^{123}Sb(^{52}Cr,4nγ) 1993Ca02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin, E. A. Mccutchan	NDS 151, 334 (2018)	30-Jun-2018

E=236 MeV; 97.7% ^{123}Sb target; TESSA3 detector array (16 Ge detectors, multiplicity and sum-energy filters); measured Eγ, Iγ, $\gamma\gamma$ coin.

^{171}Re Levels

E(level)[†]	J^π[‡]	E(level)[†]	J^π[‡]	E(level)[†]	J^π[‡]	E(level)[†]	J^π[‡]
0.0[@]	9/2$^-$	6895.7[@] *16*	(57/2$^-$)	1917.0+x[#] *12*	23/2$^+$	4154.5+x[c] *18*	41/2$^+$
157.5[&] *8*	11/2$^-$	0.0+x[a]	5/2$^-$	1951.6+x[e] *11*	25/2$^+$	4167.7+x[e] *18*	41/2$^+$
381.5[@] *8*	13/2$^-$	41.1+x[c] *12*	5/2$^+$	2040.4+x[c] *13*	25/2$^+$	4205.3+x *18*	
615.2[&] *8*	15/2$^-$	95.9+x[a] *10*	9/2$^-$	2125.8+x[f] *14*		4302.4+x[f] *22*	
895.5[@] *8*	17/2$^-$	191.8+x[d] *12*	7/2$^+$	2203.8+x[d] *13*	27/2$^+$	4445.4+x[d] *18*	43/2$^+$
1163.8[&] *8*	19/2$^-$	325.4+x[a] *11*	13/2$^-$	2234.3+x[b] *17*		4502.4+x[a] *16*	45/2$^-$
1475.9[@] *8*	21/2$^-$	363.7+x[c] *11*	9/2$^+$	2258.3+x[a] *11*	29/2$^-$	4711.7+x[c] *19*	45/2$^+$
1759.9[&] *8*	23/2$^-$	386.6+x[b] *22*		2405.0+x[c] *13*	29/2$^+$	4781.9+x[e] *21*	45/2$^+$
2074.1[@] *8*	25/2$^-$	568.5+x[d] *11*	11/2$^+$	2424.7+x[e] *12*	29/2$^+$	4877.7+x *21*	
2345.8[&] *8*	27/2$^-$	660.7+x[b] *20*		2555.1+x[f] *14*		4987.9+x[d] *19*	47/2$^+$
2548.7[@] *8*	29/2$^-$	680.6+x[a] *11*	17/2$^-$	2642.8+x[d] *14*	31/2$^+$	5024.4+x[f] *25*	
2707.7[&] *8*	31/2$^-$	771.6+x[c] *11*	13/2$^+$	2660.0+x[b] *20*		5186.1+x[a] *19*	(49/2$^-$)
2892.3[@] *8*	33/2$^-$	996.8+x[d] *11*	15/2$^+$	2821.6+x[a] *12*	33/2$^-$	5288.6+x[c] *20*	49/2$^+$
3110.2[&] *8*	35/2$^-$	1039.1+x[b] *17*		2909.4+x[c] *15*	33/2$^+$	5386.1+x[e] *23*	49/2$^+$
3358.9[@] *8*	37/2$^-$	1138.5+x[a] *11*	21/2$^-$	2954.9+x[e] *12*	33/2$^+$	5618.3+x[d] *20*	51/2$^+$
3639.7[&] *9*	39/2$^-$	1204.6+x[c] *11*	17/2$^+$	3056.1+x[f] *17*		5799+x[f] *3*	
3941.7[@] *9*	41/2$^-$	1235.5+x[e] *11*	17/2$^+$	3102.6+x[b] *22*		5932.3+x[a] *21*	(53/2$^-$)
4271.3[&] *9*	43/2$^-$	1435.1+x[b] *14*		3199.9+x[d] *16*	35/2$^+$	5976.0+x[c] *21*	53/2$^+$
4610.8[@] *9*	45/2$^-$	1442.8+x[d] *12*	19/2$^+$	3333.8+x[a] *12*	37/2$^-$	6053+x[e] *3*	53/2$^+$
4972.9[&] *9*	47/2$^-$	1545.2+x[e] *11*	21/2$^+$	3512.2+x[c] *16*	37/2$^+$	6364.8+x[d] *21*	55/2$^+$
5336.1[@] *11*	49/2$^-$	1674.6+x[a] *11*	25/2$^-$	3538.3+x[e] *15*	37/2$^+$	6765.2+x[c] *22*	57/2$^+$
5721.8[&] *12*	51/2$^-$	1676.1+x[c] *11*	21/2$^+$	3641.6+x[f] *20*		7191.8+x[d] *24*	(59/2$^+$)
6098.8[@] *13*	53/2$^-$	1834.6+x[b] *14*		3830.7+x[d] *17*	39/2$^+$		
6512.6[&] *14*	55/2$^-$	1916.3+x[d] *12*	23/2$^+$	3884.9+x[a] *12*	41/2$^-$		

[†] From least-squares adjustment of Eγ. from Adopted Levels, the energy offset “X”=189.8 *4*.
[‡] Authors′ values.
[#] Possibly a 3-quasiparticle state. Not a 5/2[402] band member in fig. 1 of 1993Ca02 (contrary to listing in table 1).
[@] Band(A): 9/2[514], α=+1/2 band.
[&] Band(a): 9/2[514], α=−1/2 band.
[a] Band(B): 1/2[541], α=+1/2 band.
[b] Band(C): 1/2[411]? band.
[c] Band(D): 5/2[402], α=+1/2 band.
[d] Band(d): 5/2[402], α=−1/2 band.
[e] Band(E): 1/2[660], α=+1/2 band.
[f] Band(F): AF⊗(π 1/2[541]) band.

