^{124}Sn(^{51}V,^{6}nγ) 2006Ha46

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 109, 2033 (2008)	15-Jun-2008

E=228 MeV. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma\gamma(\theta)$ using GAMMASPHERE array (100 Compton-suppressed HPGE detectors) and a 80 ns software gate on prompt γ rays. Interpreted rotational band structures based on cranked shell model calculations.

^{169}Ta Levels

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
0.0[d]	5/2+	1430.5[j] 3	21/2−	3053.5[d] 3	33/2+	4728.8[&] 5	(43/2−)
11.3[f] 4	1/2+	1432.80[b] 18	19/2+	3053.9[@] 4	33/2−	4750.4[d] 4	45/2+
27.4[g] 3	3/2+	1493.52[g] 25	19/2+	3074.7[i] 3	(31/2+)	4860.7[@] 5	45/2−
96.44[e] 13	7/2+	1518.6[&] 3	19/2−	3150.0[a] 4	33/2+	4883.6[i] 5	(43/2+)
135.68[b] 13	7/2+	1580.96[d] 21	21/2+	3152.5[&] 4	31/2−	4903.0[a] 5	(45/2+)
179.8[f] 3	5/2+	1683.0[k] 4	23/2−	3173.3[f] 3	(33/2+)	4946.7[k] 5	47/2−
180.0[@] 4	1/2−#	1697.39[a] 19	21/2+	3176.6[c] 3	33/2+	4948.1[f] 5	(45/2+)
191.8[@] 3	5/2−	1789.14[f] 24	21/2+	3210.6[k] 4	35/2−	5030.9[c] 5	45/2+
219.54[j] 22	9/2−	1820.1[@] 3	25/2−	3241.9[h] 4	33/2−	5111.1[e] 4	(47/2+)
233.3[g] 3	7/2+	1854.92[e] 22	23/2+	3296.7[e] 3	35/2+	5245.3[h] 5	(45/2−)
244.71[d] 13	9/2+	1874.94[c] 24	21/2+	3402.2[b] 4	35/2+	5278.9[b] 6	(47/2+)
297.98[a] 13	9/2+	1976.97[b] 21	23/2+	3440.2[j] 4	37/2−	5305.5[j] 5	49/2−
299.4[@] 3	9/2−	1994.5[j] 4	25/2−	3461.8[g] 4	35/2+	5316.8[l] 6	(47/2+)
336.48[k] 24	11/2−	2017.3[g] 3	23/2+	3540.9[d] 3	37/2+	5354.7[g] 6	(47/2+)
348.2[&] 4	(3/2−)	2035.3[&] 3	23/2−	3620.5[&] 4	35/2−	5391.3[&] 6	(47/2−)
420.05[e] 14	11/2+	2129.67[d] 22	25/2+	3622.1[i] 4	(35/2+)	5449.8[d] 4	(49/2+)
466.0[f] 3	9/2+	2205.64[c] 21	25/2+	3652.7[a] 4	(37/2+)	5556.8[@] 5	49/2−
468.5[&] 3	(7/2−)	2217.7[i] 3	(23/2+)	3663.3[@] 4	37/2−	5591.9[i] 5	(47/2+)
487.62[b] 14	11/2+	2257.27[a] 22	25/2+	3689.2[f] 3	(37/2+)	5627.3[a] 6	(49/2+)
506.61[j] 24	13/2−	2262.0[k] 4	27/2−	3698.5[k] 4	39/2−	5642.2[f] 5	(49/2+)
522.2[@] 3	13/2−	2334.9[f] 3	25/2+	3741.7[c] 3	37/2+	5679.0[k] 5	(51/2−)
568.4[g] 3	11/2+	2405.28[e] 22	27/2+	3795.4[h] 4	37/2−	5746.6[c] 5	(49/2+)
616.86[d] 15	13/2+	2412.5[@] 3	29/2−	3829.6[e] 3	39/2+	5834.5[e] 4	(51/2+)
692.3[k] 3	15/2−	2498.82[b] 25	27/2+	3952.0[b] 5	39/2+	5988.0[h] 5	(49/2−)
695.89[a] 15	13/2+	2530.5[g] 3	27/2+	3974.0[j] 5	41/2−	6003.5[l] 8	(51/2+)
723.37[&] 25	(11/2−)	2541.6[h] 4	(25/2−)	4019.8[g] 5	39/2+	6024.2[b] 6	(51/2+)
835.84[e] 16	15/2+	2570.9[j] 4	29/2−	4109.9[d] 4	41/2+	6073.6[j] 5	(53/2−)
848.8[f] 3	13/2+	2602.9[&] 3	27/2−	4137.3[&] 5	(39/2−)	6104.0[g] 6	(51/2+)
858.6[@] 3	17/2−	2623.4[i] 3	(27/2+)	4225.1[i] 4	(39/2+)	6111.3?[&] 8	(51/2−)
924.7[j] 3	17/2−	2634.62[d] 23	29/2+	4230.9[@] 4	41/2−	6194.9[d] 4	(53/2+)
927.89[b] 17	15/2+	2667.39[c] 23	29/2+	4240.2[a] 5	(41/2+)	6315.2[@] 6	53/2−
999.4[g] 3	15/2+	2711.37[a] 25	29/2+	4281.5[k] 5	43/2−	6351.2[f] 7	(53/2+)
1069.57[d] 18	17/2+	2745.4[f] 4	(29/2+)	4285.5[f] 4	(41/2+)	6391.1[a] 6	(53/2+)
1076.4[&] 3	15/2−	2795.4[k] 4	31/2−	4360.8[c] 4	41/2+	6467.4[k] 5	(55/2−)
1150.4[k] 3	19/2−	2844.80[e] 25	31/2+	4438.6[e] 4	43/2+	6521.3[c] 5	(53/2+)
1170.48[a] 17	17/2+	2851.5[h] 3	(29/2−)	4503.7[h] 4	41/2−	6599.2[e] 5	(55/2+)
1296.6[@] 3	21/2−	2940.5[b] 4	31/2+	4582.0[b] 5	(43/2+)	6742.7[l] 9	(55/2+)
1304.25[f] 25	17/2+	2986.5[g] 4	31/2+	4601.4[j] 5	45/2−	6812.4[b] 8	(55/2+)
1321.07[e] 19	19/2+	3003.5[j] 4	33/2−	4651.4[g] 5	43/2+	6887.7[g] 8	(55/2+)

Continued on next page (footnotes at end of table)

^{124}Sn(^{51}V,^{6}nγ) 2006Ha46 (continued)

^{169}Ta Levels (continued)

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
6900.9[j] 6	(57/2⁻)	7409.2[e] 5	(59/2⁺)	8279.2?[e] 7	(63/2⁺)	9635.0[d] 8	(69/2⁺)
6978.2[d] 5	(57/2⁺)	7789.6[j] 6	(61/2⁻)	8694.8[d] 6	(65/2⁺)	9886.8[@] 10	(69/2⁻)
7128.8[@] 6	(57/2⁻)	7809.8[d] 5	(61/2⁺)	8745.2[j] 8	(65/2⁻)	10154.6[k] 10	(71/2⁻)
7194.8[a] 8	(57/2⁺)	7993.6[@] 6	(61/2⁻)	8913.2[@] 8	(65/2⁻)	10916.6[@] 11	(73/2⁻)
7309.7[k] 6	(59/2⁻)	8182.2[c] 9	(61/2⁺)	9085.2[c] 10	(65/2⁺)	11992.6?[@] 12	(77/2⁻)
7327.6[c] 7	(57/2⁺)	8206.9[k] 6	(63/2⁻)	9158.0[k] 8	(67/2⁻)		

† From least-squares fit to Eγ.

‡ Authors′ values, based on deduced band structures and transition multipolarities, and alignment and band-crossing frequency arguments. these differ from adopted values only insofar As all adopted values are given In parentheses.

Differs from adopted Jπ=(5/2⁺); see discussion In Adopted Levels.

@ Band(A): π 1/2[541], α=+1/2 band. Band crossing at ħω=0.30 MeV due to first pair of $i_{13/2}$ neutrons. Steady gain in alignment suggests subsequent crossing by a second pair of $i_{13/2}$ neutrons.

& Band(a): π 1/2[541], α=−1/2 band. Band crossing at ħω=0.26 MeV due to first pair of $i_{13/2}$ neutrons. Steady gain in alignment suggests subsequent crossing by a second pair of $i_{13/2}$ neutrons.

[a] Band(B): π 7/2[404], α=+1/2 band. First crossing at ħω=0.238 MeV due to first pair of $i_{13/2}$ neutrons, second crossing at ħω=0.37 MeV due to second pair of $i_{13/2}$ neutrons. Above the first crossing there is mixing of 5/2[402] and 7/2[404] configurations.

[b] Band(b): π 7/2[404], α=−1/2 band. See comment on signature partner band.

[c] Band(C): π 1/2[660], α=+1/2 band. Decoupled band. No evidence of wobbling mode of excitation is suggested, although the population intensity of this band is weak.

[d] Band(D): π 5/2[402], α=+1/2 band. First crossing at ħω=0.242 MeV due to first pair of $i_{13/2}$ neutrons, second crossing at ħω=0.37 MeV due to second pair of $i_{13/2}$ neutrons. Above the first crossing there is mixing of 5/2[402] and 7/2[404] configurations.

[e] Band(d): π 5/2[402], α=−1/2 band. See comment on signature partner band.

[f] Band(E): π 1/2[411], α=+1/2 band. First crossing at ħω=0.24 MeV due to first pair of $i_{13/2}$ neutrons, second crossing at ħω=0.37 MeV due to second pair of $i_{13/2}$ neutrons.

[g] Band(e): π 1/2[411], α=−1/2 band. See comment on signature partner band.

[h] Band(F): Band based on (25/2⁻), α=+1/2. This band interacts strongly with 1/2[541] band. At low-spins the configuration may be π $h_{9/2}$(first pair of $i_{13/2}$ neutrons). At higher spins (J>35/2), it seems to be a continuation of 1/2[541] band. Band crossing at ħω ≈ 0.37 MeV due to second pair of $i_{13/2}$ neutrons.

[i] Band(G): π$h_{9/2}$ ν$i_{13/2}$ ν$p_{3/2}$? band. Jπ values are from figure 1 (proposed level scheme) of 2006Ha46 and reflect the authors′ preference for 23/2⁺ over 21/2⁻ for the lowest-energy level observed In this band, As discussed In their text. The different values appearing in the summary of transition properties In table I of the original publication were based on the less-favored 21/2⁻ option; these were erroneous and were subsequently corrected In an erratum. stromg feeding to 1/2[541] band.

[j] Band(H): π 9/2[514], α=+1/2 band. Band crossing at ħω=0.24 MeV due to first pair of $i_{13/2}$ neutrons. Steady gain in alignment suggests crossing by a second pair of $i_{13/2}$ neutrons.

[k] Band(h): π 9/2[514], α=−1/2 band. See comment for α=+1/2 signature partner band.

[l] Band(I): band fragment. This band is built as a side band above the 43/2⁺ state in 1/2[411] band.

