^{124}Sn(^{15}N,5nγ) 2001Ba75

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	A. A. Sonzogni	NDS 103, 1 (2004)	31-Jul-2004

E=82 MeV: Measured Eγ, Iγ, $\gamma\gamma$ and $\gamma\gamma(\theta)$(DCO) using the CAESAR detector array comprised of 6 Compton-suppressed HPGe detectors and 2 LEPS detectors.
Other: 1992Ol03, ^{128}Te(^{10}B,4nγ), E=44 MeV.

^{134}La Levels

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
0.0+y	6^-	1812.6+y *4*	12^-	3138.9+y[b] *4*		4357.2+y *5*	18^+
53.36+y *20*	7^-	1886.2+y[&] *3*	12^-	3168.3+y[e] *4*	16^+	4434.0+y *5*	
211.5+y[&] *3*	8^-	1969.5+y[@] *3*	13^+	3279.6+y *4*	16^+	4698.9+y[@] *4*	19^+
240.8+y *3*	8^-	2051.1+y[g] *3*	13^+	3281.0+y[c] *5*	16^-	4729.6+y[d] *5*	19^-
518.7+y[a] *3*	9^-	2132.8+y[a] *4*	13^-	3284.7+y[#] *4*	16^+	4815.3+y[f] *4*	19^+
668.6+y *3*	9^+	2168.3+y[e] *4*	14^+	3352.4+y *4*		4838.7+y *5*	
813.6+y[#] *3*	10^+	2198.1+y[c] *3*	12^-	3529.8+y *4*		4866.6+y *5*	19^+
925.6+y *3*	10^-	2238.8+y[b] *3*	12^-	3775.8+y[@] *4*	17^+	5079.4+y[#] *4*	20^+
953.8+y *4*		2369.0+y[d] *3*	13^-	3787.0+y *4*	$17^{(+)}$	5110.9+y[c] *6*	20^-
976.1+y[&] *3*	10^-	2404.3+y[#] *4*	14^+	3789.4+y[d] *5*	17^-	5144.6+y *4*	
1195.2+y[@] *3*	11^+	2418.1+y[g] *4*	(14^+)	3825.0+y *4*	17^+	5461.3+y *5*	
1199.4+y[b] *3*	10^-	2596.7+y *4*		3831.2+y[f] *4*	17^+	5605.8+y[d] *6*	(21^-)
1233.8+y[a] *3*	11^-	2598.2+y[c] *4*	14^-	3884.2+y *5*	17^-	5714.4+y[@] *4*	21^+
1412.1+y[g] *3*	11^+	2640.9+y *4*	14^+	3918.2+y *5*		6137.3+y[#] *4*	22^+
1533.2+y[#] *3*	12^+	2690.3+y[&] *4*	(14^-)	4025.8+y *5*	17^-	6178.7+y[c] *7*	(22^-)
1575.2+y *4*	$11^{(+)}$	2779.4+y[f] *4*	15^+	4120.9+y[#] *4*	18^+	6742.0+y[@] *4*	(23^+)
1710.3+y[g] *3*	12^+	2832.4+y *4*		4133.5+y[e] *4*	18^+	6806.2+y[d] *7*	(23^-)
1796.7+y[b] *4*	11^-	2850.1+y[@] *4*	15^+	4306.9+y[c] *5*	18^-	7179.7+y[#] *5*	(24^+)
1798.7+y *4*	12^+	2874.5+y[d] *5*	15^-	4315.6+y *4*	18		

† From least-squares fit to Eγ's.
‡ As given by 2001Ba75, assuming that the 668+Y level has a J^π value of 9^+, and the remaining values are deduced from γ multipolarities and band properties.
# Band(A): $\pi h_{11/2}\nu h_{11/2}$, α=0.
@ Band(a): $\pi h_{11/2}\nu h_{11/2}$, α=1.
& Band(B): band based on 8^-, α=0.
a Band(b): band based on 8^-, α=1.
b Band(C): band based on 10^-.
c Band(D): $\pi h_{11/2}\nu g_{(7/2}h^2_{11/2})$, α=0.
d Band(d): $\pi h_{11/2}\nu (g_{7/2}h^2_{11/2})$, α=1.
e Band(E): $\pi g_{7/2}\nu (g_{7/2}h^2_{11/2})$, α=0.
f Band(e): $\pi g_{7/2}\nu (g_{7/2}h^2_{11/2})$, α=1.
g Band(F): Chiral doublet partner of $\pi h_{11/2}\nu h_{11/2}$.

^{124}Sn(^{15}N,5nγ) 2001Ba75 (continued)

$\gamma(^{134}La)$

DCO=I[γ_1(48°/145°),γ_2(97°)]/I[γ_1(97°),γ_2(48° /145°)]. DCO_1=DCO ratio with gate on a stretched quadrupole transition. DCO_2=DCO ratio with gate on a stretched dipole transition.