^{123}Sb(^{52}Cr,4nγ) 1993Ca02 (continued)

γ(^{171}Re)

Eγ†	Iγ‡	Ei(level)	J^π_i	Ef	J^π_f	Comments
96.0 *10*		95.9+x	9/2−	0.0+x	5/2−	
123.3 *10*	8	2040.4+x	25/2+	1917.0+x	23/2+	
124.5 *10*	14	2040.4+x	25/2+	1916.3+x	23/2+	
150.7 *2*	44	191.8+x	7/2+	41.1+x	5/2+	
157.4 *10*		157.5	11/2−	0.0	9/2−	
159.1 *2*	42	2707.7	31/2−	2548.7	29/2−	
163.9 *10*	18	2203.8+x	27/2+	2040.4+x	25/2+	
172.0 *2*	46	363.7+x	9/2+	191.8+x	7/2+	
184.7 *2*	52	2892.3	33/2−	2707.7	31/2−	
199 *1*		1435.1+x		1235.5+x	17/2+	Eγ: from fig. 1 of 1993Ca02; absent from table 1.
201.2 *2*	20	2405.0+x	29/2+	2203.8+x	27/2+	
202.9 *2*	55	2548.7	29/2−	2345.8	27/2−	
203.2 *2*	32	771.6+x	13/2+	568.5+x	11/2+	
204.9 *2*	42	568.5+x	11/2+	363.7+x	9/2+	
207.9 *2*	20	1204.6+x	17/2+	996.8+x	15/2+	
218.0 *2*	53	3110.2	35/2−	2892.3	33/2−	
224.1 *2*	100	381.5	13/2−	157.5	11/2−	
225.3 *2*	25	996.8+x	15/2+	771.6+x	13/2+	
229.5 *2*	60	325.4+x	13/2−	95.9+x	9/2−	
233.7 *10*	13	1676.1+x	21/2+	1442.8+x	19/2+	
233.8 *2*	75	615.2	15/2−	381.5	13/2−	
237.9 *10*	19	2642.8+x	31/2+	2405.0+x	29/2+	
238.5 *10*	11	1235.5+x	17/2+	996.8+x	15/2+	
238.7 *10*	17	1442.8+x	19/2+	1204.6+x	17/2+	
239.2 *10*	7	1916.3+x	23/2+	1676.1+x	21/2+	
240.8 *10*	5	1917.0+x	23/2+	1676.1+x	21/2+	
248.7 *2*	47	3358.9	37/2−	3110.2	35/2−	
266.3 *10*	16	2909.4+x	33/2+	2642.8+x	31/2+	
266.6 *10*	10	4711.7+x	45/2+	4445.4+x	43/2+	
268.5 *2*	51	1163.8	19/2−	895.5	17/2−	
271.7 *2*	46	2345.8	27/2−	2074.1	25/2−	
274.1 *10*		660.7+x		386.6+x		
276.1 *10*	9	4987.9+x	47/2+	4711.7+x	45/2+	
280.5 *2*	59	895.5	17/2−	615.2	15/2−	
280.6 *2*	35	3639.7	39/2−	3358.9	37/2−	
284.1 *2*	52	1759.9	23/2−	1475.9	21/2−	
286 *1*		2203.8+x	27/2+	1917.0+x	23/2+	Eγ: from fig. 1 of 1993Ca02; absent from table 1.
288 *1*	3	2203.8+x	27/2+	1916.3+x	23/2+	Iγ: I(288γ)/I(164γ)=0.16 *3* (1993Ca02).
290 *1*		1834.6+x		1545.2+x	21/2+	Eγ: from fig. 1 of 1993Ca02; absent from table 1.
290.4 *10*	14	3199.9+x	35/2+	2909.4+x	33/2+	
290.8 *10*	12	4445.4+x	43/2+	4154.5+x	41/2+	
296.5 *10*	2	2555.1+x		2258.3+x	29/2−	
300.8 *10*	6	5288.6+x	49/2+	4987.9+x	47/2+	
301.9 *2*	31	3941.7	41/2−	3639.7	39/2−	
309.7 *2*	24	1545.2+x	21/2+	1235.5+x	17/2+	
312.2 *2*	48	1475.9	21/2−	1163.8	19/2−	
312.4 *10*	13	3512.2+x	37/2+	3199.9+x	35/2+	
314.3 *2*	40	2074.1	25/2−	1759.9	23/2−	
318.6 *10*	12	3830.7+x	39/2+	3512.2+x	37/2+	
322.4 *10*	16	363.7+x	9/2+	41.1+x	5/2+	Iγ: I(322γ)/I(172γ)=0.36 *8* (1993Ca02).
323.6 *10*	11	4154.5+x	41/2+	3830.7+x	39/2+	
329.6 *2*	28	4271.3	43/2−	3941.7	41/2−	
330.0 *10*	7	5618.3+x	51/2+	5288.6+x	49/2+	
339.6 *2*	20	4610.8	45/2−	4271.3	43/2−	
340.6 *2*	25	1545.2+x	21/2+	1204.6+x	17/2+	

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^{123}Sb(^{52}Cr,4nγ) 1993Ca02 (continued)

γ(^{171}Re) (continued)