^{124}Sn(^{51}V,^{6}nγ) 2006Ha46 (continued)

$\gamma(^{169}Ta)$

E_γ[†]	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	Comments
11.8[a]	<1	191.8	5/2$^-$	180.0	1/2$^-$		
53.0[a] 5		233.3	7/2$^+$	179.8	5/2$^+$		
96.4 2	≈45[@]	96.44	7/2$^+$	0.0	5/2$^+$	D	$R_{\gamma\gamma(\theta)}$=0.55 9.
107.6 2	36 2	299.4	9/2$^-$	191.8	5/2$^-$		$R_{\gamma\gamma(\theta)}$=0.63 4; far too low for ΔJ=2 γ required by level scheme.
109.0 2	10.3[#] 5	244.71	9/2$^+$	135.68	7/2$^+$	D	$R_{\gamma\gamma(\theta)}$=0.53 9.
116.9 2	≈62[#]	336.48	11/2$^-$	219.54	9/2$^-$	D	$R_{\gamma\gamma(\theta)}$=0.67 2.
120.3 2	1.4 2	468.5	(7/2$^-$)	348.2	(3/2$^-$)		
122.1 2	4.8 5	420.05	11/2$^+$	297.98	9/2$^+$		
123.0 2		219.54	9/2$^-$	96.44	7/2$^+$	D	$R_{\gamma\gamma(\theta)}$=0.79 5.
129.2 2	4.1 3	616.86	13/2$^+$	487.62	11/2$^+$		
135.7 2	≈45[@]	135.68	7/2$^+$	0.0	5/2$^+$	D	$R_{\gamma\gamma(\theta)}$=0.64 3.
140.0 2	1.7 4	835.84	15/2$^+$	695.89	13/2$^+$		
148.3 2	59[#] 2	244.71	9/2$^+$	96.44	7/2$^+$	D	$R_{\gamma\gamma(\theta)}$=0.68 4.
152.4 2	≈26[#]	179.8	5/2$^+$	27.4	3/2$^+$	D+Q	$R_{\gamma\gamma(\theta)}$=0.71 5.
152.6 2	≈37[@]	180.0	1/2$^-$	27.4	3/2$^+$		$R_{\gamma\gamma(\theta)}$=0.88 6; too high for ΔJ=1, Δπ=yes transition implied by placement In level scheme.
162.3 2	≈30[#]	297.98	9/2$^+$	135.68	7/2$^+$	D	$R_{\gamma\gamma(\theta)}$=0.64 4.
164.4 2	≈42[@]	191.8	5/2$^-$	27.4	3/2$^+$	D	$R_{\gamma\gamma(\theta)}$=0.66 4.
168.2 5	<1	348.2	(3/2$^-$)	180.0	1/2$^-$		
168.5 2	≈5[#]	179.8	5/2$^+$	11.3	1/2$^+$	(Q)	$R_{\gamma\gamma(\theta)}$=0.9 2.
168.7 2	≈38[@]	180.0	1/2$^-$	11.3	1/2$^+$		$R_{\gamma\gamma(\theta)}$=0.90 5; interpreted by authors As D, ΔJ=0.
169.1 2	1.7 2	468.5	(7/2$^-$)	299.4	9/2$^-$		
170.2 2	92 4	506.61	13/2$^-$	336.48	11/2$^-$	D+Q	$R_{\gamma\gamma(\theta)}$=0.75 3.
175.3 2	62 1	420.05	11/2$^+$	244.71	9/2$^+$	D+Q	$R_{\gamma\gamma(\theta)}$=0.73 4.
178		2844.80	31/2$^+$	2667.39	29/2$^+$		E_γ: from fig. 1 of 2006Ha46; absent In table I.
185.5 2	2.7 3	522.2	13/2$^-$	336.48	11/2$^-$		$R_{\gamma\gamma(\theta)}$=0.86 9.
185.6 2	83 3	692.3	15/2$^-$	506.61	13/2$^-$	D+Q	$R_{\gamma\gamma(\theta)}$=0.74 2.
189.6 2	23[#] 1	487.62	11/2$^+$	297.98	9/2$^+$	D	$R_{\gamma\gamma(\theta)}$=0.70 4.
196.8 2	37 1	616.86	13/2$^+$	420.05	11/2$^+$	D	$R_{\gamma\gamma(\theta)}$=0.69 4.
201.0 5	<1	723.37	(11/2$^-$)	522.2	13/2$^-$		
201.5 2	≈6.6[#]	297.98	9/2$^+$	96.44	7/2$^+$	D	$R_{\gamma\gamma(\theta)}$=0.71 6.
205.8 2	49[#]	233.3	7/2$^+$	27.4	3/2$^+$		$R_{\gamma\gamma(\theta)}$=0.80 5.
206.9 2	40 5	3210.6	35/2$^-$	3003.5	33/2$^-$		$R_{\gamma\gamma(\theta)}$=0.68 2 for 207.9γ+206.9γ.
207.9 2	42 4	3003.5	33/2$^-$	2795.4	31/2$^-$		$R_{\gamma\gamma(\theta)}$=0.68 4 for 207.9γ+206.9γ.
208.4 2	14.0 7	695.89	13/2$^+$	487.62	11/2$^+$	D+Q	$R_{\gamma\gamma(\theta)}$=0.77 5.
208.8 2	15 2	3053.5	33/2$^+$	2844.80	31/2$^+$		$R_{\gamma\gamma(\theta)}$=0.69 3 for 208.8γ+210.2γ.
210.2 2	17.1 8	2844.80	31/2$^+$	2634.62	29/2$^+$		$R_{\gamma\gamma(\theta)}$=0.69 3 for 208.8γ+210.2γ.
216.7 2	1.4 1	723.37	(11/2$^-$)	506.61	13/2$^-$		
218.9 2	25 1	835.84	15/2$^+$	616.86	13/2$^+$	D+Q	$R_{\gamma\gamma(\theta)}$=0.74 4.
222.8 2	100 4	522.2	13/2$^-$	299.4	9/2$^-$		$R_{\gamma\gamma(\theta)}$=0.81 3.
224.6 2	33 4	2795.4	31/2$^-$	2570.9	29/2$^-$		$R_{\gamma\gamma(\theta)}$=0.74 2 for 224.6γ+225.6γ.
225.6 2	58 4	1150.4	19/2$^-$	924.7	17/2$^-$		$R_{\gamma\gamma(\theta)}$=0.74 2 for 224.6γ+225.6γ.
229.3 2	15.9 7	2634.62	29/2$^+$	2405.28	27/2$^+$	D	$R_{\gamma\gamma(\theta)}$=0.68 6.
229.6 2	33 2	3440.2	37/2$^-$	3210.6	35/2$^-$	D+Q	$R_{\gamma\gamma(\theta)}$=0.72 5.
232.0 2	12.6 9	927.89	15/2$^+$	695.89	13/2$^+$	D+Q	$R_{\gamma\gamma(\theta)}$=0.72 5. x.
232.4 2	70 3	924.7	17/2$^-$	692.3	15/2$^-$	D+Q	$R_{\gamma\gamma(\theta)}$=0.85 4.
232.6 2	25 2	466.0	9/2$^+$	233.3	7/2$^+$	D	$R_{\gamma\gamma(\theta)}$=0.61 4.
233.8 2	15.3 7	1069.57	17/2$^+$	835.84	15/2$^+$	D+Q	$R_{\gamma\gamma(\theta)}$=0.83 5.
241.6 2	4.9 5	2498.82	27/2$^+$	2257.27	25/2$^+$		$R_{\gamma\gamma(\theta)}$=0.85 5 for 241.6γ+242.5γ+242.9γ.
242.5 2	10.2 6	1170.48	17/2$^+$	927.89	15/2$^+$		$R_{\gamma\gamma(\theta)}$=0.85 5 for 241.6+242.5γ+242.9γ.

Continued on next page (footnotes at end of table)

^{124}Sn(^{51}V,^{6}nγ) 2006Ha46 (continued)

γ(^{169}Ta) (continued)

E_γ[†]	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	Comments
242.9 *2*	5.7[#] *6*	487.62	11/2$^+$	244.71	9/2$^+$		$R_{\gamma\gamma(\theta)}$=0.85 *5* for 241.6+242.5+242.9.
243.1 *2*	13.1 *6*	3296.7	35/2$^+$	3053.5	33/2$^+$		$R_{\gamma\gamma(\theta)}$=0.69 *3* for 243.1γ+244.3γ.
244.3 *2*	8.3 *8*	3540.9	37/2$^+$	3296.7	35/2$^+$		$R_{\gamma\gamma(\theta)}$=0.69 *3* for 243.1γ+244.3γ.
244.7 *2*	11.3[#] *8*	244.71	9/2$^+$	0.0	5/2$^+$		
251.5 *2*	13.2 *7*	1321.07	19/2$^+$	1069.57	17/2$^+$	D+Q	$R_{\gamma\gamma(\theta)}$=0.78 *5*.
252.4 *2*	46 *2*	1683.0	23/2$^-$	1430.5	21/2$^-$	D+Q	$R_{\gamma\gamma(\theta)}$=0.76 *3*.
254.9 *2*	10.2 *7*	723.37	(11/2$^-$)	468.5	(7/2$^-$)		$R_{\gamma\gamma(\theta)}$=0.85 *4*.
258.0 *2*	27 *2*	3698.5	39/2$^-$	3440.2	37/2$^-$	D+Q	$R_{\gamma\gamma(\theta)}$=0.71 *3*.
259.8 *2*	12.7 *6*	1580.96	21/2$^+$	1321.07	19/2$^+$	D+Q	$R_{\gamma\gamma(\theta)}$=0.73 *5*.
262.2 *2*	7.5 *6*	1432.80	19/2$^+$	1170.48	17/2$^+$		$R_{\gamma\gamma(\theta)}$=0.69 *7* for 264.6γ+262.2γ.
262.2 *2*	3.6 *3*	2667.39	29/2$^+$	2405.28	27/2$^+$		
264.6 *2*	6.2 *7*	1697.39	21/2$^+$	1432.80	19/2$^+$		$R_{\gamma\gamma(\theta)}$=0.69 *7* for 264.6γ+262.2γ.
267.4 *2*	31 *2*	2262.0	27/2$^-$	1994.5	25/2$^-$	D(+Q)	$R_{\gamma\gamma(\theta)}$=0.69 *3*.
274.0 *2*	13.6 *8*	1854.92	23/2$^+$	1580.96	21/2$^+$		$R_{\gamma\gamma(\theta)}$=0.54 *4* for 274.0γ+274.7γ+275.5γ.
274.7 *2*	11.6 *4*	2129.67	25/2$^+$	1854.92	23/2$^+$		$R_{\gamma\gamma(\theta)}$=0.54 *4* for 274.0γ+274.7γ+275.5γ.
275.4 *2*	20 *1*	3974.0	41/2$^-$	3698.5	39/2$^-$	D+Q	$R_{\gamma\gamma(\theta)}$=0.75 *5*.
275.5 *2*	10.3 *9*	2405.28	27/2$^+$	2129.67	25/2$^+$		$R_{\gamma\gamma(\theta)}$=0.54 *4* for 274.0γ+274.7γ+275.5γ.
275.8 *2*	3.6 *4*	695.89	13/2$^+$	420.05	11/2$^+$	D+Q	$R_{\gamma\gamma(\theta)}$=0.84 *6*.
276.7 *2*	3.8 *3*	468.5	(7/2$^-$)	191.8	5/2$^-$	Q(+D)	$R_{\gamma\gamma(\theta)}$=0.95 *6*.
279.5 *2*	4.9 *5*	1976.97	23/2$^+$	1697.39	21/2$^+$		$R_{\gamma\gamma(\theta)}$=0.79 *5* for 280.2γ+279.5γ.
280.1 *2*	57 *2*	1430.5	21/2$^-$	1150.4	19/2$^-$	D+Q	$R_{\gamma\gamma(\theta)}$=0.82 *5*.
280.2 *2*	6.2 *6*	2257.27	25/2$^+$	1976.97	23/2$^+$		$R_{\gamma\gamma(\theta)}$=0.79 *5* for 280.2γ+279.5γ.
280.4 *2*	10.2 *8*	848.8	13/2$^+$	568.4	11/2$^+$	D	$R_{\gamma\gamma(\theta)}$=0.65 *6*.
280.4 *2*	5.3 *8*	4109.9	41/2$^+$	3829.6	39/2$^+$	D	$R_{\gamma\gamma(\theta)}$=0.63 *5*.
286.3 *2*	26 *2*	466.0	9/2$^+$	179.8	5/2$^+$		$R_{\gamma\gamma(\theta)}$=0.80 *4*.
287.0 *2*	24 *2*	506.61	13/2$^-$	219.54	9/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=1.2 *1*.
288.6 *2*	6.7 *7*	3829.6	39/2$^+$	3540.9	37/2$^+$	D+Q	$R_{\gamma\gamma(\theta)}$=0.67 *6*.
295.7 *2*	2.1 *2*	1789.14	21/2$^+$	1493.52	19/2$^+$		
298.0 *2*	≈11[#]	297.98	9/2$^+$	0.0	5/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=1.00 *6*.
304.8 *2*	2.6 *2*	1304.25	17/2$^+$	999.4	15/2$^+$		
305.9 *2*	1.6 *2*	2711.37	29/2$^+$	2405.28	27/2$^+$		
307.4 *2*	13.9 *7*	4281.5	43/2$^-$	3974.0	41/2$^-$	D+Q	$R_{\gamma\gamma(\theta)}$=0.72 *2*.
309.0 *2*	32 *2*	2570.9	29/2$^-$	2262.0	27/2$^-$	D+Q	$R_{\gamma\gamma(\theta)}$=0.72 *4*.
309.9 *2*	1.3 *2*	2851.5	(29/2$^-$)	2541.6	(25/2$^-$)		
311.0 *2*	7.3 *6*	927.89	15/2$^+$	616.86	13/2$^+$	D+Q	$R_{\gamma\gamma(\theta)}$=0.80 *9*.
311.5 *2*	41 *2*	1994.5	25/2$^-$	1683.0	23/2$^-$	D+Q	$R_{\gamma\gamma(\theta)}$=0.82 *4*.
311.8 *2*	4.5 *8*	4750.4	45/2$^+$	4438.6	43/2$^+$		
319.8 *2*	10.4 *6*	4601.4	45/2$^-$	4281.5	43/2$^-$	D	$R_{\gamma\gamma(\theta)}$=0.65 *4*.
323.7 *2*	27 *2*	420.05	11/2$^+$	96.44	7/2$^+$		$R_{\gamma\gamma(\theta)}$=0.81 *5*.
328.8 *2*	5.3 *6*	4438.6	43/2$^+$	4109.9	41/2$^+$	D	$R_{\gamma\gamma(\theta)}$=0.61 *6*.
330.5 *2*	2.8 *3*	2205.64	25/2$^+$	1874.94	21/2$^+$		
334.7 *2*	3.9 *4*	1170.48	17/2$^+$	835.84	15/2$^+$		
335.1 *2*	44 *3*	568.4	11/2$^+$	233.3	7/2$^+$		$R_{\gamma\gamma(\theta)}$=0.83 *4*.
336.4 *2*	99 *4*	858.6	17/2$^-$	522.2	13/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=0.89 *3*.
338.6 *2*	2.7 *6*	5449.8	(49/2$^+$)	5111.1	(47/2$^+$)		
345.4 *2*	7.6 *5*	4946.7	47/2$^-$	4601.4	45/2$^-$	D	$R_{\gamma\gamma(\theta)}$=0.55 *4*.
352.0 *2*	16.8[#] *9*	487.62	11/2$^+$	135.68	7/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=0.92 *5*.
352.1 *2*	1.8 *2*	858.6	17/2$^-$	506.61	13/2$^-$		
353.0 *2*	13.9 *7*	1076.4	15/2$^-$	723.37	(11/2$^-$)	Q	$R_{\gamma\gamma(\theta)}$=0.99 *5*.
355.9 *2*	46 *2*	692.3	15/2$^-$	336.48	11/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=0.94 *2*.
358.8 *2*	6.2 *3*	5305.5	49/2$^-$	4946.7	47/2$^-$	D	$R_{\gamma\gamma(\theta)}$=0.61 *5*.
360.3 *2*	1.8 *3*	6194.9	(53/2$^+$)	5834.5	(51/2$^+$)		
360.6 *2*	3.1 *5*	5111.1	(47/2$^+$)	4750.4	45/2$^+$	D+Q	$R_{\gamma\gamma(\theta)}$=0.76 *5*.
363.3 *2*	4.1 *5*	1432.80	19/2$^+$	1069.57	17/2$^+$		
372.2 *2*	59 *2*	616.86	13/2$^+$	244.71	9/2$^+$		$R_{\gamma\gamma(\theta)}$=0.85 *4*.