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
53.35 *3*		53.36+y	7^-	0.0+y	6^-		DCO_1=0.57 *7*.
							DCO_2=0.76 *8*.
120.69 *3*	8.7 *3*	1533.2+y	12^+	1412.1+y	11^+		
130.14 *3*	32.1 *10*	2369.0+y	13^-	2238.8+y	12^-		DCO_1=0.59 *7*.
144.67 *3*	182 *6*	813.6+y	10^+	668.6+y	9^+		DCO_1=0.63 *4*.
							DCO_2=0.95 *4*.
149.65 *4*	9.4 *3*	668.6+y	9^+	518.7+y	9^-		DCO_1=1.0 *6*.
158.10 *3*	90 *4*	211.5+y	8^-	53.36+y	7^-	M1(+E2)	α(exp)=0.23 *9*
							DCO_1=0.61 *3*.
170.70 *3*	39.5 *12*	2369.0+y	13^-	2198.1+y	12^-		DCO_1=0.55 *5*.
187.51 *3*	92 *4*	240.8+y	8^-	53.36+y	7^-	M1(+E2)	α(exp)=0.14 *5*
							DCO_1=0.68 *4*.
							DCO_2=0.95 *4*.
229.14 *3*	103 *3*	2598.2+y	14^-	2369.0+y	13^-		DCO_1=0.61 *4*.
246.78 *19*	1.7 *3*	2132.8+y	13^-	1886.2+y	12^-		
257.57 *3*	31.1 *10*	1233.8+y	11^-	976.1+y	10^-		DCO_1=0.53 *5*.
263.91 *5*	5.4 *3*	5079.4+y	20^+	4815.3+y	19^+		DCO_2=1.3 *4*.
276.33 *3*	96 *3*	2874.5+y	15^-	2598.2+y	14^-		DCO_1=0.59 *4*.
278.02 *5*	10.3 *4*	518.7+y	9^-	240.8+y	8^-		
289.25 *4*	10.3 *4*	4120.9+y	18^+	3831.2+y	17^+		DCO_2=1.0 *2*.
295.52 *6*	5.2 *3*	4120.9+y	18^+	3825.0+y	17^+		DCO_2=0.85 *24*.
298.19 *4*	11.1 *4*	1710.3+y	12^+	1412.1+y	11^+		DCO_2=1.0 *2*.
307.10 *3*	108 *3*	518.7+y	9^-	211.5+y	8^-		DCO_1=0.48 *3*.
338.07 *3*	57.4 *18*	1533.2+y	12^+	1195.2+y	11^+		DCO_2=0.80 *6*.
340.85 *5*	13.0 *6*	2051.1+y	13^+	1710.3+y	12^+		DCO_2=0.77 *12*.
345.47 *8*	3.3 *2*	4120.9+y	18^+	3775.8+y	17^+		
352.40 *4*	9.2 *4*	2238.8+y	12^-	1886.2+y	12^-		
379.77 *20*	2.2 *4*	5079.4+y	20^+	4698.9+y	19^+		
381.28† *3*	157† *5*	1195.2+y	11^+	813.6+y	10^+		DCO_1=0.37 *4*.
							DCO_2=0.82 *5*.
381.28† *3*	22.7† *8*	5110.9+y	20^-	4729.6+y	19^-		DCO_1=0.48 *7*.
388.48 *6*	6.7 *3*	3168.3+y	16^+	2779.4+y	15^+		DCO_1=0.39 *5*.
406.52 *3*	82.3 *25*	3281.0+y	16^-	2874.5+y	15^-		DCO_1=0.55 *4*.
422.70 *3*	25.9 *8*	4729.6+y	19^-	4306.9+y	18^-		DCO_1=0.56 *7*.
427.49 *3*	176 *5*	668.6+y	9^+	240.8+y	8^-		DCO_1=0.62 *4*.
434.45 *4*	32.1 *13*	2404.3+y	14^+	1969.5+y	13^+		DCO_1=0.51 *6*.
							DCO for 434.45+434.97.
434.97 *4*	33.2 *15*	3284.7+y	16^+	2850.1+y	15^+		DCO for 434.45+434.97.
436.33 *3*	68.7 *22*	1969.5+y	13^+	1533.2+y	12^+		DCO_2=0.81 *5*.
442.31 *5*	7.6 *3*	2238.8+y	12^-	1796.7+y	11^-		DCO_2=1.0 *2*.
445.68 *3*	43.3 *14*	2850.1+y	15^+	2404.3+y	14^+		DCO_1=0.57 *5*.
456.92 *3*	75.3 *24*	668.6+y	9^+	211.5+y	8^-		DCO_1=0.61 *8*.
457.54 *5*	16.0 *7*	976.1+y	10^-	518.7+y	9^-		DCO_2=1.22 *9*.
458.27 *3*	78.4 *25*	2168.3+y	14^+	1710.3+y	12^+		DCO_2=1.59 *11*.
475.99 *15*	3.8 *4*	2051.1+y	13^+	1575.2+y	$11^{(+)}$		
476.29 *4*	21.4 *7*	1710.3+y	12^+	1233.8+y	11^-		DCO_1=0.63 *5*.
490.75 *4*	16.4 *6*	3775.8+y	17^+	3284.7+y	16^+		
494.87 *3*	19.7 *6*	5605.8+y	(21^-)	5110.9+y	20^-		DCO_1=0.76 *12*.
502.25 *4*	13.3 *5*	3787.0+y	$17^{(+)}$	3284.7+y	16^+		DCO_1=0.45 *12*.
508.57 *3*	53.9 *17*	3789.4+y	17^-	3281.0+y	16^-		DCO_1=0.48 *5*.

