
10531.4[g] 9	71/2+	12160.3[l] 11	77/2+	15108.1[&] 11	89/2+	2588.4+y[q] 9	(J3+6)
10551.3[d] 11	71/2+	12168.0[h] 8	(77/2+)	15312.0[m] 16	(87/2+)	3562.9+y[q] 10	(J3+8)
10553.1[t] 8	(71/2−)	12209.6[s] 15	(77/2−)	15472.8[n] 11	(89/2−)	4593.0+y[q] 12	(J3+10)
10654.4[&] 5	73/2+	12377.2[o] 6	79/2−	15558.2[j] 12	(89/2+)	5682.3+y[q] 13	(J3+12)
10655.3[y] 7	(71/2−)	12440.4[a] 9	79/2+	15735.0[l] 14	(89/2+)	6830.5+y[q] 14	(J3+14)
10846.4[m] 12	(71/2+)	12657.0[w] 12	79/2−	15968.5[o] 11	(91/2−)	8040.5+y[q] 15	(J3+16)
10947.3[n] 6	73/2−	12686.9[d] 13	(79/2+)	16067.3[a] 13	(91/2+)	9310.7+y[q] 15	(J3+18)
10957.6[j] 6	73/2+	12697.3[t] 11	(79/2−)	16339.3[&] 12	93/2+		

[†] From a least-squares fit to Eγ values. Normalized χ^2=0.61, with about 40 γ ray energies out of 630 γ rays falling within 2σ of the corresponding level-energy differences, which implies 94% of the Eγ values are fitted within 1σ.

[‡] As assigned by 2015Ro27 based on multipolarities deduced from $\gamma\gamma(\theta)$(DCO) values, band structures, decay modes and theoretical model calculations.

[#] From the Adopted Levels.

[@] Band(A): π5/2[402] band,α=+1/2. Configuration=iBC → iBCAD; BC crossing at $\hbar\omega$=0.32 MeV, followed by AD crossing. This band appears to be a continuation of α=+1/2 signature of band (I). This band interacts with band (D) at 49/2$^+$; energy separation=21.0 keV.

[&] Band(B): π7/2[404] band,α=+1/2. Configuration=a → aAB → aABCD; AB crossing at $\hbar\omega$=0.26 MeV, and CD crossing at $\hbar\omega$=0.42 MeV. This band interacts with band (J) at 57/2$^+$; energy separation=65.8 keV.

[a] Band(b): π7/2[404] band,α=−1/2. Configuration=b → bAB → bABCD → bABCD(ef or fg); AB crossing at $\hbar\omega$=0.26 MeV, CD crossing at $\hbar\omega$=0.42 MeV and ef or fg proton crossing at $\hbar\omega$=0.62 MeV.

[b] Band(C): γ-vibrational band. Possible γ-vibrational band built on π1/2[411] orbital. This band interacts with band (d) at 39/2$^+$; energy separation=29.6 keV.

[c] Band(D): 3-qp, eAF band,α=+1/2. Configuration=eAF → eAFBC; BC crossing at $\hbar\omega\approx$0.32 MeV. This band interacts with band (E) at 53/2$^+$; energy separation=33.9 keV. This band interacts with band (G) at 49/2$^+$; energy separation=21.0 keV.

[d] Band(d): 3-qp, fAF band,α=−1/2. Configuration=fAF → fAFBC; BC crossing at $\hbar\omega\approx$0.32 MeV. This positive-parity band was

Continued on next page (footnotes at end of table)

^{123}Sb(^{48}Ca,4nγ) E=203 MeV 2015Ro27 (continued)

^{167}Lu Levels (continued)

previously assigned in 2005Am02, incorrectly, as a triaxial strongly deformed (TSD-3) band with a negative parity. This band interacts with band (F) at 39/2$^+$; energy separation=29.6 keV.

[e] Band(E): Possible 5-qp band, cBCAD,α=+1/2. This band interacts with band (K) at 61/2$^+$; energy separation=45.9 keV. This band interacts with band (D) at 53/2$^+$; energy separation=33.9 keV.

[f] Band(F): π1/2[411] band,α=+1/2. Configuration=c → cAB; AB crossing at $\hbar\omega$=0.27 MeV.

[g] Band(f): π1/2[411] band,α=−1/2. Configuration=d → dAB → dABCD; AB crossing at $\hbar\omega$=0.27 MeV, and CD crossing at $\hbar\omega$=0.46 MeV. This band interacts with band (i) at 31/2$^+$; energy separation=20.0 keV. This band interacts with band (j) at 47/2$^+$; energy separation=14.2 keV.

[h] Band(G): 5-qp band, aABCD,α=+1/2. Configuration=aABCD → aAB, Landau-Zener crossing with band (A) at J=57/2. This band interacts with band (A) at 57/2$^+$; energy separation=65.8 keV. This band interacts with band (I) at 49/2$^+$; energy separation=45.2 keV.

[i] Band(g): 5-qp band, bABCD,α=−1/2. Configuration=bABCD → bAB, Landau-Zener crossing with band (a) at J=59/2. This band interacts with band (h) at 47/2$^+$; energy separation=14.2 keV.

[j] Band(H): π5/2[402] band,α=+1/2. Configuration=i → iAB → iABCD; AB crossing at $\hbar\omega$=0.25 MeV, and CD crossing at $\hbar\omega$=0.46 MeV. This band interacts with band (J) at 49/2$^+$; energy separation=45.2 keV. This band interacts with band (K) at 61/2$^+$; energy separation=39.3 keV.

[k] Band(h): π5/2[402] band,α=−1/2. Configuration=j → jAB; AB crossing at $\hbar\omega$=0.25 MeV. This band interacts with band (h) at 31/2$^+$; energy separation=20.0 keV.

[l] Band(I): TSD-1, 0-phonon band,α=+1/2. Triaxial strongly−deformed band (TSD) associated with π1/2[660] orbital. This band interacts with band (E) at 61/2$^+$; energy separation=45.9 keV. This band interacts with band (I) at 61/2$^+$; energy separation=39.3 keV. Q(transition)=6.9 *3* (2005Gu28, preliminary value). The uncertainty does not include systematic error of ≈10-15% due to stopping power. Population≈8% relative to yrast band. Note that 1998Ya04 proposed a cascade of eight transitions (904-854-804-753-705-653-601-551) in an SD band connected via 547 and 561 transitions to normal bands. The connecting transitions given by 2003Am01 are different from those in 1998Ya04. Corresponding spins are also higher by two units in 2003Am01 than those proposed by 1998Ya04.

[m] Band(J): TSD-2, 1-phonon band,α=−1/2. Triaxial strongly-deformed (TSD) band associated with π1/2[660] orbital. Population ≈2% relative to yrast band (2003Am01,2005Am02).

[n] Band(K): π9/2[514] band,α=+1/2. Configuration=e → eAB → eABfg; AB crossing at $\hbar\omega$=0.26 MeV, and fg crossing at $\hbar\omega$=0.55 MeV.

[o] Band(k): π9/2[514] band,α=−1/2. Configuration=f → fAB → fABCD → fABCDEF; AB crossing at $\hbar\omega$=0.26 MeV, Cd crossing at $\hbar\omega$=0.35-0.55 MeV, and ef crossing at $\hbar\omega$=0.6 MeV.

[p] Band(L): 3-qp, eBC band. Configuration=eBC → eBCAD; AD crossing at $\hbar\omega$=0.35-0.50 MeV.

[q] Band(M): Possible triaxial strongly-deformed band.

[r] Band(N): Possible triaxial strongly-deformed band.

[s] Band(O): π1/2[541] band,α=+1/2. Configuration=g → gBCAD; BCAD crossing at $\hbar\omega$=0.38 MeV. This band interacts with band (B) at 41/2$^-$; energy separation=12.4 keV.

[t] Band(o): π1/2[541] band,α=−1/2. Configuration=h → hAB → hABCD → hABCD(proton orbital); AB crossing at $\hbar\omega$=0.29 MeV, CD crossing at $\hbar\omega$=0.4-0.5 MeV and possible crossing at $\hbar\omega$=0.55 MeV due to proton orbitals. This band interacts with band (c) at 39/2$^-$; energy separation=21.5 keV.

[u] Band(P): 3-qp, gAB band,α=+1/2. Configuration=gAB → gAB(CD/EF) → gAB(CD/EF)ef; CD/EF crossing at $\hbar\omega$=0.4-0.5 MeV and ef crossing at $\hbar\omega$≈0.57 MeV. This band interacts with band (B) at 65/2$^-$; energy separation=1.3 keV.

[v] Band(Q): 3-qp, aAE band,α=+1/2. Configuration=aAE → aAEBC → aAEBC(ef); BC crossing at $\hbar\omega$=0.32 MeV and possible ef crossing at $\hbar\omega$≈0.5 MeV. This band interacts with band (M) at 41/2$^-$; energy separation=12.4 keV. This band interacts with band (N) at 65/2$^-$; energy separation=1.3 keV.

[w] Band(q): 3-qp, bAE band,α=−1/2. Configuration=bAE → bAEBC; BC crossing at $\hbar\omega$=0.32 MeV.

[x] Band(R): 3-qp, aAF band,α=+1/2. Configuration=aAF → aAFBC; BC crossing at $\hbar\omega$≈0.32 MeV.

[y] Band(r): 3-qp, bAF band,α=−1/2. Configuration=bAF → bAFBC; BC crossing at $\hbar\omega$≈0.32 MeV. This band interacts with band (m) at 39/2$^-$; energy separation=21.5 keV.

^{123}Sb(^{48}Ca,4nγ) E=203 MeV 2015Ro27 (continued)

γ(^{167}Lu)

DCO values correspond to gates on ΔJ=2, quadrupole (E2) transitions, and angles of 32°, 37°, 143°, 148° and 163° along the x-axis and 58° to 122° along the y-axis. Expected DCO values are 1.0 for ΔJ=2, quadrupole and 0.6 for ΔJ=1, dipole transitions. Mixed M1+E2 transitions in coupled bands have DCO values between 0.6 and 1.0.

All measured conversion coefficients (α(K)exp values) are from 2008Gu02. The numerical values corresponding to Figs. 6, 7, 9 and 12 in 2008Gu02 were received by the XUNDL compiler as email replies of on Feb 28, 2008 and March 11, 2008 from C.W. Beausang.

Multipolarities deduced from DCO ratios and decay patterns are not listed explicitly by 2015Ro27 but these are implied from the assigned J^π values and band structures.

E_γ[†]	I_γ[‡]	E_i(level)	J^π_i	E_f	J^π_f	Mult.	Comments
87.7[@] *2*	[@]	136.3	1/2⁻	48.6	3/2⁺		
101.5 *2*	10.1 *20*	433.6	11/2⁻	331.9	9/2⁻		
102.6 *2*	11.2 *22*	136.3	1/2⁻	33.7	1/2⁺	D	DCO=0.92 *4* Mult.: ΔJ=0 transition.
107.3 *2*	26.3 *53*	155.9	5/2⁻	48.6	3/2⁺	D	DCO=0.84 *3* DCO value seems too large for ΔJ=1, dipole (expected as pure E1) transition.
111.7 *2*	29.1 *58*	267.6	9/2⁻	155.9	5/2⁻		
117.4[@] *2*	[@]	184.5	7/2⁺	67.1	5/2⁺	D+Q	DCO=0.85 *4*
129.7[@] *2*	[@]	178.3	5/2⁺	48.6	3/2⁺		
140.0 *2*	14.7 *29*	140.0	9/2⁺	0.0	7/2⁺		
143.4 *2*	44.8 *28*	576.9	13/2⁻	433.6	11/2⁻		
144.6[@] *2*	[@]	178.3	5/2⁺	33.7	1/2⁺		
145.0 *2*	19.5 *33*	329.5	9/2⁺	184.5	7/2⁺	D+Q	DCO=0.80 *8*
159.7 *2*	1.5 *1*	2100.3	23/2⁻	1940.5	21/2⁻		
162.2 *5*	≤0.3	2938.9	31/2⁺	2776.7	29/2⁺		
165.3 *2*	37.5 *36*	305.3	11/2⁺	140.0	9/2⁺		
167.3 *2*	62.9 *55*	744.09	15/2⁻	576.9	13/2⁻		
167.7 *2*	2.5 *7*	435.4	7/2⁻	267.6	9/2⁻		
169.4 *2*	14.1 *11*	499.0	11/2⁺	329.5	9/2⁺	D+Q	DCO=0.74 *7*
169.8[@] *2*	[@]	218.4	7/2⁺	48.6	3/2⁺	Q	DCO=1.00 *4*
174.9 *2*	2.1 *2*	3133.7	33/2⁺	2958.8	31/2⁻	D	DCO=0.66 *11*
176.7 *2*	1.0 *2*	435.4	7/2⁻	258.7	3/2⁻	Q	DCO=1.07 *5*
178.2 *2*	9.5 *10*	507.8	11/2⁺	329.5	9/2⁺	D+Q	DCO=0.82 *4*
185.3 *2*	4.2 *4*	2285.55	25/2⁻	2100.3	23/2⁻	D+Q	DCO=0.91 *13*
186.0 *2*	7.9 *8*	693.9	13/2⁺	507.8	11/2⁺	D	DCO=0.68 *7*
188.2 *2*	5.1 *4*	2694.6	29/2⁺	2506.5	27/2⁺	D+Q	DCO=0.83 *8*
188.9 *2*	25.3 *28*	494.2	13/2⁺	305.3	11/2⁺		
189.5 *2*	1.5 *1*	1406.6	19/2⁺	1217.1	17/2⁺	D+Q	DCO=0.78 *16*
191.2 *2*	1.1 *2*	3628.5	37/2⁺	3437.3	35/2⁺	D+Q	DCO=0.74 *15*
191.7 *2*	32.1 *64*	331.9	9/2⁻	140.0	9/2⁺		
193.5 *5*	0.9 *1*	887.3	15/2⁺	693.9	13/2⁺	D	DCO=0.69 *14*
194.8 *2*	5.8 *5*	693.9	13/2⁺	499.0	11/2⁺	D+Q	DCO=0.82 *9*
203.1 *2*	1.9 *2*	3413.9	35/2⁺	3210.8	33/2⁺		
203.6 *2*	49.4 *29*	947.7	17/2⁻	744.09	15/2⁻		
205.3 *5*	0.5 *1*	1346.5	19/2⁺	1141.4	17/2⁺	D+Q	DCO=0.77 *15*
205.4 *2*	3.8 *3*	2491.0	27/2⁻	2285.55	25/2⁻	D+Q	DCO=0.86 *12*
210.3 *2*	24.0 *22*	704.2	15/2⁺	494.2	13/2⁺		
211.7 *2*	46.3 *34*	1159.4	19/2⁻	947.7	17/2⁻		
212.3 *2*	66.3 *61*	479.9	13/2⁻	267.6	9/2⁻	E2	DCO=1.10 *4* B(E2)↓=1.58 *14* (2019Ro13)
213.0 *5*	0.7 *2*	692.8	11/2⁻	479.9	13/2⁻		
214.5 *2*	5.7 *6*	432.8	9/2⁺	218.4	7/2⁺	D+Q	DCO=0.81 *8*

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^{123}Sb(^{48}Ca,4nγ) E=203 MeV 2015Ro27 (continued)

γ(^{167}Lu) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
214.6 2	1.2 2	3628.5	37/2+	3413.9	35/2+		
218.8 2	24.4 15	3288.7	35/2−	3069.9	33/2−		
221.1[&] 2	11.0 9	3043.7	33/2+	2822.8	31/2+	(M1+E2)	α(K)exp=0.16 3 (2008Gu02) α(K)exp for a γ-ray energy of 226.3 keV, corresponding to unresolved 230.0γ from 934, 17/2+ level, and 221.1γ from 3034, 33/2+ level.
222.4 2	8.9 7	916.2	15/2+	693.9	13/2+	D+Q	DCO=0.81 5
224.7 2	1.3 2	2715.7	29/2−	2491.0	27/2−	D+Q	DCO=0.99 20
225.0 2	1.7 3	258.7	3/2−	33.7	1/2+		
225.3 2	6.8 3	1141.4	17/2+	916.2	15/2+	D	DCO=0.68 16
226.6 5	0.6 1	3437.3	35/2+	3210.8	33/2+		
226.9 5	0.3 1	4205.9	41/2+	3978.9	39/2+		
230.0[&] 2	21.6 31	934.2	17/2+	704.2	15/2+	(M1+E2)	α(K)exp=0.16 3 (2008Gu02) α(K)exp for a γ-ray energy of 226.3 keV, corresponding to unresolved 230.0γ from 934, 17/2+ level, and 221.1γ from 3044, 33/2+ level.
232.3 2	2.4 3	2187.1	25/2+	1954.7	23/2+	D+Q	DCO=0.82 12
234.4 2	24.9 15	3523.1	37/2−	3288.7	35/2−		
235.4 5	≤0.3	3356.9	33/2+	3121.2	31/2+		
238.0 5	0.8 1	1954.7	23/2+	1716.7	21/2+	D+Q	DCO=0.80 16
241.2 2	10.9 12	3285.1	35/2+	3043.7	33/2+		
242.1 2	8.1 8	2822.8	31/2+	2580.6	29/2+		
242.9 5	0.9 3	2749.3	29/2+	2506.5	27/2+	D+Q	DCO=0.82 12
243.1 2	1.1 2	2958.8	31/2−	2715.7	29/2−	D+Q	DCO=1.07 21
243.4 2	3.9 3	1649.9	21/2+	1406.6	19/2+	D+Q	DCO=0.75 11
244.4 2	32.0 30	1655.8	23/2−	1411.5	21/2−		
245.1 2	14.4 24	576.9	13/2−	331.9	9/2−		
245.8 2	2.9 3	2506.5	27/2+	2260.7	25/2+	D	DCO=0.63 16
246.6 2	≤21.6	1181.0	19/2+	934.2	17/2+		
246.6 2	≤13.8	3531.9	37/2+	3285.1	35/2+		
248.3 2	2.0 3	432.8	9/2+	184.5	7/2+	D+Q	DCO=0.84 13
251.0 2	17.2 17	3774.0	39/2−	3523.1	37/2−		
252.1 2	39.6 32	1411.5	21/2−	1159.4	19/2−		
254.0 2	1.4 1	1141.4	17/2+	887.3	15/2+	D+Q	DCO=0.81 16
254.5 2	5.6 6	432.8	9/2+	178.3	5/2+	Q	DCO=0.99 10
257.4 2	6.4 13	692.8	11/2−	435.4	7/2−	Q	DCO=1.04 5
258.5 5	0.7 2	3217.3	33/2−	2958.8	31/2−	D+Q	DCO=1.21 24
260.0 5	0.5 2	3678.3	35/2−	3418.1	33/2−		
262.4 2	2.7 5	329.5	9/2+	67.1	5/2+	Q	DCO=0.90 14
263.5 2	9.5 11	1940.5	21/2−	1677.0	(17/2−)		
263.6 2	12.8 10	1444.4	21/2+	1181.0	19/2+		
264.0 2	1.0 2	4861.3	45/2+	4597.4	43/2+		
264.1 2	6.6 7	2958.9	31/2+	2694.6	29/2+	D+Q	DCO=0.83 8
265.2 2	3.7 2	1406.6	19/2+	1141.4	17/2+	D+Q	DCO=0.77 12
266.6 5	≤0.3	3892.5	37/2+	3625.8	35/2+		
267.6 2	14.2 25	2214.9	27/2−	1947.3	25/2−		
268.4 2	34.8 60	2800.4	31/2−	2531.7	29/2−		
269.1 5	0.4 1	3625.8	35/2+	3356.9	33/2+		
269.6 2	37.8 60	3069.9	33/2−	2800.4	31/2−		
270.2 2	2.8 3	2776.7	29/2+	2506.5	27/2+		
270.4 2	2.2 6	3948.7	37/2−	3678.3	35/2−	D	DCO=0.61 6
271.7 2	20.9 14	4045.5	41/2−	3774.0	39/2−		
272.0 5	0.6 1	3210.8	33/2+	2938.9	31/2+		
274.3 5	0.8 4	3491.7	35/2−	3217.3	33/2−	D+Q	DCO=0.99 20
275.8 2	10.0 9	1720.1	23/2+	1444.4	21/2+		

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$^{123}Sb(^{48}Ca,4n\gamma)$ E=203 MeV 2015Ro27 (continued)

$\gamma(^{167}Lu)$ (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
276.0 *2*	1.4 *2*	783.7	13/2+	507.8	11/2+	D	DCO=0.67 *13*
279.4 *2*	11.0 *22*	435.4	7/2−	155.9	5/2−		
280.7 *2*	4.8 *9*	3812.6	39/2+	3531.9	37/2+		
281.0 *2*	7.6 *12*	2580.6	29/2+	2299.3	27/2+		
283.6 *2*	5.2 *6*	4096.0	41/2+	3812.6	39/2+		
284.5 *2*	4.0 *5*	783.7	13/2+	499.0	11/2+	D	DCO=0.65 *10*
287.0 *5*	0.6 *2*	3778.6	37/2−	3491.7	35/2−	D+Q	DCO=1.00 *20*
288.3 *2*	11.0 *9*	2008.1	25/2+	1720.1	23/2+		
289.4 *2*	17.5 *17*	507.8	11/2+	218.4	7/2+	Q	DCO=0.97 *4*
291.2 *2*	6.8 *7*	2299.3	27/2+	2008.1	25/2+		
291.6 *2*	25.2 *16*	1947.3	25/2−	1655.8	23/2−		
293.6 *2*	33.0 *66*	433.6	11/2−	140.0	9/2+		
293.9 *2*	14.5 *16*	4339.2	43/2−	4045.5	41/2−		
295.7 *5*	0.4 *1*	4244.6	39/2−	3948.7	37/2−		
299.4 *5*	0.9 *2*	4078.1	39/2−	3778.6	37/2−	D+Q	DCO=1.02 *20*
300.0 *5*	0.5 *1*	4193.1	39/2+	3892.5	37/2+		
300.3 *5*	0.4 *1*	4544.8	41/2−	4244.6	39/2−		
301.0 *2*	1.1 *2*	1217.1	17/2+	916.2	15/2+	D	DCO=0.69 *14*
303.6 *2*	1.9 *2*	3437.3	35/2+	3133.7	33/2+	D	DCO=0.67 *13*
304.1 *5*	0.5 *2*	5184.7	45/2−	4880.8	43/2−		
304.9 *2*	2.8 *1*	1954.7	23/2+	1649.9	21/2+	D+Q	DCO=0.73 *11*
305.3[&] *2*	44.3 *33*	305.3	11/2+	0.0	7/2+	(E2)	α(K)exp=0.0074 *17* (2008Gu02) α(K)exp for a γ-ray energy of 310.0 keV, corresponding to unresolved 305.3γ from 305, 11/2+ level, and possibly mixed with 315γ in 7/2[523] band (an E1 γ reported from 315 level in ^{167}Hf decay).
306.0 *2*	6.0 *7*	2260.7	25/2+	1954.7	23/2+	D+Q	DCO=0.79 *8*
307.2 *5*	0.7 *1*	5586.5	49/2+	5279.4	47/2+		
307.4 *2*	1.9 *2*	3721.3	37/2+	3413.9	35/2+		
307.9 *5*	0.7 *2*	4385.9	41/2−	4078.1	39/2−	D+Q	DCO=0.91 *18*
310.0 *2*	9.0 *9*	1716.7	21/2+	1406.6	19/2+	D+Q	DCO=0.84 *4*
310.4 *2*	32.8 *24*	744.09	15/2−	433.6	11/2−		
311.2 *2*	3.8 *2*	2100.3	23/2−	1789.1	19/2−		
314.5 *2*	7.3 *7*	499.0	11/2+	184.5	7/2+	Q	DCO=0.93 *18*
314.5 *2*	87.5 *81*	794.5	17/2−	479.9	13/2−	E2	DCO=1.02 *4* α(K)exp=0.035 *4* (2008Gu02); B(E2)↓=1.53 *+18−16* (2019Ro13)
316.4 *2*	20.0 *29*	2531.7	29/2−	2214.9	27/2−		
316.9 *2*	13.4 *21*	4655.9	45/2−	4339.2	43/2−		
317.7 *2*	≤4.8	4734.9	45/2+	4417.0	43/2+	D	DCO=0.68 *4*
318.4 *2*	1.6 *2*	2483.5	25/2−	2165.0	21/2−	Q	DCO=1.10 *20*
318.8 *5*	0.5 *1*	4704.8	43/2−	4385.9	41/2−	D+Q	DCO=1.09 *22*
319.4 *2*	1.2 *2*	2506.5	27/2+	2187.1	25/2+	D	DCO=0.52 *10*
319.4 *5*	≤0.3	5859.6	49/2−	5540.1	47/2−		
319.7 *5*	≤0.3	4815.5	43/2+	4496.0	41/2+		
321.0 *2*	≤3.0	4417.0	43/2+	4096.0	41/2+	D	DCO=0.73 *4*
326.2 *5*	≤0.3	5030.7	45/2−	4704.8	43/2−	D+Q	DCO=0.81 *16*
329.2 *2*	2.0 *4*	4554.1	(J1)	4224.9	39/2−		
329.8 *2*	4.4 *5*	1217.1	17/2+	887.3	15/2+	D	DCO=0.56 *8*
330.0 *2*	13.8 *12*	4985.9	47/2−	4655.9	45/2−		
331.9 *2*	40.4 *60*	331.9	9/2−	0.0	7/2+		
335.9 *5*	0.9 *3*	4880.8	43/2−	4544.8	41/2−		
338.4 *5*	0.7 *6*	5369.5	47/2−	5030.7	45/2−	D+Q	DCO=0.86 *17*
341.6 *2*	6.8 *6*	1034.4	15/2−	692.8	11/2−	Q	DCO=1.08 *11*
345.0 *2*	7.7 *7*	2285.55	25/2−	1940.5	21/2−		