Continued on next page (footnotes at end of table)

^{124}Sn(^{51}V,^{6}nγ) 2006Ha46 (continued)

γ(^{169}Ta) (continued)

E_γ †	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.&	Comments
373.4 *2*	3.1 *2*	5679.0	(51/2$^-$)	5305.5	49/2$^-$		
376.4 *2*	3.6 *4*	1697.39	21/2$^+$	1321.07	19/2$^+$		
377.0 *5*	<1	2711.37	29/2$^+$	2334.9	25/2$^+$		
381.4 *2*	1.7 *2*	1874.94	21/2$^+$	1493.52	19/2$^+$		
382.7 *2*	33 *3*	848.8	13/2$^+$	466.0	9/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=0.90 *5*.
384.8 *2*	2.2 *3*	5834.5	(51/2$^+$)	5449.8	(49/2$^+$)	D	$R_{\gamma\gamma(\theta)}$=0.59 *5*.
386.9 *2*	1.5 *2*	723.37	(11/2$^-$)	336.48	11/2$^-$		
390.3 *2*	3.1 *4*	3241.9	33/2$^-$	2851.5	(29/2$^-$)		
394.6 *2*	2.7 *2*	6073.6	(53/2$^-$)	5679.0	(51/2$^-$)		
397.9 *2*	26 *2*	695.89	13/2$^+$	297.98	9/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=0.91 *5*.
404.0[a] *5*	<1	6599.2	(55/2$^+$)	6194.9	(53/2$^+$)		
405.7 *2*	1.2 *2*	2623.4	(27/2$^+$)	2217.7	(23/2$^+$)		
410.1 *2*	3.3 *3*	2667.39	29/2$^+$	2257.27	25/2$^+$		
410.5 *2*	2.6 *2*	2745.4	(29/2$^+$)	2334.9	25/2$^+$		
415.3 *2*	24 *1*	3210.6	35/2$^-$	2795.4	31/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=1.07 *4*.
415.9 *2*	54 *2*	835.84	15/2$^+$	420.05	11/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=0.96 *5*.
416.5 *2*	15.1 *9*	2205.64	25/2$^+$	1789.14	21/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=0.95 *4*.
418.1 *2*	59 *3*	924.7	17/2$^-$	506.61	13/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=0.97 *3*.
418.8 *2*	17 *1*	3053.5	33/2$^+$	2634.62	29/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=1.0 *1*.
421.4 *2*	3.2 *2*	3663.3	37/2$^-$	3241.9	33/2$^-$		
424.0 *2*	8.7 *6*	723.37	(11/2$^-$)	299.4	9/2$^-$		$R_{\gamma\gamma(\theta)}$=0.90 *5*.
428[a]	<1	3173.3	(33/2$^+$)	2745.4	(29/2$^+$)	Q	$R_{\gamma\gamma(\theta)}$=0.97 *9*.
429.0 *2*	3.5 *5*	2634.62	29/2$^+$	2205.64	25/2$^+$		
431.0 *2*	37 *3*	999.4	15/2$^+$	568.4	11/2$^+$	(Q)	$R_{\gamma\gamma(\theta)}$=0.89 *4*.
431[a]	<1	3176.6	33/2$^+$	2745.4	(29/2$^+$)		
432.6 *2*	19 *1*	3003.5	33/2$^-$	2570.9	29/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=0.92 *5*.
436.7 *2*	17 *1*	3440.2	37/2$^-$	3003.5	33/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=1.03 *7*.
438.1 *2*	94 *4*	1296.6	21/2$^-$	858.6	17/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=0.97 *3*.
438.6 *2*	7.1 *6*	3150.0	33/2$^+$	2711.37	29/2$^+$		$R_{\gamma\gamma(\theta)}$=1.03 *6* for 438.6γ+440.2γ+441.7γ.
438.9 *2*	2.3 *3*	2851.5	(29/2$^-$)	2412.5	29/2$^-$		
439.6 *2*	20 *1*	2844.80	31/2$^+$	2405.28	27/2$^+$		$R_{\gamma\gamma(\theta)}$=1.11 *6* for an unresolved doublet.
440.2 *2*	29 *2*	927.89	15/2$^+$	487.62	11/2$^+$		$R_{\gamma\gamma(\theta)}$=1.03 *6* for 438.6γ+440.2γ+441.7γ.
441.7 *2*	7.9 *6*	2940.5	31/2$^+$	2498.82	27/2$^+$		$R_{\gamma\gamma(\theta)}$=1.03 *6* for 438.6γ+440.2γ+441.7γ.
441.9 *2*	17 *1*	1518.6	19/2$^-$	1076.4	15/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=0.97 *3*.
451.3 *2*	3.9 *5*	3074.7	(31/2$^+$)	2623.4	(27/2$^+$)		
451.9 *2*	13.5 *6*	3296.7	35/2$^+$	2844.80	31/2$^+$		$R_{\gamma\gamma(\theta)}$=0.98 *4* for 451.9γ+452.8γ.
452.8 *2*	52 *2*	1069.57	17/2$^+$	616.86	13/2$^+$		$R_{\gamma\gamma(\theta)}$=0.98 *4* for 452.8γ+451.9γ.
454[a]	<1	2711.37	29/2$^+$	2257.27	25/2$^+$		
455.4 *2*	26 *2*	1304.25	17/2$^+$	848.8	13/2$^+$	(Q)	$R_{\gamma\gamma(\theta)}$=0.90 *4*.
456.0 *2*	15.6 *8*	2986.5	31/2$^+$	2530.5	27/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=1.11 *9*.
458.2 *2*	90 *3*	1150.4	19/2$^-$	692.3	15/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=0.93 *3*.
459.9 *2*	3.3 *3*	2334.9	25/2$^+$	1874.94	21/2$^+$		
461.7 *2*	25 *2*	2667.39	29/2$^+$	2205.64	25/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=0.98 *5*.
461.7 *2*	4.4 *3*	3402.2	35/2$^+$	2940.5	31/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=0.97 *5*.
468.0 *2*	4.9 *3*	3620.5	35/2$^-$	3152.5	31/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=1.2 *1*.
474.6 *2*	29 *3*	1170.48	17/2$^+$	695.89	13/2$^+$		$R_{\gamma\gamma(\theta)}$=0.70 *5*; too low for ΔJ=2 required by level scheme.
475.3 *2*	13.5 *7*	3461.8	35/2$^+$	2986.5	31/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=1.19 *8*.
485.0 *2*	21 *2*	1789.14	21/2$^+$	1304.25	17/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=0.99 *5*.
485.2 *2*	47 *2*	1321.07	19/2$^+$	835.84	15/2$^+$		$R_{\gamma\gamma(\theta)}$=1.15 *4* for an unresolved doublet.
487.4 *2*	14 *1*	3540.9	37/2$^+$	3053.5	33/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=1.15 *8*.
488[a]	<1	2745.4	(29/2$^+$)	2257.27	25/2$^+$		
488.0 *2*	19 *1*	3698.5	39/2$^-$	3210.6	35/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=1.1 *1*.
494.3 *2*	34 *3*	1493.52	19/2$^+$	999.4	15/2$^+$		$R_{\gamma\gamma(\theta)}$=0.86 *6*.
502.7 *2*	6.4 *7*	3652.7	(37/2$^+$)	3150.0	33/2$^+$		

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^{124}Sn(^{51}V,^{6}nγ) 2006Ha46 (continued)

γ(^{169}Ta) (continued)