E_γ †	I_γ ‡	E_i(level)	J^π_i	E_f	J^π_f	Comments
343.6 *10*	8	2892.3	33/2−	2548.7	29/2−	Iγ: I(344γ)/I(185γ)=0.15 *3* (1993Ca02).
355.2 *2*	63	680.6+x	17/2−	325.4+x	13/2−	
358.0 *10*	4	5976.0+x	53/2+	5618.3+x	51/2+	
361.7 *2*	22	2707.7	31/2−	2345.8	27/2−	
362.5 *10*	13	4972.9	47/2−	4610.8	45/2−	
363.2 *10*	4	5336.1	49/2−	4972.9	47/2−	
364.5 *10*	6	2405.0+x	29/2+	2040.4+x	25/2+	Iγ: I(365γ)/I(201γ)=0.32 *3* (1993Ca02).
376.5 *10*	7	6098.8	53/2−	5721.8	51/2−	
376.6 *2*	29	568.5+x	11/2+	191.8+x	7/2+	Iγ: I(377γ)/I(205γ)=0.70 *3* (1993Ca02); precision appears to be atypically high.
378.4 *10*		1039.1+x		660.7+x		
381.6 *10*	14	381.5	13/2−	0.0	9/2−	Iγ: I(382γ)/I(224γ)=0.14 *3* (1993Ca02).
386.1 *10*	10	5721.8	51/2−	5336.1	49/2−	
388.8 *10*	2	6364.8+x	55/2+	5976.0+x	53/2+	Eγ: from fig. 1 of 1993Ca02; Eγ=389 in table 1.
396.0 *10*		1435.1+x		1039.1+x		
398.9 *10*		1834.6+x		1435.1+x		
399.7 *10*		2234.3+x		1834.6+x		
399.9 *10*	5	6765.2+x	57/2+	6364.8+x	55/2+	Eγ: from fig. 1 of 1993Ca02; Eγ=400 in table 1.
402.3 *10*	16	3110.2	35/2−	2707.7	31/2−	Iγ: I(402γ)/I(218γ)=0.3 *3* (1993Ca02).
406.4 *2*	41	1951.6+x	25/2+	1545.2+x	21/2+	
406.6 *2*	21	1545.2+x	21/2+	1138.5+x	21/2−	
407.9 *2*	39	771.6+x	13/2+	363.7+x	9/2+	Iγ: I(408γ)/I(203γ)=1.23 *3* (1993Ca02); precision is atypically high and evaluator suspects it may be overestimated.
413 *1*	5	6512.6	55/2−	6098.8	53/2−	
425.7 *10*		2660.0+x		2234.3+x		
428.3 *2*	30	996.8+x	15/2+	568.5+x	11/2+	Iγ: I(428γ)/I(225γ)=1.2 *3* (1993Ca02).
429.6 *10*	5	2555.1+x		2125.8+x		
432.8 *2*	31	1204.6+x	17/2+	771.6+x	13/2+	Iγ: I(433γ)/I(208γ)=1.5 *5* (1993Ca02).
438.8 *10*	6	2642.8+x	31/2+	2203.8+x	27/2+	Iγ: I(439γ)/I(238γ)=0.31 *4* (1993Ca02).
442.6 *10*		3102.6+x		2660.0+x		
446.0 *2*	39	1442.8+x	19/2+	996.8+x	15/2+	Iγ: I(446γ)/I(239γ)=2.3 *5* (1993Ca02).
451.4 *10*	5	2125.8+x		1674.6+x	25/2−	
457.7 *2*	35	615.2	15/2−	157.5	11/2−	Iγ: I(458γ)/I(234γ)=0.47 *5* (1993Ca02).
457.9 *2*	56	1138.5+x	21/2−	680.6+x	17/2−	
463.6 *10*	15	1235.5+x	17/2+	771.6+x	13/2+	
466.5 *2*	20	3358.9	37/2−	2892.3	33/2−	Iγ: I(467γ)/I(249γ)=0.42 *7* (1993Ca02).
471.5 *2*	24	1676.1+x	21/2+	1204.6+x	17/2+	Iγ: I(472γ)/I(234γ)=1.88 *7* (1993Ca02); precision appears to be atypically high.
473.1 *2*	30	2424.7+x	29/2+	1951.6+x	25/2+	
473.6 *2*	38	1916.3+x	23/2+	1442.8+x	19/2+	
474.2 *2*	29	1917.0+x	23/2+	1442.8+x	19/2+	
474.6 *2*	28	2548.7	29/2−	2074.1	25/2−	Iγ: I(475γ)/I(203γ)=0.54 *8* (1993Ca02).
501.0 *10*	7	3056.1+x		2555.1+x		
504.6 *10*	5	2909.4+x	33/2+	2405.0+x	29/2+	Iγ: I(505γ)/I(266γ)=0.31 *5* (1993Ca02).
512.2 *2*	27	3333.8+x	37/2−	2821.6+x	33/2−	Placement taken from fig. 1; deexcites J=25/2 band member according to table 1.
513.8 *2*	42	895.5	17/2−	381.5	13/2−	Iγ: I(514γ)/I(281γ)=0.5 *3* (1993Ca02).
530.2 *2*	25	2954.9+x	33/2+	2424.7+x	29/2+	
530.4 *10*	17	3639.7	39/2−	3110.2	35/2−	Iγ: I(530γ)/I(281γ)=0.5 *3* (1993Ca02).
536.1 *2*	51	1674.6+x	25/2−	1138.5+x	21/2−	Placement taken from fig. 1; deexcites J=29/2 band member according to table 1.
542.4 *10*	4	4987.9+x	47/2+	4445.4+x	43/2+	Iγ: I(542γ)/I(276γ)=0.5 *3* (1993Ca02).
548.5 *2*	51	1163.8	19/2−	615.2	15/2−	Iγ: I(549γ)/I(269γ)=1.0 *3* (1993Ca02).
551.1 *2*	20	3884.9+x	41/2−	3333.8+x	37/2−	Placement taken from fig. 1; deexcites J=33/2 band member according to table 1.
556.1 *10*	3	1235.5+x	17/2+	680.6+x	17/2−	

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^{123}Sb(^{52}Cr,4nγ) 1993Ca02 (continued)