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^{123}Sb(^{48}Ca,4nγ) E=203 MeV 2015Ro27 (continued)

γ(^{167}Lu) (continued)

E_γ †	I_γ ‡	E_i(level)	J^π_i	E_f	J^π_f	Mult.	Comments
345.0 *2*	1.0 *9*	5714.6	49/2⁻	5369.5	47/2⁻		
349.6 *2*	4.7 *5*	5442.6	49/2⁺	5093.0	47/2⁺	D	DCO=0.72 *11*
350.1 *5*	≤0.3	6592.6	53/2⁻	6242.3	51/2⁻		
350.4 *2*	1.6 *3*	3978.9	39/2⁺	3628.5	37/2⁺		
350.6 *5*	0.9 *2*	6332.7	53/2⁺	5982.1	51/2⁺		
351.0 *2*	12.6 *13*	783.7	13/2⁺	432.8	9/2⁺	Q	DCO=0.94 *4*
351.0 *2*	1.0 *3*	2749.3	29/2⁺	2398.1	27/2⁺	D+Q	DCO=0.85 *13*
351.4 *2*	3.2 *7*	5982.1	51/2⁺	5630.7	49/2⁺		
354.1& *2*	66.0 *60*	494.2	13/2⁺	140.0	9/2⁺	(E2)	α(K)exp=0.024 *3* (2008Gu02) α(K)exp for a contaminated conversion line for 356.6γ (2008Gu02).
355.5 *5*	0.7 *2*	5540.1	47/2⁻	5184.7	45/2⁻		
356.4 *2*	8.7 *7*	5705.4	51/2⁻	5349.0	49/2⁻		
358.1 *2*	≤2.4	5093.0	47/2⁺	4734.9	45/2⁺	D+Q	DCO=0.85 *6*
362.8 *5*	0.9 *4*	6077.5	51/2⁻	5714.6	49/2⁻		
363.0 *2*	9.0 *18*	5349.0	49/2⁻	4985.9	47/2⁻		
364.6 *2*	12.9 *13*	693.9	13/2⁺	329.5	9/2⁺	E2	DCO=1.01 *4* α(K)exp=0.020 *9* (2008Gu02) α(K)exp for a conversion line for 366.5γ, corresponding to 364.6γ from 694, 13/2⁺ level, and possibly mixed with L-conversion line of 315γ, the latter reported in ^{167}Hf decay.
368.4 *2*	1.3 *2*	9192.6	67/2⁻	8824.2	65/2⁻	D	DCO=0.75 *6*
370.0 *5*	0.4 *2*	6447.7	53/2⁻	6077.5	51/2⁻		
370.1 *2*	2.1 *2*	1716.7	21/2⁺	1346.5	19/2⁺	D+Q	DCO=0.83 *12*
370.8 *2*	33.6 *29*	947.7	17/2⁻	576.9	13/2⁻		
373.8 *2*	3.3 *4*	6490.5	55/2⁻	6116.9	53/2⁻		
374.2 *5*	0.7 *2*	7100.9	57/2⁺	6726.6	55/2⁺		
379.2 *2*	17.3 *17*	887.3	15/2⁺	507.8	11/2⁺	Q	DCO=0.96 *4*
379.5 *2*	1.9 *5*	6212.7	53/2⁺	5833.2	51/2⁺	D	DCO=0.76 *15*
381.0 *2*	1.6 *2*	8236.2	63/2⁻	7855.3	61/2⁻	D	DCO=0.61 *12*
381.7 *2*	2.2 *2*	7334.8	59/2⁻	6953.1	57/2⁻		
382.5 *5*	≤0.3	6242.3	51/2⁻	5859.6	49/2⁻		
384.3 *2*	1.1 *1*	2893.0	29/2⁺	2508.8	25/2⁺	Q	DCO=0.91 *18*
386 *1*		2350.0	(25/2⁺)	1964.0	(21/2⁺)		E_γ: from Fig. 1 in 2015Ro27, not listed in authors′ Table IV.
388.3 *2*	16.4 *40*	887.3	15/2⁺	499.0	11/2⁺	Q	DCO=0.96 *4*
390.7 *2*	10.5 *8*	2491.0	27/2⁻	2100.3	23/2⁻	Q	DCO=0.97 *4*
390.7 *2*	2.8 *4*	5833.2	51/2⁺	5442.6	49/2⁺	D	DCO=0.71 *11*
391.3 *5*	0.7 *2*	4597.4	43/2⁺	4205.9	41/2⁺		
392.0 *5*	0.7 *3*	6839.2	55/2⁻	6447.7	53/2⁻		
393.9 *5*	0.6 *2*	6726.6	55/2⁺	6332.7	53/2⁺		
395.6 *5*	0.4 *1*	5982.1	51/2⁺	5586.5	49/2⁺		
399.0& *2*	82.8 *66*	704.2	15/2⁺	305.3	11/2⁺	(E2)	α(K)exp=0.023 *6* (2008Gu02) α(K)exp for a contaminated conversion line for 405.1γ (2008Gu02).
399.3 *2*	1.7 *3*	2749.3	29/2⁺	2350.0	(25/2⁺)		
399.4 *2*	7.6 *16*	3293.9	33/2⁻	2894.4	29/2⁻	Q	DCO=0.97 *10*
400.7 *5*	0.5 *2*	7239.8	57/2⁻	6839.2	55/2⁻		
404.8 *2*	3.4 *13*	7036.1	57/2⁺	6631.2	55/2⁺	D	DCO=0.67 *10*
406.5 *5*	≤0.3	887.3	15/2⁺	479.9	13/2⁻		
408.4 *2*	7.1 *7*	916.2	15/2⁺	507.8	11/2⁺	Q	DCO=0.93 *9*
408.7 *5*	≤0.3	7001.3	55/2⁻	6592.6	53/2⁻		
410.8 *2*	100.0 *14*	1205.3	21/2⁻	794.5	17/2⁻	E2	DCO=0.93 *4* α(K)exp=0.024 *3* (2008Gu02); B(E2)↓=1.51 *+27−49* (2019Ro13)

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^{123}Sb(^{48}Ca,4nγ) E=203 MeV 2015Ro27 (continued)

γ(^{167}Lu) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J^π_i	E_f	J^π_f	Mult.	Comments
410.8 2	≈8.0	2894.4	29/2⁻	2483.5	25/2⁻	Q	DCO=0.93 5
411.8 2	3.8 5	6116.9	53/2⁻	5705.4	51/2⁻		
415.3 2	48.1 29	1159.4	19/2⁻	744.09	15/2⁻		
417.4 2	6.0 5	916.2	15/2⁺	499.0	11/2⁺	Q	DCO=1.00 10
418.0 5	≤0.3	5279.4	47/2⁺	4861.3	45/2⁺		
418.2 2	1.7 2	6631.2	55/2⁺	6212.7	53/2⁺	D	DCO=0.77 15
423.0 5	≤0.3	7662.6	59/2⁻	7239.8	57/2⁻		
424.0 5	0.5 1	3121.2	31/2⁺	2697.0	27/2⁺		
424.6 2	6.9 8	1458.9	19/2⁻	1034.4	15/2⁻	Q	DCO=1.05 11
425.2 2	8.8 18	692.8	11/2⁻	267.6	9/2⁻		
430.1 2	5.6 6	2715.7	29/2⁻	2285.55	25/2⁻	Q	DCO=0.94 9
433.3[#] 5	16.9[#] 20	1217.1	17/2⁺	783.7	13/2⁺	Q	DCO=1.05 4
434.0[#] 5	5.4[#] 13	3210.8	33/2⁺	2776.7	29/2⁺		
434.7 5	0.9 2	7471.1	59/2⁺	7036.1	57/2⁺	D	DCO=0.66 13
439.0 2	11.5 13	3133.7	33/2⁺	2694.6	29/2⁺	Q	DCO=1.03 4
439.7 2	96 12	934.2	17/2⁺	494.2	13/2⁺	E2	α(K)exp=0.022 3 (2008Gu02)
447.5 2	10.9 7	1141.4	17/2⁺	693.9	13/2⁺	Q	DCO=0.91 4
452.3 2	5.7 4	2958.9	31/2⁺	2506.5	27/2⁺	Q	DCO=0.97 10
453.1 2	17.4 11	3523.1	37/2⁻	3069.9	33/2⁻		
455.8 2	2.8 8	3121.2	31/2⁺	2665.3	27/2⁺	Q	DCO=1.06 21
459.0 2	22.8 57	1346.5	19/2⁺	887.3	15/2⁺	Q	DCO=1.03 4
462.3 2	18.5 38	3285.1	35/2⁺	2822.8	31/2⁺		
462.7 2	8.7 10	6953.1	57/2⁻	6490.5	55/2⁻		
463.0 2	35.6 50	3043.7	33/2⁺	2580.6	29/2⁺	E2	α(K)exp=0.0162 23 (2008Gu02)
463.8 2	42.6 26	1411.5	21/2⁻	947.7	17/2⁻		
464.1 5	0.8 1	3356.9	33/2⁺	2893.0	29/2⁺	Q	DCO=1.00 20
467.8 2	7.0 11	2958.8	31/2⁻	2491.0	27/2⁻	Q	DCO=0.97 10
471.0 5	≤0.3	2749.3	29/2⁺	2278.5	25/2⁺		
475.0 2	6.8 7	3413.9	35/2⁺	2938.9	31/2⁺	Q	DCO=1.02 10
476.0 2	6.4 13	3770.0	37/2⁻	3293.9	33/2⁻	Q	DCO=1.01 4
477.0 2	70.1 52	1181.0	19/2⁺	704.2	15/2⁺		
478.4 2	5.8 5	3437.3	35/2⁺	2958.8	31/2⁻	Q	DCO=1.01 10
478.9 2	2.3 5	3417.8	35/2⁺	2938.9	31/2⁺		Placement shown from 3437.7 level in Table IV of 2015Ro27 seems incorrect. The placement here follows from Fig. 1 in 2015Ro27.
483.0 2	2.2 2	2491.0	27/2⁻	2008.1	25/2⁺	D	DCO=0.69 10
485.3 2	16.1 12	3774.0	39/2⁻	3288.7	35/2⁻		
488.3 2	22.1 14	3288.7	35/2⁻	2800.4	31/2⁻		
488.4 2	23.1 18	3531.9	37/2⁺	3043.7	33/2⁺	E2	α(K)exp=0.0107 26 (2008Gu02) α(K)exp for contaminated conversion line for 491.4γ.
488.6 2	2.2 4	2749.3	29/2⁺	2260.7	25/2⁺	Q	DCO=0.95 10
490.4 2	12.7 5	1406.6	19/2⁺	916.2	15/2⁺	Q	DCO=1.04 4
494.8 2	10.3 10	3628.5	37/2⁺	3133.7	33/2⁺	Q	DCO=1.02 4
496.4 2	48.2 29	1655.8	23/2⁻	1159.4	19/2⁻		
498.2 2	93.6 14	1703.3	25/2⁻	1205.3	21/2⁻	E2	DCO=1.03 4 α(K)exp=0.0124 15 (2008Gu02); B(E2)↓=1.56 34 (2019Ro13)
499.8 2	15.6 16	1716.7	21/2⁺	1217.1	17/2⁺	Q	DCO=1.11 3
501.1 2	8.0 16	1959.7	23/2⁻	1458.9	19/2⁻	Q	DCO=1.03 4
501.6 2	5.5 11	3217.3	33/2⁻	2715.7	29/2⁻	Q	DCO=1.02 10
504.6 2	3.5 4	3625.8	35/2⁺	3121.2	31/2⁺	Q	DCO=1.08 16
504.7 2	7.8 9	3254.3	33/2⁺	2749.3	29/2⁺	E2	DCO=0.90 5 α(K)exp=0.0165 23 (2008Gu02)
504.9 2	5.2 9	2883.7	29/2⁻	2378.8	25/2⁻	Q	DCO=0.95 19
505 1		1964.0	(21/2⁺)	1458.9	19/2⁻		E_γ: from Fig. 1 in 2015Ro27, not listed in authors′ Table IV.

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$^{123}Sb(^{48}Ca,4n\gamma)$ E=203 MeV 2015Ro27 (continued)

$\gamma(^{167}Lu)$ (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
508.0[#] *5*	10.5[#] *21*	2694.6	29/2+	2187.1	25/2+	Q	DCO=0.93 *4* DCO for 508.7+508.0.
508.7[#] *5*	11.0[#] *22*	1649.9	21/2+	1141.4	17/2+	Q	DCO=0.93 *4* DCO for 508.7+508.0.
510.0 *2*	21.0 *40*	1856.7	23/2+	1346.5	19/2+	Q	DCO=1.07 *4*
510.2[&] *2*	89.4 *66*	1444.4	21/2+	934.2	17/2+	(E2)	α(K)exp=0.0158 *16* (2008Gu02) α(K)exp for a conversion line for 504.7γ, corresponding to 510.2γ from 1444, 21/2+ level, and possibly mixed with another γ ray.
510.4 *2*	5.7 *14*	3721.3	37/2+	3210.8	33/2+		
516.0 *2*	6.4 *13*	2776.7	29/2+	2260.7	25/2+		
520.4 *2*	1.0 *3*	7855.3	61/2−	7334.8	59/2−	D+Q	DCO=0.95 *19*
522.4 *2*	20.9 *14*	4045.5	41/2−	3523.1	37/2−		
523.8 *2*	26.8 *21*	2822.8	31/2+	2299.3	27/2+		
524.9 *5*	0.8 *2*	4898.4	43/2+	4373.5	41/2−	D	DCO=0.69 *6*
527.5 *2*	21.1 *17*	3812.6	39/2+	3285.1	35/2+		
530.6 *2*	5.1 *10*	3948.7	37/2−	3418.1	33/2−	Q	DCO=0.98 *10*
532.8 *2*	5.8 *17*	3491.7	35/2−	2958.8	31/2−	Q	DCO=1.00 *10*
534.4 *2*	5.7 *10*	3418.1	33/2−	2883.7	29/2−	Q	DCO=1.18 *15*
535.3 *5*	0.8 *1*	3892.5	37/2+	3356.9	33/2+	Q	DCO=0.98 *20*
535.9 *2*	42.5 *27*	1947.3	25/2−	1411.5	21/2−		
536.0 *2*	6.5 *9*	4306.1	41/2−	3770.0	37/2−		
536.4 *2*	4.7 *11*	4266.1	39/2−	3729.7	35/2−	Q	DCO=0.93 *14*
537.3 *2*	10.0 *20*	2187.1	25/2+	1649.9	21/2+	Q	DCO=0.98 *4*
538.2 *2*	25.7 *18*	3069.9	33/2−	2531.7	29/2−		
539.0 *2*	63.7 *47*	1720.1	23/2+	1181.0	19/2+	E2	α(K)exp=0.019 *3* (2008Gu02)
541.2[a#] *5*	14.0[a#] *27*	2398.1	27/2+	1856.7	23/2+	Q	DCO=1.10 *4* DCO for 541.2 doublet.
541.2[a#] *5*	9.0[a#] *18*	2938.9	31/2+	2398.1	27/2+	Q	DCO=1.10 *4* DCO for 541.2 doublet.
541.6 *2*	4.4 *9*	3978.9	39/2+	3437.3	35/2+		
544.0 *2*	10.4 *26*	2260.7	25/2+	1716.7	21/2+	Q	DCO=0.92 *4*
544.0 *2*	3.8 *4*	3957.9	39/2+	3413.9	35/2+	Q	DCO=1.12 *17*
547.0 *2*	1.8 *3*	4521.2	39/2+	3974.1	35/2+	Q	DCO=0.92 *18*
548.0 *2*	10.2 *7*	1954.7	23/2+	1406.6	19/2+	Q	DCO=1.00 *5*
551.7 *2*	7.2 *14*	2506.5	27/2+	1954.7	23/2+	Q	DCO=1.05 *5*
554.6 *2*	2.4 *2*	1034.4	15/2−	479.9	13/2−	D	DCO=0.58 *9*
558.9 *2*	46.7 *29*	2214.9	27/2−	1655.8	23/2−		
559.8 *2*	5.5 *8*	3254.3	33/2+	2694.6	29/2+	Q	DCO=1.02 *4* DCO for 559.8+560.6.
560.6 *2*	9.0 *9*	3814.8	37/2+	3254.3	33/2+	E2	DCO=1.02 *4* α(K)exp=0.0141 *21* (2008Gu02) DCO for 559.8+560.6.
561.1 *2*	2.0 *4*	3978.9	39/2+	3417.8	35/2+		
561.3 *2*	4.0 *14*	3778.6	37/2−	3217.3	33/2−	Q	DCO=0.91 *14*
562.0 *5*	≤0.3	2278.5	25/2+	1716.7	21/2+	Q	DCO=1.02 *4* DCO for 562.0+562.3.
562.3 *2*	2.0 *3*	2749.3	29/2+	2187.1	25/2+	Q	DCO=1.02 *4* DCO for 562.0+562.3.
563.6 *2*	64.8 *60*	2008.1	25/2+	1444.4	21/2+		
563.9 *2*	22.1 *36*	4096.0	41/2+	3531.9	37/2+	E2	α(K)exp=0.0125 *15* (2008Gu02)
565.2 *2*	16.6 *12*	4339.2	43/2−	3774.0	39/2−		
565.4 *2*	6.6 *6*	2285.55	25/2−	1720.1	23/2+	D	DCO=0.68 *7*
566.3 *2*	2.3 *6*	4244.6	39/2−	3678.3	35/2−		
566.8 *2*	8.6 *17*	2526.6	27/2−	1959.7	23/2−	Q	DCO=1.04 *4*

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^{123}Sb(^{48}Ca,4nγ) E=203 MeV 2015Ro27 (continued)

γ(^{167}Lu) (continued)

E_γ †	I_γ ‡	E_i(level)	J^π_i	E_f	J^π_f	Mult.	Comments
567.4 *2*	2.8 *2*	4193.1	39/2+	3625.8	35/2+	E2	DCO=0.99 *15* α(K)exp=0.012 *6* (2008Gu02)
568.4 *2*	1.4 *3*	4941.9	45/2−	4373.5	41/2−		
572.6 *2*	40.1 *31*	2580.6	29/2+	2008.1	25/2+	(E2)	α(K)exp=0.0113 *18* (2008Gu02) α(K)exp for 572.6+579.2 unresolved line (for 575.75γ) in ce spectrum.
572.6 *2*	5.1 *5*	4838.6	43/2−	4266.1	39/2−	Q	DCO=1.04 *10*
574.7 *2*	71.6 *13*	2278.0	29/2−	1703.3	25/2−	E2	DCO=1.03 *4* α(K)exp=0.0118 *15* (2008Gu02); B(E2)↓>1.73 (2019Ro13)
574.8 *2*	1.5 *2*	3589.4	35/2+	3014.6	31/2+		
577.3 *2*	9.5 *10*	4205.9	41/2+	3628.5	37/2+	Q	DCO=0.97 *5*
579.2 *2*	52.5 *40*	2299.3	27/2+	1720.1	23/2+	(E2)	α(K)exp=0.0113 *18* (2008Gu02) α(K)exp for 579.2+572.6 unresolved line (for 575.75γ) in ce spectrum.
584.4 *2*	30.1 *38*	2531.7	29/2−	1947.3	25/2−		
585.8 *2*	47.8 *51*	2800.4	31/2−	2214.9	27/2−		
586.4 *2*	5.7 *21*	4078.1	39/2−	3491.7	35/2−	Q	DCO=0.99 *10*
586.4 *2*	5.5 *6*	4307.7	41/2+	3721.3	37/2+		
588.0 *2*	1.3 *2*	8824.2	65/2−	8236.2	63/2−		
591.3 *2*	5.7 *6*	3729.7	35/2−	3138.4	31/2−	Q	DCO=1.07 *11*
593.9 *2*	2.3 *5*	3322.3	33/2+	2728.4	29/2+	Q	DCO=0.99 *11*
594.0 *2*	2.1 *2*	4838.6	43/2−	4244.6	39/2−	(Q)	DCO=0.81 *15*
596.0 *2*	3.2 *8*	4544.8	41/2−	3948.7	37/2−		
597.0 *2*	1.1 *3*	4222.8	39/2+	3625.8	35/2+		
603.3 *2*	1.5 *3*	4373.5	41/2−	3770.0	37/2−	Q	DCO=0.93 *19*
603.5 *2*	1.0 *2*	4496.0	41/2+	3892.5	37/2+	Q	DCO=0.99 *20*
603.6 *5*	0.6 *1*	4193.1	39/2+	3589.4	35/2+		
604.3 *2*	1.4 *3*	5125.6	43/2+	4521.2	39/2+		
604.4 *2*	22.4 *20*	4417.0	43/2+	3812.6	39/2+	Q	DCO=0.99 *2*
606.8 *2*	7.8 *7*	4421.6	41/2+	3814.8	37/2+	E2	DCO=1.07 *11* α(K)exp=0.0077 *28* (2008Gu02)
607.3 *2*	5.3 *21*	4385.9	41/2−	3778.6	37/2−	Q	DCO=0.95 *10*
609.4 *2*	1.0 *3*	4222.8	39/2+	3613.7	37/2−	D	DCO=0.64 *5*
610.2 *2*	20.2 *14*	4655.9	45/2−	4045.5	41/2−		
612.0 *2*	5.4 *5*	3138.4	31/2−	2526.6	27/2−	Q	DCO=1.05 *11*
613.7 *2*	1.5 *2*	4838.6	43/2−	4224.9	39/2−		
616.6 *2*	3.2 *8*	3014.6	31/2+	2398.1	27/2+		
618.6 *2*	2.1 *8*	4597.4	43/2+	3978.9	39/2+	Q	DCO=1.02 *15*
620.2 *2*	3.0 *10*	4578.1	43/2+	3957.9	39/2+	Q	DCO=1.05 *16*
622.4 *2*	1.6 *3*	4594.8	41/2+	3972.4	37/2+	Q	DCO=1.02 *10*
622.4 *2*	2.6 *2*	4815.5	43/2+	4193.1	39/2+	E2	DCO=0.94 *14* α(K)exp=0.0094 *23* (2008Gu02) Initial level: negative parity in Table IV of 2015Ro27 is a misprint, it should be positive as in level-scheme Fig. 1.
626.6 *2*	4.4 *17*	4704.8	43/2−	4078.1	39/2−	Q	DCO=1.02 *15*
632.2 *5*	0.4 *1*	2893.0	29/2+	2260.7	25/2+		
633.2 *2*	6.4 *16*	4222.8	39/2+	3589.4	35/2+		DCO=0.97 *4*
635.9 *2*	10.9 *10*	4941.9	45/2−	4306.1	41/2−	E2	DCO=1.05 *4* α(K)exp=0.0094 *13* (2008Gu02)
636.0 *2*	1.2 *2*	5230.8	45/2+	4594.8	41/2+	Q	DCO=1.07 *6*
636.2 *2*	2.9 *8*	4880.8	43/2−	4244.6	39/2−		
639.1 *2*	26.1 *22*	4734.9	45/2+	4096.0	41/2+	E2	DCO=0.98 *2* α(K)exp=0.0070 *15* (2008Gu02)
640.0 *2*	3.3 *9*	5184.7	45/2−	4544.8	41/2−	Q	DCO=1.13 *17*
640.9 *2*	50.8 *12*	2918.5	33/2−	2278.0	29/2−	Q	DCO=1.05 *4*
644.7 *2*	3.8 *15*	5030.7	45/2−	4385.9	41/2−	Q	DCO=0.98 *15*