E_γ[†]	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	Comments
504.9 *2*	24 *2*	1432.80	19/2$^+$	927.89	15/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=1.02 *5*.
504.9 *2*	35 *2*	2634.62	29/2$^+$	2129.67	25/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=0.97 *5*.
505.7 *2*	69 *3*	1430.5	21/2$^-$	924.7	17/2$^-$		$R_{\gamma\gamma(\theta)}$=0.87 *4*.
505.8 *2*	10.1 *9*	3173.3	(33/2$^+$)	2667.39	29/2$^+$		
508.4 *2*	10.8 *8*	2205.64	25/2$^+$	1697.39	21/2$^+$		$R_{\gamma\gamma(\theta)}$=1.0 *1* for an unresolved doublet.
509.3 *2*	14 *2*	3176.6	33/2$^+$	2667.39	29/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=1.05 *9*.
511.5 *2*	45 *2*	1580.96	21/2$^+$	1069.57	17/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=0.96 *4*.
512.6 *2*	3.1 *4*	3689.2	(37/2$^+$)	3176.6	33/2$^+$		
513.3 *2*	22 *2*	2530.5	27/2$^+$	2017.3	23/2$^+$		$R_{\gamma\gamma(\theta)}$=0.86 *5*.
515.9 *2*	5.6 *6*	3689.2	(37/2$^+$)	3173.3	(33/2$^+$)		
516.6 *2*	14 *2*	2035.3	23/2$^-$	1518.6	19/2$^-$		$R_{\gamma\gamma(\theta)}$=0.75 *4* for an unresolved doublet.
516.8 *2*	3.1 *5*	4137.3	(39/2$^-$)	3620.5	35/2$^-$		
521.8 *2*	14.2 *9*	2498.82	27/2$^+$	1976.97	23/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=1.2 *1*.
523.4 *2*	87 *5*	1820.1	25/2$^-$	1296.6	21/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=1.04 *3*.
523.9 *2*	29 *3*	2017.3	23/2$^+$	1493.52	19/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=0.94 *5*.
527.0 *2*	30 *2*	1697.39	21/2$^+$	1170.48	17/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=1.01 *4*.
532.6 *2*	82 *5*	1683.0	23/2$^-$	1150.4	19/2$^-$		$R_{\gamma\gamma(\theta)}$=1.02 *2* for 532.6γ+533.3γ.
532.9 *2*	12.7 *5*	3829.6	39/2$^+$	3296.7	35/2$^+$		$R_{\gamma\gamma(\theta)}$=1.06 *5*. for 532.9γ+533.8γ.
533.3 *2*	60 *4*	2795.4	31/2$^-$	2262.0	27/2$^-$		$R_{\gamma\gamma(\theta)}$=1.02 *2* for 532.6γ+533.3γ.
533.8 *2*	44 *4*	1854.92	23/2$^+$	1321.07	19/2$^+$		$R_{\gamma\gamma(\theta)}$=1.06 *5* for 532.9γ+533.8γ.
534.0 *2*	13 *2*	3974.0	41/2$^-$	3440.2	37/2$^-$		$R_{\gamma\gamma(\theta)}$=0.96 *6* for an unresolved doublet.
535[a]	<1	2940.5	31/2$^+$	2405.28	27/2$^+$		
542[a]	<1	3176.6	33/2$^+$	2634.62	29/2$^+$		
544.1 *2*	18 *1*	1976.97	23/2$^+$	1432.80	19/2$^+$		$R_{\gamma\gamma(\theta)}$=0.89 *6*.
544.2 *2*	2.4 *3*	3074.7	(31/2$^+$)	2530.5	27/2$^+$		
546.0 *2*	5.0 *4*	2334.9	25/2$^+$	1789.14	21/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=1.0 *1*.
547.5 *2*	3.9 *5*	3622.1	(35/2$^+$)	3074.7	(31/2$^+$)		
548.7 *2*	43 *2*	2129.67	25/2$^+$	1580.96	21/2$^+$		$R_{\gamma\gamma(\theta)}$=1.08 *5* for 548.7γ+550.4γ. x.
549.7 *2*	8.3 *6*	3152.5	31/2$^-$	2602.9	27/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=1.06 *8*.
549.8 *2*	3.8 *3*	3952.0	39/2$^+$	3402.2	35/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=0.98 *5*.
550.4 *2*	41 *2*	2405.28	27/2$^+$	1854.92	23/2$^+$		$R_{\gamma\gamma(\theta)}$=1.08 *5* for 548.7γ+550.4γ.
553.4 *2*	4.3 *4*	3795.4	37/2$^-$	3241.9	33/2$^-$		
554.1 *2*	6.9 *5*	1076.4	15/2$^-$	522.2	13/2$^-$	D	$R_{\gamma\gamma(\theta)}$=0.64 *6*.
558.0 *2*	9.8 *6*	4019.8	39/2$^+$	3461.8	35/2$^+$		$R_{\gamma\gamma(\theta)}$=1.4 *1*.
560.0 *2*	13.9 *9*	2257.27	25/2$^+$	1697.39	21/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=1.00 *5*.
564.1 *2*	60 *2*	1994.5	25/2$^-$	1430.5	21/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=0.96 *6*.
565.2 *2*	10.2 *7*	3741.7	37/2$^+$	3176.6	33/2$^+$		$R_{\gamma\gamma(\theta)}$=0.8 *1*.
567.5 *2*	12.2 *7*	2602.9	27/2$^-$	2035.3	23/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=1.2 *1*.
567.6 *2*	22 *1*	4230.9	41/2$^-$	3663.3	37/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=0.91 *3*.
568.1 *2*	1.2 *2*	3622.1	(35/2$^+$)	3053.9	33/2$^-$		
568.3 *2*	5.6 *6*	3741.7	37/2$^+$	3173.3	(33/2$^+$)	Q	$R_{\gamma\gamma(\theta)}$=1.2 *2*.
569.0 *2*	15 *1*	4109.9	41/2$^+$	3540.9	37/2$^+$	(Q)	$R_{\gamma\gamma(\theta)}$=0.87 *8*.
570.4 *2*	4.3 *3*	1874.94	21/2$^+$	1304.25	17/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=0.94 *9*.
574.3 *5*	<1	2986.5	31/2$^+$	2412.5	29/2$^-$		
576.5 *2*	53 *2*	2570.9	29/2$^-$	1994.5	25/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=1.06 *5*.
579.0 *2*	75 *3*	2262.0	27/2$^-$	1683.0	23/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=1.00 *3*.
581.8 *2*	10.0 *8*	2711.37	29/2$^+$	2129.67	25/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=1.2 *1*.
583.0 *2*	16 *2*	4281.5	43/2$^-$	3698.5	39/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=0.97 *4*.
587.5 *2*	4.1 *4*	4240.2	(41/2$^+$)	3652.7	(37/2$^+$)		
591.5 *2*	2.6 *3*	4728.8	(43/2$^-$)	4137.3	(39/2$^-$)		
592.3 *2*	79 *4*	2412.5	29/2$^-$	1820.1	25/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=0.98 *3*.
596.3 *2*	6.0 *5*	4285.5	(41/2$^+$)	3689.2	(37/2$^+$)		
603.0 *2*	4.2 *5*	4225.1	(39/2$^+$)	3622.1	(35/2$^+$)		
608.9 *2*	12.7 *5*	4438.6	43/2$^+$	3829.6	39/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=0.92 *6*.

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^{124}Sn(^{51}V,^{6}nγ) 2006Ha46 (continued)

γ(^{169}Ta) (continued)

E_γ[†]	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	Comments
609.4 *2*	37 *3*	3663.3	37/2$^-$	3053.9	33/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=1.13 *4*.
619.1 *2*	10.5 *7*	4360.8	41/2$^+$	3741.7	37/2$^+$		$R_{\gamma\gamma(\theta)}$=0.82 *8*.
624.0[a] *5*	<1	2205.64	25/2$^+$	1580.96	21/2$^+$		
627.4 *2*	11.4 *7*	4601.4	45/2$^-$	3974.0	41/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=1.3 *1*.
629.8 *2*	14.4 *7*	4860.7	45/2$^-$	4230.9	41/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=1.07 *6*.
630.0 *2*	3.1 *3*	4582.0	(43/2$^+$)	3952.0	39/2$^+$		
631.6 *2*	5.6 *5*	4651.4	43/2$^+$	4019.8	39/2$^+$		
635.0 *5*	<1	1493.52	19/2$^+$	858.6	17/2$^-$		
640.6 *2*	11.8 *9*	4750.4	45/2$^+$	4109.9	41/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=1.14 *8*.
641.4 *2*	48 *3*	3053.9	33/2$^-$	2412.5	29/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=1.12 *4*.
658.5 *2*	2.1 *3*	4883.6	(43/2$^+$)	4225.1	(39/2$^+$)		
660.1 *2*	6.0 *4*	1518.6	19/2$^-$	858.6	17/2$^-$	D	$R_{\gamma\gamma(\theta)}$=0.58 *6*.
662.2 *2*	6.6 *7*	3074.7	(31/2$^+$)	2412.5	29/2$^-$		
662.5 *2*	1.7 *2*	5391.3	(47/2$^-$)	4728.8	(43/2$^-$)		
662.6 *2*	3.1 *3*	4948.1	(45/2$^+$)	4285.5	(41/2$^+$)		
662.8 *2*	3.6 *3*	4903.0	(45/2$^+$)	4240.2	(41/2$^+$)		
665.1 *2*	7.9 *5*	4946.7	47/2$^-$	4281.5	43/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=1.2 *1*.
665.4[‡] *2*	2.7[‡] *2*	5316.8	(47/2$^+$)	4651.4	43/2$^+$		
670.1 *2*	7.4 *6*	5030.9	45/2$^+$	4360.8	41/2$^+$		$R_{\gamma\gamma(\theta)}$=0.8 *1*.
672.5 *2*	10.7 *5*	5111.1	(47/2$^+$)	4438.6	43/2$^+$	Q	$R_{\gamma\gamma(\theta)}$=1.10 *8*.
686.7[‡] *5*	<1[‡]	6003.5	(51/2$^+$)	5316.8	(47/2$^+$)		
694.1 *2*	1.4 *2*	5642.2	(49/2$^+$)	4948.1	(45/2$^+$)		
696.1 *2*	9.4 *5*	5556.8	49/2$^-$	4860.7	45/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=1.18 *8*.
696.9 *2*	2.1 *2*	5278.9	(47/2$^+$)	4582.0	(43/2$^+$)		
699.4 *2*	10.3 *7*	5449.8	(49/2$^+$)	4750.4	45/2$^+$		
703.3 *2*	2.1 *2*	5354.7	(47/2$^+$)	4651.4	43/2$^+$		
704.1 *2*	7.7 *4*	5305.5	49/2$^-$	4601.4	45/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=0.96 *5*.
708.3 *2*	6.3 *7*	4503.7	41/2$^-$	3795.4	37/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=1.1 *1*.
708.3 *2*	1.4 *2*	5591.9	(47/2$^+$)	4883.6	(43/2$^+$)		
709.0 *5*	<1	6351.2	(53/2$^+$)	5642.2	(49/2$^+$)		
710.2 *2*	3.6 *3*	2530.5	27/2$^+$	1820.1	25/2$^-$		
715.7 *2*	6.1 *5*	5746.6	(49/2$^+$)	5030.9	45/2$^+$		
720.0[a] *5*	<1	6111.3?	(51/2$^-$)	5391.3	(47/2$^-$)		
720.8 *2*	2.9 *2*	2017.3	23/2$^+$	1296.6	21/2$^-$		
721.5 *2*	2.1 *3*	2541.6	(25/2$^-$)	1820.1	25/2$^-$		
723.4 *2*	7.1 *6*	5834.5	(51/2$^+$)	5111.1	(47/2$^+$)	Q	$R_{\gamma\gamma(\theta)}$=1.04 *9*.
724.3 *2*	2.9 *3*	5627.3	(49/2$^+$)	4903.0	(45/2$^+$)		
732.4 *2*	5.6 *3*	5679.0	(51/2$^-$)	4946.7	47/2$^-$		
738.8 *2*	4.3 *6*	2035.3	23/2$^-$	1296.6	21/2$^-$		
739.2[‡] *5*	<1[‡]	6742.7	(55/2$^+$)	6003.5	(51/2$^+$)		
739.9 *2*	1.7 *3*	3152.5	31/2$^-$	2412.5	29/2$^-$		
741.6 *2*	5.6 *6*	3795.4	37/2$^-$	3053.9	33/2$^-$		$R_{\gamma\gamma(\theta)}$=1.1 *1* for an unresolved doublet.
741.6 *2*	3.5 *6*	5245.3	(45/2$^-$)	4503.7	41/2$^-$		
742.7 *2*	1.7 *4*	5988.0	(49/2$^-$)	5245.3	(45/2$^-$)		
745.1 *2*	5.6 *8*	6194.9	(53/2$^+$)	5449.8	(49/2$^+$)		
745.3 *2*	1.0 *2*	6024.2	(51/2$^+$)	5278.9	(47/2$^+$)		
749.3 *2*	1.1 *2*	6104.0	(51/2$^+$)	5354.7	(47/2$^+$)		
758.4 *2*	4.7 *4*	6315.2	53/2$^-$	5556.8	49/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=1.2 *1*.
763.8 *2*	2.1 *2*	6391.1	(53/2$^+$)	5627.3	(49/2$^+$)		
764.6 *2*	3.6 *5*	6599.2	(55/2$^+$)	5834.5	(51/2$^+$)		
768.2 *2*	4.1 *2*	6073.6	(53/2$^-$)	5305.5	49/2$^-$		
774.7 *2*	2.2 *2*	6521.3	(53/2$^+$)	5746.6	(49/2$^+$)		
782.9 *2*	3.5 *3*	2602.9	27/2$^-$	1820.1	25/2$^-$		
783.3 *2*	4.2 *7*	6978.2	(57/2$^+$)	6194.9	(53/2$^+$)		
783.7 *5*	<1	6887.7	(55/2$^+$)	6104.0	(51/2$^+$)		