Continued on next page (footnotes at end of table)

^{124}Sn(^{15}N,5nγ) 2001Ba75 (continued)

γ(^{134}La) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
515.40 *3*	63.1 *20*	1710.3+y	12^+	1195.2+y	11^+	DCO_1=0.40 *4*. DCO_2=0.73 *5*.
517.49 *3*	30.2 *10*	4306.9+y	18^-	3789.4+y	17^-	DCO_1=0.49 *7*.
539.79 *5*	10.8 *4*	4315.6+y	18	3775.8+y	17^+	DCO_2=0.94 *11*.
545.60 *6*	11.9 *5*	2596.7+y		2051.1+y	13^+	
556.75 *7*	5.9 *2*	2369.0+y	13^-	1812.6+y	12^-	
570.20 *5*	11.6 *5*	4357.2+y	18^+	3787.0+y	$17^{(+)}$	DCO_2=0.86 *8*.
572.89 *4*	14.9 *5*	6178.7+y	(22^-)	5605.8+y	(21^-)	DCO_1=0.57 *12*.
577.78 *5*	12.3 *5*	4698.9+y	19^+	4120.9+y	18^+	DCO_2=0.99 *14*.
597.42 *5*	11.9 *6*	1796.7+y	11^-	1199.4+y	10^-	DCO_2=0.73 *9*.
598.67 *4*	22.9 *9*	1412.1+y	11^+	813.6+y	10^+	DCO_1=0.15 *16*.
603.17 *5*	11.8 *5*	3884.2+y	17^-	3281.0+y	16^-	
603.47 *5*	20.9 *9*	1798.7+y	12^+	1195.2+y	11^+	DCO_2=0.77 *6*.
604.35 *5*	6.5 *20*	6742.0+y	(23^+)	6137.3+y	22^+	
611.05 *4*	29.1 *10*	2779.4+y	15^+	2168.3+y	14^+	
627.52 *5*	8.6 *3*	6806.2+y	(23^-)	6178.7+y	(22^-)	
635.17 *6*	9.2 *4*	5714.4+y	21^+	5079.4+y	20^+	DCO_2=0.76 *16*.
637.22 *12*	3.8 *3*	3918.2+y		3281.0+y	16^-	
644.59 *8*	5.7 *3*	4434.0+y		3789.4+y	17^-	
652.26 *6*	10.6 *5*	1886.2+y	12^-	1233.8+y	11^-	DCO_1=0.45 *9*.
656.34 *6*	8.5 *4*	3825.0+y	17^+	3168.3+y	16^+	DCO_1=0.33 *8*.
662.55 *6*	11.8 *5*	3831.2+y	17^+	3168.3+y	16^+	DCO_1=0.45 *7*.
671.40 *5*	17.4 *7*	2640.9+y	14^+	1969.5+y	13^+	DCO_2=0.65 *8*.
680.76 *4*	24.7 *10*	1199.4+y	10^-	518.7+y	9^-	DCO_2=0.77 *6*.
684.85 *4*	20.6 *10*	925.6+y	10^-	240.8+y	8^-	DCO_2=1.68 *16*.
705.13 *8*	6.9 *4*	4838.7+y		4133.5+y	18^+	
707.89 *8*	8.5 *5*	2418.1+y	(14^+)	1710.3+y	12^+	
715.35 *3*	69.4 *22*	1233.8+y	11^-	518.7+y	9^-	
719.46 *3*	55.8 *18*	1533.2+y	12^+	813.6+y	10^+	DCO_2=1.46 *10*.
733.03 *9*	5.1 *3*	4866.6+y	19^+	4133.5+y	18^+	DCO_2=0.69 *17*.
735.52 *12*	4.4 *3*	976.1+y	10^-	240.8+y	8^-	
742.3 *3*	4.3 *8*	953.8+y		211.5+y	8^-	
743.49 *6*	14.7 *7*	1412.1+y	11^+	668.6+y	9^+	DCO_2=1.6 *2*.
744.66 *6*	10.2 *4*	4025.8+y	17^-	3281.0+y	16^-	DCO_2=0.87 *11*.
761.66 *10*	8.7 *6*	1575.2+y	$11^{(+)}$	813.6+y	10^+	DCO_2=0.84 *14*.
764.71 *4*	26.5 *11*	976.1+y	10^-	211.5+y	8^-	DCO_2=1.73 *11*.
774.38 *6*	12.7 *5*	1969.5+y	13^+	1195.2+y	11^+	DCO_2=1.26 *16*.
804.00 *9*	9.3 *6*	2690.3+y	(14^-)	1886.2+y	12^-	
836.21 *4*	20.1 *7*	4120.9+y	18^+	3284.7+y	16^+	DCO_2=1.40 *15*.
841.43 *13*	3.9 *3*	4120.9+y	18^+	3279.6+y	16^+	
855.71 *9*	7.8 *5*	2051.1+y	13^+	1195.2+y	11^+	
870.84 *4*	39.9 *13*	2404.3+y	14^+	1533.2+y	12^+	DCO_1=0.89 *9*.
879.71 *6*	14.9 *9*	3284.7+y	16^+	2404.3+y	14^+	DCO_2=1.53 *14*.
881.04 *6*	17.6 *9*	2850.1+y	15^+	1969.5+y	13^+	
887.24 *6*	15.6 *7*	1812.6+y	12^-	925.6+y	10^-	DCO_2=1.72 *16*.
898.85 *10*	11.2 *8*	2132.8+y	13^-	1233.8+y	11^-	DCO_1=1.09 *13*.
900.14 *12*	10.1 *9*	3138.9+y		2238.8+y	12^-	
910.30 *8*	8.1 *5*	1886.2+y	12^-	976.1+y	10^-	DCO_1=0.98 *22*.
914.61 *18*	2.6 *3*	3789.4+y	17^-	2874.5+y	15^-	
923.03 *15*	3.7 *3*	4698.9+y	19^+	3775.8+y	17^+	
925.78 *10*	6.5 *4*	3775.8+y	17^+	2850.1+y	15^+	
947.4‡ *4*	1.1 *2*	5079.4+y	20^+	4133.5+y	18^+	E_γ: Poor fit in the level scheme. Level energy difference=945.9.
948.02 *8*	8.4 *4*	3352.4+y		2404.3+y	14^+	
958.55 *4*	21.8 *7*	5079.4+y	20^+	4120.9+y	18^+	DCO_2=1.8 *2*.
964.43 *3*	27.2 *10*	2198.1+y	12^-	1233.8+y	11^-	DCO_1=0.35 *4*.