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$^{123}Sb(^{48}Ca,4n\gamma)$ E=203 MeV 2015Ro27 (continued)

$\gamma(^{167}Lu)$ (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
646.7 *2*	18.1 *15*	4985.9	47/2⁻	4339.2	43/2⁻		
647.0 *2*	4.7 *6*	4954.7	45/2⁺	4307.7	41/2⁺	Q	DCO=1.02 *15*
650.1 *2*	3.1 *6*	3972.4	37/2⁺	3322.3	33/2⁺	Q	DCO=0.94 *7*
650.4 *2*	2.3 *6*	3589.4	35/2⁺	2938.9	31/2⁺		
651.5 *2*	1.7 *4*	1856.7	23/2⁺	1205.3	21/2⁻		
652.6 *2*	6.9 *7*	5491.2	47/2⁻	4838.6	43/2⁻	Q	DCO=1.02 *10*
654.6 *2*	6.4 *6*	5076.2	45/2⁺	4421.6	41/2⁺	E2	DCO=0.91 *4* α(K)exp=0.0084 *29* (2008Gu02)
655.3 *2*	9.0 *9*	4861.3	45/2⁺	4205.9	41/2⁺	Q	DCO=0.94 *5*
655.9 *2*	14.4 *7*	2100.3	23/2⁻	1444.4	21/2⁺	D	DCO=0.65 *3*
657.0 *5*	0.9 *4*	5030.7	45/2⁻	4373.5	41/2⁻		
658.1 *2*	1.0 *2*	5783.7	47/2⁺	5125.6	43/2⁺	(Q)	DCO=0.87 *13*
658.7 *2*	5.0 *5*	2378.8	25/2⁻	1720.1	23/2⁺	D	DCO=0.69 *7*
659.3 *2*	2.8 *7*	5540.1	47/2⁻	4880.8	43/2⁻		
660.9 *5*	0.9 *3*	2938.9	31/2⁺	2278.0	29/2⁻		
664.1 *5*	0.7 *1*	5894.8	49/2⁺	5230.8	45/2⁺	Q	DCO=0.98 *5*
664.4 *5*	0.6 *1*	5160.4	45/2⁺	4496.0	41/2⁺	Q	DCO=1.04 *21*
664.5 *2*	2.3 *1*	1458.9	19/2⁻	794.5	17/2⁻	D	DCO=0.55 *8*
664.6 *2*	4.1 *17*	5369.5	47/2⁻	4704.8	43/2⁻	Q	DCO=1.00 *15*
670.8 *2*	5.2 *12*	3589.4	35/2⁺	2918.5	33/2⁻	D	DCO=0.64 *6*
670.9 *2*	2.4 *2*	5486.4	47/2⁺	4815.5	43/2⁺	E2	DCO=0.94 *14* α(K)exp=0.0073 *26* (2008Gu02)
674.9 *2*	3.8 *10*	5859.6	49/2⁻	5184.7	45/2⁻	Q	DCO=0.97 *4*
675.5 *2*	7.4 *19*	4898.4	43/2⁺	4222.8	39/2⁺	Q	DCO=1.10 *7*
676.0 *2*	17.1 *15*	5093.0	47/2⁺	4417.0	43/2⁺	Q	DCO=1.00 *4*
676.0 *2*	4.7 *6*	5630.7	49/2⁺	4954.7	45/2⁺	Q	DCO=1.03 *15*
676.2[#] *5*	1.5[#] *3*	5230.4	(J1+2)	4554.1	(J1)		
677.0[#] *5*	2.5[#] *5*	3477.5	35/2⁻	2800.4	31/2⁻		
682.0 *2*	2.9 *3*	5279.4	47/2⁺	4597.4	43/2⁺	Q	DCO=1.01 *15*
682.5 *2*	1.4 *3*	5912.9	(J1+4)	5230.4	(J1+2)		
684.0 *2*	3.2 *16*	5714.6	49/2⁻	5030.7	45/2⁻	Q	DCO=1.05 *16*
687.0 *2*	2.9 *3*	5265.1	47/2⁺	4578.1	43/2⁺	Q	DCO=1.07 *16*
692.6 *2*	11.5 *20*	4306.1	41/2⁻	3613.7	37/2⁻	Q	DCO=1.04 *4*
693.0[&] *2*	17.4 *24*	5349.0	49/2⁻	4655.9	45/2⁻	(E2)	α(K)exp=0.0065 *16* (2008Gu02) α(K)exp for a conversion line for 691.5γ, probably corresponding to 693.0γ from 5349, 49/2⁻ level, and mixed with an unknown 687γ.
694.7 *2*	1.2 *3*	2398.1	27/2⁺	1703.3	25/2⁻		
695.8 *2*	32.4 *69*	3613.7	37/2⁻	2918.5	33/2⁻	E2	DCO=1.01 *4* α(K)exp=0.0076 *9* (2008Gu02) E_γ: somewhat poor fit, level-energy difference=695.2.
696.2 *2*	10.0 *20*	5638.0	49/2⁻	4941.9	45/2⁻	E2	DCO=1.00 *4* α(K)exp=0.0076 *9* (2008Gu02)
701.8 *2*	4.9 *5*	5778.0	49/2⁺	5076.2	45/2⁺	E2	DCO=1.00 *10* α(K)exp=0.0060 *11* (2008Gu02)
702.0 *2*	4.7 *6*	6332.7	53/2⁺	5630.7	49/2⁺	Q	DCO=1.01 *15*
702.1 *2*	3.0 *8*	6242.3	51/2⁻	5540.1	47/2⁻		
702.8 *2*	2.0 *2*	5982.1	51/2⁺	5279.4	47/2⁺	Q	DCO=0.99 *15*
704.2 *5*	0.5 *2*	5125.6	43/2⁺	4421.6	41/2⁺		
705.0 *5*	≤0.3	6599.8	53/2⁺	5894.8	49/2⁺	Q	DCO=0.97 *5*
705.8 *5*	0.4 *1*	2893.0	29/2⁺	2187.1	25/2⁺		
706.1 *5*	0.8 *2*	4521.2	39/2⁺	3814.8	37/2⁺	D+Q	DCO=0.66 *13* δ(Q/D)=−3.1 *+11−34* or −0.26 *16* from DCO (2003Am01); authors support larger δ value in comparison to similar transitions of known mixing ratio in SD band of ^{163}Lu.

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^{123}Sb(^{48}Ca,4nγ) E=203 MeV 2015Ro27 (continued)

γ(^{167}Lu) (continued)

E$_\gamma$[†]	I$_\gamma$[‡]	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.	Comments
							DCO=0.66 *13* δ(Q/D)=−3.1 +*11*−*34* or −0.26 *16* from DCO (2003Am01); authors support larger δ value in comparison to similar transitions of known mixing ratio in SD band of ^{163}Lu. Note that 2003Am01 did list DCO value. DCO in 2015Ro27 seems consistent with DJ=1, dipole.
707.6 *2*	21.4 *19*	5442.6	49/2$^+$	4734.9	45/2$^+$	E2	DCO=1.01 *4* α(K)exp=0.0042 *8* (2008Gu02)
707.7 *5*	0.4 *1*	5783.7	47/2$^+$	5076.2	45/2$^+$		δ(Q/D)=−5.1 +*16*−*25* or −0.07 *7* from DCO (2003Am01); authors support larger δ value in comparison to similar transitions of known mixing ratio in SD band of ^{163}Lu. Note that DCO value was not listed by 2003Am01.
707.9 *2*	3.2 *14*	6077.5	51/2$^-$	5369.5	47/2$^-$	Q	DCO=0.96 *14*
710.8 *5*	0.7 *1*	6494.8	51/2$^+$	5783.7	47/2$^+$	Q	DCO=1.00 *20*
713.6 *5*	0.7 *1*	5873.9	49/2$^+$	5160.4	45/2$^+$	Q	DCO=1.02 *20*
714.8 *2*	6.9 *7*	6206.0	51/2$^-$	5491.2	47/2$^-$	Q	DCO=1.05 *11*
716.1 *2*	2.2 *2*	6202.5	51/2$^+$	5486.4	47/2$^+$	Q	DCO=0.99 *15*
717.0 *2*	2.0 *2*	5982.1	51/2$^+$	5265.1	47/2$^+$		
717.0 *5*	0.4 *1*	6494.8	51/2$^+$	5778.0	49/2$^+$		δ(Q/D)=−3.9 +*27*−*84* or −0.35 *65* from DCO (2003Am01); authors support larger δ value in comparison to similar transitions of known mixing ratio in SD band of ^{163}Lu. Note that DCO value was not listed by 2003Am01.
719.6 *2*	18.7 *25*	5705.4	51/2$^-$	4985.9	47/2$^-$		
719.8[@] *2*	[@]	3974.1	35/2$^+$	3254.3	33/2$^+$	D	DCO=0.66 *10*
720.2 *2*	6.3 *13*	2728.4	29/2$^+$	2008.1	25/2$^+$	Q	DCO=0.94 *9*
723.1 *5*	≤0.3	3121.2	31/2$^+$	2398.1	27/2$^+$		
725.2 *2*	5.9 *6*	5586.5	49/2$^+$	4861.3	45/2$^+$	Q	DCO=1.04 *10*
725.8 *5*	≤0.3	6599.8	53/2$^+$	5873.9	49/2$^+$		
726.6 *5*	0.8 *2*	6634.0	53/2$^-$	5907.4	49/2$^-$	Q	DCO=1.06 *21*
726.7 *2*	7.0 *18*	5625.1	47/2$^+$	4898.4	43/2$^+$	Q	DCO=0.95 *10*
730.3 *5*	≤0.3	7259.8	55/2$^+$	6529.6	53/2$^+$		
733.0 *2*	3.7 *9*	6592.6	53/2$^-$	5859.6	49/2$^-$	Q	DCO=0.97 *4*
733.1 *2*	2.3 *9*	6447.7	53/2$^-$	5714.6	49/2$^-$	Q	DCO=1.08 *16*
735.6 *5*	0.7 *1*	6015.4	51/2$^+$	5279.4	47/2$^+$		
736.4 *2*	1.0 *2*	3014.6	31/2$^+$	2278.0	29/2$^-$	D	DCO=0.67 *13*
740.3 *2*	14.7 *17*	5833.2	51/2$^+$	5093.0	47/2$^+$	E2	DCO=0.97 *4* α(K)exp=0.0064 *16* (2008Gu02)
741.0[b] *5*	≤0.3	7403.0	57/2$^+$	6661.9	53/2$^+$		
741.8 *2*	2.9 *6*	3322.3	33/2$^+$	2580.6	29/2$^+$	Q	DCO=0.96 *5*
744.4 *2*	1.5 *2*	6726.6	55/2$^+$	5982.1	51/2$^+$	Q	DCO=0.95 *19*
744.6 *5*	0.5 *1*	7471.1	59/2$^+$	6726.6	55/2$^+$		
746.4 *5*	≤0.3	6332.7	53/2$^+$	5586.5	49/2$^+$		
746.4[#] *5*	1.3[#] *3*	6659.3	(J1+6)	5912.9	(J1+4)		
747.3[#] *5*	2.3[#] *5*	4224.9	39/2$^-$	3477.5	35/2$^-$		
750.4 *2*	1.8 *2*	6015.4	51/2$^+$	5265.1	47/2$^+$	Q	DCO=1.07 *21*
751.6 *2*	3.8 *5*	6529.6	53/2$^+$	5778.0	49/2$^+$	E2	DCO=0.91 *9* α(K)exp=0.0068 *16* (2008Gu02)
752.0 *5*	≤0.3	6659.3	(J1+6)	5907.4	49/2$^-$		
754.1 *2*	2.7 *1*	1959.7	23/2$^-$	1205.3	21/2$^-$		
754.4 *5*	0.3 *1*	6628.3	53/2$^+$	5873.9	49/2$^+$	Q	DCO=1.00 *20*
757.6 *2*	1.1 *1*	6388.3	53/2$^+$	5630.7	49/2$^+$		
759.0 *2*	3.2 *8*	7001.3	55/2$^-$	6242.3	51/2$^-$	Q	DCO=0.97 *4*
759.4 *2*	3.8 *3*	1940.5	21/2$^-$	1181.0	19/2$^+$		
759.6 *2*	7.7 *19*	6397.5	53/2$^-$	5638.0	49/2$^-$	E2	DCO=0.97 *10* α(K)exp=0.0062 *7* (2008Gu02)

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^{123}Sb(^{48}Ca,4nγ) E=203 MeV 2015Ro27 (continued)

γ(^{167}Lu) (continued)

E_γ †	I_γ ‡	E_i(level)	J^π_i	E_f	J^π_f	Mult.	Comments
760.0 2	13.0 14	4373.5	41/2⁻	3613.7	37/2⁻	Q	DCO=0.95 4
761.6 2	2.5 11	6839.2	55/2⁻	6077.5	51/2⁻	Q	DCO=0.94 14
763.2 2	1.4 2	6965.7	55/2⁺	6202.5	51/2⁺	Q	DCO=0.94 19
763.2 2	5.6 7	6969.2	55/2⁻	6206.0	51/2⁻	Q	DCO=1.08 11
765.0 5	0.6 2	7259.8	55/2⁺	6494.8	51/2⁺	Q	DCO=1.06 21
765.1 5	0.8 2	5907.4	49/2⁻	5142.3	45/2⁻	Q	DCO=1.04 8 DCO for 768.8+765.1.
767.9 2	11.7 10	6116.9	53/2⁻	5349.0	49/2⁻		
768.0 5	≤0.3	768.0+x	(J2+2)	x	J2	(Q)	DCO=0.84 31
768.1 2	4.8 6	7100.9	57/2⁺	6332.7	53/2⁺	Q	DCO=1.03 15
768.8 5	0.8 2	5142.3	45/2⁻	4373.5	41/2⁻	Q	DCO=1.04 21 DCO for 768.8+765.1.
770.0 2	16.1 15	6212.7	53/2⁺	5442.6	49/2⁺	E2	DCO=0.99 4 α(K)exp=0.0045 6 (2008Gu02)
772.0 5	≤0.3	4385.9	41/2⁻	3613.7	37/2⁻		
774.9 5	≤0.3	7403.0	57/2⁺	6628.3	53/2⁺	Q	DCO=0.99 20
775.1 5	≤0.3	7374.9	57/2⁺	6599.8	53/2⁺	Q	DCO=0.96 10
776.2 2	2.6 10	7877.1	61/2⁺	7100.9	57/2⁺		
776.6 5	0.4 2	7410.6	57/2⁻	6634.0	53/2⁻	Q	DCO=1.02 20
780.6 2	6.7 17	6405.7	51/2⁺	5625.1	47/2⁺	Q	DCO=0.86 13
781.0 2	4.0 4	1940.5	21/2⁻	1159.4	19/2⁻		
784.8 2	10.2 9	6490.5	55/2⁻	5705.4	51/2⁻		
788.0 5	≤0.3	6661.9	53/2⁺	5873.9	49/2⁺		
788.0 5	≤0.3	7449.8	57/2⁺	6661.9	53/2⁺		
791.0 2	3.6 9	7383.6	57/2⁻	6592.6	53/2⁻	Q	DCO=1.02 4
792.1 2	1.7 7	7239.8	57/2⁻	6447.7	53/2⁻	Q	DCO=0.93 19
798.3 2	10.1 11	6631.2	55/2⁺	5833.2	51/2⁺	Q	DCO=0.99 4
798.7 2	2.7 4	7328.3	57/2⁺	6529.6	53/2⁺	E2	DCO=0.96 10 α(K)exp=0.0057 11 (2008Gu02)
801.8 2	3.4 3	6388.3	53/2⁺	5586.5	49/2⁺	Q	DCO=0.95 4
801.9 5	0.6 2	7461.2	(J1+8)	6659.3	(J1+6)		
804.7 2	2.0 2	6820.1	55/2⁺	6015.4	51/2⁺	Q	DCO=0.97 19
807.0 5	≤0.3	807.0+y	(J3+2)	y	J3		
808.5 2	1.0 2	2665.3	27/2⁺	1856.7	23/2⁺		
810.0 2	1.2 2	7775.7	59/2⁺	6965.7	55/2⁺	Q	DCO=1.01 19
810.3 2	3.0 3	7779.5	59/2⁻	6969.2	55/2⁻	Q	DCO=1.09 16
814.8 5	≤0.3	1582.8+x	(J2+4)	768.0+x	(J2+2)	Q	DCO=0.96 18
815.2 5	≤0.3	8143.6	61/2⁺	7328.3	57/2⁺	Q	DCO=0.99 20
816.0 5	0.6 2	8075.8	59/2⁺	7259.8	55/2⁺	Q	DCO=1.03 20
816.6 2	1.2 2	7543.2	59/2⁺	6726.6	55/2⁺	Q	DCO=1.09 22
817.6 2	6.8 17	7215.0	57/2⁻	6397.5	53/2⁻	E2	DCO=1.00 10 α(K)exp=0.0045 9 (2008Gu02)
821.4 5	0.4 1	7449.8	57/2⁺	6628.3	53/2⁺	Q	DCO=1.00 20
823.0 2	3.2 8	7824.3	59/2⁻	7001.3	55/2⁻	Q	DCO=1.02 4
823.3 2	1.7 8	7662.6	59/2⁻	6839.2	55/2⁻	Q	DCO=0.93 19
823.4 2	2.5 1	2526.6	27/2⁻	1703.3	25/2⁻		
823.4 2	11.2 40	7036.1	57/2⁺	6212.7	53/2⁺	Q	DCO=0.94 4
826.0 5	≤0.3	8228.9	61/2⁺	7403.0	57/2⁺		
829.3 2	4.6 12	7235.0	55/2⁺	6405.7	51/2⁺	Q	DCO=0.90 14
836.2 2	2.4 2	5142.3	45/2⁻	4306.1	41/2⁻	Q	DCO=1.03 16
836.2 2	10.1 10	6953.1	57/2⁻	6116.9	53/2⁻		
840.0 2	6.1 8	7471.1	59/2⁺	6631.2	55/2⁺	Q	DCO=0.98 10
841.0 2	8.5 30	7877.1	61/2⁺	7036.1	57/2⁺	Q	DCO=0.97 5
843.1 5	0.7 1	3121.2	31/2⁺	2278.0	29/2⁻		DCO=0.50 10
843.8 2	3.7 9	8227.4	61/2⁻	7383.6	57/2⁻	Q	DCO=0.93 6
844.4 2	7.4 8	7334.8	59/2⁻	6490.5	55/2⁻		

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$^{123}Sb(^{48}Ca,4n\gamma)$ E=203 MeV 2015Ro27 (continued)

$\gamma(^{167}Lu)$ (continued)

E_γ †	I_γ ‡	E_i(level)	J^π_i	E_f	J^π_f	Mult.	Comments
845.1 5	≤0.3	8255.7	61/2−	7410.6	57/2−	Q	DCO=1.02 20
849.4 5	≤0.3	8299.2	(61/2+)	7449.8	57/2+		
851.3 2	1.9 2	3770.0	37/2−	2918.5	33/2−	Q	DCO=0.95 19
853.0 2	1.3 1	2508.8	25/2+	1655.8	23/2−	D	DCO=0.63 13
853.5 2	2.3 2	7241.7	57/2+	6388.3	53/2+	Q	DCO=1.02 15
854.5 2	1.3 3	8182.9	61/2+	7328.3	57/2+		DCO=1.10 17 DCO for 854.9+854.5.
854.9 5	0.6 2	9037.8	65/2+	8182.9	61/2+	Q	DCO=1.10 22 DCO for 854.9+854.5.
855.0 2	2.1 5	1789.1	19/2−	934.2	17/2+		
855.9 2	1.3 5	8095.9	61/2−	7239.8	57/2−	Q	DCO=0.96 19
859.2 5	≤0.3	8320.4	(J1+10)	7461.2	(J1+8)		
860.4 2	1.5 1	3138.4	31/2−	2278.0	29/2−		
863.1 5	≤0.3	1670.1+y	(J3+4)	807.0+y	(J3+2)		
864.4 2	4.2 11	8099.4	(59/2+)	7235.0	55/2+		
864.7 2	1.4 2	7684.8	59/2+	6820.1	55/2+	Q	DCO=0.97 19
865.0 2	1.9 2	8644.5	63/2−	7779.5	59/2−	Q	DCO=1.05 21
866.9 2	3.9 5	7967.8	61/2+	7100.9	57/2+	Q	DCO=0.99 15
870.1 5	0.5 1	8946.0	63/2+	8075.8	59/2+	Q	DCO=0.94 19
871.0 5	0.6 2	8646.7	63/2+	7775.7	59/2+	Q	DCO=0.99 20
871.3 2	3.7 4	8342.4	63/2+	7471.1	59/2+	Q	DCO=1.08 16
871.9 2	6.4 23	8749.0	65/2+	7877.1	61/2+	Q	DCO=0.96 10
872.6 2	5.4 13	8087.5	61/2−	7215.0	57/2−	Q	DCO=0.96 9
876.2 5	≤0.3	2459.0+x	(J2+6)	1582.8+x	(J2+4)	Q	DCO=0.95 19
880.1 5	0.4 2	9109.0	65/2+	8228.9	61/2+		
886.9 2	1.3 5	8549.5	63/2−	7662.6	59/2−	Q	DCO=0.96 19
887.0 2	3.3 8	8711.3	63/2−	7824.3	59/2−	Q	DCO=0.93 6
888.4 2	1.8 7	7100.9	57/2+	6212.7	53/2+		
890.0 2	1.5 2	6332.7	53/2+	5442.6	49/2+		
893.1 2	2.6 7	9120.5	(65/2−)	8227.4	61/2−		
894.2 2	1.0 1	9037.8	65/2+	8143.6	61/2+	Q	DCO=1.09 22
901.4 2	6.0 7	8236.2	63/2−	7334.8	59/2−	Q	DCO=0.94 9
901.9 2	1.2 1	8143.6	61/2+	7241.7	57/2+	Q	DCO=1.05 21
902.1 2	8.9 9	7855.3	61/2−	6953.1	57/2−	Q	DCO=1.08 5
904.2 2	1.9 5	9003.6	(63/2+)	8099.4	(59/2+)		
911.3 5	≤0.3	9210.5	(65/2+)	8299.2	(61/2+)		
912.0 5	0.9 2	7543.2	59/2+	6631.2	55/2+		
912.0 5	≤0.3	9232.4	(J1+12)	8320.4	(J1+10)		
912.6 2	1.0 1	8455.8	63/2+	7543.2	59/2+	Q	DCO=0.98 5
915.2 2	1.2 2	8600.0	63/2+	7684.8	59/2+	Q	DCO=0.92 18
917.5 5	≤0.3	9173.2	(65/2−)	8255.7	61/2−		
918.3 5	≤0.3	2588.4+y	(J3+6)	1670.1+y	(J3+4)		
919.5 5	0.8 4	9016.0	65/2−	8095.9	61/2−	Q	DCO=1.03 21
923.0 5	0.5 1	9869.0	67/2+	8946.0	63/2+	Q	DCO=1.05 21
923.7 2	1.2 2	9568.2	67/2−	8644.5	63/2−	Q	DCO=1.10 22
924.7 5	0.4 2	9571.4	67/2+	8646.7	63/2+	Q	DCO=1.04 21
925.1 2	5.5 20	9674.1	69/2+	8749.0	65/2+	Q	DCO=1.01 10
926.0 5	0.9 2	9109.0	65/2+	8182.9	61/2+	Q	DCO=0.98 15
926.6 2	3.8 10	9014.0	65/2−	8087.5	61/2−	Q	DCO=0.98 15
927.5 2	2.8 3	9269.9	67/2+	8342.4	63/2+	Q	DCO=0.96 14
930.0 5	≤0.3	3389.0+x	(J2+8)	2459.0+x	(J2+6)	Q	DCO=0.99 20
931.7 2	1.7 4	7967.8	61/2+	7036.1	57/2+	Q	DCO=0.93 14
931.8 2	1.5 2	9969.6	69/2+	9037.8	65/2+	Q	DCO=1.01 20
941.2 5	≤0.3	8182.9	61/2+	7241.7	57/2+	Q	DCO=1.05 21
942.1 5	≤0.3	9542.1	67/2+	8600.0	63/2+	Q	DCO=0.96 19
946.0 2	2.9 7	9657.3	(67/2−)	8711.3	63/2−		