Continued on next page (footnotes at end of table)

^{124}Sn(^{51}V,^{6}nγ) 2006Ha46 (continued)

γ(^{169}Ta) (continued)

E_γ[†]	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	Comments
788.2 *5*	<1	6812.4	(55/2$^+$)	6024.2	(51/2$^+$)		
788.4 *2*	3.3 *2*	6467.4	(55/2$^-$)	5679.0	(51/2$^-$)		
803.4 *2*	1.4 *2*	2623.4	(27/2$^+$)	1820.1	25/2$^-$		
803.7 *5*	<1	7194.8	(57/2$^+$)	6391.1	(53/2$^+$)		
806.3 *5*	<1	7327.6	(57/2$^+$)	6521.3	(53/2$^+$)		
810.0 *2*	1.1 *2*	7409.2	(59/2$^+$)	6599.2	(55/2$^+$)		
813.6 *2*	2.8 *4*	7128.8	(57/2$^-$)	6315.2	53/2$^-$		
827.3 *2*	3.3 *1*	6900.9	(57/2$^-$)	6073.6	(53/2$^-$)		
829.4 *2*	4.9 *5*	3241.9	33/2$^-$	2412.5	29/2$^-$	Q	$R_{\gamma\gamma(\theta)}$=1.0 *1*.
831.6 *2*	2.7 *6*	7809.8	(61/2$^+$)	6978.2	(57/2$^+$)		
840.0[a] *5*	<1	4503.7	41/2$^-$	3663.3	37/2$^-$		
842.3 *2*	3.1 *2*	7309.7	(59/2$^-$)	6467.4	(55/2$^-$)		
854.6 *5*	<1	8182.2	(61/2$^+$)	7327.6	(57/2$^+$)		
864.8 *2*	1.5 *1*	7993.6	(61/2$^-$)	7128.8	(57/2$^-$)		
870.0[a] *5*	<1	8279.2?	(63/2$^+$)	7409.2	(59/2$^+$)		
885.0 *2*	1.6 *3*	8694.8	(65/2$^+$)	7809.8	(61/2$^+$)		
888.6 *2*	1.8 *1*	7789.6	(61/2$^-$)	6900.9	(57/2$^-$)		
897.2 *2*	1.4 *1*	8206.9	(63/2$^-$)	7309.7	(59/2$^-$)		
903.0 *5*	<1	9085.2	(65/2$^+$)	8182.2	(61/2$^+$)		
919.6 *5*	<1	8913.2	(65/2$^-$)	7993.6	(61/2$^-$)		
921.0 *2*	1.4 *2*	2217.7	(23/2$^+$)	1296.6	21/2$^-$		
940.0 *5*	<1	9635.0	(69/2$^+$)	8694.8	(65/2$^+$)		
951.1 *5*	<1	9158.0	(67/2$^-$)	8206.9	(63/2$^-$)		
955.6 *5*	<1	8745.2	(65/2$^-$)	7789.6	(61/2$^-$)		
973.6 *5*	<1	9886.8	(69/2$^-$)	8913.2	(65/2$^-$)		
996.6 *5*	<1	10154.6	(71/2$^-$)	9158.0	(67/2$^-$)		
1029.8 *5*	<1	10916.6	(73/2$^-$)	9886.8	(69/2$^-$)		
1031.3 *2*	1.9 *3*	2851.5	(29/2$^-$)	1820.1	25/2$^-$		
1076.0[a] *5*	<1	11992.6?	(77/2$^-$)	10916.6	(73/2$^-$)		

[†] Uncertainty=0.2 keV for most γ rays, 0.5 keV for Iγ<1, Asstated by 2006Ha46. The transition energies shown in parentheses In table I (summary of transition properties) by 2006Ha46 are interpreted by the evaluator as being for tentatively-placed transitions. Details for the 665γ, 687γ and 739γ shown In the proposed level scheme In FIG.1 but absent In the summary of transition properties In table I of 2006Ha46 are taken from an e-mail response to B. Singh on Dec 3, 2006 from D.J. Hartley.

[‡] Absent In table I (summary of transition properties) from 2006Ha46; see general comment on Eγ data.

[#] Estimated by 2006Ha46 from intensity balance and branching ratio. For ΔJ=1, $\Delta\pi$=no transitions, pure M1 assumed (as communicated to B. Singh in an e-mail reply, Dec 3, 2006 from D. J. Hartley).

[@] Estimated by 2006Ha46 from intensity balance. For ΔJ=1, $\Delta\pi$=no transitions, pure M1 assumed (as communicated to B. Singh in an e-mail reply, Dec 3, 2006 from D. J. Hartley).

[&] Assigned by the evaluator (consistent with authors' conclusions) based on measured $R_{\gamma\gamma(\theta)}=W(\theta_f,\phi)/W(\theta_{90^\circ},\phi)$, where $W(\theta_f,\phi)$ is the intensity observed in forward detectors (θ=122°, 130°, 143°, 148° and 163°) and $W(\theta_{90^\circ},\phi)$ is the intensity observed in Gammasphere rings near 90° (θ=79°, 81°, 90°, 99° and 101°); Normalized ratios of approximately 0.6 and 1.0 were observed for known stretched D and stretched Q transitions, respectively.

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

^{124}Sn(^{51}V,^{6}nγ) **2006Ha46**

Level Scheme

Intensities: Relative I_γ

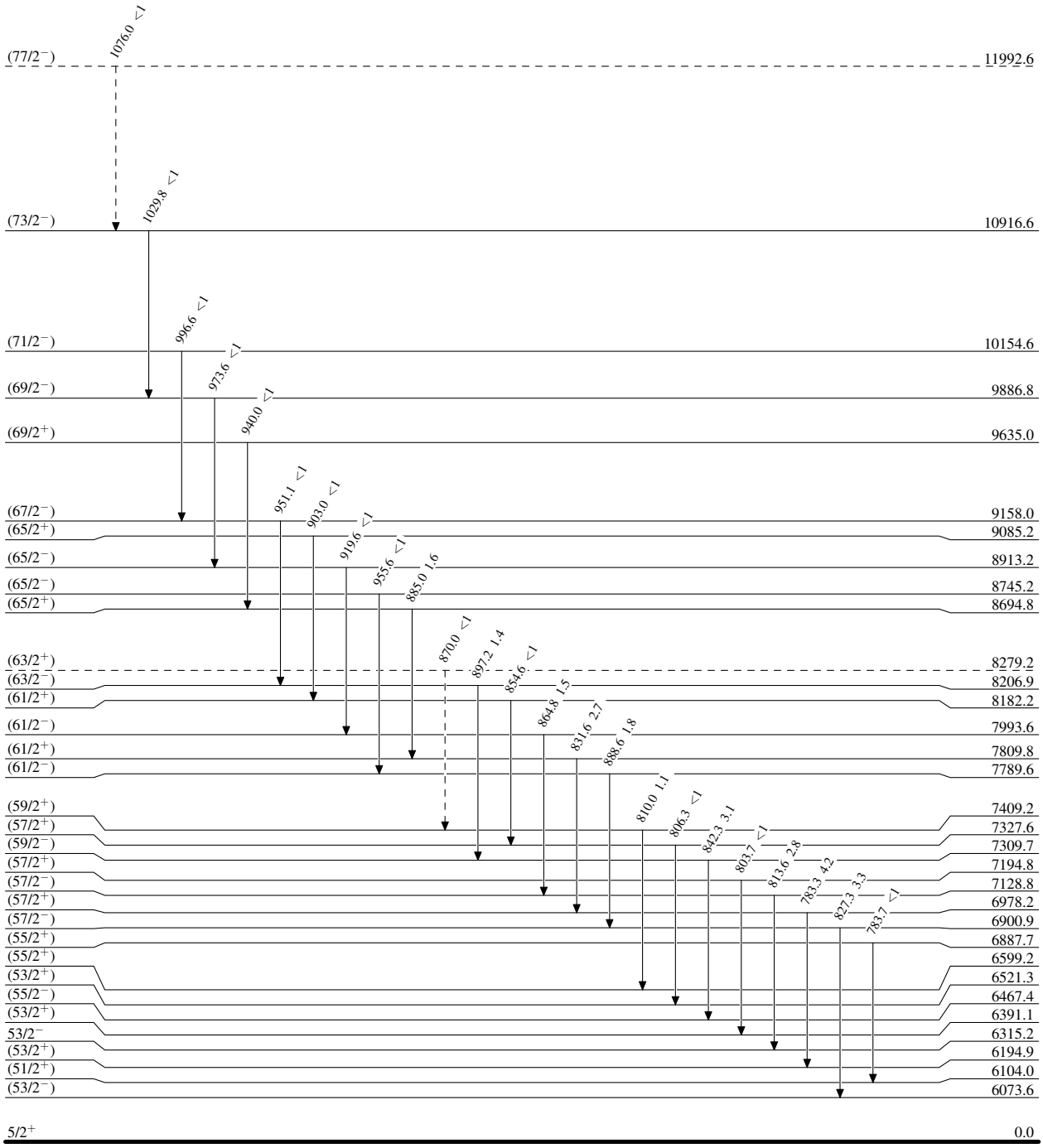
Legend

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

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

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

γ Decay (Uncertain)



$^{169}_{73}Ta_{96}$

^{124}Sn(^{51}V,^{6}nγ) 2006Ha46

Level Scheme (continued)

Intensities: Relative I_γ

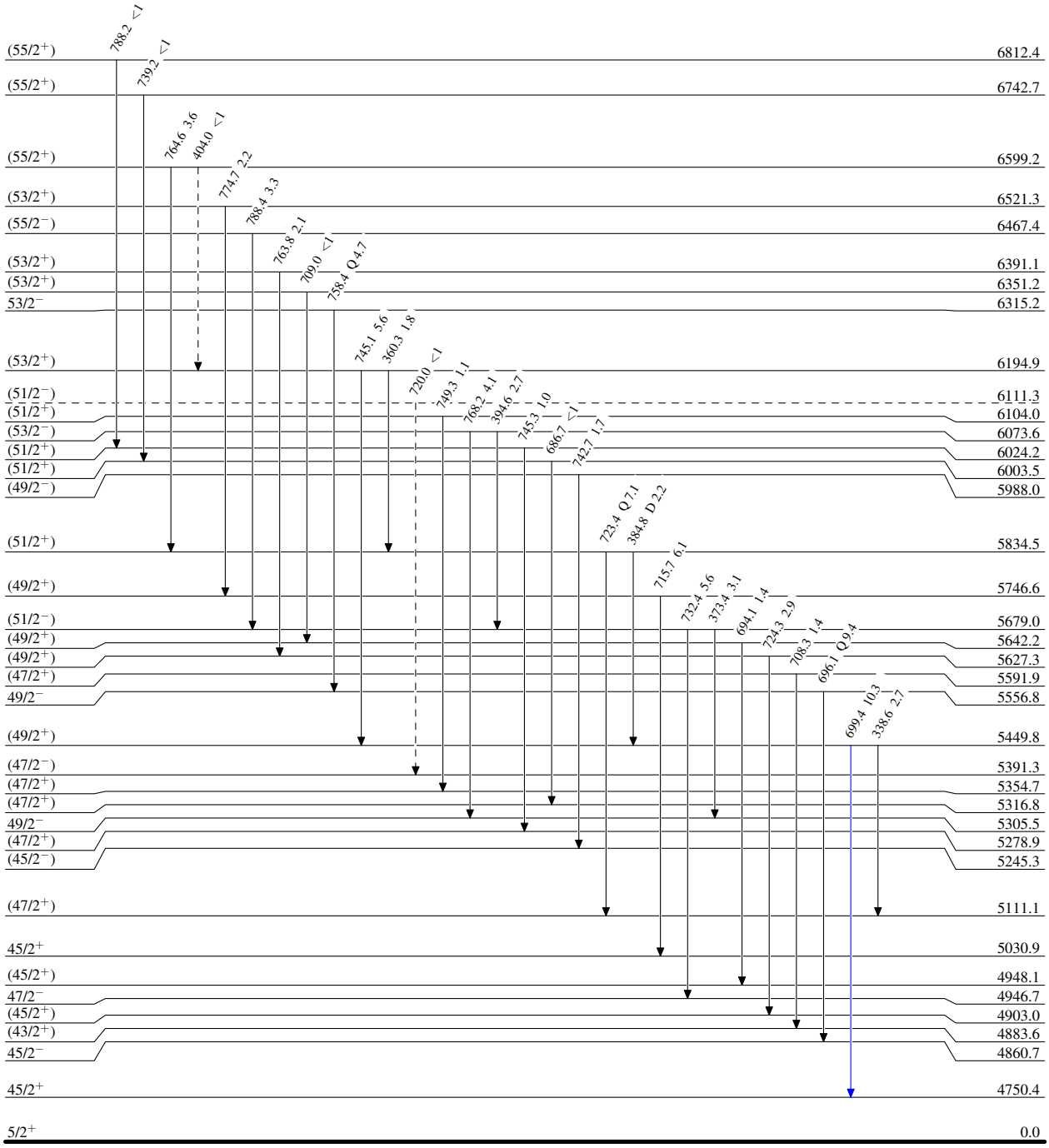
Legend

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

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

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

γ Decay (Uncertain)



