^{120}Sn(^{18}O,4nγ) 2004La03

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

E=80 MeV; Measured Eγ, Iγ, $\gamma\gamma$-coin using an array of eight Compton-suppressed Clover detectors and a 14-element NaI(T1) multiplicity filter. Others: 1994MaZS, 1990GaZD. Results from 1990GaZD were included in the g.s. band. The remaining were not as they come from non-refereed publications.

^{134}Ce Levels

E(level)[†]	J$^{\pi}$[‡]	$T_{1/2}$	Comments
0[#]	0^+		
408.9[#] *3*	2^+		
1048.4[#] *5*	4^+		
1811.6 *9*	(4)		
1862.4[#] *5*	6^+		
2026.7 *8*	(5)		
2173.6[a] *5*	5^-		
2357.8 *9*	(6)		
2473.1[b] *7*	6^-		
2564.2 *10*	(7)		
2705.8[a] *6*	7^-		
2810.5[#] *6*	8^+		
2895.6[b] *7*	8^-		
3157.1[a] *6*	9^-		
3405.2[b] *7*	10^-		
3600.1 *7*	(9^-)		
3718.8[#] *6*	10^+		
3751.9[a] *7*	11^-		
4022.0 *7*	9^-		E(level): no de-exciting gammas reported.
4143.0[b] *7*	12^-		
4183.1[#] *7*	12^+		
4187.0[@] *6*	10^-		
4383.2[@] *6*	11^-		
4541.2[a] *7*	13^-		
4622.0[@] *7*	12^-		
4897.2[@] *7*	13^-		
4907.7[#] *8*	14^+		
5020.4[b] *7*	14^-		
5229.1[@] *7*	14^-		
5496.6[a] *7*	15^-		
5593.1[&] *7*	14^-		
5628.1[@] *7*	15^-		
5725.4[#] *8*	16^+		
5748.5[&] *7*	15^-		
5968.0[&] *7*	16^-		
6026.4[b] *8*	16^-		
6048.1[@] *7*	16^-	0.56 ps *8*	
6308.2[&] *8*	17^-	0.59 ps *5*	
6523.6[@] *7*	17^-	<0.64 ps	$T_{1/2}$: effective half-life is <0.57 ps *7*.

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^{120}Sn(^{18}O,4nγ) 2004La03 (continued)

^{134}Ce Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	T$_{1/2}$	Comments
6597.6[#] *9*	18$^+$		
6765.8[&] *8*	18$^-$	0.236 ps *21*	
7043.9[@] *10*	(18$^-$)		
7071.1[b] *8*	18$^-$		
7285.6[&] *9*	19$^-$	0.194 ps *21*	
7582.6[#] *13*	20$^+$		
7833.6[&] *9*	20$^-$	<0.22 ps	T$_{1/2}$: effective half-life is <0.194 ps *24*.
8584.6[#] *17*	22$^+$		
9538[#c] *3*	24$^+$		
10528[#c] *3*	26$^+$		
11602[#c] *4*	28$^+$		
12763[#c] *4*	30$^+$		
14008[#c] *4*	32$^+$		
15332[#c] *4*	34$^+$		

[†] From least-squares fit to Eγ's assuming 0.3 keV uncertainty for Eγ's quoted to tenth of a keV, and 1 keV for others.
[‡] As given by 2004La03, based on γ multipolarity and band decay pattern.
[#] Band(A): g.s. band.
[@] Band(B): Magnetic-dipole rotational band based on 9$^-$. Configurations=$\pi g^2_{7/2}\otimes\nu(h_{11/2}d_{3/2})$ and $\pi h^2_{11/2}\otimes\nu(h_{11/2}d_{3/2})$.
[&] Band(C): Magnetic-dipole rotational band based on 14$^-$. Configuration=$\pi(g_{7/2}h_{11/2})\otimes\nu h^2_{11/2}$.
[a] Band(D): Octupole band, odd spins.
[b] Band(d): Octupole band, even spins.
[c] Observed by 1990GaZD only.