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^{123}Sb(^{48}Ca,4nγ) E=203 MeV 2015Ro27 (continued)

γ(^{167}Lu) (continued)

E_γ †	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
948.7 *5*	0.8 *4*	9498.2	67/2−	8549.5	63/2−	Q	DCO=1.02 *20*
950.4 *2*	2.8 *8*	10070.9	(69/2−)	9120.5	(65/2−)		
952.6 *5*	≤0.3	10185.0	(J1+14)	9232.4	(J1+12)		
956.4 *2*	4.8 *5*	9192.6	67/2−	8236.2	63/2−	Q	DCO=1.01 *15*
957.0 *2*	2.8 *8*	8924.8	65/2+	7967.8	61/2+	Q	DCO=0.95 *14*
959.0 *5*	0.7 *2*	10068.0	69/2+	9109.0	65/2+	Q	DCO=0.96 *19*
962.0 *2*	1.3 *4*	2665.3	27/2+	1703.3	25/2−		DCO=0.53 *11* Mult.: δ(Q/D)=−1.9 +*11*−*200* or −0.5 +*5*−*8* (2005Am02) from DCO ratio.
968.9 *2*	4.8 *5*	8824.2	65/2−	7855.3	61/2−	Q	DCO=1.00 *15*
971.5 *5*	≤0.3	10144.7	(69/2−)	9173.2	(65/2−)		
974.5 *5*	≤0.3	3562.9+y	(J3+8)	2588.4+y	(J3+6)		
976.9 *5*	≤0.3	9993.8	69/2−	9016.0	65/2−		
977.4 *5*	≤0.3	10846.4	(71/2+)	9869.0	67/2+		I_γ: listed as 3 in table IV of 2015Ro27 (or 0.3 for revised normalization here). Evaluators assume that it is meant to be ≤3.
979.9 *5*	≤0.3	10551.3	71/2+	9571.4	67/2+	Q	DCO=0.98 *20*
980.0 *2*	2.4 *6*	9993.8	69/2−	9014.0	65/2−	Q	DCO=1.02 *15*
980.3 *2*	3.0 *11*	10654.4	73/2+	9674.1	69/2+	Q	DCO=1.02 *15*
981.1 *5*	≤0.3	9997.0	69/2−	9016.0	65/2−	Q	DCO=0.95 *19*
982.5 *5*	≤0.3	9997.0	69/2−	9014.0	65/2−		
982.5 *5*	≤0.3	10193.0	(69/2+)	9210.5	(65/2+)		
984.7 *5*	≤0.3	4373.7+x	(J2+10)	3389.0+x	(J2+8)	Q	DCO=0.98 *20*
984.9 *5*	≤0.3	10553.1	(71/2−)	9568.2	67/2−		
987.1 *5*	0.9 *1*	9442.9	67/2+	8455.8	63/2+	Q	DCO=1.22 *24*
988.0 *2*	1.0 *1*	10957.6	73/2+	9969.6	69/2+	Q	DCO=1.03 *21*
989.3 *5*	≤0.3	10531.4	71/2+	9542.1	67/2+	Q	DCO=0.90 *18*
993.7 *2*	1.2 *2*	2697.0	27/2+	1703.3	25/2−		
993.7 *2*	1.0 *2*	10263.6	71/2+	9269.9	67/2+	Q	DCO=0.91 *18*
998.0 *2*	2.0 *5*	10655.3	(71/2−)	9657.3	(67/2−)		
1005.9 *5*	0.5 *2*	10504.1	71/2−	9498.2	67/2−	Q	DCO=0.94 *19*
1007.0 *5*	≤0.3	11151.7	(73/2−)	10144.7	(69/2−)		
1009.1 *5*	≤0.3	11194.1	(J1+16)	10185.0	(J1+14)		
1010.3 *2*	3.4 *4*	10202.9	71/2−	9192.6	67/2−	Q	DCO=0.99 *15*
1013.2 *2*	2.2 *6*	11084.1	(73/2−)	10070.9	(69/2−)		
1016.0 *2*	1.2 *3*	3293.9	33/2−	2278.0	29/2−		
1016.4 *5*	0.6 *2*	11084.4	73/2+	10068.0	69/2+	Q	DCO=1.17 *23*
1022.0 *2*	2.7 *8*	9946.8	69/2+	8924.8	65/2+	Q	DCO=0.91 *18*
1026.4 *5*	≤0.3	11219.4	(73/2+)	10193.0	(69/2+)		
1030.1 *5*	≤0.3	4593.0+y	(J3+10)	3562.9+y	(J3+8)		
1032.3 *5*	≤0.3	11878.7	(75/2+)	10846.4	(71/2+)		
1033.9 *5*	0.8 *3*	11027.2	73/2−	9993.8	69/2−	Q	DCO=0.95 *19*
1034.1 *2*	3.0 *4*	9858.3	69/2−	8824.2	65/2−	Q	DCO=1.04 *16*
1036.1 *2*	1.9 *7*	11690.5	77/2+	10654.4	73/2+	Q	DCO=1.01 *20*
1036.6 *5*	≤0.3	11587.9	75/2+	10551.3	71/2+	Q	DCO=1.11 *22*
1039.5 *5*	≤0.3	5413.2+x	(J2+12)	4373.7+x	(J2+10)	Q	DCO=0.98 *20*
1039.5 *5*	≤0.3	11037.0	73/2−	9997.0	69/2−	Q	DCO=0.90 *18*
1040.0 *5*	≤0.3	11571.4	(75/2+)	10531.4	71/2+		
1046.2 *5*	0.8 *1*	10489.1	71/2+	9442.9	67/2+	(Q)	DCO=0.87 *17*
1048.1 *5*	≤0.3	11601.2	(75/2−)	10553.1	(71/2−)		
1054.0 *5*	0.8 *1*	12011.6	77/2+	10957.6	73/2+	Q	DCO=1.11 *22*
1054.8 *5*	0.4 *2*	11558.9	75/2−	10504.1	71/2−	Q	DCO=0.97 *19*
1057.9[b] *5*	≤0.3	12209.6	(77/2−)	11151.7	(73/2−)		
1058.3 *5*	0.8 *2*	11321.9	75/2+	10263.6	71/2+	Q	DCO=1.13 *23*
1062.4 *2*	1.6 *2*	11265.3	75/2−	10202.9	71/2−	Q	DCO=0.97 *19*

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^{123}Sb(^{48}Ca,4nγ) E=203 MeV 2015Ro27 (continued)

γ(^{167}Lu) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J^π_i	E_f	J^π_f	Mult.	Comments
1070.6 *2*	1.1 *3*	12154.7	(77/2⁻)	11084.1	(73/2⁻)		
1075.9 *5*	0.5 *1*	12160.3	77/2⁺	11084.4	73/2⁺	Q	DCO=1.13 *23*
1084.0 *5*	≤0.3	12962.7	(79/2⁺)	11878.7	(75/2⁺)		
1084.1 *2*	1.4 *3*	11030.9	(73/2⁺)	9946.8	69/2⁺		
1089.0 *2*	2.0 *3*	10947.3	73/2⁻	9858.3	69/2⁻	Q	DCO=1.00 *15*
1089.3 *5*	≤0.3	5682.3+y	(J3+12)	4593.0+y	(J3+10)		
1090.1 *5*	≤0.3	12127.2	(77/2⁻)	11037.0	73/2⁻		
1090.4 *5*	0.7 *3*	12780.9	81/2⁺	11690.5	77/2⁺	Q	DCO=0.92 *18*
1096.1 *5*	≤0.3	12697.3	(79/2⁻)	11601.2	(75/2⁻)		
1096.2 *5*	≤0.3	6509.4+x	(J2+14)	5413.2+x	(J2+12)	Q	DCO=0.94 *19*
1098.1 *5*	0.4 *2*	12657.0	79/2⁻	11558.9	75/2⁻	Q	DCO=0.98 *20*
1099.0 *5*	≤0.3	12686.9	(79/2⁺)	11587.9	75/2⁺		
1100.1 *5*	≤0.3	12127.2	(77/2⁻)	11027.2	73/2⁻		
1102.0 *5*	≤0.3	12139.2	77/2⁻	11037.0	73/2⁻	Q	DCO=0.98 *20*
1102.2 *2*	1.1 *3*	12049.5	77/2⁻	10947.3	73/2⁻	Q	DCO=0.98 *20*
1105.3 *5*	0.6 *1*	11594.4	75/2⁺	10489.1	71/2⁺	Q	DCO=1.08 *22*
1108.3 *5*	0.8 *3*	13157.8	81/2⁻	12049.5	77/2⁻	Q	DCO=1.01 *22*
1111.9 *2*	1.1 *4*	12377.2	79/2⁻	11265.3	75/2⁻	Q	DCO=1.03 *21*
1112.3 *5*	≤0.3	12139.2	77/2⁻	11027.2	73/2⁻		
1115.9 *5*	≤0.3	13813.3	(83/2⁻)	12697.3	(79/2⁻)		
1118.4 *5*	0.4 *1*	12440.4	79/2⁺	11321.9	75/2⁺	Q	DCO=0.90 *18*
1120.1 *5*	0.6 *1*	13131.7	81/2⁺	12011.6	77/2⁺	Q	DCO=1.02 *20*
1135.1 *5*	0.4 *1*	13295.4	(81/2⁺)	12160.3	77/2⁺		
1136.1 *5*	0.7 *2*	13290.8	(81/2⁻)	12154.7	(77/2⁻)		
1137.1 *5*	0.9 *2*	12168.0	(77/2⁺)	11030.9	(73/2⁺)		
1138.4 *5*	≤0.3	13795.4	(83/2⁻)	12657.0	79/2⁻		
1139.1[b] *5*	≤0.3	13278.2	(81/2⁻)	12139.2	77/2⁻		
1140.8 *5*	≤0.3	13921.7	85/2⁺	12780.9	81/2⁺	Q	DCO=0.98 *20*
1141.9 *5*	≤0.3	14299.7	(85/2⁻)	13157.8	81/2⁻		
1148.2 *5*	≤0.3	6830.5+y	(J3+14)	5682.3+y	(J3+12)		
1149.2 *5*	≤0.3	14111.9	(83/2⁺)	12962.7	(79/2⁺)		
1150.9 *5*	≤0.3	13278.2	(81/2⁻)	12127.2	(77/2⁻)		
1151.8[b] *5*	≤0.3	13291.0	(81/2⁻)	12139.2	77/2⁻		
1153.1 *5*	≤0.3	7662.5+x	(J2+16)	6509.4+x	(J2+14)	Q	DCO=0.97 *18*
1160.1 *5*	0.5 *2*	13537.3	83/2⁻	12377.2	79/2⁻	Q	DCO=0.97 *19*
1164.1 *5*	≤0.3	13851.1	(83/2⁺)	12686.9	(79/2⁺)		
1169.6 *5*	≤0.3	14965.0	(87/2⁻)	13795.4	(83/2⁻)		
1170.6 *5*	≤0.3	13611.0	83/2⁺	12440.4	79/2⁺	Q	DCO=1.07 *21*
1173.1 *5*	≤0.3	15472.8	(89/2⁻)	14299.7	(85/2⁻)		
1183.3 *5*	0.4 *1*	14315.0	85/2⁺	13131.7	81/2⁺	Q	DCO=0.97 *19*
1186.4 *5*	≤0.3	15108.1	89/2⁺	13921.7	85/2⁺	Q	DCO=0.98 *20*
1188.2 *5*	≤0.3	14466.4	(85/2⁻)	13278.2	(81/2⁻)		
1191.1 *2*	1.5 *2*	2894.4	29/2⁻	1703.3	25/2⁻	Q	DCO=1.03 *21*
1192.4 *5*	≤0.3	14487.8	(85/2⁺)	13295.4	(81/2⁺)		
1200.1 *5*	≤0.3	15312.0	(87/2⁺)	14111.9	(83/2⁺)		Final level: J^π=(81/2⁺) in Table IV of 2015Ro27 is a misprint, it should be (83/2⁺) as in authors′ level-scheme Fig. 1.
1200.2 *5*	≤0.3	14737.5	87/2⁻	13537.3	83/2⁻	Q	DCO=0.91 *18*
1208.4 *5*	≤0.3	16681.2	(93/2⁻)	15472.8	(89/2⁻)		
1210.0 *5*	≤0.3	8040.5+y	(J3+16)	6830.5+y	(J3+14)		
1210.4 *5*	≤0.3	8872.9+x	(J2+18)	7662.5+x	(J2+16)	Q	DCO=1.00 *20*
1212.3 *5*	≤0.3	14823.3	87/2⁺	13611.0	83/2⁺	Q	DCO=1.04 *21*
1231.0 *5*	≤0.3	15968.5	(91/2⁻)	14737.5	87/2⁻		
1231.2 *5*	≤0.3	16339.3	93/2⁺	15108.1	89/2⁺	Q	DCO=1.00 *20*
1243.2 *5*	≤0.3	15558.2	(89/2⁺)	14315.0	85/2⁺		

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^{123}Sb(^{48}Ca,4nγ) E=203 MeV 2015Ro27 (continued)

γ(^{167}Lu) (continued)

E_γ †	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
1244.0 *5*	≤0.3	16067.3	(91/2+)	14823.3	87/2+		
1247.2 *5*	≤0.3	15735.0	(89/2+)	14487.8	(85/2+)		
1256.1 *5*	≤0.3	17323.4	(95/2+)	16067.3	(91/2+)		
1261.3 *5*	≤0.3	17229.8	(95/2−)	15968.5	(91/2−)		
1262.1[b] *5*	≤0.3	17943.3?	(97/2−)	16681.2	(93/2−)		
1264.0 *5*	≤0.3	10136.9+x	(J2+20)	8872.9+x	(J2+18)	Q	DCO=0.97 *19*
1270.2 *5*	≤0.3	9310.7+y	(J3+18)	8040.5+y	(J3+16)		
1278.1 *2*	1.5 *2*	2483.5	25/2−	1205.3	21/2−	Q	DCO=1.11 *22*
1278.6 *5*	≤0.3	17617.9	(97/2+)	16339.3	93/2+		
1309.3 *5*	≤0.3	11446.2+x	(J2+22)	10136.9+x	(J2+20)	Q	DCO=1.11 *29*
1313.1[b] *5*	≤0.3	17048.1?	(93/2+)	15735.0	(89/2+)		
1356.1 *5*	≤0.3	12802.3+x	(J2+24)	11446.2+x	(J2+22)		
1370.0 *5*	0.6 *1*	2165.0	21/2−	794.5	17/2−		

† According to footnote ‘a’ in Table IV of 2015Ro27, uncertainty is 0.2 keV for most transitions, except 0.5 keV for γ rays with Iγ<10 units relative to 1000 for 410.8-keV γ ray from 1205.3, 21/2− level, or <1.0 unit relative to 100.0 for 410.8-keV γ ray listed here. Evaluators also assigns 0.5 keV uncertainty for all the unresolved multiplets as marked by footnote ‘e’ in table IV of 2015Ro27. For Eγ values stated to nearest keV, Δ(Eγ)=1 keV is assigned.

‡ Values listed in Table IV are divided by a factor of 10, thus given as relative to 100.0 for 410.8-keV γ ray.

Unresolved multiplet. Energy uncertainty is assigned by evaluators as 0.5 keV, and the intensity is listed as approximate by 2015Ro27.

@ Intensity is not given in Table IV of 2015Ro27, however it is expected to be strong as the transition lies near the bottom of the band, thus evaluators assign ΔEγ=0.2 keV.

& From 2008Gu02, contaminated and poorly resolved transition in ce spectrum.

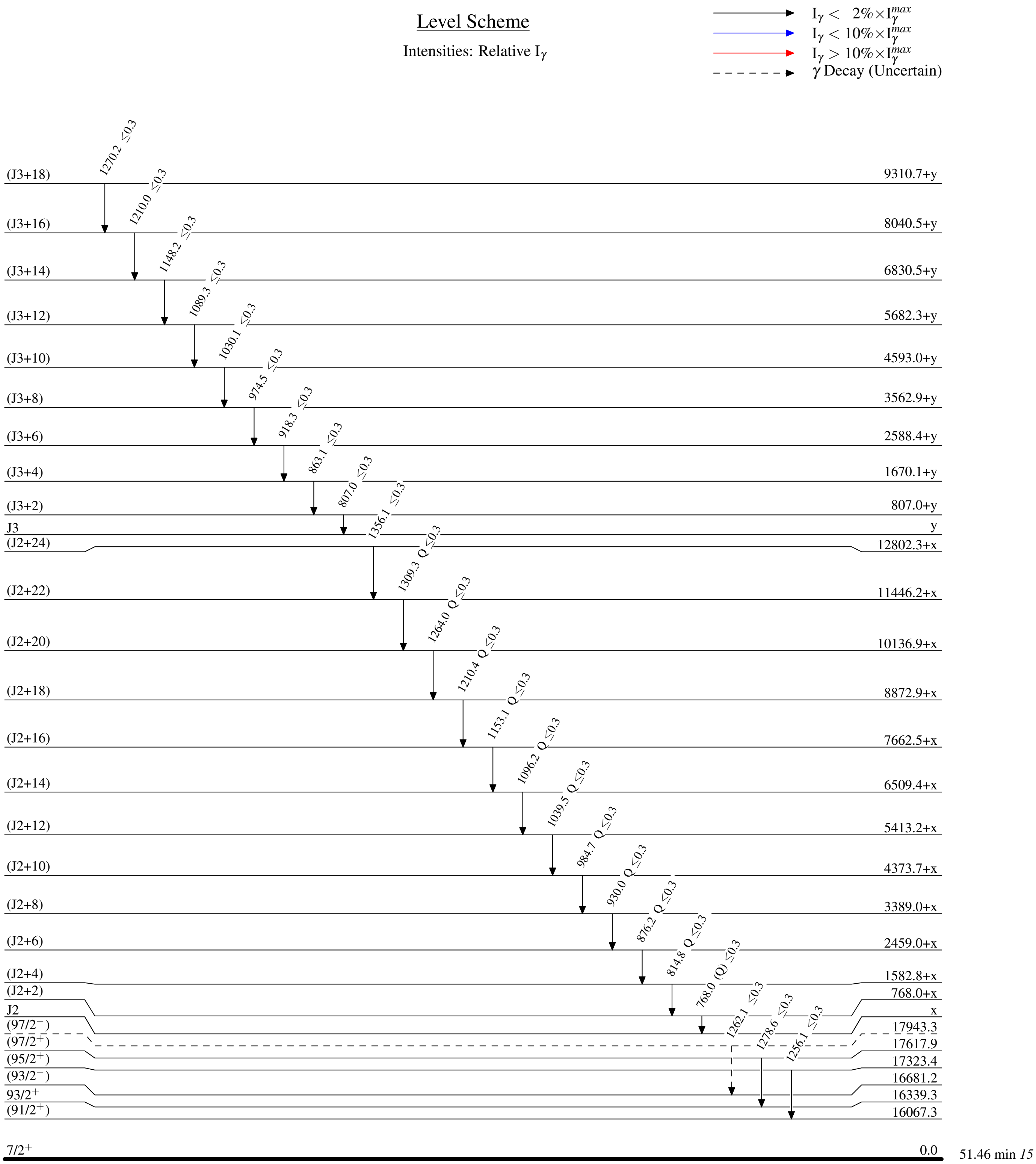
a Multiply placed with intensity suitably divided.

b Placement of transition in the level scheme is uncertain.

$^{123}Sb(^{48}Ca,4n\gamma)$ E=203 MeV 2015Ro27

Level Scheme

Intensities: Relative I_γ

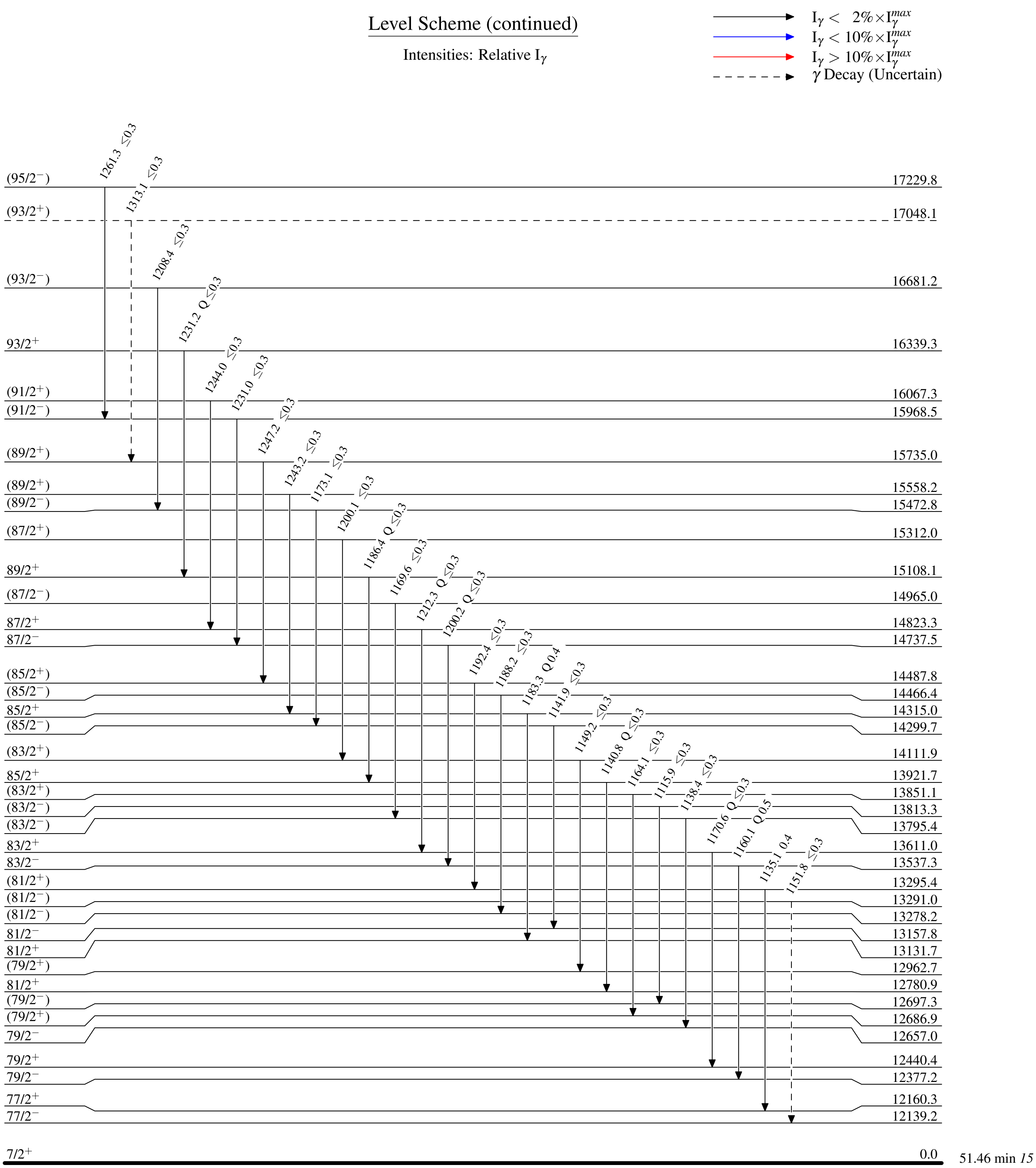


$^{167}_{71}Lu_{96}$

$^{123}Sb(^{48}Ca,4n\gamma)$ E=203 MeV 2015Ro27

Level Scheme (continued)