$^{169}_{73}Ta_{96}$

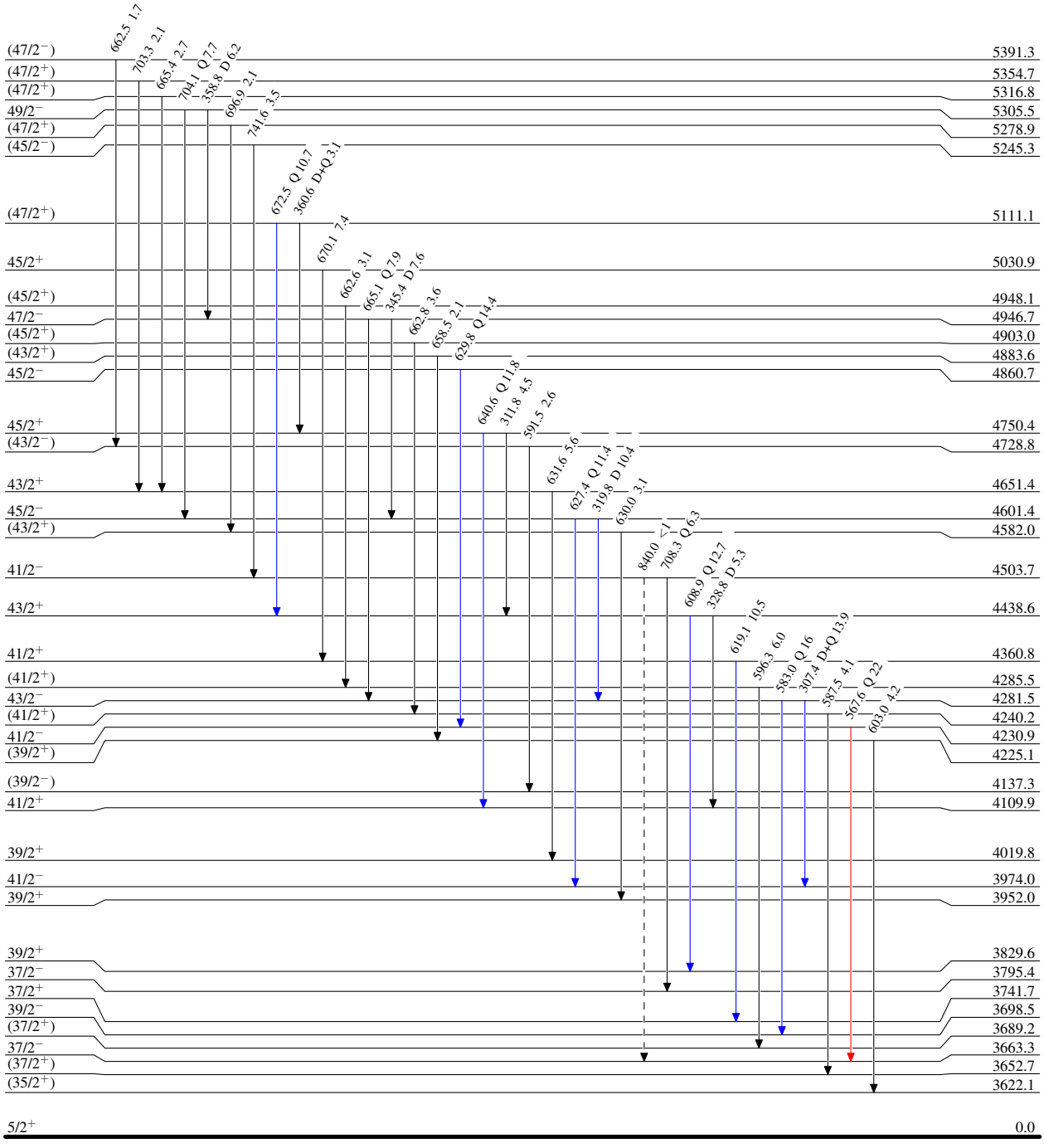
^{124}Sn(^{51}V,^{6}nγ) 2006Ha46

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)



$^{169}_{73}Ta_{96}$

^{124}Sn(^{51}V,^{6}nγ) **2006Ha46**

Level Scheme (continued)

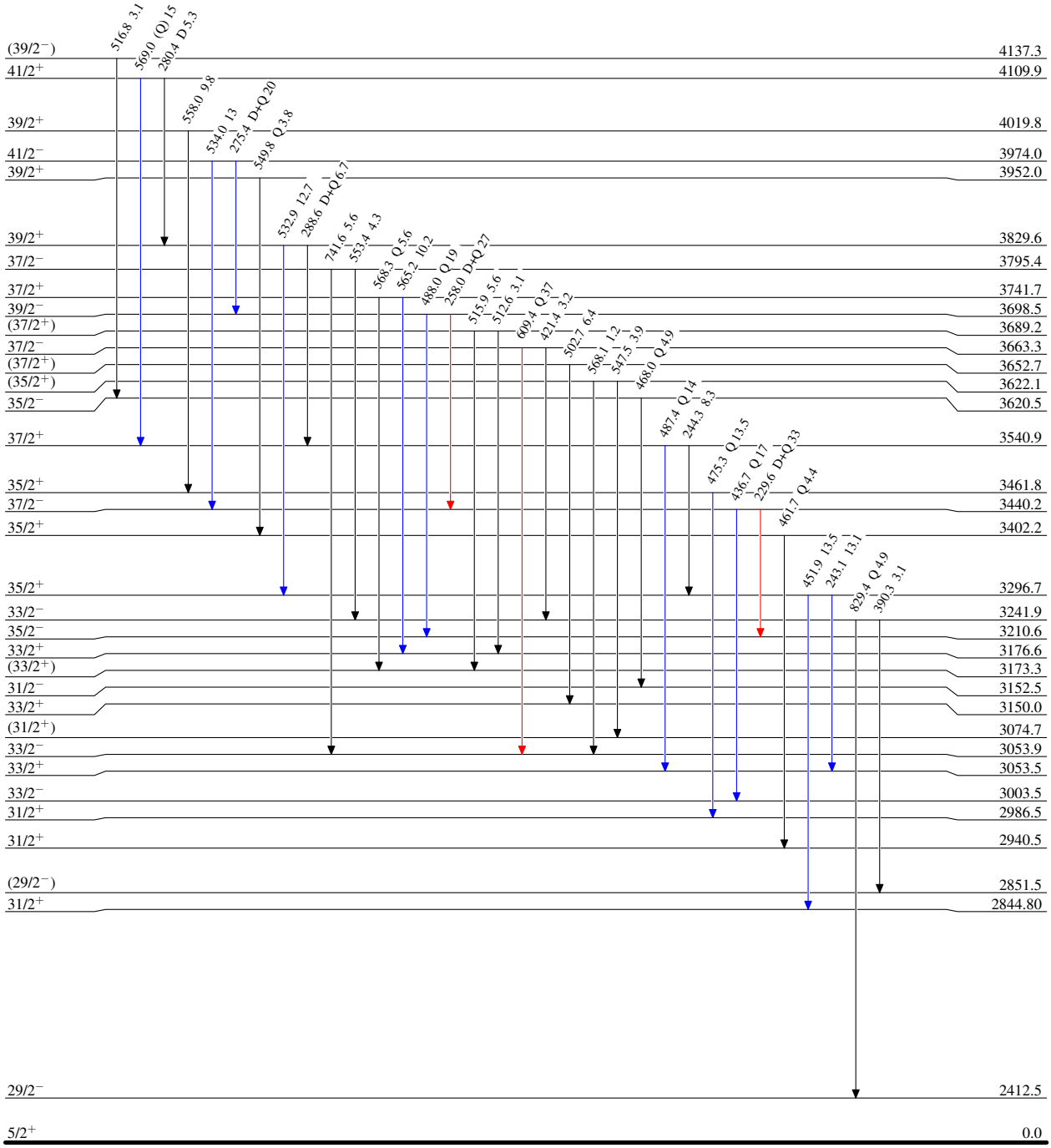
Intensities: Relative I_γ

Legend

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

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

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



$^{169}_{73}Ta_{96}$

^{124}Sn(^{51}V,^{6}nγ) **2006Ha46**

Level Scheme (continued)

Intensities: Relative I_γ

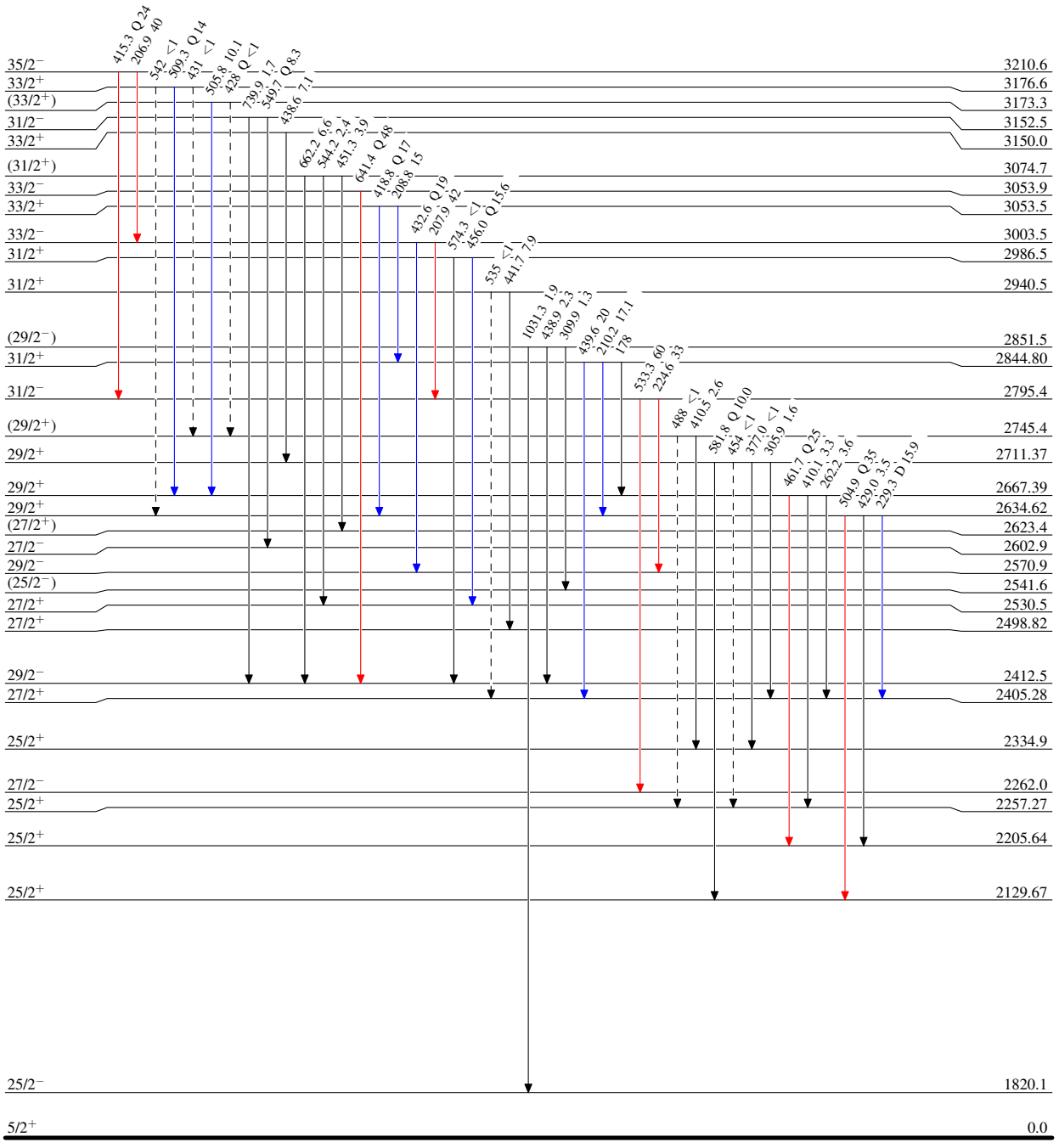
Legend

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

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

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

γ Decay (Uncertain)