γ(^{171}Re) (continued)

E_γ †	I_γ ‡	E_i(level)	J^π_i	E_f	J^π_f	Comments
557 *1*	11	4711.7+x	45/2$^+$	4154.5+x	41/2$^+$	
557.2 *10*	7	3199.9+x	35/2$^+$	2642.8+x	31/2$^+$	I_γ: I(557γ)/I(290γ)=0.5 *3* (1993Ca02).
563.3 *2*	32	2821.6+x	33/2$^-$	2258.3+x	29/2$^-$	Placement taken from fig. 1; deexcites J=37/2 band member according to table 1.
577.2 *10*	3	5288.6+x	49/2$^+$	4711.7+x	45/2$^+$	I_γ: I(577γ)/I(301γ)=0.5 *3* (1993Ca02).
580.5 *2*	52	1475.9	21/2$^-$	895.5	17/2$^-$	I_γ: I(581γ)/I(312γ)=1.1 *3* (1993Ca02).
582.9 *2*	28	3941.7	41/2$^-$	3358.9	37/2$^-$	I_γ: I(583γ)/I(302γ)=0.9 *3* (1993Ca02).
583.4 *10*	19	3538.3+x	37/2$^+$	2954.9+x	33/2$^+$	
583.7 *2*	41	2258.3+x	29/2$^-$	1674.6+x	25/2$^-$	Placement taken from fig. 1; deexcites J=41/2 band member according to table 1.
585.5 *10*	8	3641.6+x		3056.1+x		
585.8 *2*	74	2345.8	27/2$^-$	1759.9	23/2$^-$	I_γ: I(586γ)/I(272γ)=1.6 *3* (1993Ca02).
596.0 *2*	78	1759.9	23/2$^-$	1163.8	19/2$^-$	I_γ: I(596γ)/I(284γ)=1.5 *3* (1993Ca02).
598.2 *2*	53	2074.1	25/2$^-$	1475.9	21/2$^-$	I_γ: I(598γ)/I(314γ)=1.3 *3* (1993Ca02).
602.8 *10*	14	3512.2+x	37/2$^+$	2909.4+x	33/2$^+$	I_γ: I(603γ)/I(312γ)=1.1 *4* (1993Ca02).
604.2 *10*	4	5386.1+x	49/2$^+$	4781.9+x	45/2$^+$	
614.2 *10*	7	4781.9+x	45/2$^+$	4167.7+x	41/2$^+$	
614.9 *10*	9	4445.4+x	43/2$^+$	3830.7+x	39/2$^+$	
617.5 *10*	13	4502.4+x	45/2$^-$	3884.9+x	41/2$^-$	
629.4 *10*	13	4167.7+x	41/2$^+$	3538.3+x	37/2$^+$	
630 *1*	7	5618.3+x	51/2$^+$	4987.9+x	47/2$^+$	
630.7 *10*	14	3830.7+x	39/2$^+$	3199.9+x	35/2$^+$	I_γ: I(631γ)/I(319γ)=1.2 *6* (1993Ca02).
631.4 *10*	17	4271.3	43/2$^-$	3639.7	39/2$^-$	
642.3 *10*	9	4154.5+x	41/2$^+$	3512.2+x	37/2$^+$	I_γ: I(642γ)/I(324γ)=0.8 *3* (1993Ca02).
660.8 *10*	6	4302.4+x		3641.6+x		
666.7 *10*	2	6053+x	53/2$^+$	5386.1+x	49/2$^+$	E_γ: from fig. 1 of 1993Ca02; Eγ=666 in table 1.
667 *1*	4	4205.3+x		3538.3+x	37/2$^+$	
668.7 *10*	16	4610.8	45/2$^-$	3941.7	41/2$^-$	I_γ: I(669γ)/I(340γ)=0.8 *3* (1993Ca02).
683.7 *10*	10	5186.1+x	(49/2$^-$)	4502.4+x	45/2$^-$	
687.6 *10*	4	5976.0+x	53/2$^+$	5288.6+x	49/2$^+$	
701.6 *2*	22	4972.9	47/2$^-$	4271.3	43/2$^-$	
710 *1*	5	4877.7+x		4167.7+x	41/2$^+$	
722.0 *10*	6	5024.4+x		4302.4+x		
725.3 *10*	12	5336.1	49/2$^-$	4610.8	45/2$^-$	
746 *1*	3	6364.8+x	55/2$^+$	5618.3+x	51/2$^+$	E_γ: from fig. 1 of 1993Ca02; Eγ=747 in table 1.
746.2 *10*	6	5932.3+x	(53/2$^-$)	5186.1+x	(49/2$^-$)	E_γ: from fig. 1 of 1993Ca02; Eγ=746 in table 1.
748.8 *10*	9	5721.8	51/2$^-$	4972.9	47/2$^-$	I_γ: I(749γ)/I(386γ)=0.9 *3* (1993Ca02).
762.4 *10*	6	6098.8	53/2$^-$	5336.1	49/2$^-$	I_γ: I(762γ)/I(377γ)=0.8 *3* (1993Ca02).
774.4 *10*	4	5799+x		5024.4+x		E_γ: from fig. 1 of 1993Ca02; Eγ=774 in table 1.
789.7 *10*		6765.2+x	57/2$^+$	5976.0+x	53/2$^+$	E_γ: from fig. 1 of 1993Ca02; Eγ=790 in table 1.
791.7 *10*	6	6512.6	55/2$^-$	5721.8	51/2$^-$	
796.9 *10*	6	6895.7	(57/2$^-$)	6098.8	53/2$^-$	
827 *1*		7191.8+x	(59/2$^+$)	6364.8+x	55/2$^+$	