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^{124}Sn(^{15}N,5nγ) 2001Ba75 (continued)

γ(^{134}La) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
965.59 *4*	19.5 *7*	4133.5+y	18^+	3168.3+y	16^+	DCO_1=0.86 *10*. DCO_2=1.46 *18*.
984.07 *10*	5.0 *3*	4815.3+y	19^+	3831.2+y	17^+	
990.86 *14*	3.6 *3*	4815.3+y	19^+	3825.0+y	17^+	
998.76 *6*	9.2 *4*	2198.1+y	12^-	1199.4+y	10^-	DCO_2=1.8 *2*.
1000.21 *4*	42.5 *14*	3168.3+y	16^+	2168.3+y	14^+	DCO_2=1.9 *2*.
1002.06 *17*	3.0 *2*	2198.1+y	12^-	1195.2+y	11^+	
1005.27 *4*	21.3 *8*	2238.8+y	12^-	1233.8+y	11^-	DCO_1=0.46 *6*.
1015.59 *9*	5.9 *3*	5714.4+y	21^+	4698.9+y	19^+	
1019.80 *15*	4.1 *3*	2832.4+y		1812.6+y	12^-	
1023.68 *14*	4.7 *3*	5144.6+y		4120.9+y	18^+	
1025.96 *8*	5.5 *3*	4306.9+y	18^-	3281.0+y	16^-	
1028.19 *18*	2.9 *3*	6742.0+y	(23^+)	5714.4+y	21^+	
1038.57 *12*	4.2 *3*	4815.3+y	19^+	3775.8+y	17^+	
1039.19 *7*	7.9 *3*	2238.8+y	12^-	1199.4+y	10^-	
1042.39 *10*	6.2 *3*	7179.7+y	(24^+)	6137.3+y	22^+	
1043.09 *10*	5.3 *3*	2238.8+y	12^-	1195.2+y	11^+	
1046.25 *9*	6.8 *4*	3825.0+y	17^+	2779.4+y	15^+	
1051.77 *9*	5.7 *3*	3831.2+y	17^+	2779.4+y	15^+	
1057.66 *4*	21.0 *7*	6137.3+y	22^+	5079.4+y	20^+	DCO_1=0.87 *12*.
1111.52 *9*	7.1 *4*	3279.6+y	16^+	2168.3+y	14^+	
1125.40 *12*	5.4 *4*	3529.8+y		2404.3+y	14^+	
1151.55 *12*	3.9 *3*	4025.8+y	17^-	2874.5+y	15^-	DCO_2=1.9 *9*.
1222.41 *11*	3.4 *2*	2198.1+y	12^-	976.1+y	10^-	
1263.07 *16*	2.6 *2*	2238.8+y	12^-	976.1+y	10^-	
1272.27 *12*	2.9 *2*	2198.1+y	12^-	925.6+y	10^-	
1312.99 *10*	4.0 *2*	2238.8+y	12^-	925.6+y	10^-	
1327.81 *14*	3.0 *2*	5461.3+y		4133.5+y	18^+	