$^{169}_{73}Ta_{96}$

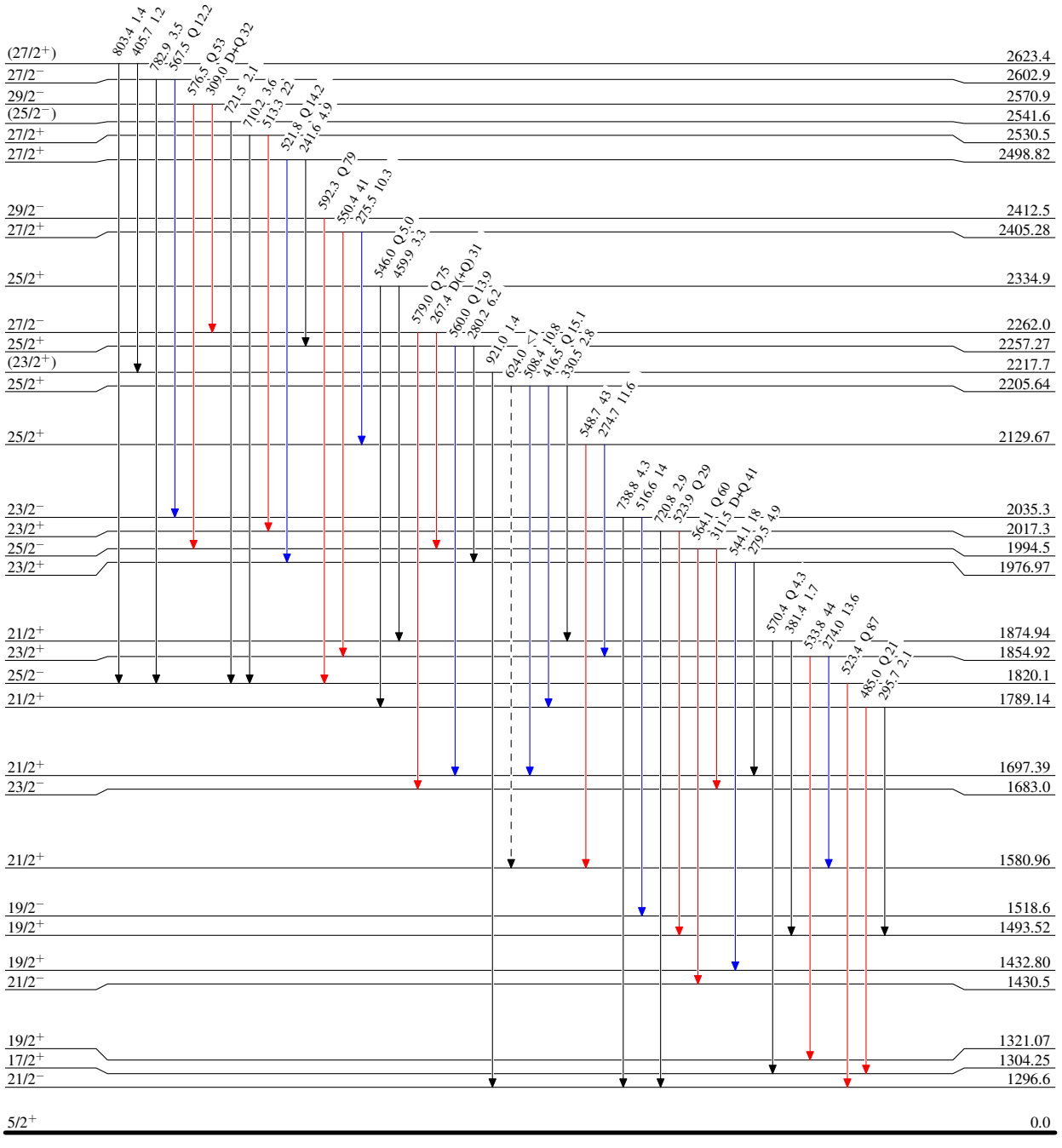
^{124}Sn(^{51}V,^{6}nγ) 2006Ha46

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)

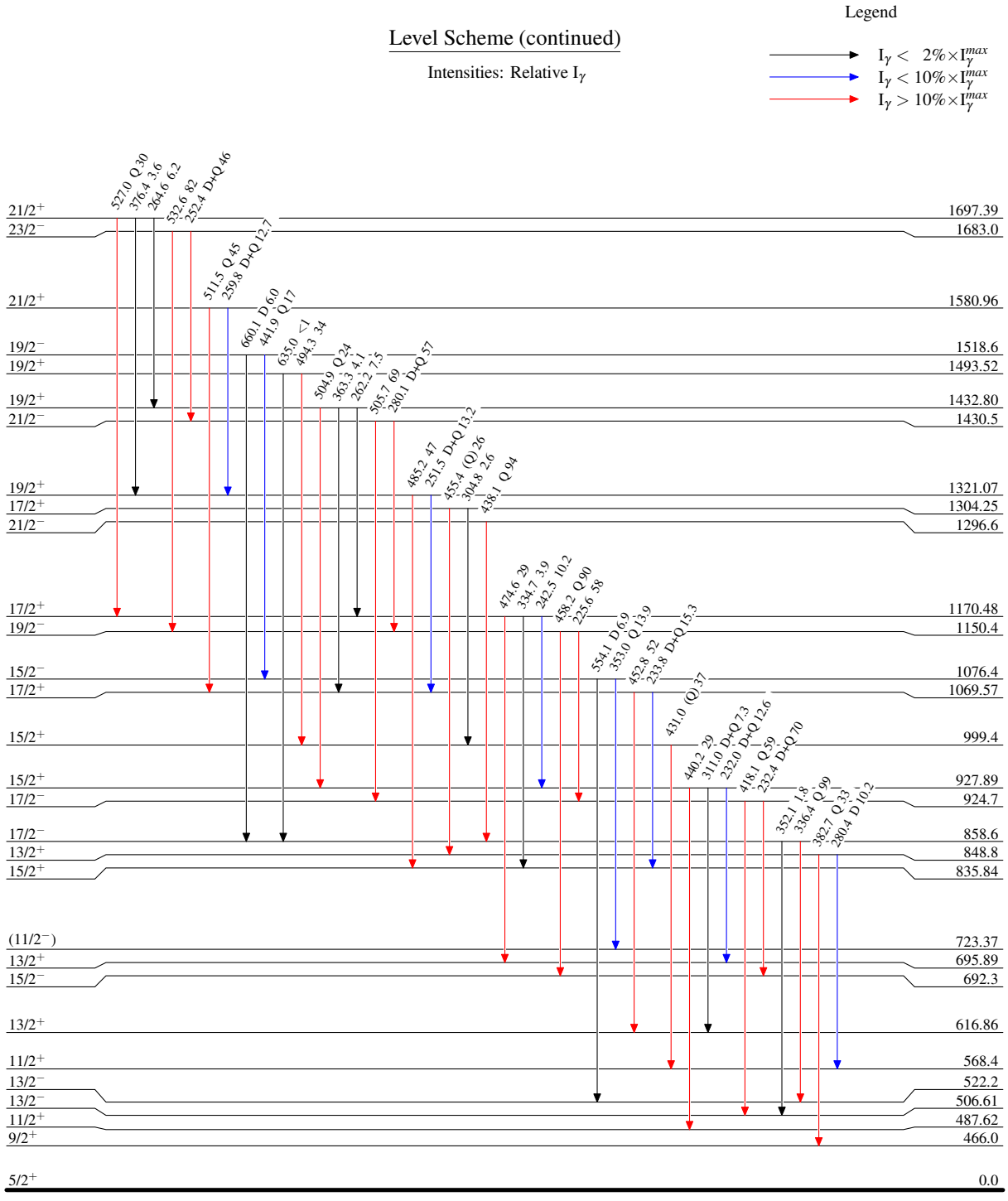


$^{169}_{73}Ta_{96}$

$^{124}Sn(^{51}V,^{6}n\gamma)$ **2006Ha46**

Level Scheme (continued)

Intensities: Relative I_γ



$^{169}_{73}Ta_{96}$

^{124}Sn(^{51}V,^{6}nγ) **2006Ha46**

Level Scheme (continued)

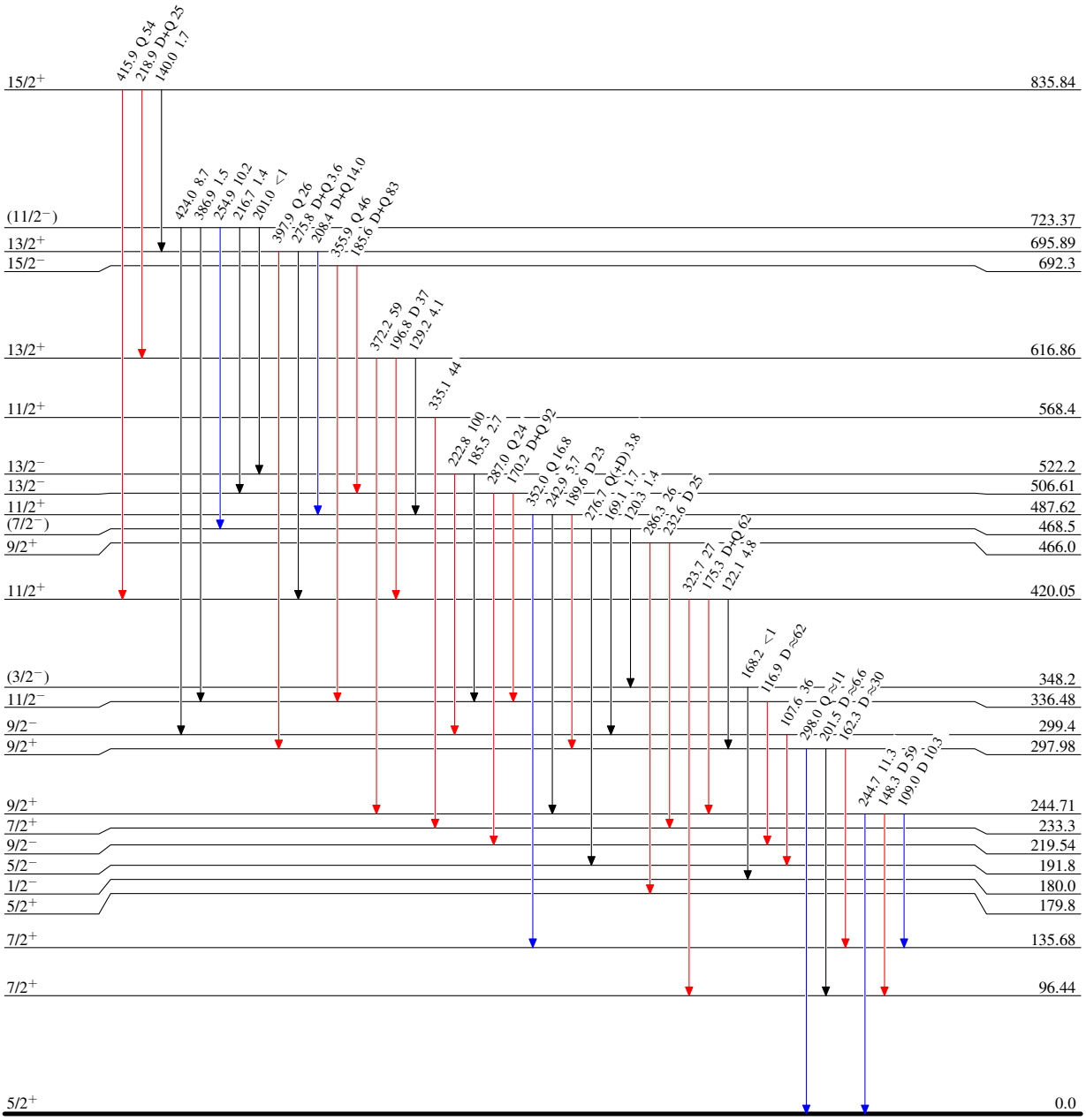
Intensities: Relative I_γ

Legend

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

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

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



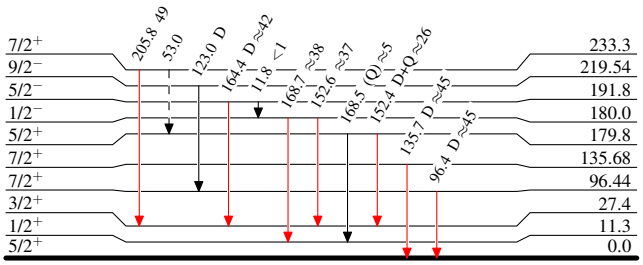
$^{169}_{73}Ta_{96}$

^{124}Sn(^{51}V,^{6}nγ) 2006Ha46

Level Scheme (continued)