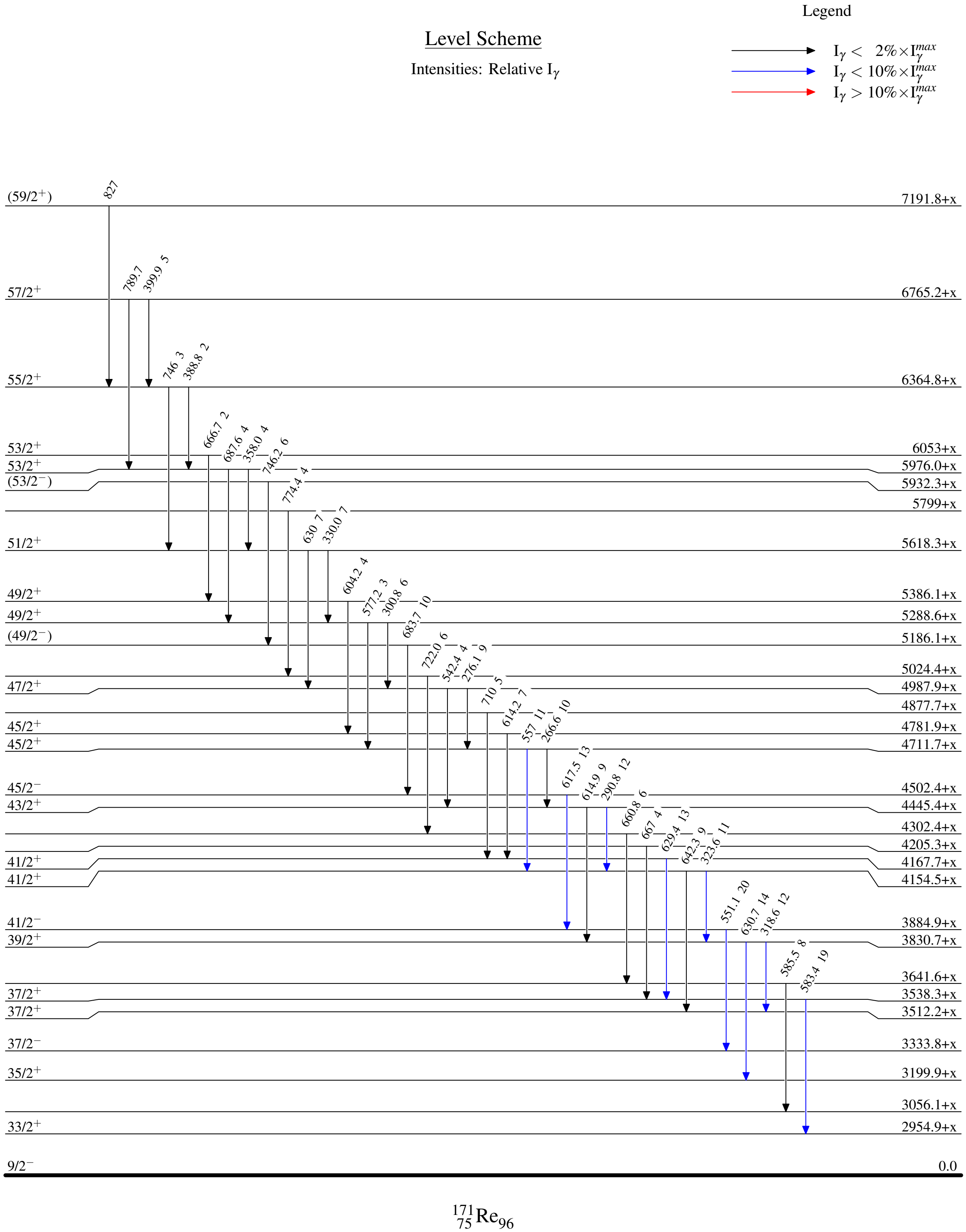
† From 1993Ca02. Uncertainties are typically 0.1-0.2 keV, increasing with energy; however, for weak transitions, the uncertainties are 0.5-1.0 keV. The evaluator assigns $\Delta E\gamma$=0.2 keV to transitions having I$\gamma\geq$20, 1.0 keV to all others.

‡ Photon intensity relative to I(224γ)=100; $\Delta I\gamma$=10-30% for strong peaks, >30% for weak or contaminated peaks. 1993Ca02 also report Iγ ratios for intraband ΔJ=1 and ΔJ=2 transitions which deexcite the same level; these were determined by gating on transitions above the level in question. The latter values are given here in comments.