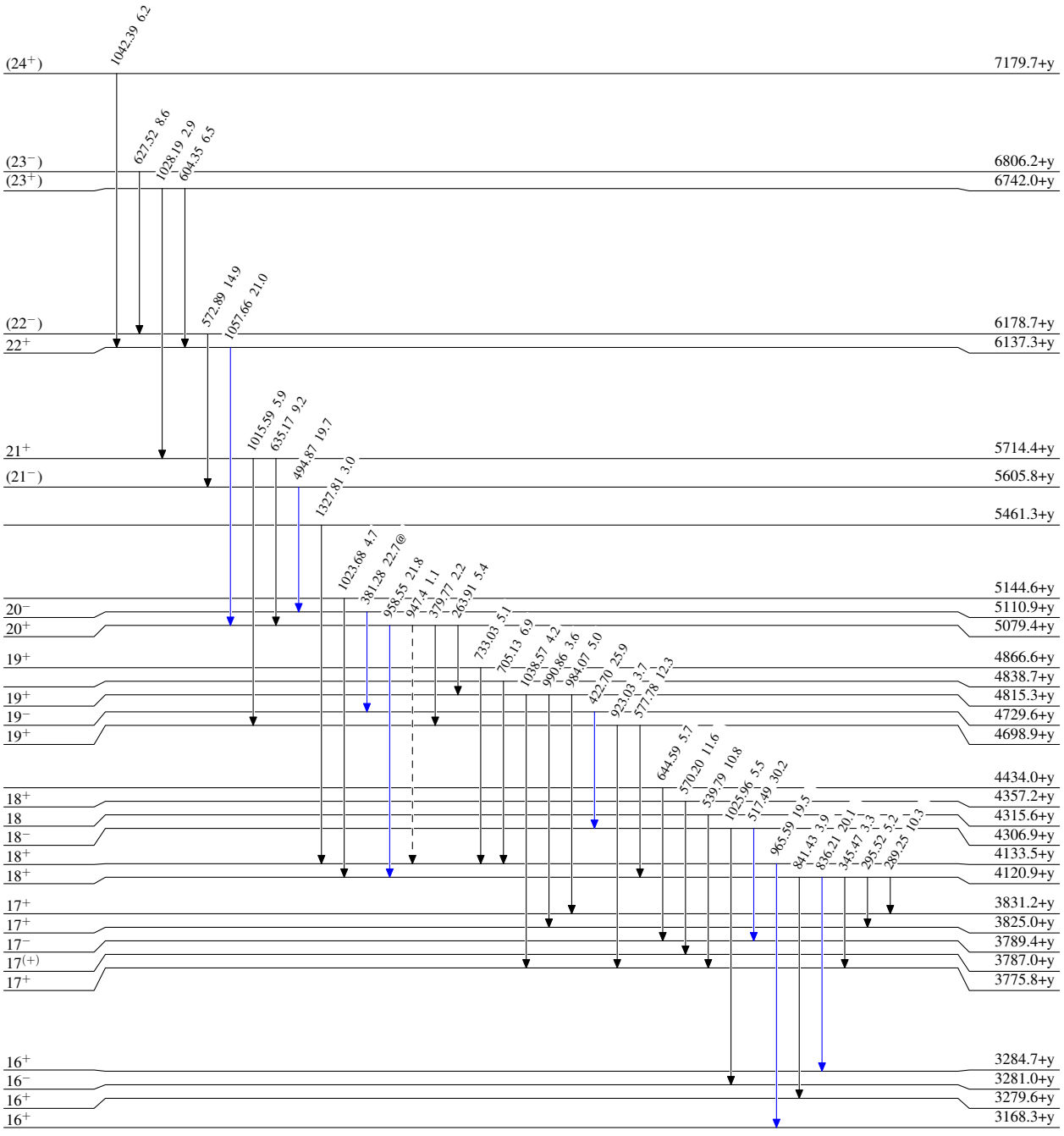
† Multiply placed with intensity suitably divided.
‡ Placement of transition in the level scheme is uncertain.