Intensities: Relative I_γ

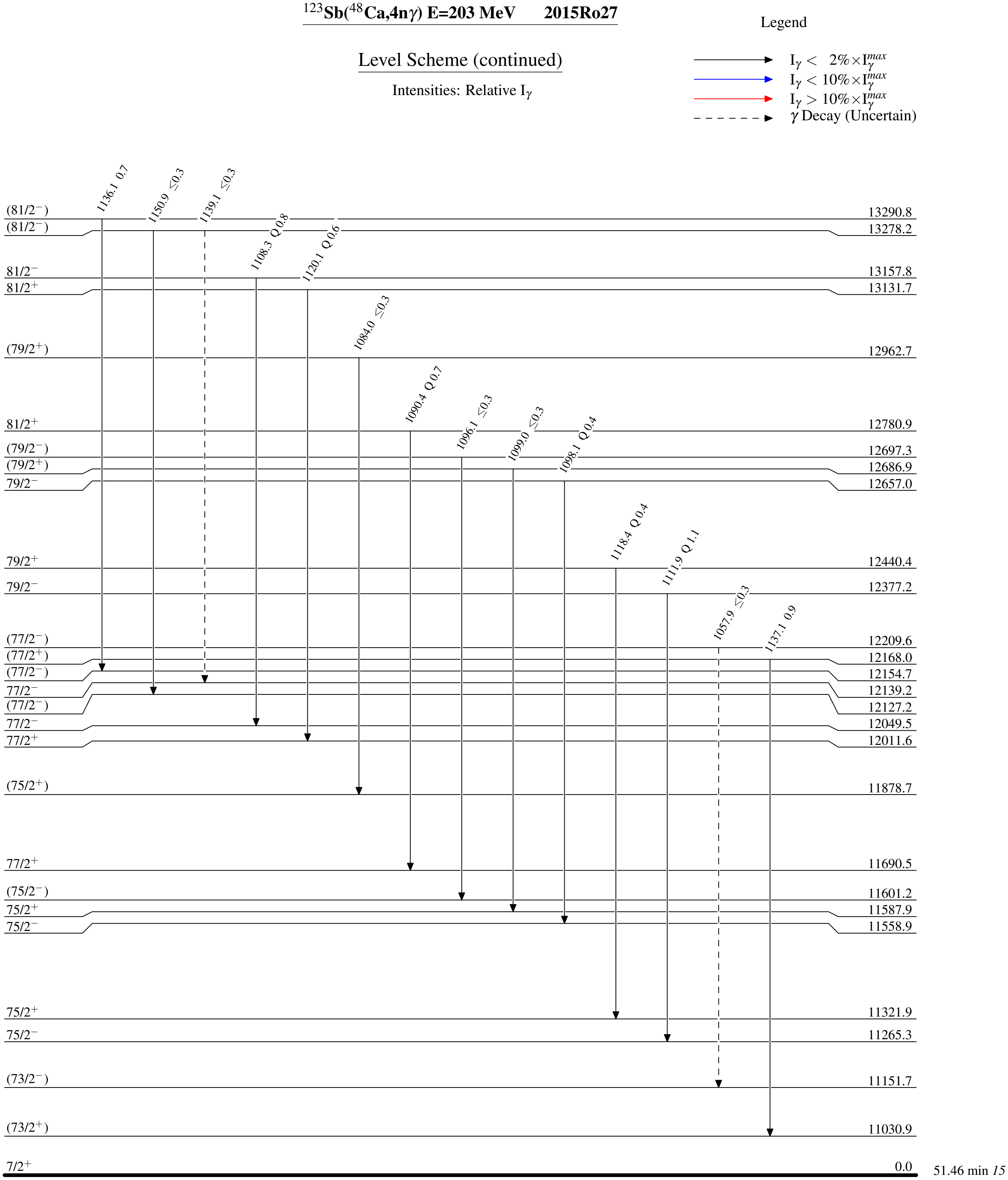


$^{167}_{71}Lu_{96}$

^{123}Sb(^{48}Ca,4nγ) E=203 MeV 2015Ro27

Level Scheme (continued)

Intensities: Relative I_γ



$^{167}_{71}Lu_{96}$

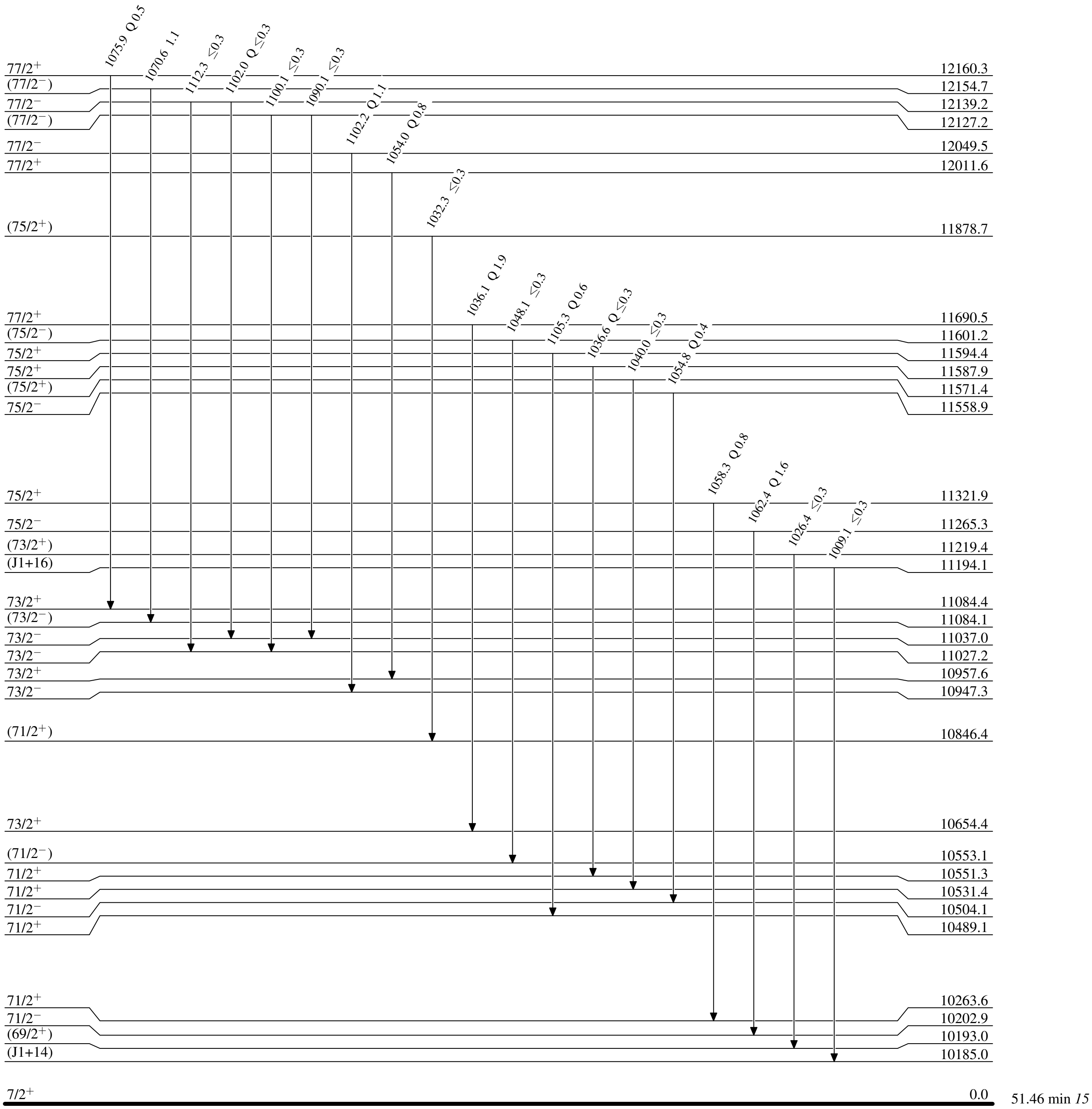
$^{123}Sb(^{48}Ca,4n\gamma)$ E=203 MeV 2015Ro27

Level Scheme (continued)

Intensities: Relative I_γ

Legend

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



$^{167}_{71}Lu_{96}$

^{123}Sb(^{48}Ca,4nγ) E=203 MeV 2015Ro27

Level Scheme (continued)

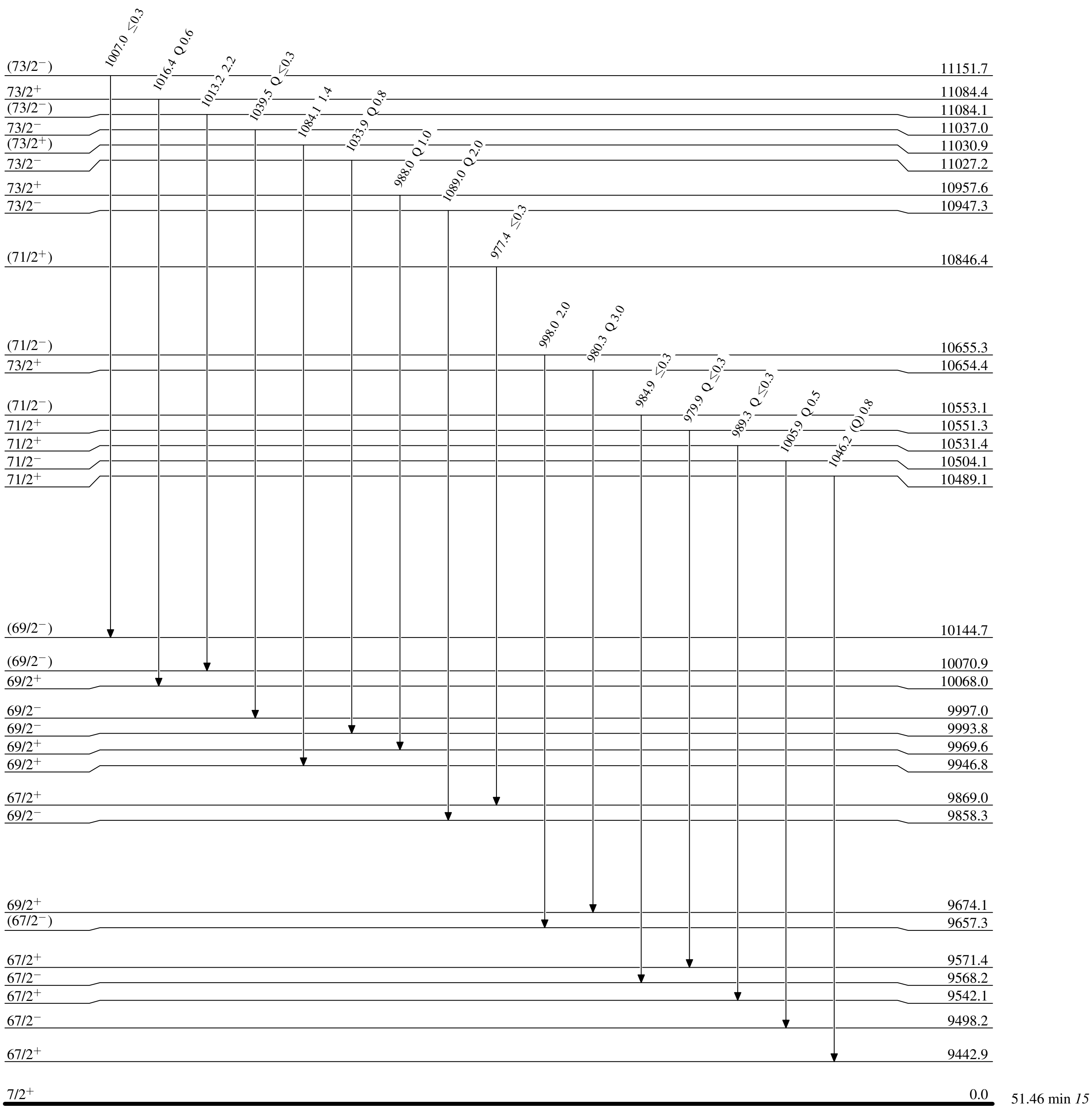
Intensities: Relative I_γ

Legend

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

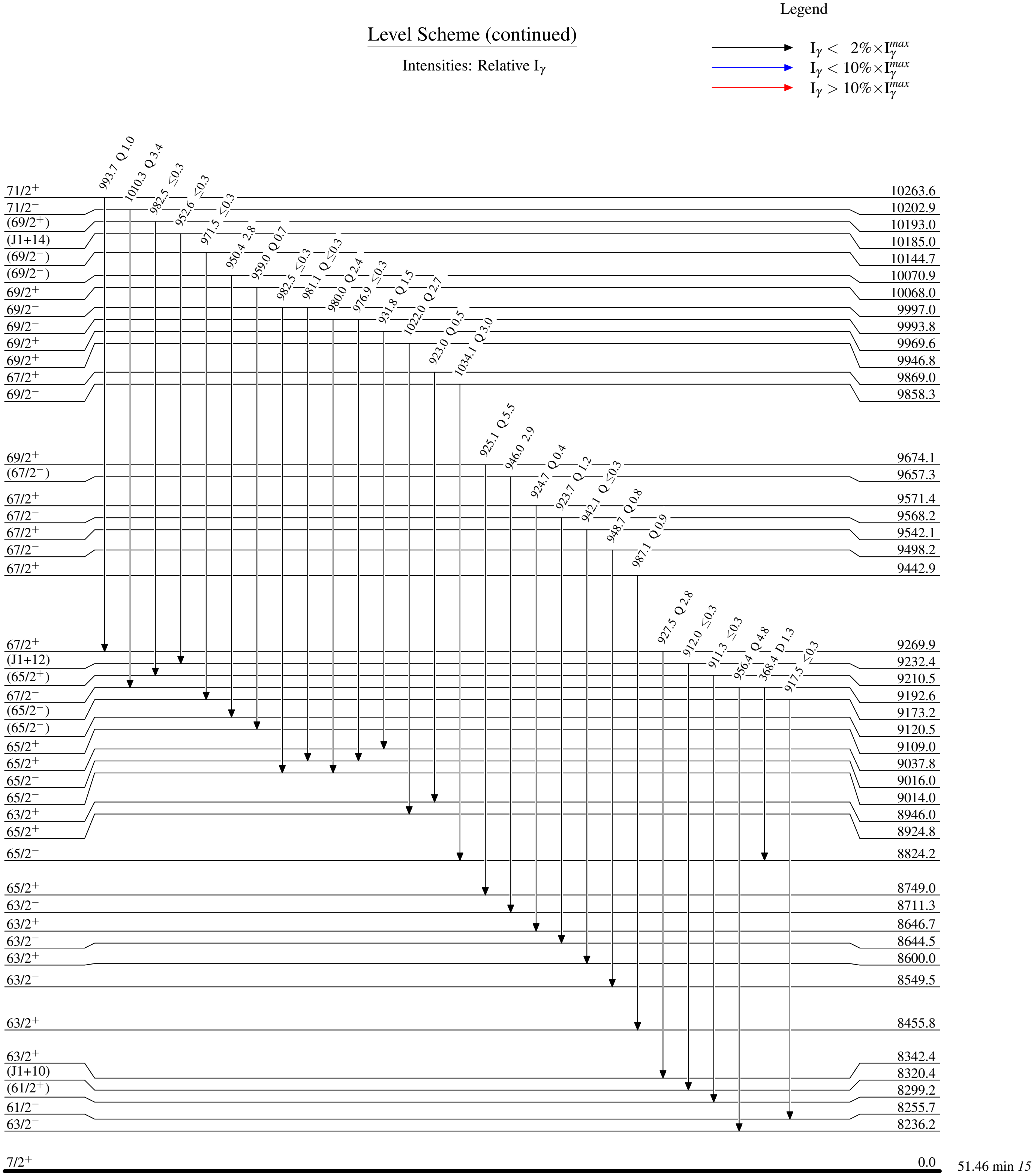
$I_\gamma < 10\% \times I_\gamma^{max}$

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



$^{167}_{71}Lu_{96}$

$^{123}Sb(^{48}Ca,4n\gamma)$ E=203 MeV 2015Ro27

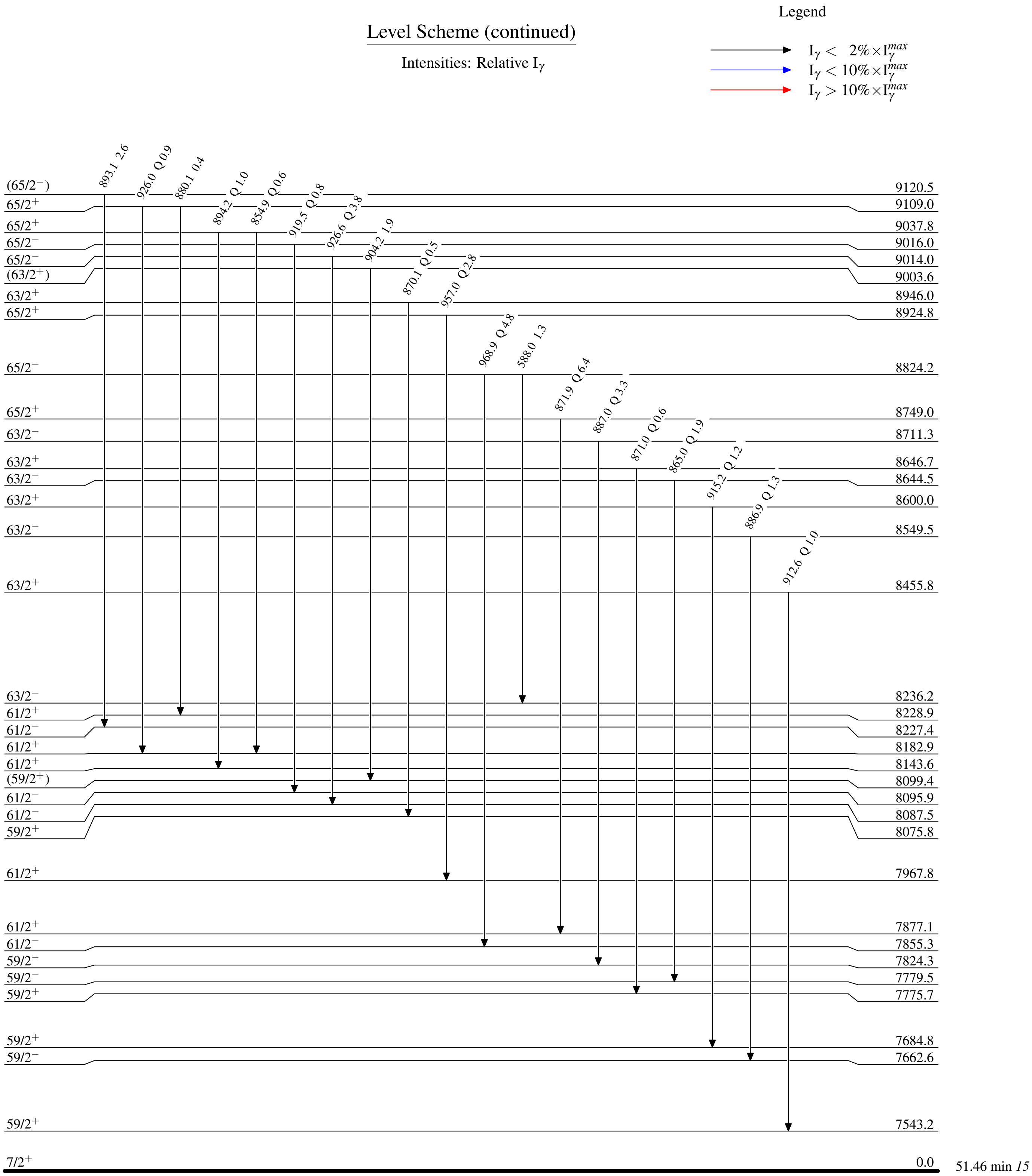


$^{167}_{71}Lu_{96}$

$^{123}Sb(^{48}Ca,4n\gamma)$ E=203 MeV 2015Ro27

Level Scheme (continued)

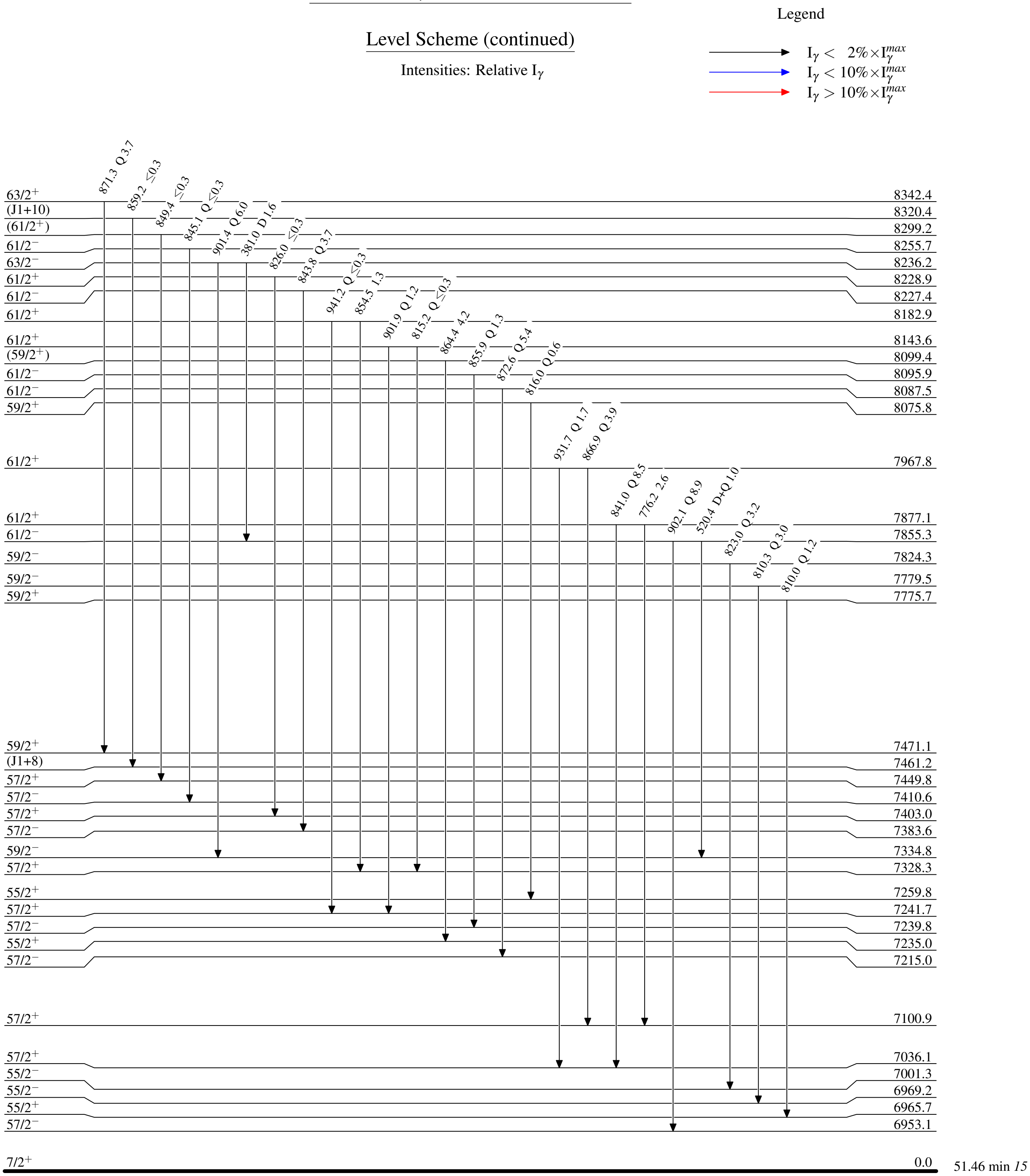
Intensities: Relative I_γ



$^{123}Sb(^{48}Ca,4n\gamma)$ E=203 MeV 2015Ro27

Level Scheme (continued)