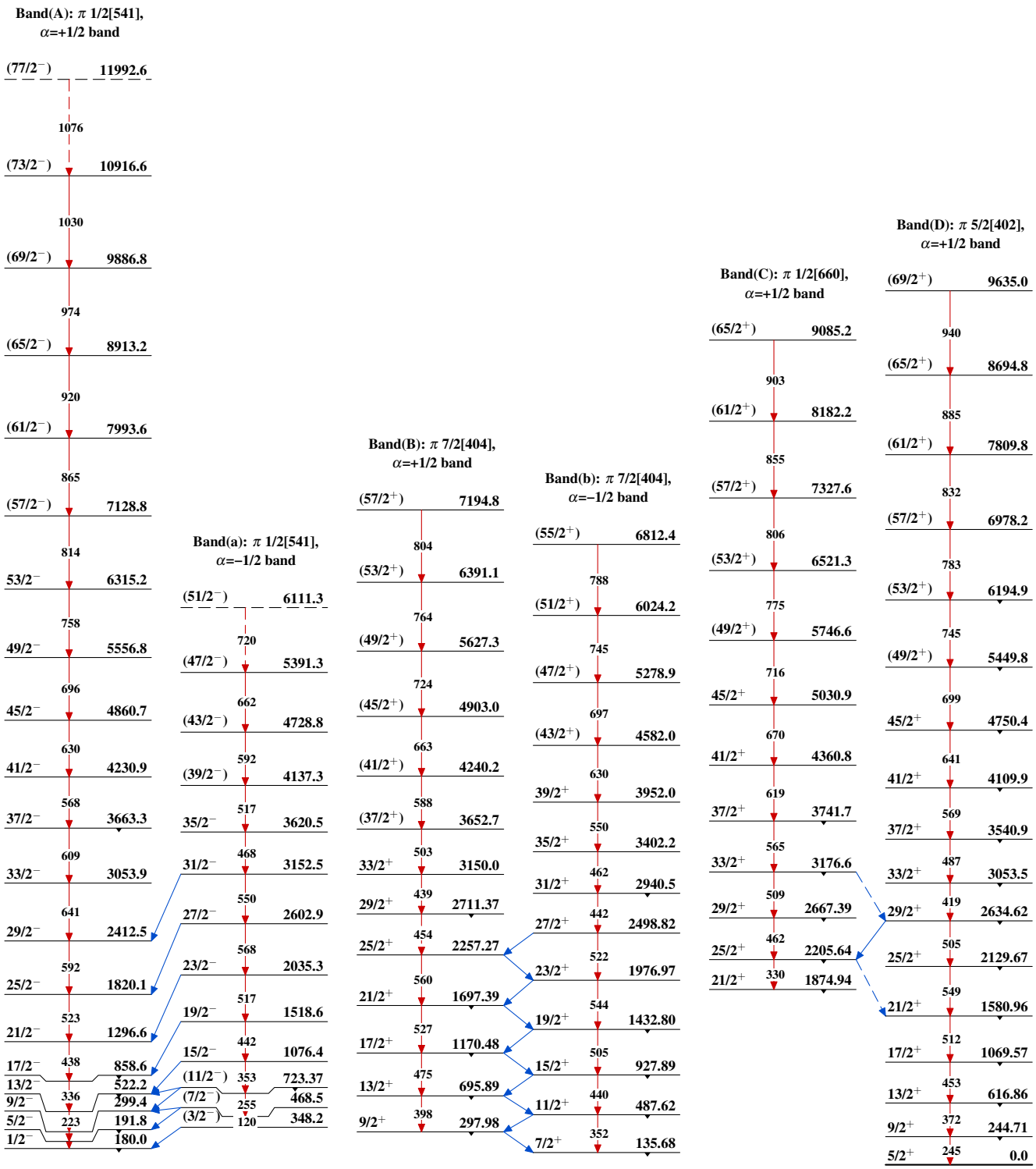
Intensities: Relative I_γ

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)



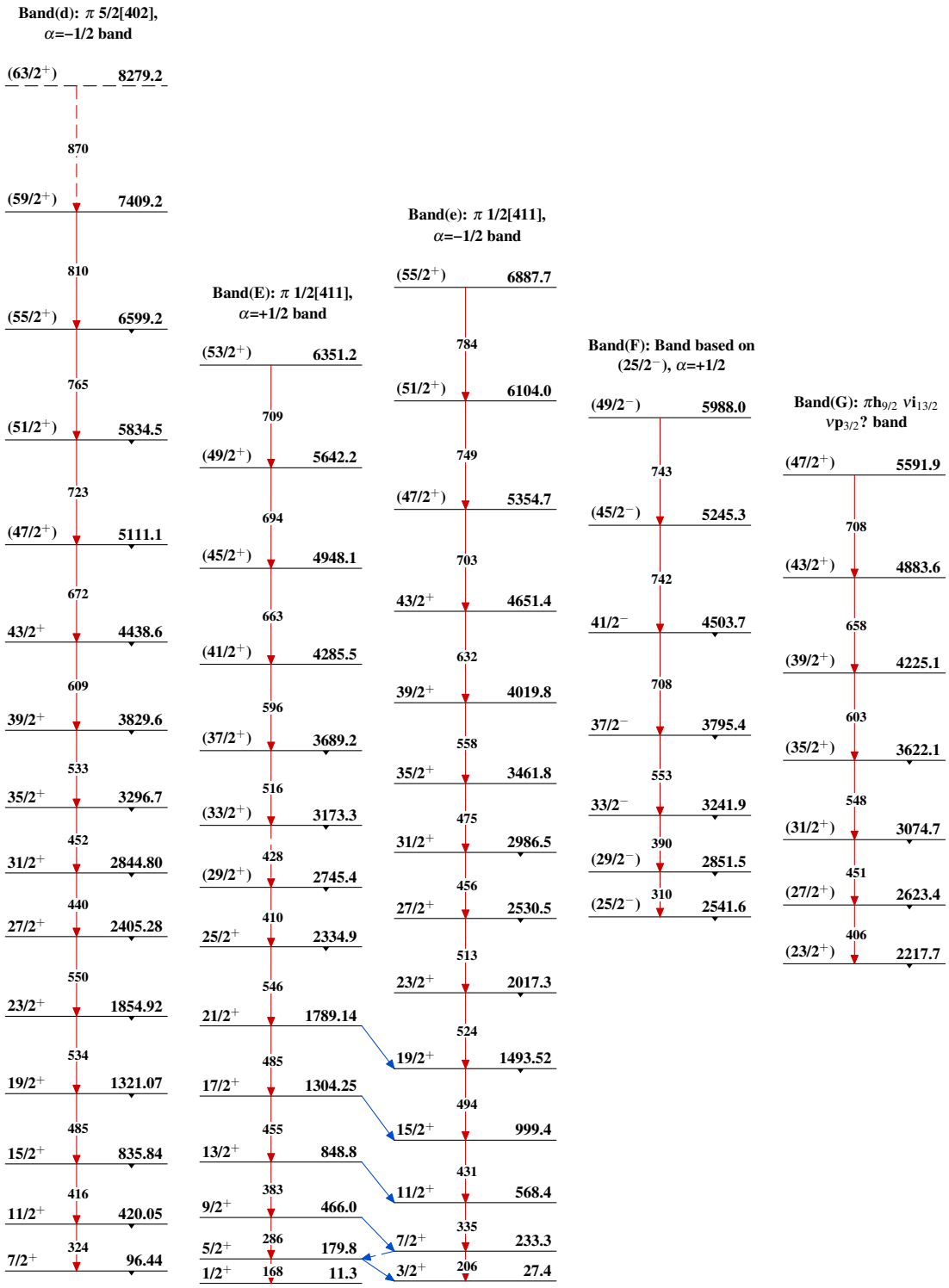
$^{169}_{73}Ta_{96}$

$^{124}Sn(^{51}V,^{6}n\gamma)$ 2006Ha46



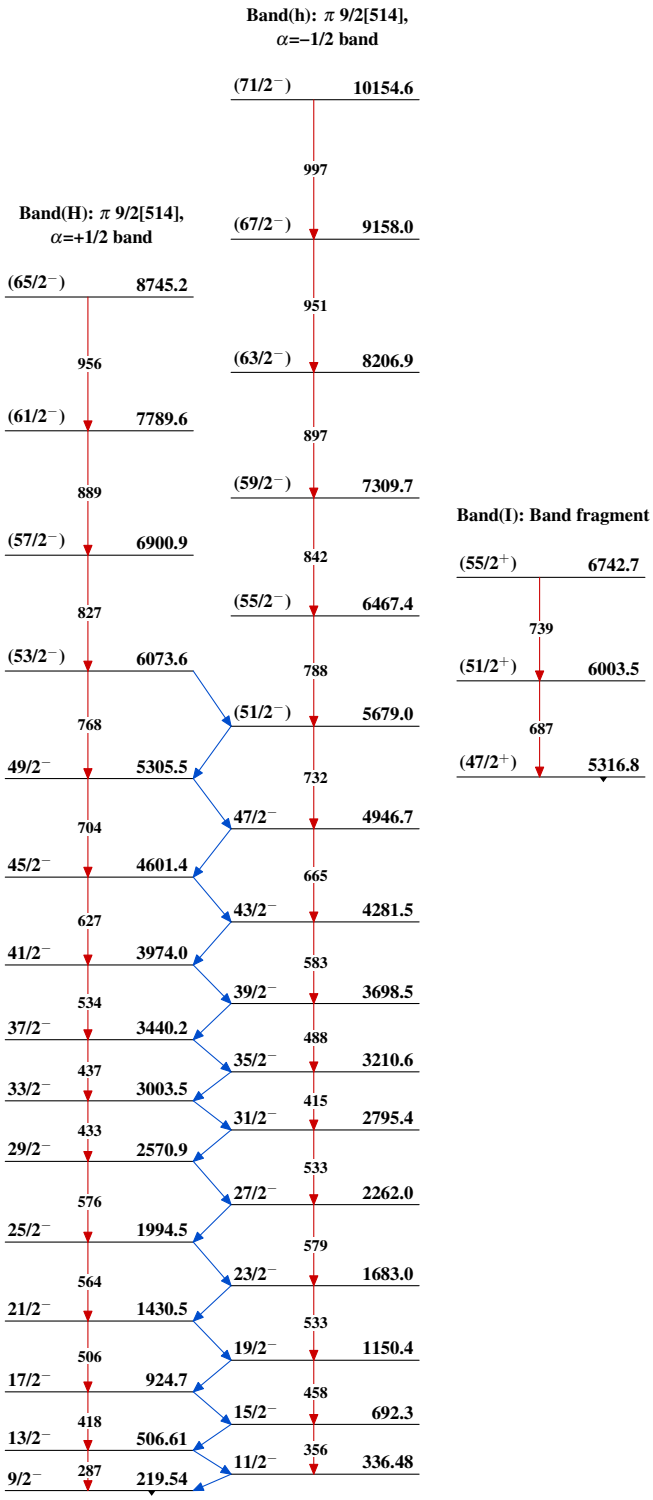
$^{169}_{73}Ta_{96}$

^{124}Sn(^{51}V,^{6}nγ) 2006Ha46 (continued)



$^{169}_{73}Ta_{96}$

^{124}Sn(^{51}V,^{6}nγ) 2006Ha46 (continued)



$^{169}_{73}Ta_{96}$