^{124}Sn(^{15}N,5nγ) 2001Ba75

Level Scheme

Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

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



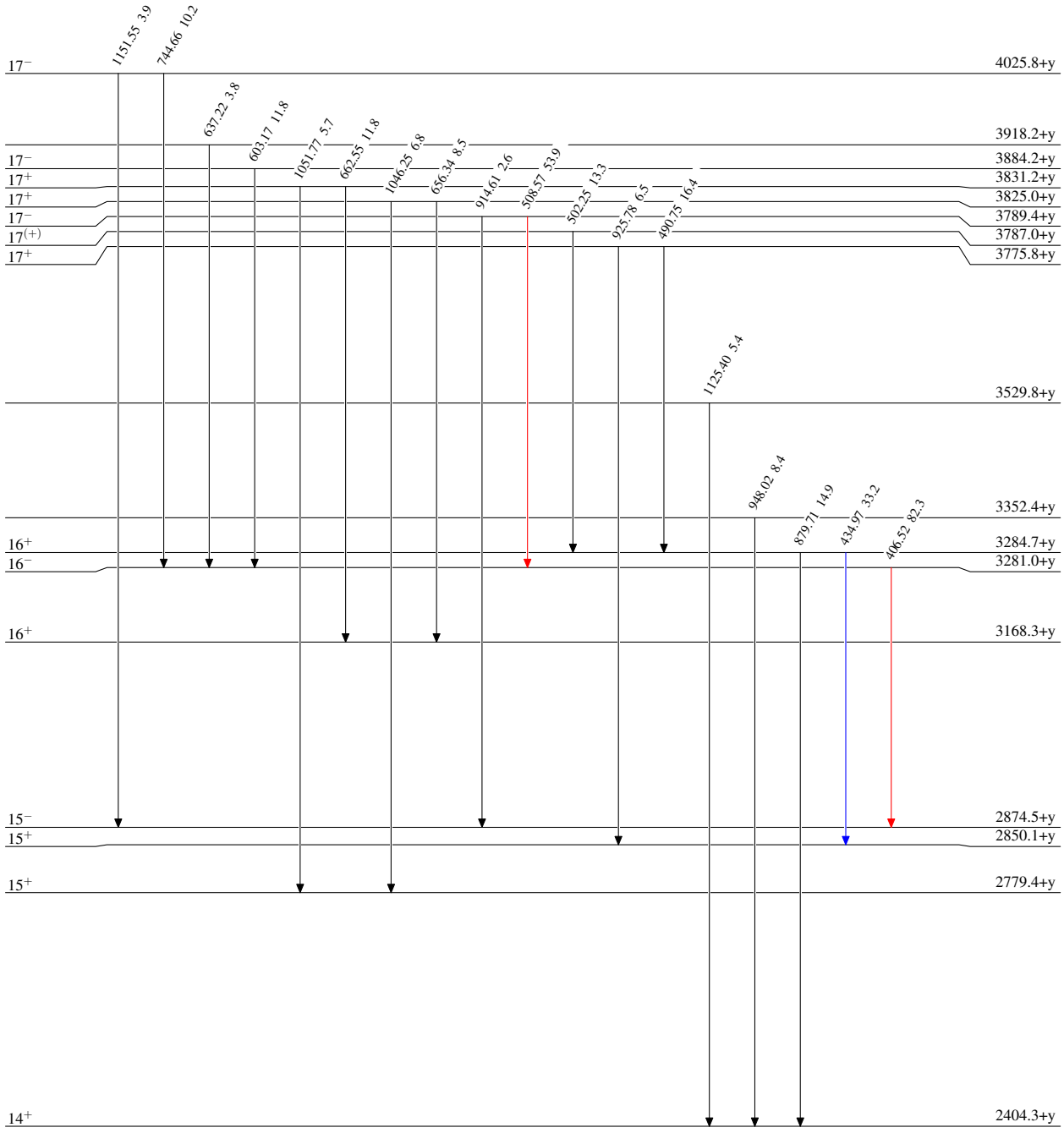
$^{134}_{57}La_{77}$

^{124}Sn(^{15}N,5nγ) 2001Ba75

Level Scheme (continued)

Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

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



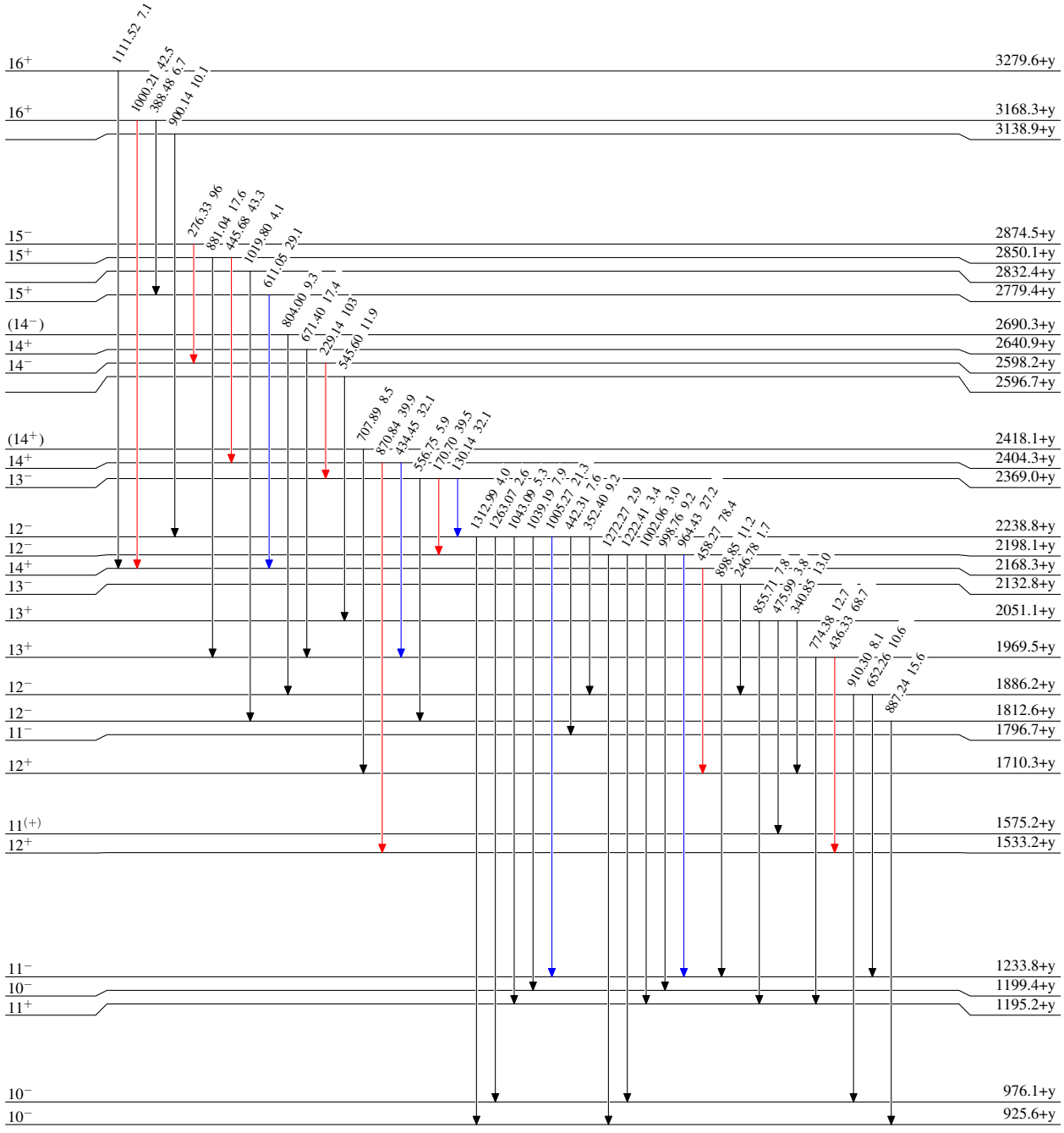
$^{134}_{57}La_{77}$

^{124}Sn(^{15}N,5nγ) 2001Ba75

Level Scheme (continued)

Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

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



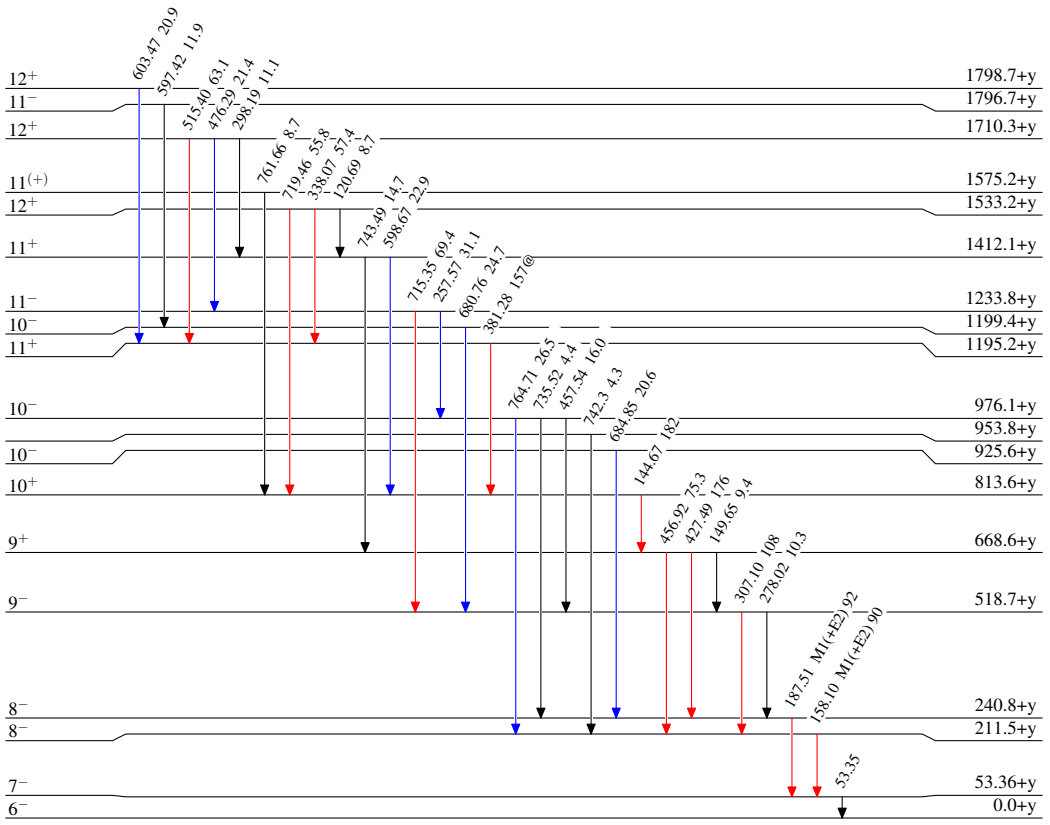
$^{134}_{57}La_{77}$

^{124}Sn(^{15}N,5nγ) 2001Ba75

Level Scheme (continued)

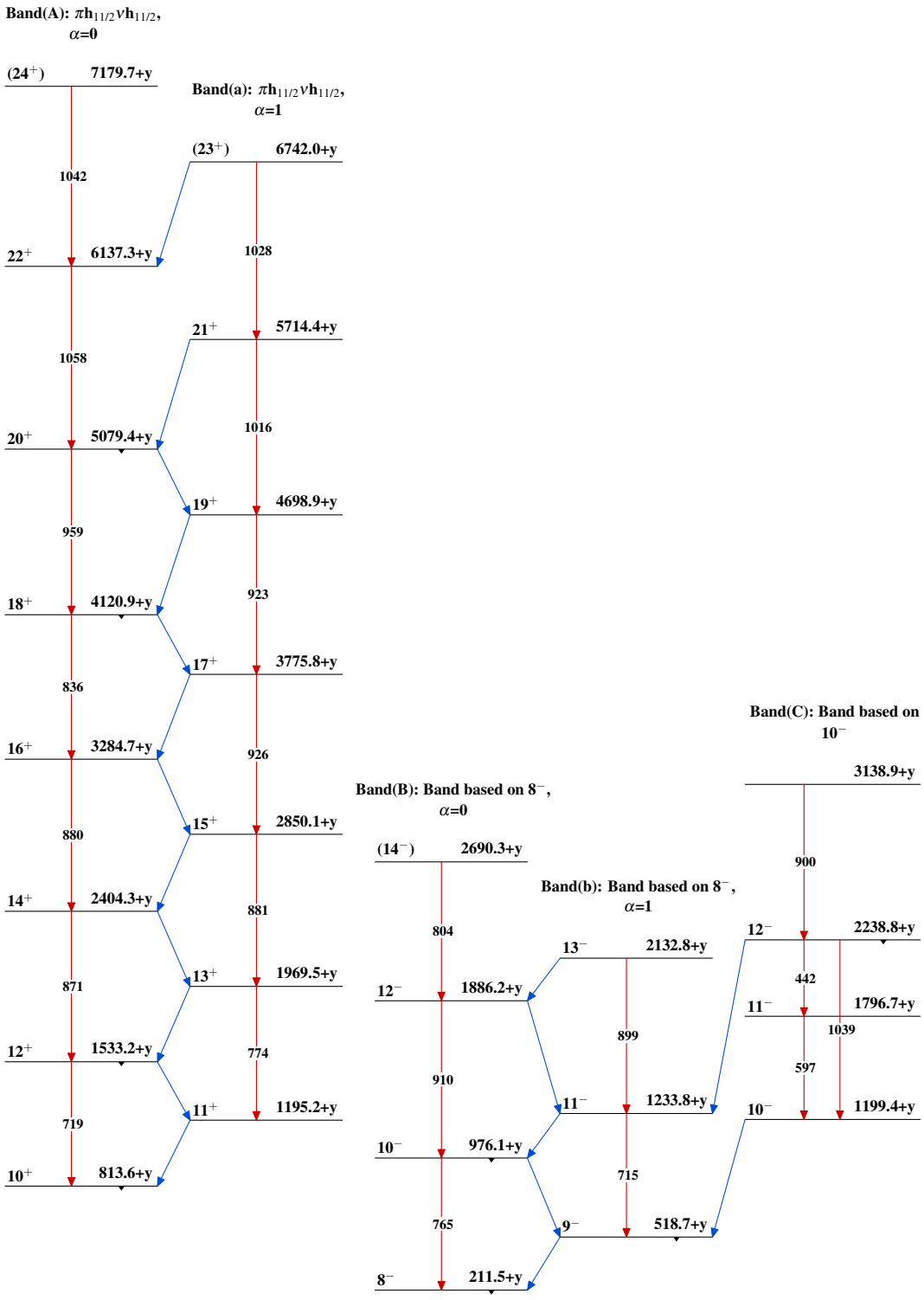
Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