Intensities: Relative I_γ



$^{167}_{71}Lu_{96}$

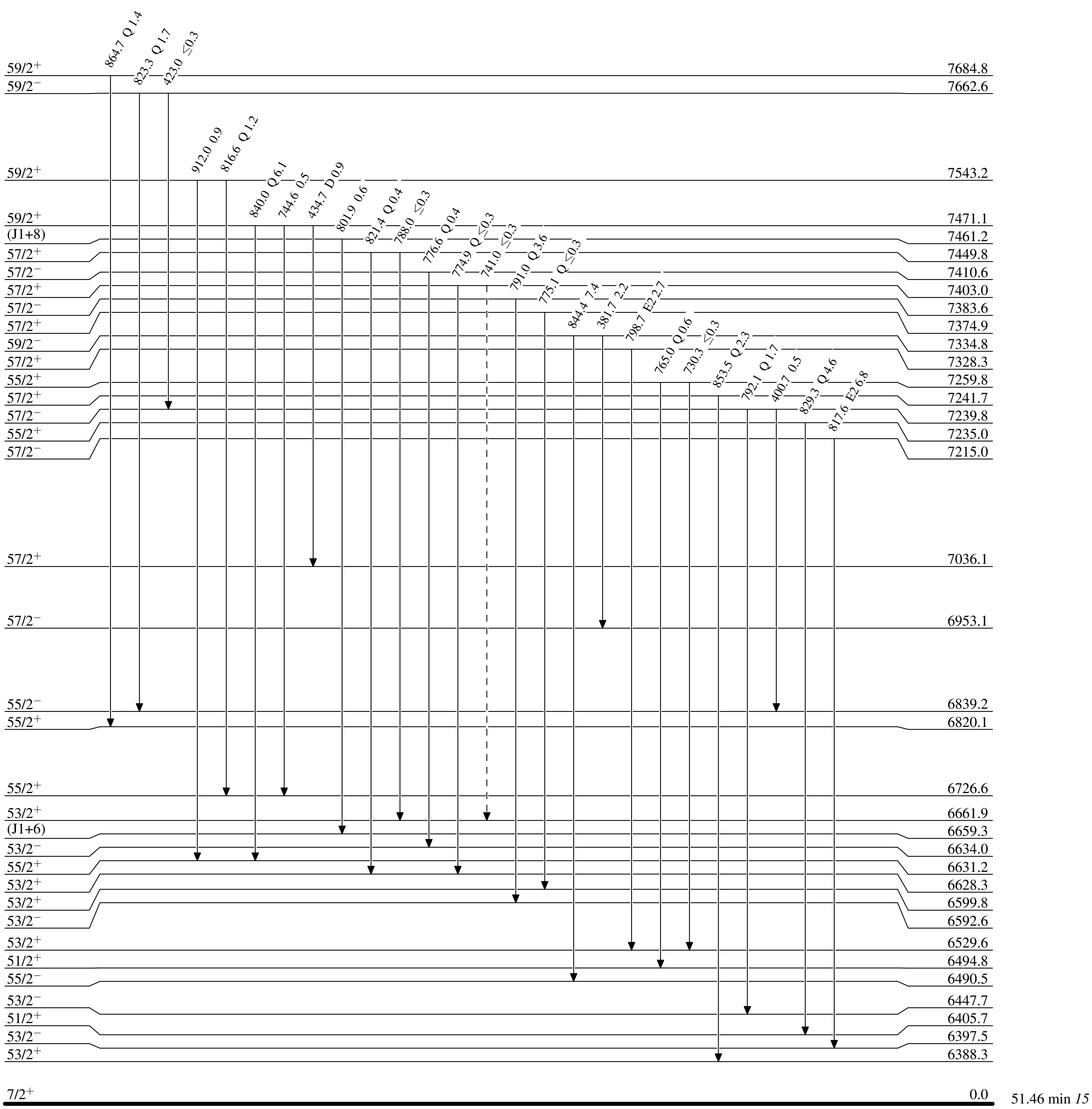
$^{123}Sb(^{48}Ca,4n\gamma)$ E=203 MeV 2015Ro27

Level Scheme (continued)

Intensities: Relative I_γ

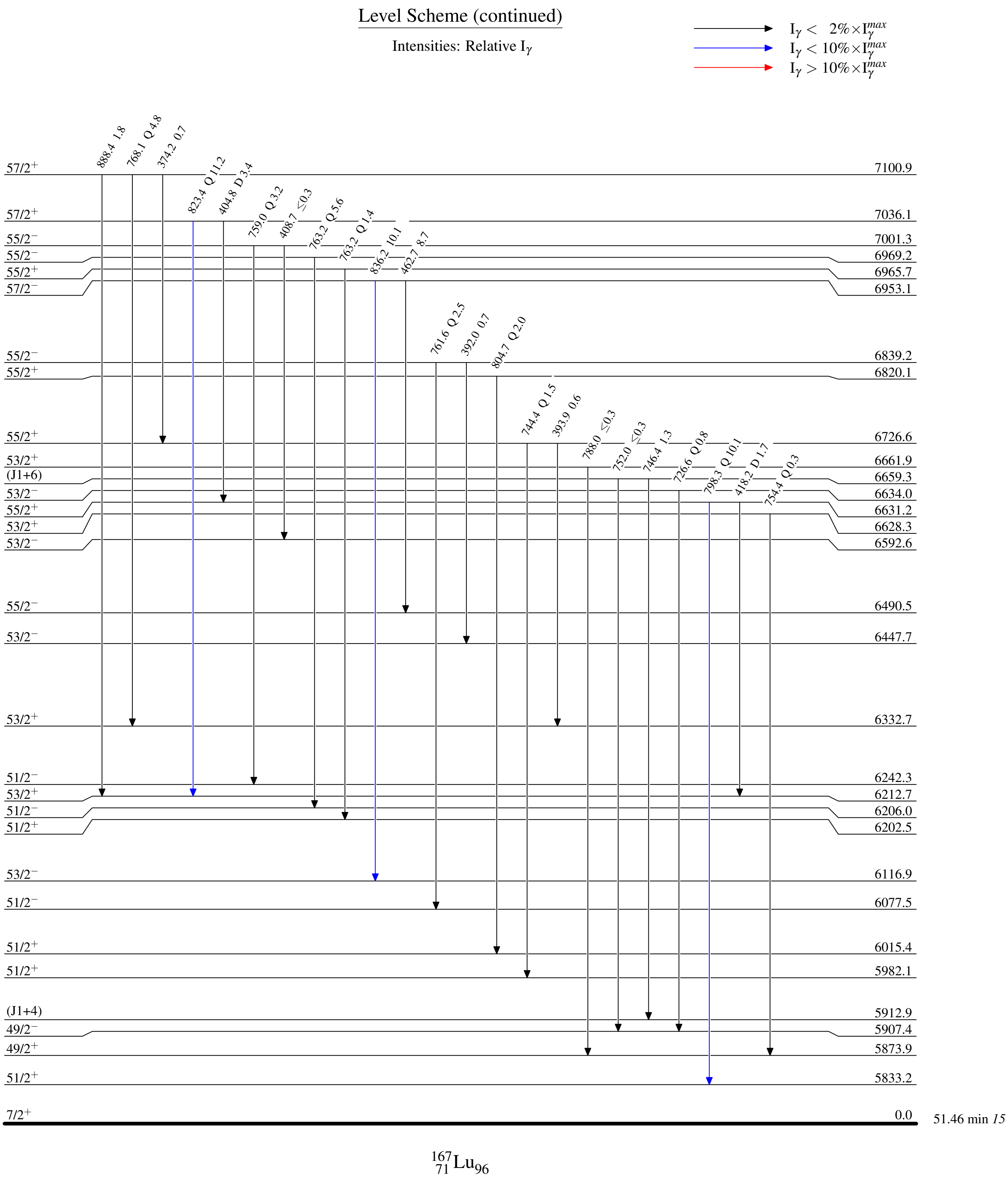
Legend

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



$^{167}_{71}Lu_{96}$

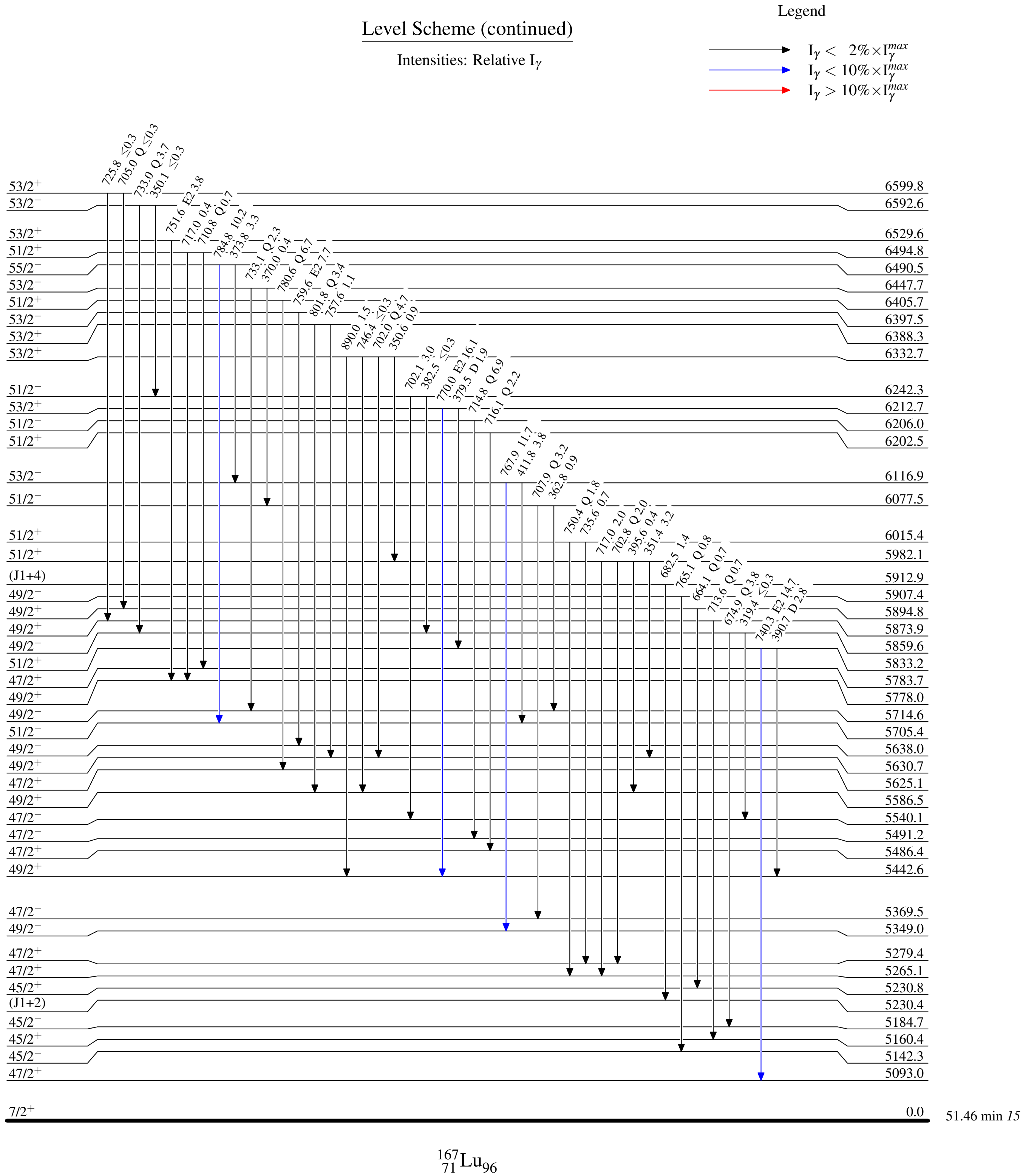
$^{123}Sb(^{48}Ca,4n\gamma)$ E=203 MeV 2015Ro27

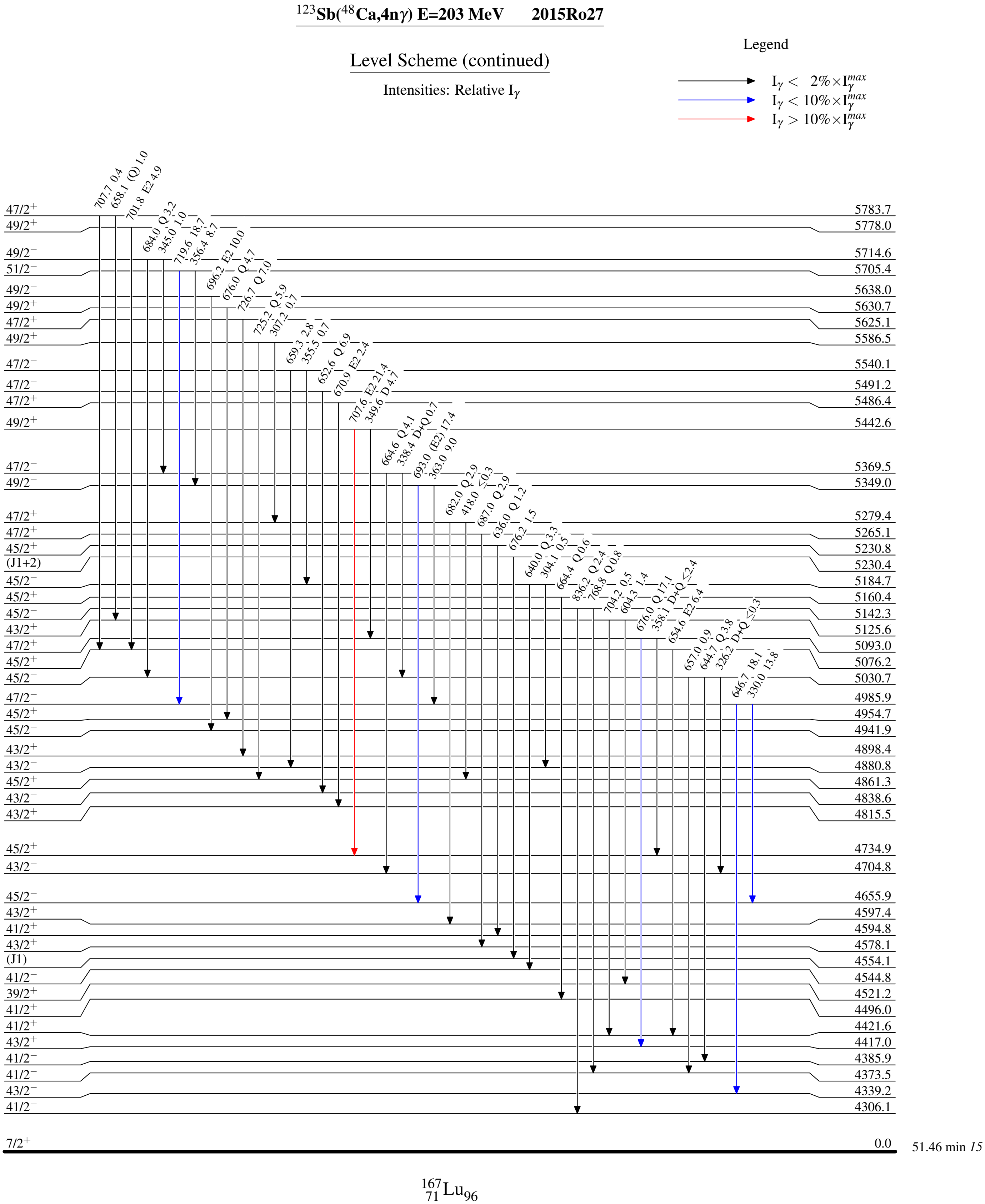


^{123}Sb(^{48}Ca,4nγ) E=203 MeV 2015Ro27

Level Scheme (continued)

Intensities: Relative I_γ

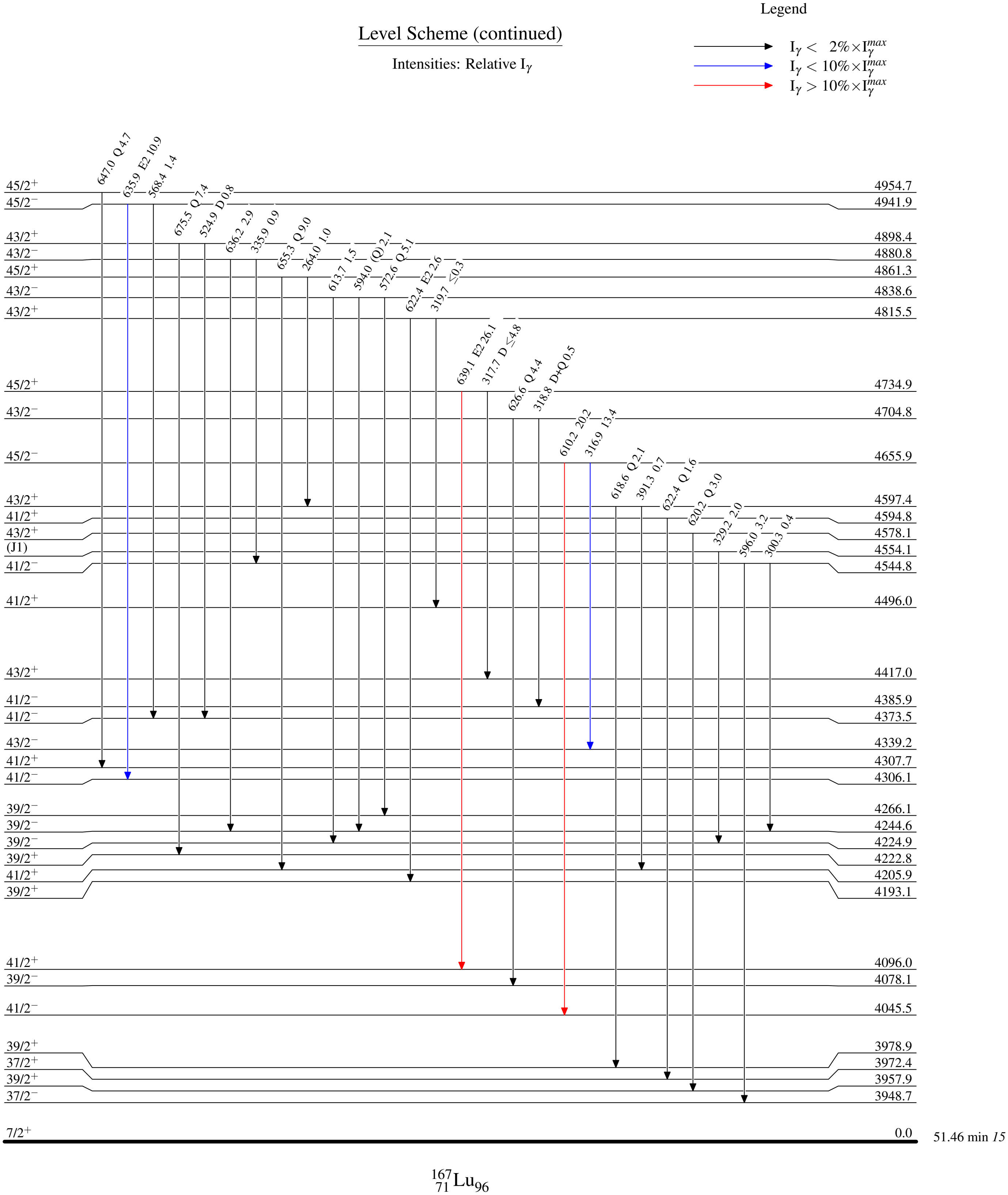



^{123}Sb(^{48}Ca,4nγ) E=203 MeV 2015Ro27
Level Scheme (continued)
Intensities: Relative Iγ
Legend
Iγ < 2%×Iγmax
Iγ < 10%×Iγmax
Iγ > 10%×Iγmax
47/2+ 5783.7
49/2+ 5778.0
49/2− 5714.6
51/2− 5705.4
49/2− 5638.0
49/2+ 5630.7
47/2+ 5625.1
49/2+ 5586.5
47/2− 5540.1
47/2− 5491.2
47/2+ 5486.4
49/2+ 5442.6
47/2− 5369.5
49/2− 5349.0
47/2+ 5279.4
47/2+ 5265.1
45/2+ 5230.8
(J1+2) 5230.4
45/2− 5184.7
45/2+ 5160.4
45/2− 5142.3
43/2+ 5125.6
47/2+ 5093.0
45/2+ 5076.2
45/2− 5030.7
47/2− 4985.9
45/2+ 4954.7
45/2− 4941.9
43/2+ 4898.4
43/2− 4880.8
45/2+ 4861.3
43/2− 4838.6
43/2+ 4815.5
45/2+ 4734.9
43/2− 4704.8
45/2− 4655.9
43/2+ 4597.4
41/2+ 4594.8
43/2+ 4578.1
(J1) 4554.1
41/2− 4544.8
39/2+ 4521.2
41/2+ 4496.0
41/2+ 4421.6
43/2+ 4417.0
41/2− 4385.9
41/2− 4373.5
43/2− 4339.2
41/2− 4306.1
7/2+ 0.0 51.46 min 15
707.7 0.4
658.1 (Q) 1.0
701.8 E2 4.9
684.0 Q 3.2
345.0 1.0
719.6 18.7
356.4 8.7
696.2 E2 10.0
676.0 Q 4.7
726.7 Q 7.0
725.2 Q 5.9
307.2 0.7
659.3 2.8
355.5 0.7
652.6 Q 6.9
670.9 E2 2.4
707.6 E2 21.4
349.6 D 4.7
664.6 Q 4.1
338.4 D+Q 0.7
693.0 (E2) 17.4
363.0 9.0
682.0 Q 2.9
418.0 ≤0.3
687.0 Q 2.9
636.0 Q 1.2
676.2 1.5
640.0 Q 3.3
304.1 0.5
664.4 Q 0.6
836.2 Q 2.4
768.8 Q 0.8
704.2 0.5
604.3 1.4
676.0 Q 17.1
358.1 D+Q ≤2.4
654.6 E2 6.4
657.0 0.9
644.7 Q 3.8
326.2 D+Q ≤0.3
646.7 18.1
330.0 13.8
$^{167}_{71}$Lu$_{96}$

$^{123}Sb(^{48}Ca,4n\gamma)$ E=203 MeV 2015Ro27

Level Scheme (continued)

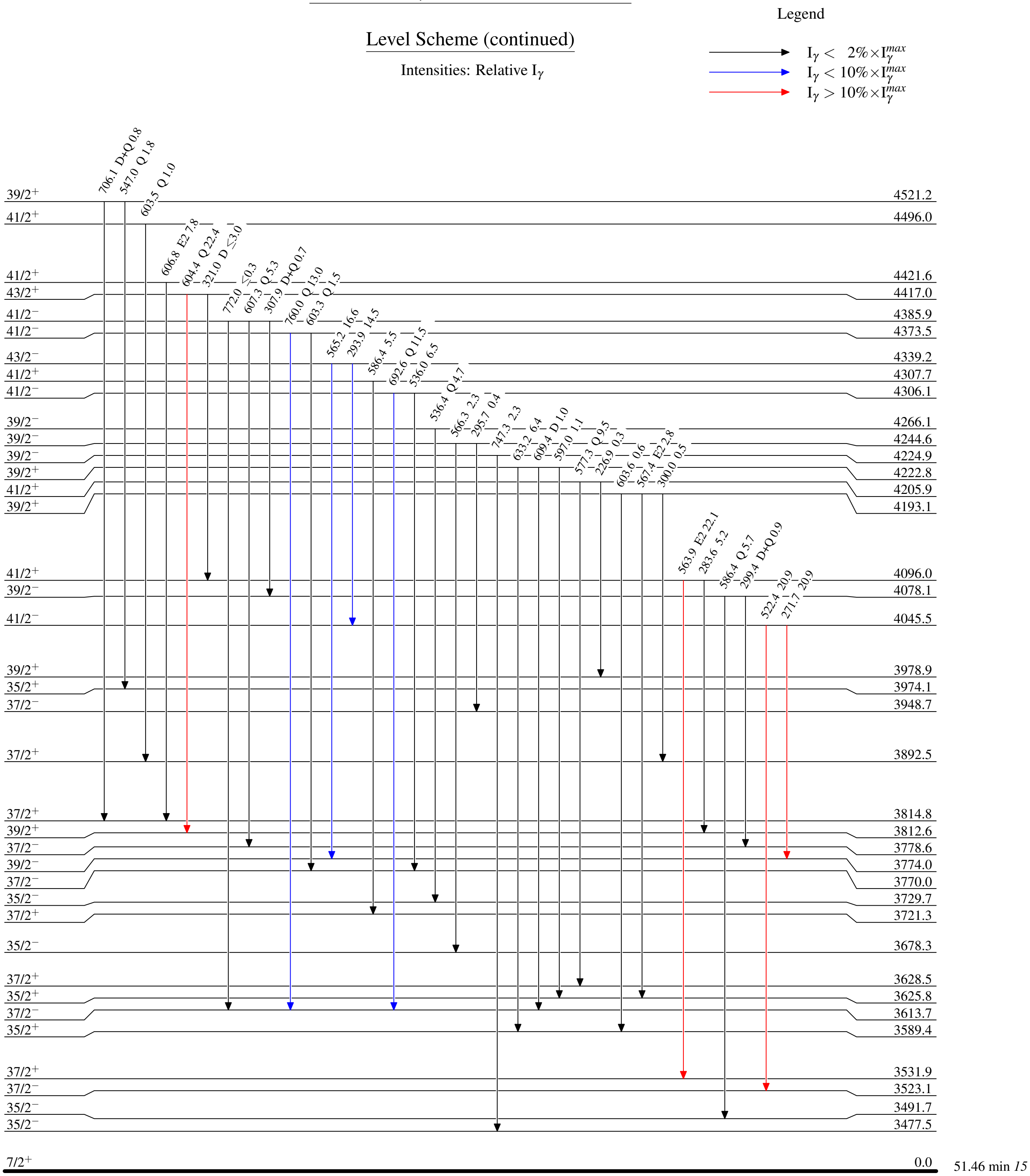
Intensities: Relative I_γ



$^{123}Sb(^{48}Ca,4n\gamma)$ E=203 MeV 2015Ro27

Level Scheme (continued)