$^{123}Sb(^{52}Cr,4n\gamma)$ 1993Ca02

Level Scheme

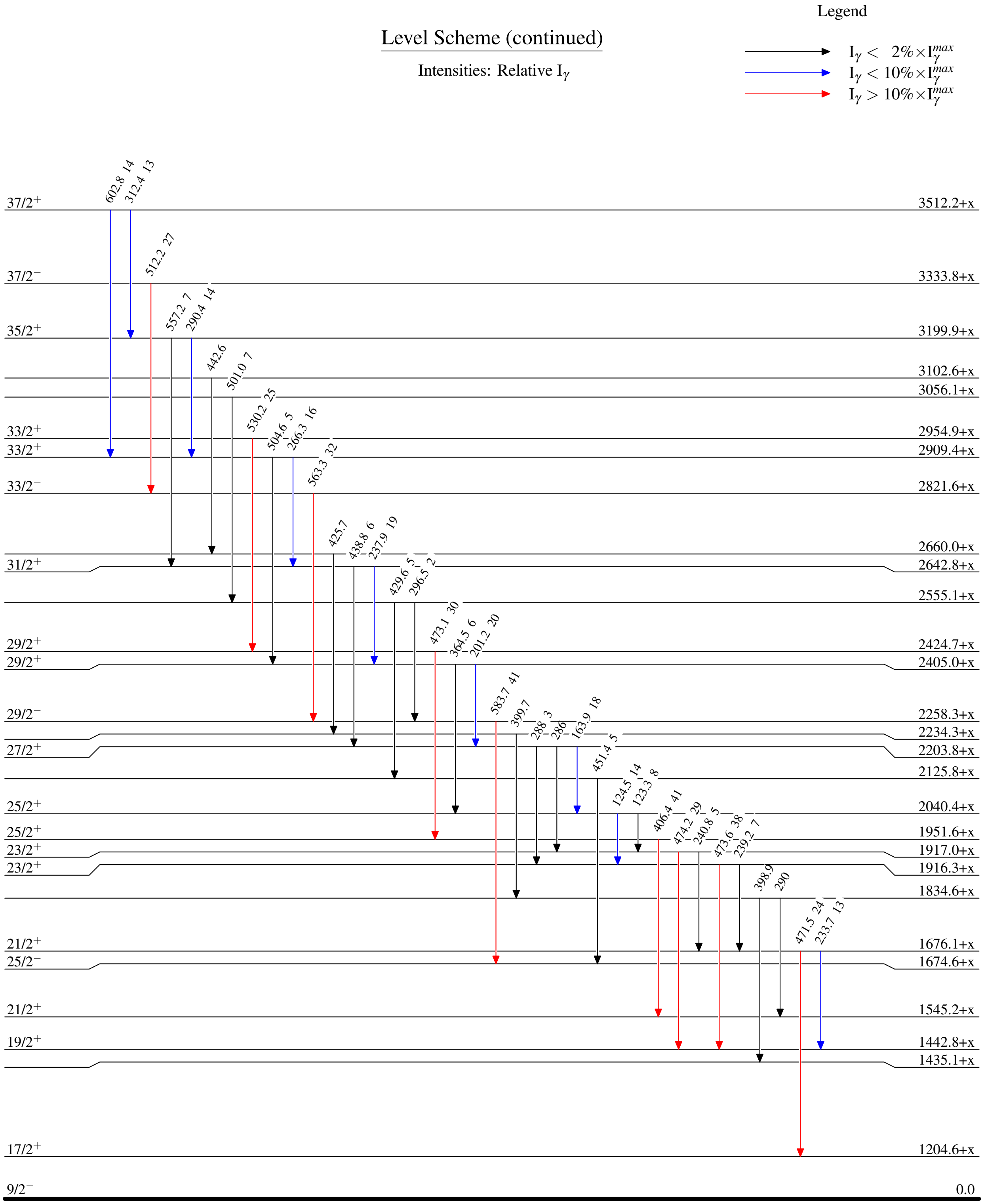
Intensities: Relative I_γ



^{123}Sb(^{52}Cr,4nγ) 1993Ca02

Level Scheme (continued)