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



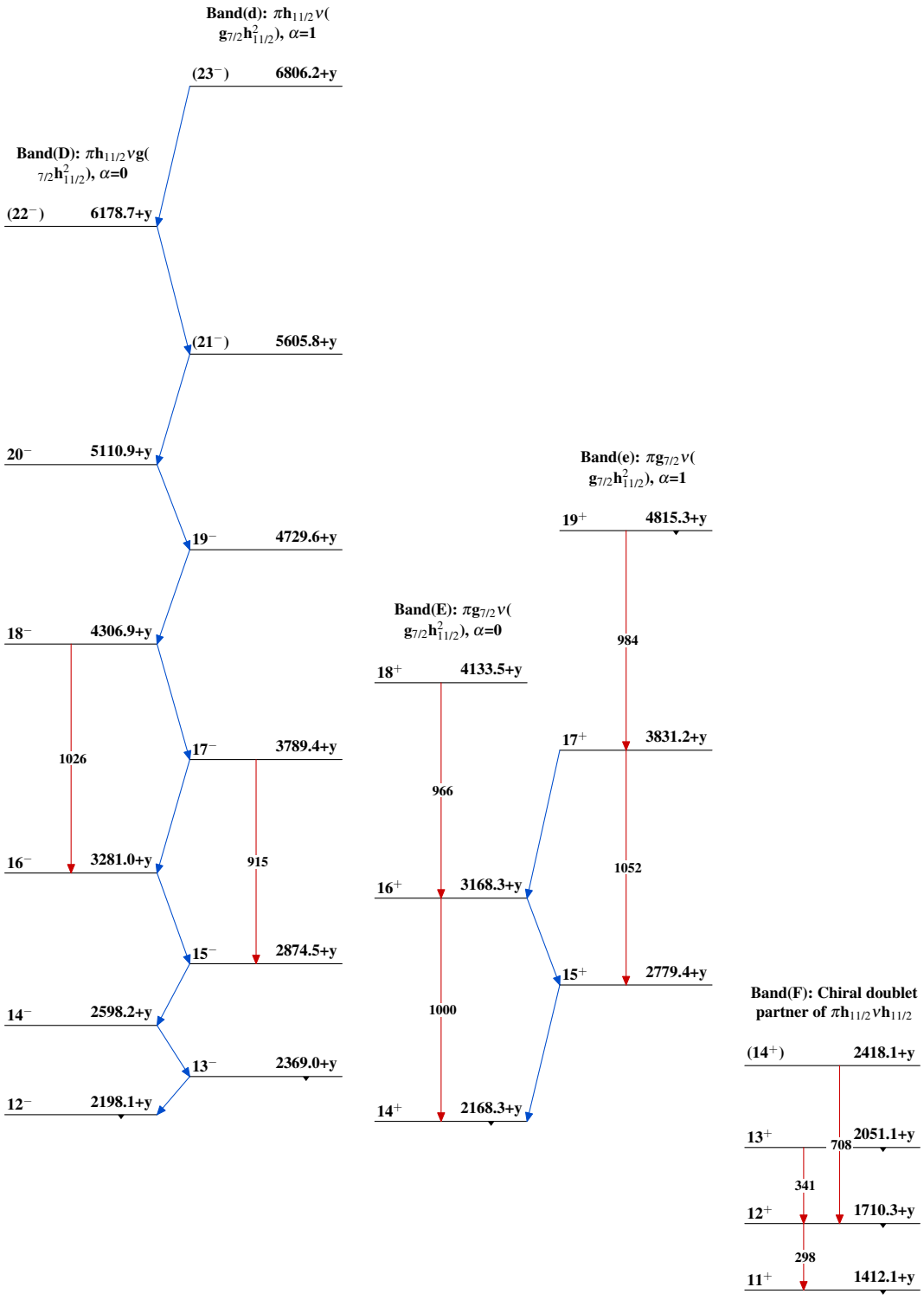
$^{134}_{57}La_{77}$

$^{124}Sn(^{15}N,5n\gamma)$ 2001Ba75



$^{134}_{57}La_{77}$

^{124}Sn(^{15}N,5nγ) 2001Ba75 (continued)



$^{134}_{57}La_{77}$