Intensities: Relative I_γ



$^{167}_{71}Lu_{96}$

^{123}Sb(^{48}Ca,4nγ) E=203 MeV 2015Ro27

Level Scheme (continued)

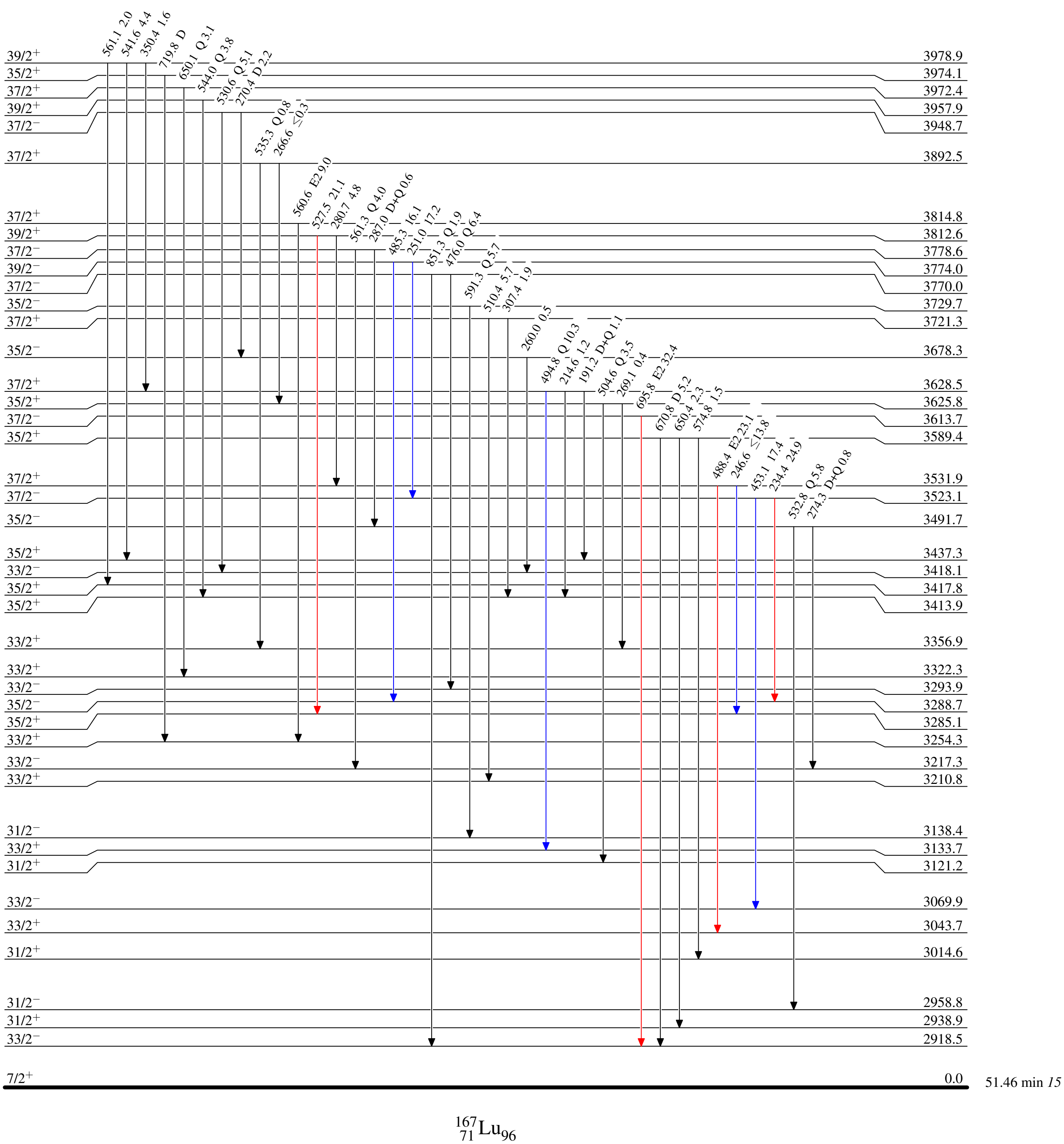
Intensities: Relative I_γ

Legend

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

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

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



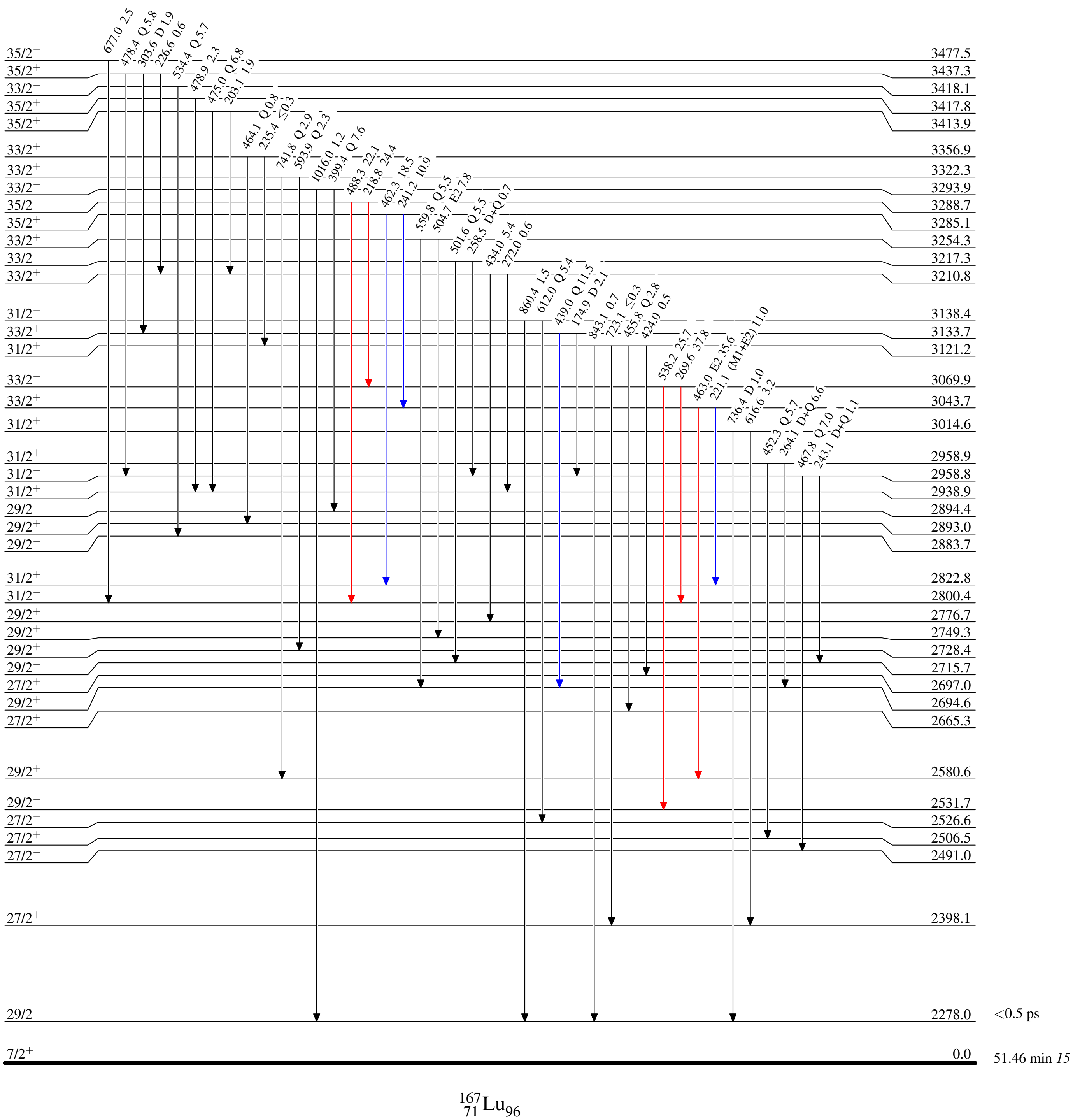
$^{123}Sb(^{48}Ca,4n\gamma)$ E=203 MeV 2015Ro27

Level Scheme (continued)

Intensities: Relative I_γ

Legend

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



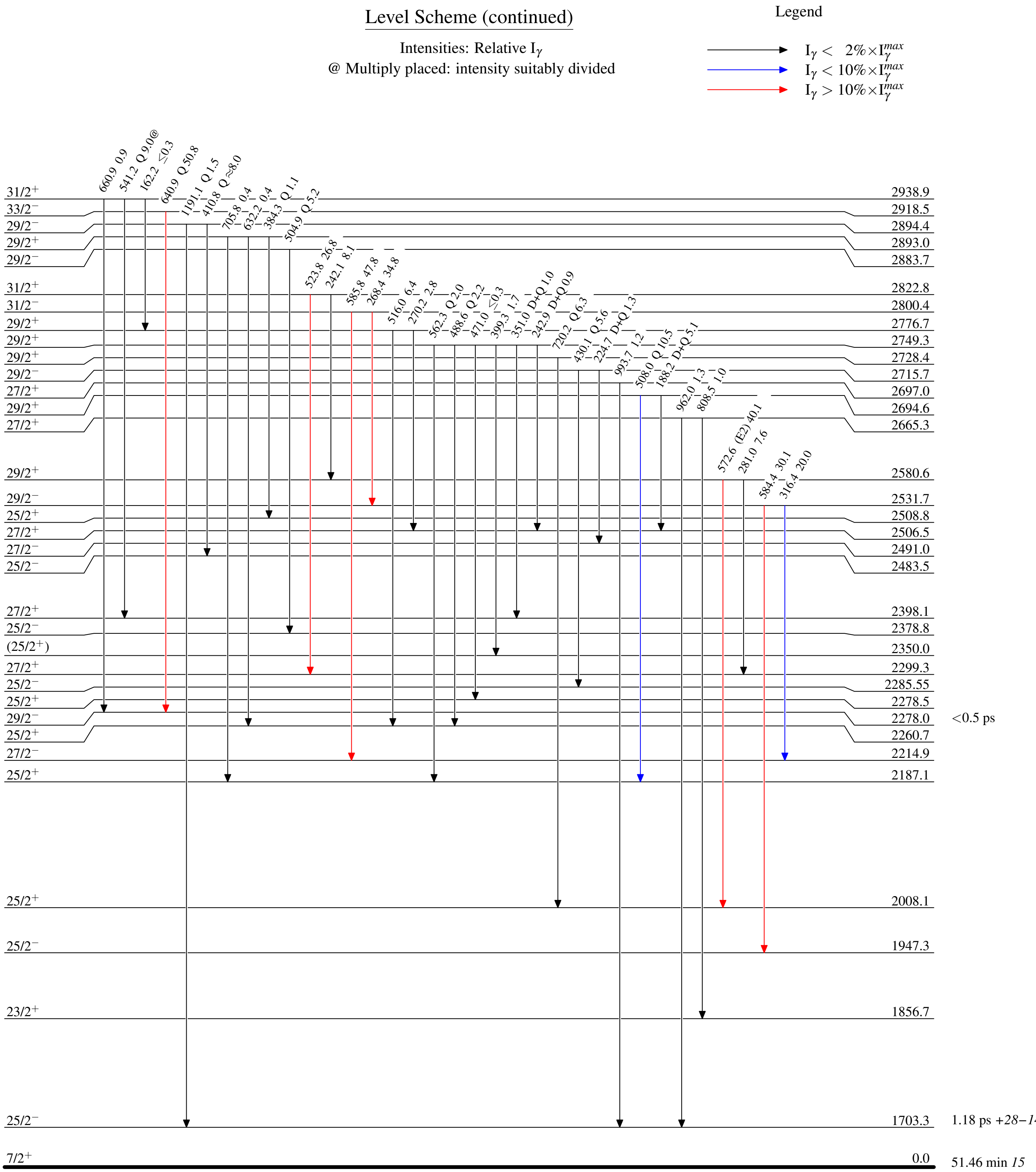
$^{167}_{71}Lu_{96}$

$^{123}Sb(^{48}Ca,4n\gamma)$ E=203 MeV 2015Ro27

Level Scheme (continued)

Intensities: Relative I_γ

@ Multiply placed: intensity suitably divided



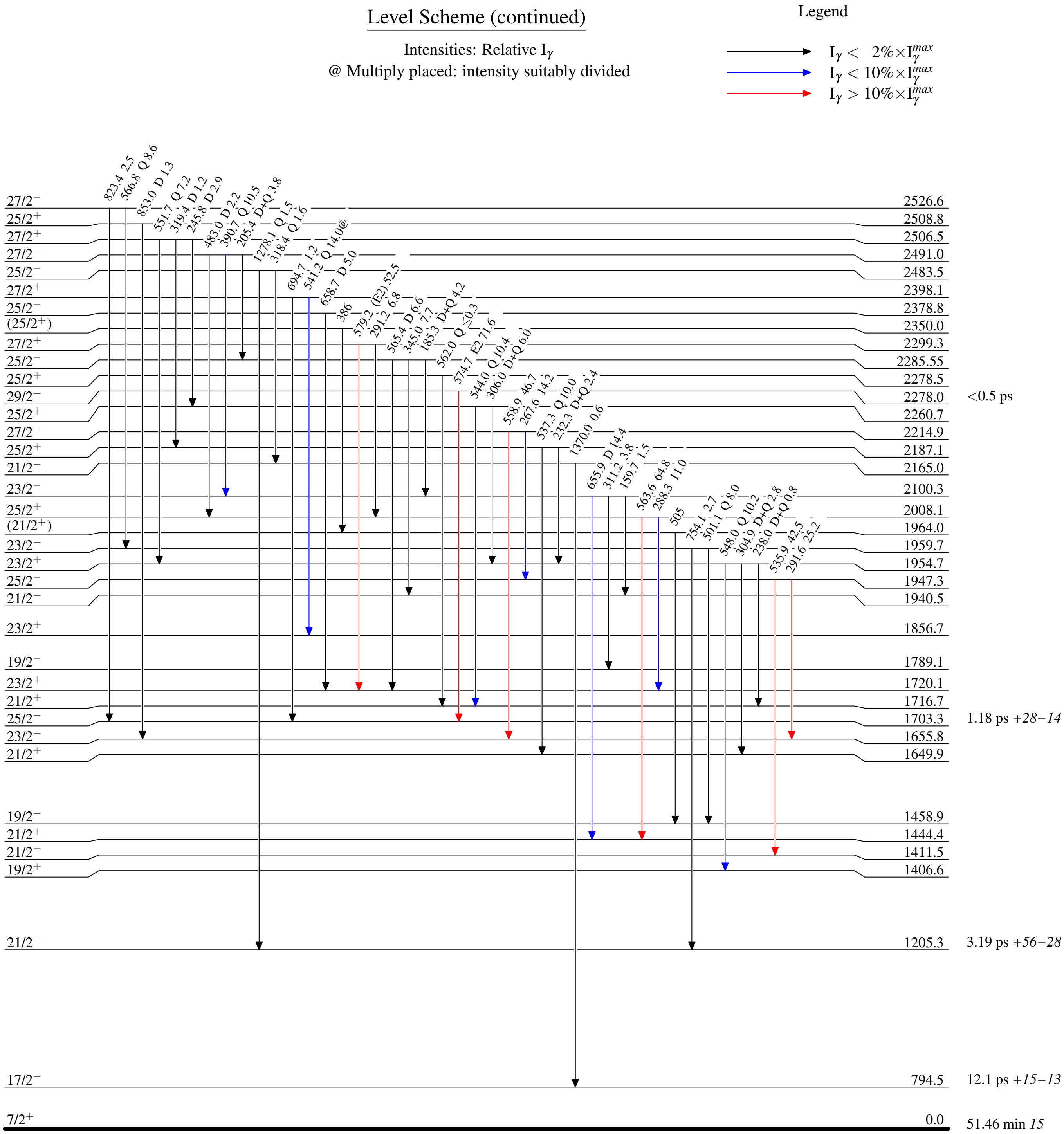
$^{167}_{71}Lu_{96}$

$^{123}Sb(^{48}Ca,4n\gamma)$ E=203 MeV 2015Ro27

Level Scheme (continued)

Intensities: Relative I_γ

@ Multiply placed: intensity suitably divided



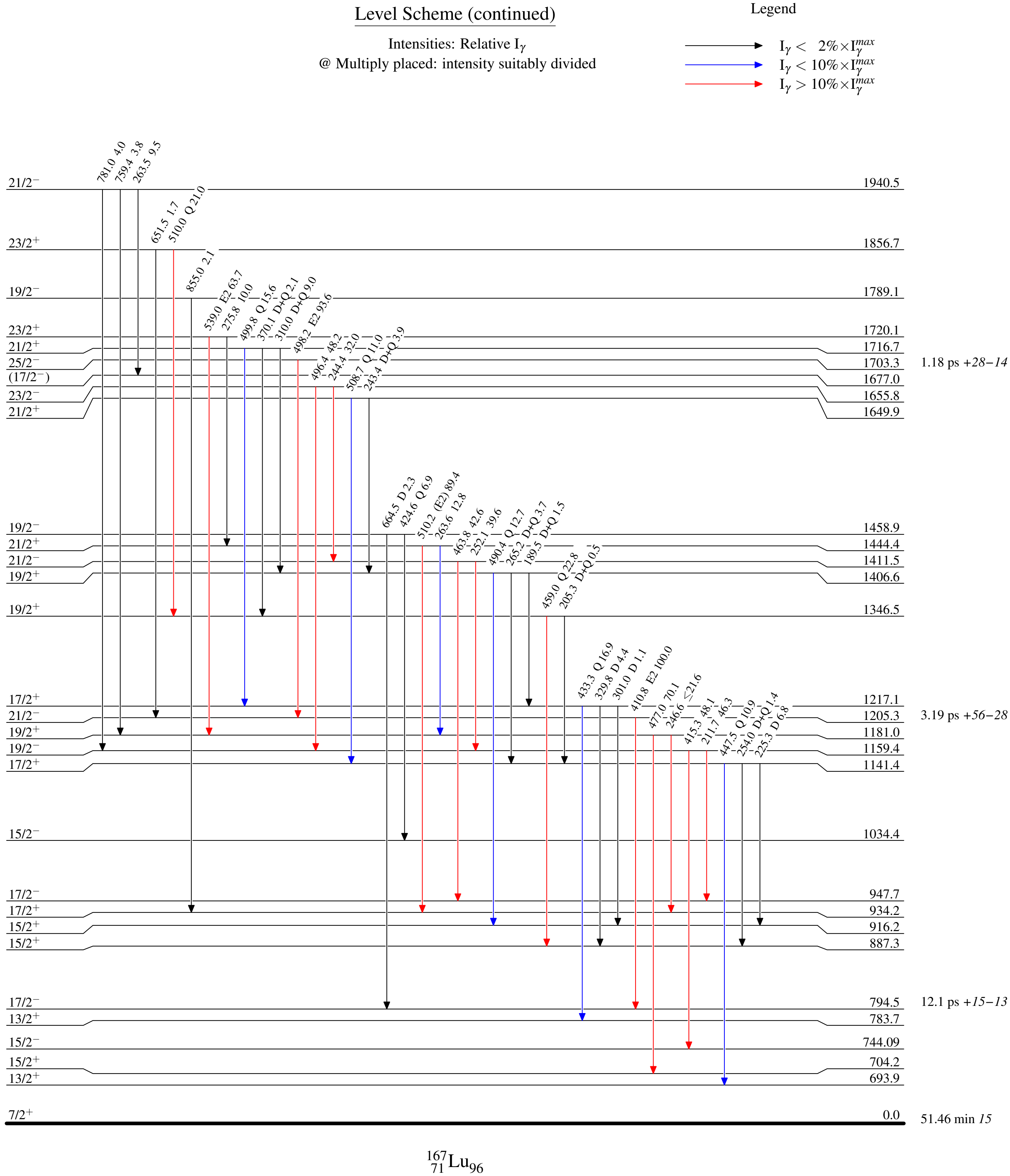
$^{167}_{71}Lu_{96}$

^{123}Sb(^{48}Ca,4nγ) E=203 MeV 2015Ro27

Level Scheme (continued)

Intensities: Relative I_γ

@ Multiply placed: intensity suitably divided

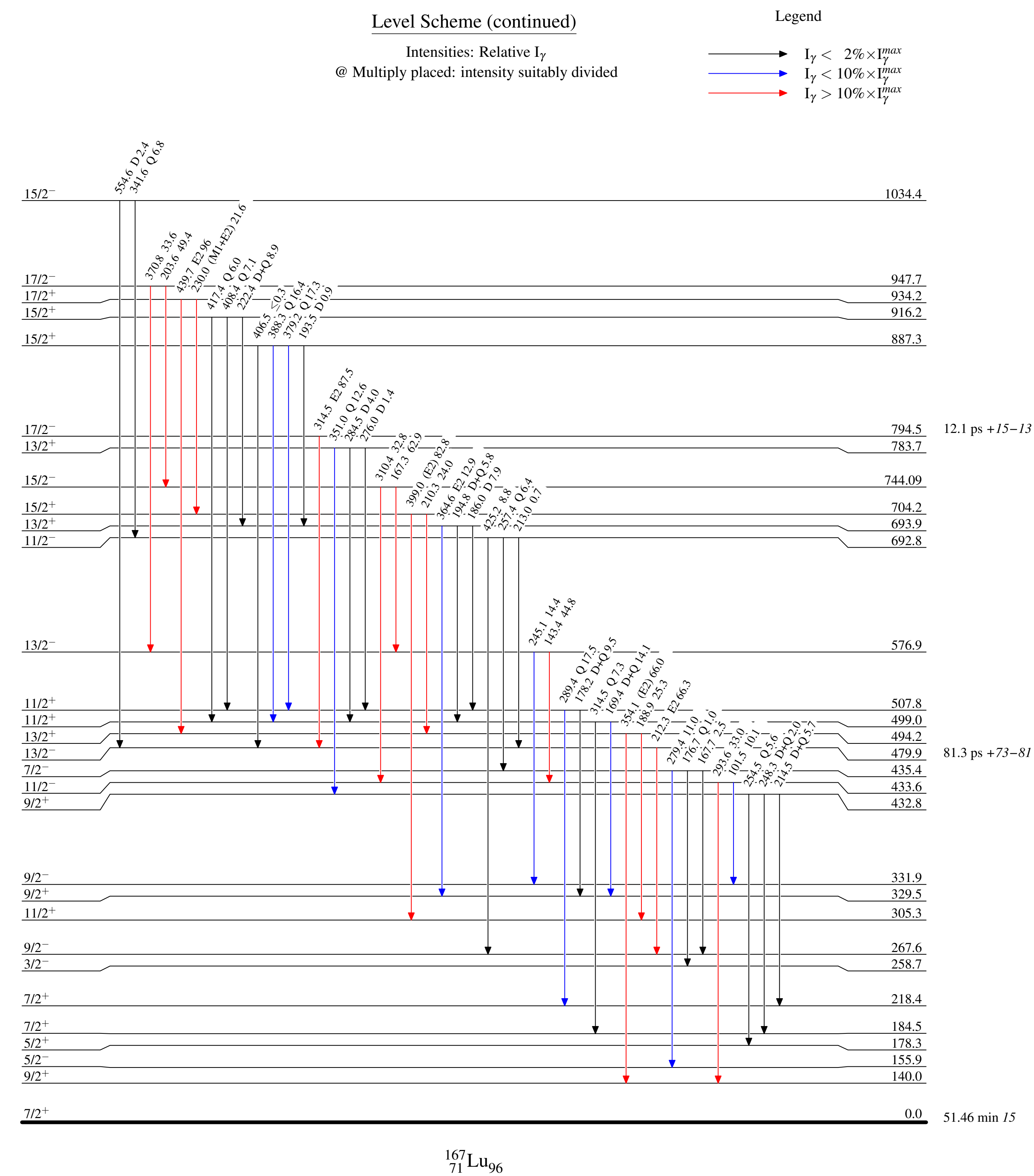


^{123}Sb(^{48}Ca,4nγ) E=203 MeV 2015Ro27

Level Scheme (continued)