Intensities: Relative I_γ

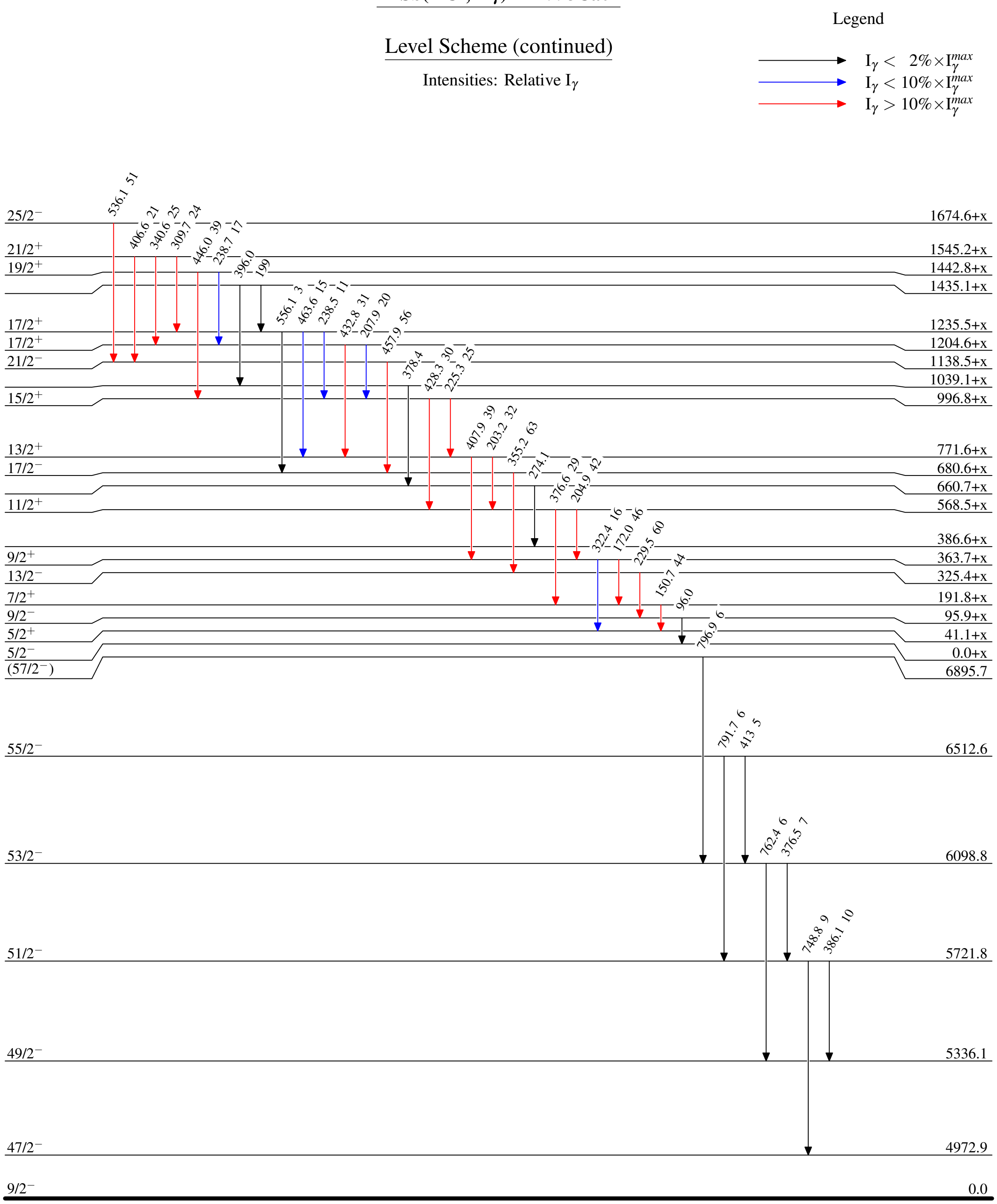


$^{171}_{75}Re_{96}$

^{123}Sb(^{52}Cr,4nγ) 1993Ca02

Level Scheme (continued)