Intensities: Relative I_γ

@ Multiply placed: intensity suitably divided



^{123}Sb(^{48}Ca,4nγ) E=203 MeV 2015Ro27

Level Scheme (continued)

Intensities: Relative I_γ

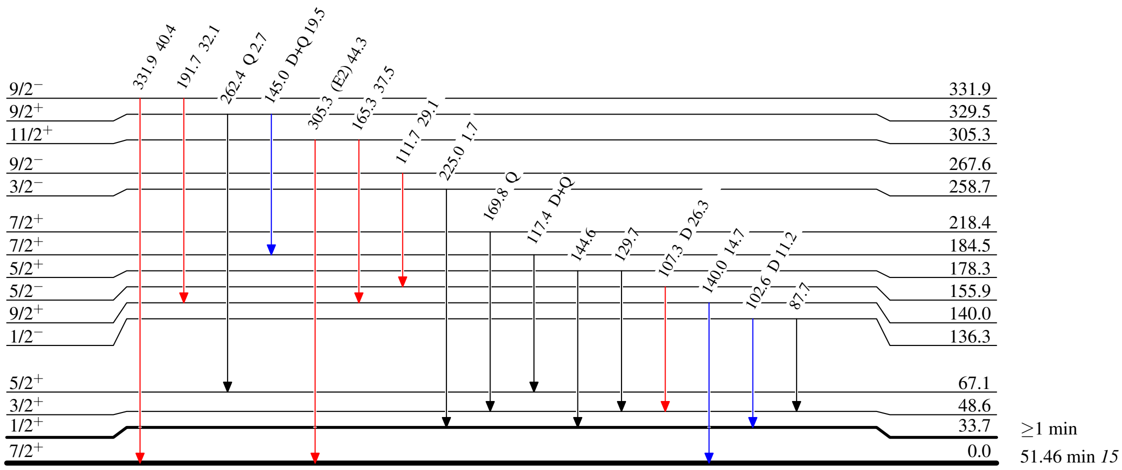
@ Multiply placed: intensity suitably divided

Legend

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

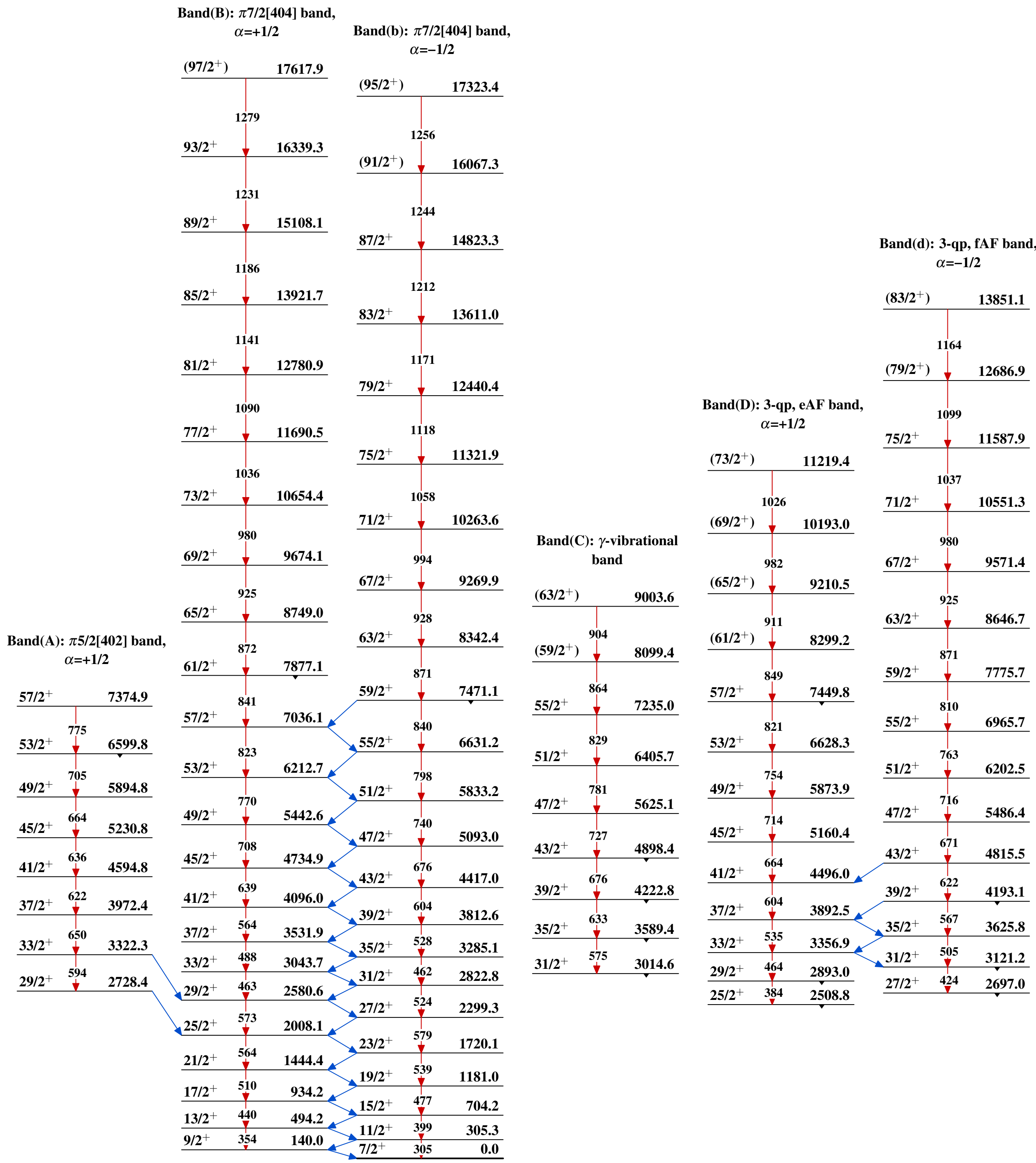
$I_\gamma < 10\% \times I_\gamma^{max}$

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



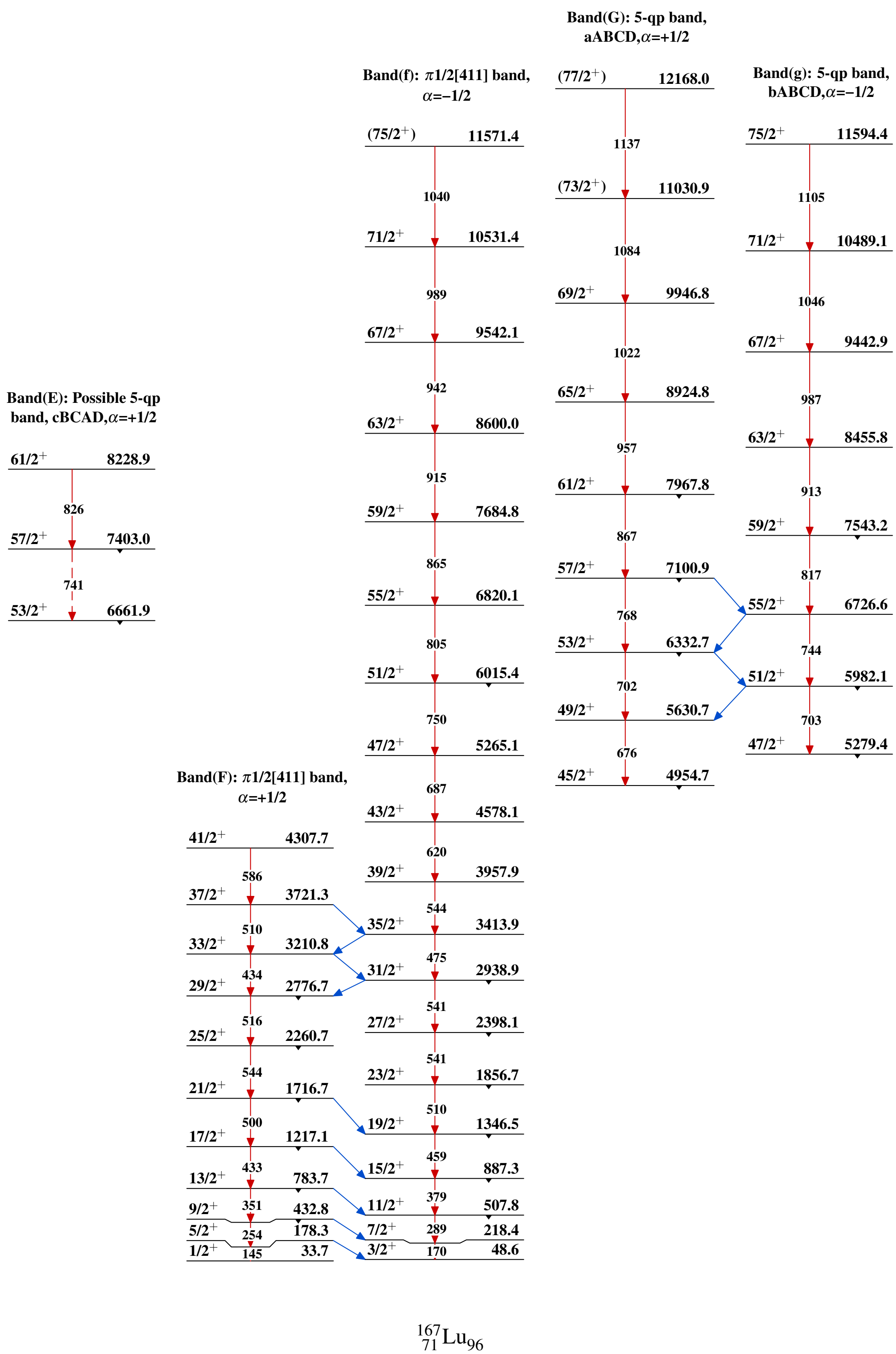
$^{167}_{71}Lu_{96}$

$^{123}Sb(^{48}Ca,4n\gamma)$ E=203 MeV 2015Ro27

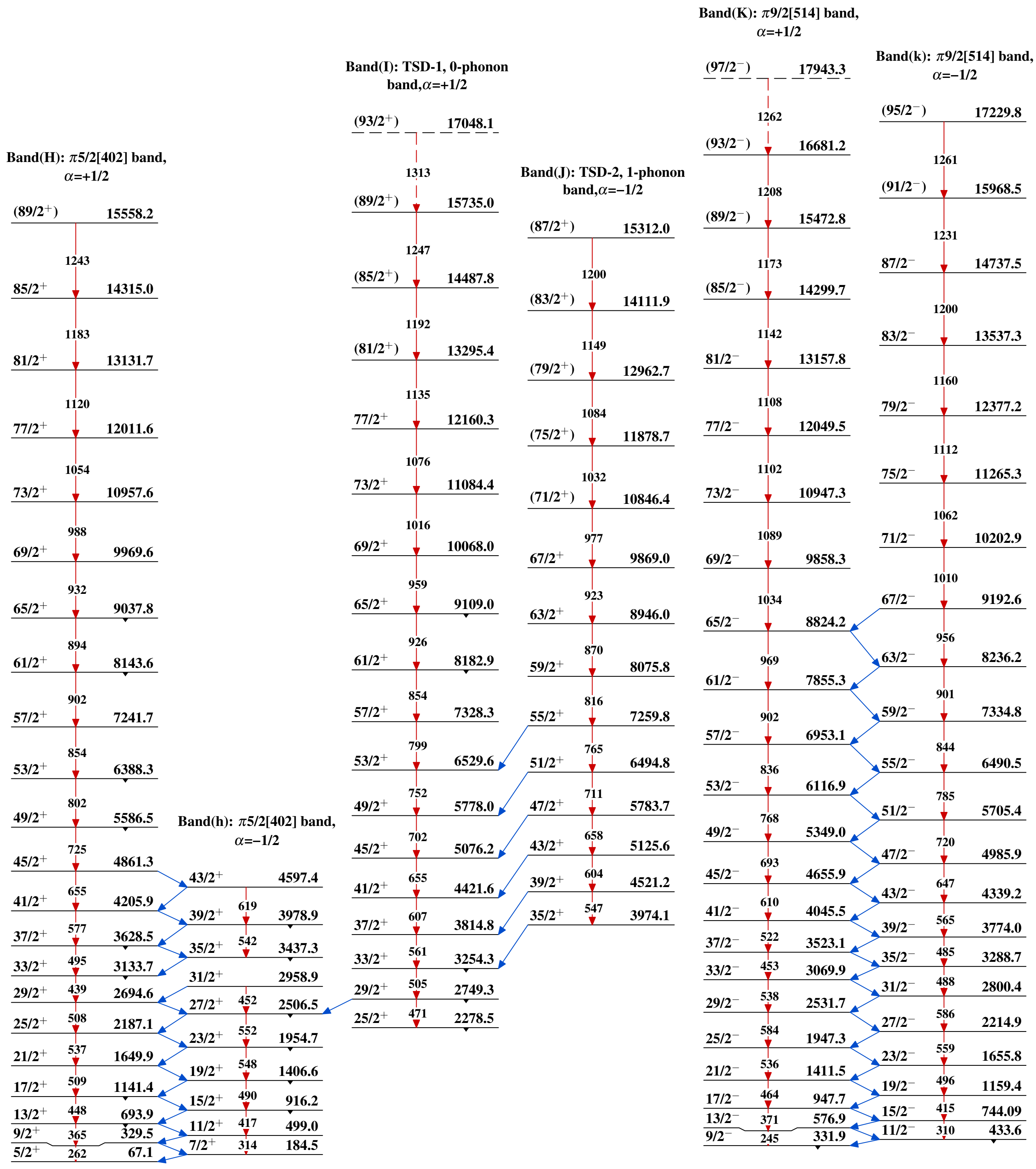


$^{167}_{71}Lu_{96}$

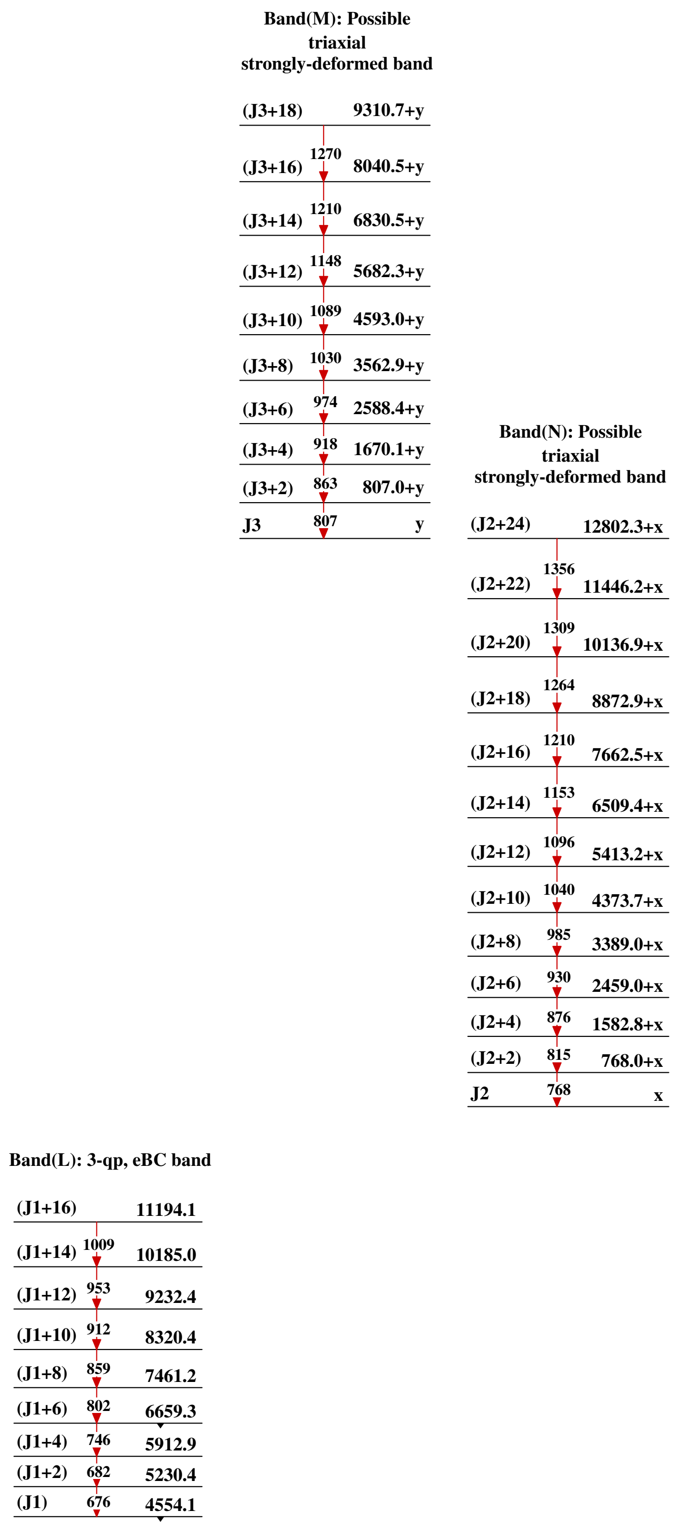
^{123}Sb(^{48}Ca,4nγ) E=203 MeV 2015Ro27 (continued)



$^{123}Sb(^{48}Ca,4n\gamma)$ E=203 MeV 2015Ro27 (continued)

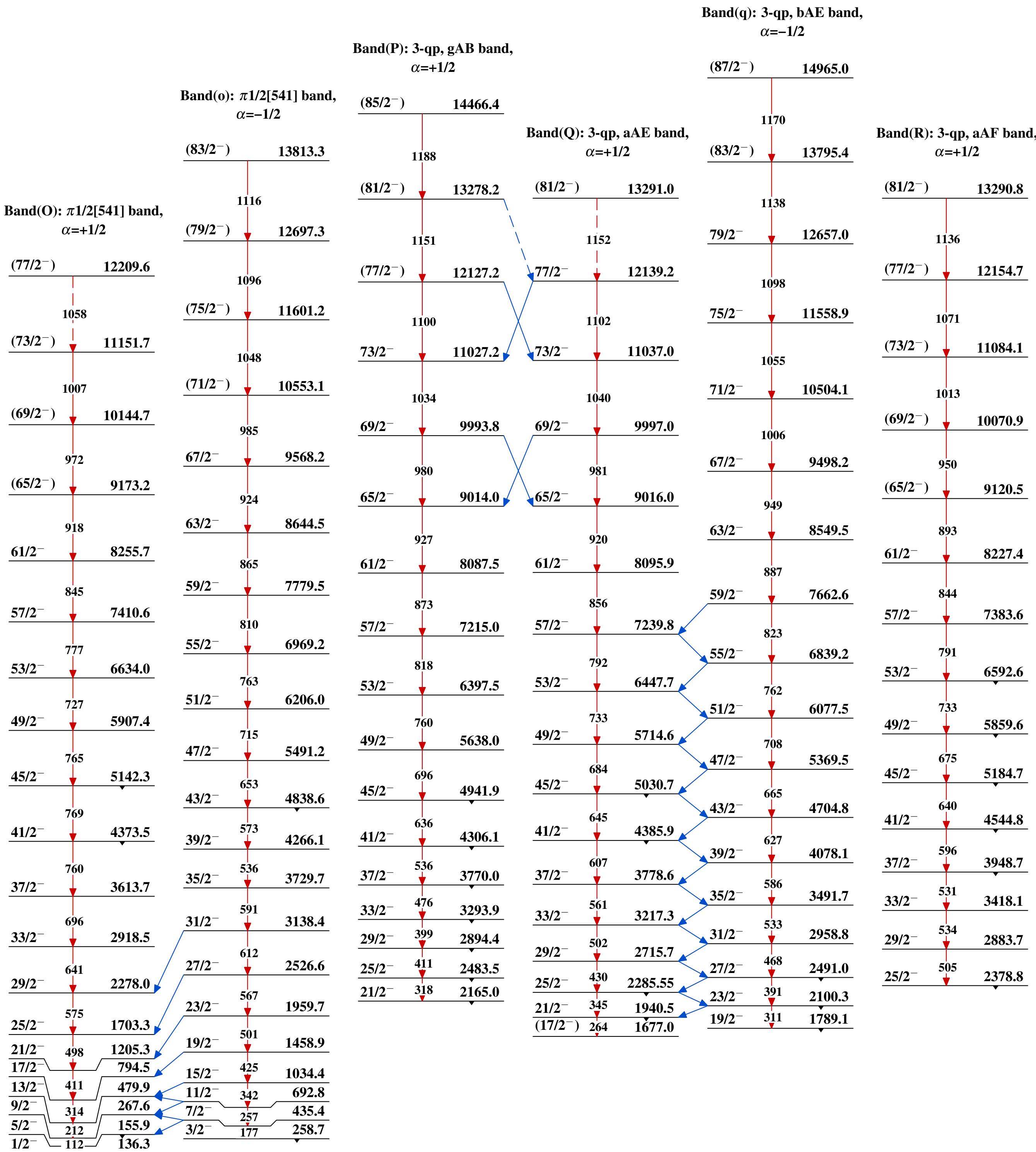


$^{123}Sb(^{48}Ca,4n\gamma)$ E=203 MeV 2015Ro27 (continued)



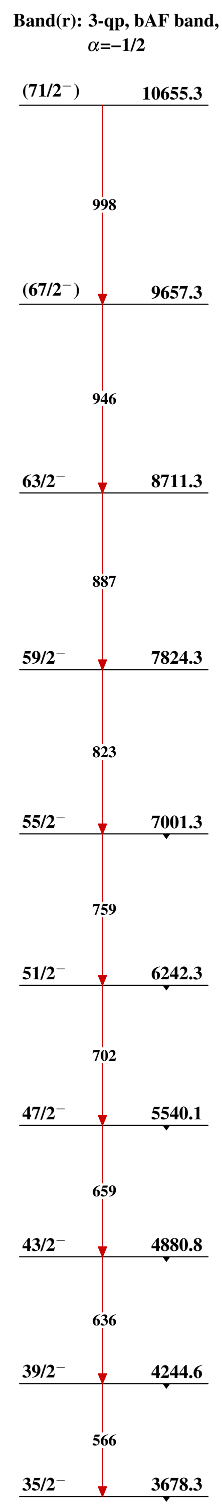
$^{167}_{71}Lu_{96}$

$^{123}Sb(^{48}Ca,4n\gamma)$ E=203 MeV 2015Ro27 (continued)



$^{167}_{71}Lu_{96}$

$^{123}Sb(^{48}Ca,4n\gamma)$ E=203 MeV 2015Ro27 (continued)



$^{167}_{71}Lu_{96}$