Intensities: Relative I_γ

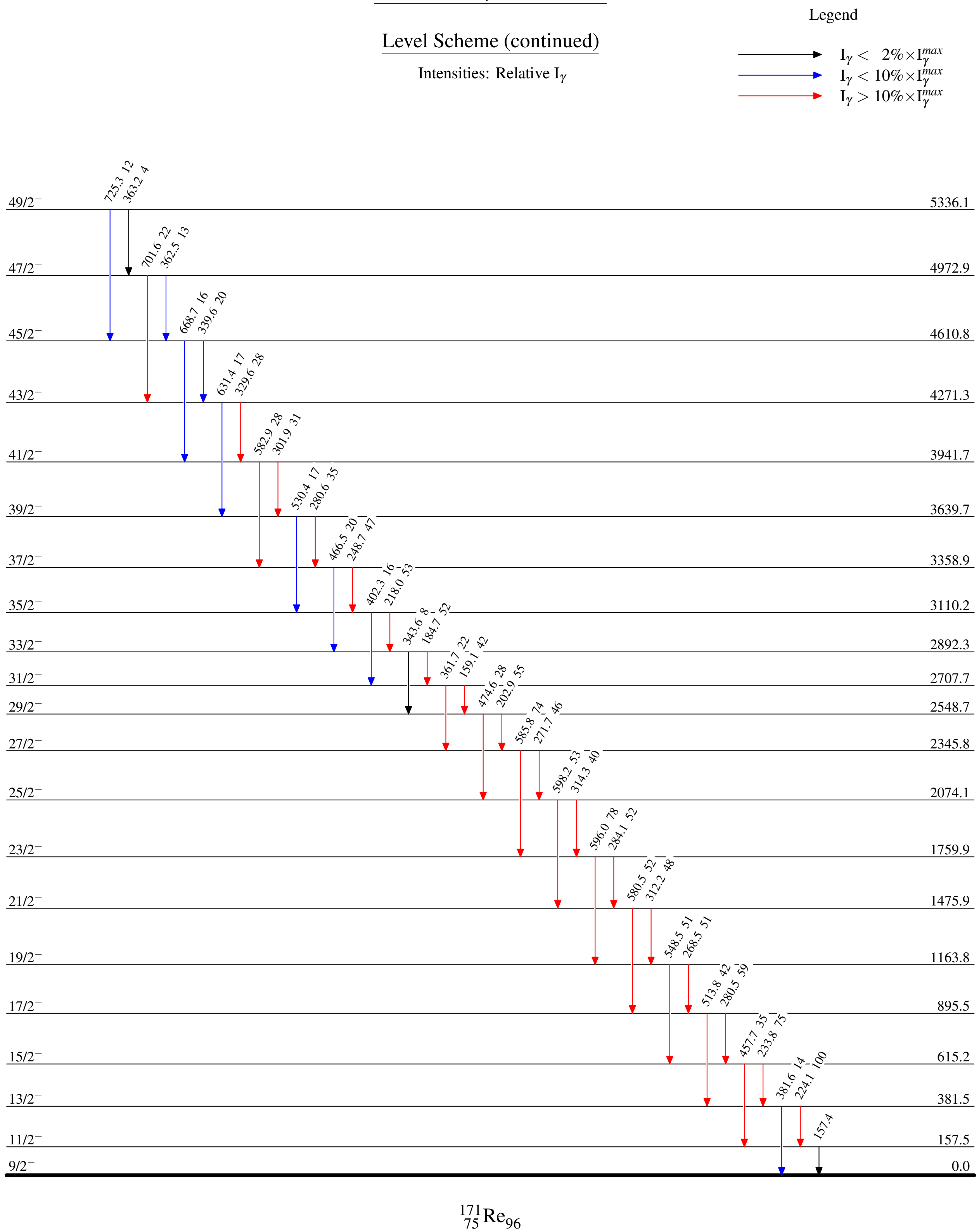


$^{171}_{75}Re_{96}$

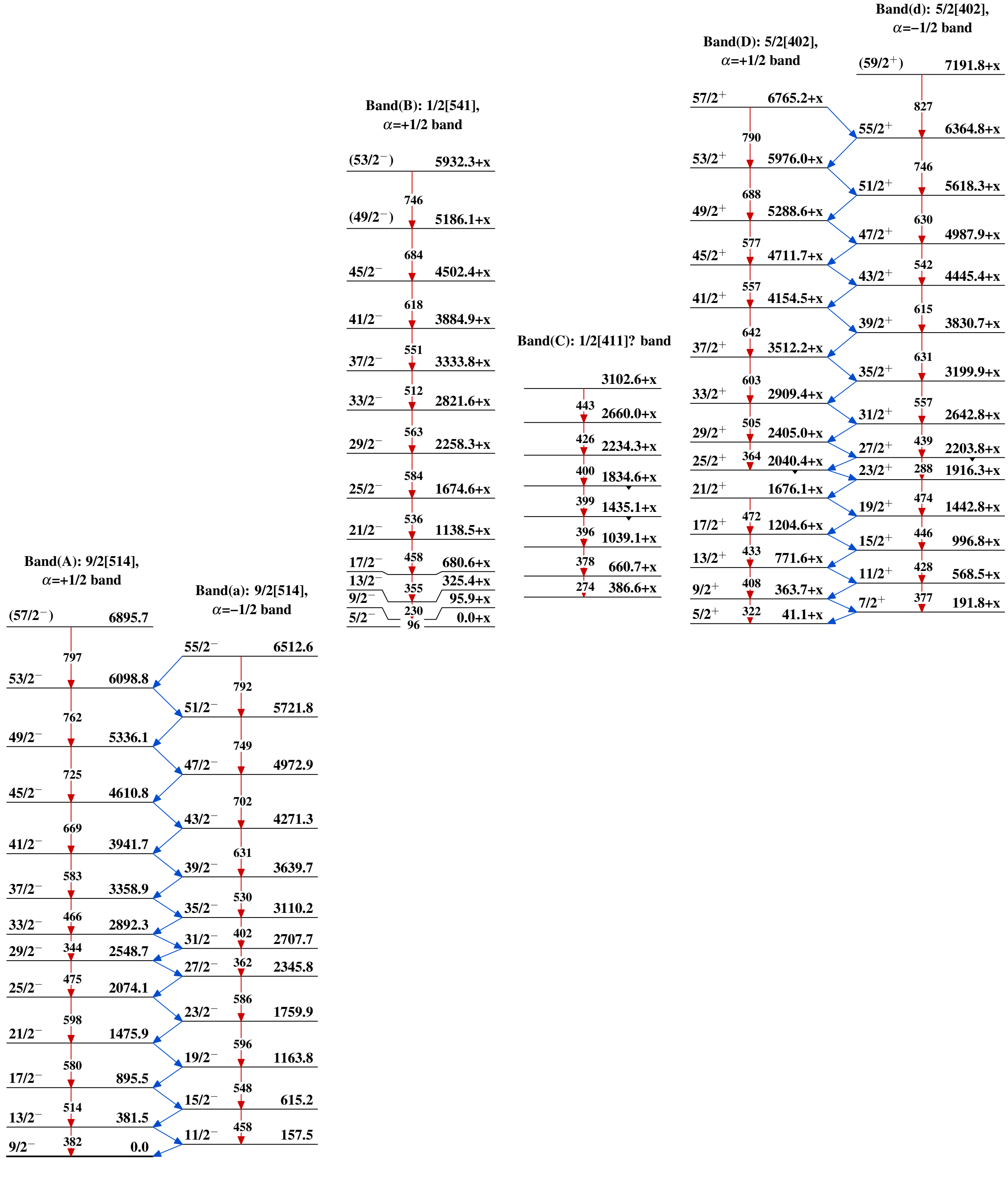
$^{123}Sb(^{52}Cr,4n\gamma)$ 1993Ca02

Level Scheme (continued)

Intensities: Relative I_γ

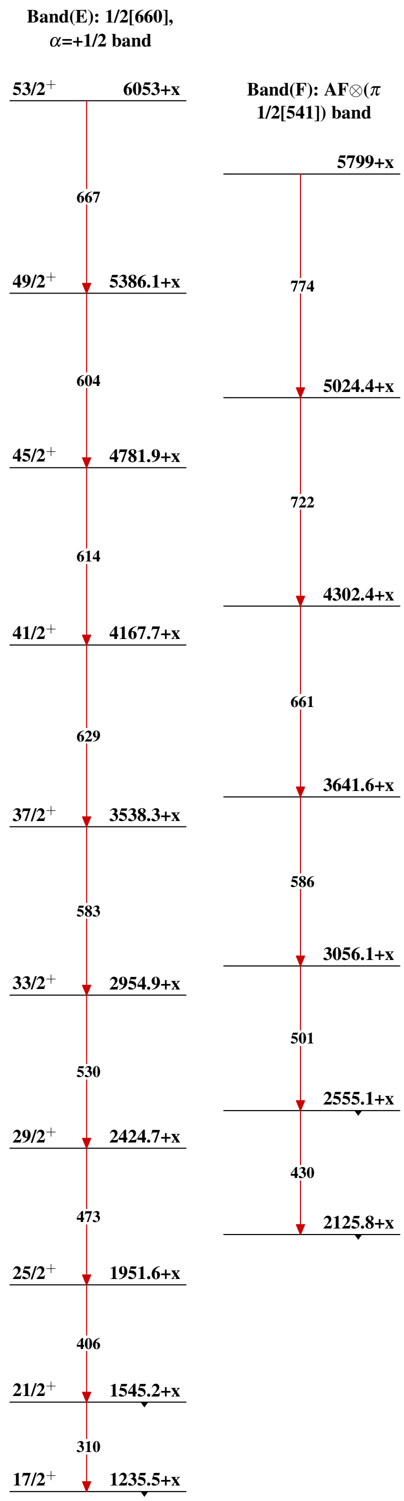


$^{123}Sb(^{52}Cr,4n\gamma)$ 1993Ca02



$^{171}_{75}Re_{96}$

^{123}Sb(^{52}Cr,4nγ) 1993Ca02 (continued)



$^{171}_{75}Re_{96}$