γ(^{134}Ce)

E$_\gamma$	I$_\gamma$	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.	Comments
155.5	1.5 *2*	5748.5	15$^-$	5593.1	14$^-$	M1	
165.0	0.23 *4*	4187.0	10$^-$	4022.0	9$^-$	(M1)	
190		2895.6	8$^-$	2705.8	7$^-$		
196.2	2.4 *3*	4383.2	11$^-$	4187.0	10$^-$	M1	
207		2564.2	(7)	2357.8	(6)		
215		2026.7	(5)	1811.6	(4)		
219.6	4.3 *4*	5968.0	16$^-$	5748.5	15$^-$	M1	
233		2705.8	7$^-$	2473.1	6$^-$		
238.8	3.8 *3*	4622.0	12$^-$	4383.2	11$^-$	M1	pol=−0.06 *3*.
247		3405.2	10$^-$	3157.1	9$^-$		
251.7	1.5 *2*	5748.5	15$^-$	5496.6	15$^-$		
262		3157.1	9$^-$	2895.6	8$^-$		
275.3	4.8 *4*	4897.2	13$^-$	4622.0	12$^-$	M1	pol=−0.05 *4*.
299		2473.1	6$^-$	2173.6	5$^-$		
331		2357.8	(6)	2026.7	(5)		
331.7	3.0 *2*	5229.1	14$^-$	4897.2	13$^-$	M1	
332		2895.6	8$^-$	2564.2	(7)		
340.2	6.4 *4*	6308.2	17$^-$	5968.0	16$^-$	M1	pol=−0.02 *2*.
347		3157.1	9$^-$	2810.5	8$^+$		
347		3751.9	11$^-$	3405.2	10$^-$		
392		4143.0	12$^-$	3751.9	11$^-$		

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^{120}Sn(^{18}O,4nγ) 2004La03 (continued)

γ(^{134}Ce) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
397		4541.2	13^-	4143.0	12^-		
398.8	2.2 *3*	5628.1	15^-	5229.1	14^-	M1	pol=−0.09 *4*.
408.9	100	408.9	2^+	0	0^+	E2	pol=+0.06 *1*.
420.0	2.4 *2*	6048.1	16^-	5628.1	15^-	M1	
422.4	13 *1*	2895.6	8^-	2473.1	6^-	E2	
435.2	0.23 *7*	4622.0	12^-	4187.0	10^-	E2	
446		2473.1	6^-	2026.7	(5)		
451.4	12 *1*	3157.1	9^-	2705.8	7^-	E2	
457.6	3.6 *3*	6765.8	18^-	6308.2	17^-	M1	
464.3†		4183.1	12^+	3718.8	10^+	E2	
471.5	1.3 *1*	5968.0	16^-	5496.6	15^-	M1	pol=−0.06 *5*.
475.5	0.61 *8*	6523.6	17^-	6048.1	16^-	M1	
476		5496.6	15^-	5020.4	14^-		
479		5020.4	14^-	4541.2	13^-		
509.5	12 *1*	3405.2	10^-	2895.6	8^-	E2	
513.7	0.49 *4*	4897.2	13^-	4383.2	11^-	E2	
519.8	1.2 *1*	7285.6	19^-	6765.8	18^-	M1	
520‡		7043.9	(18^-)	6523.6	17^-		
530		6026.4	16^-	5496.6	15^-		
532.2	14 *1*	2705.8	7^-	2173.6	5^-	E2	
537		2895.6	8^-	2357.8	(6)		
548.0	1.0 *1*	7833.6	20^-	7285.6	19^-	M1	
561		3718.8	10^+	3157.1	9^-		
574		5593.1	14^-	5020.4	14^-		
595.0	11 *1*	3751.9	11^-	3157.1	9^-	E2	
607.2	0.39 *6*	5229.1	14^-	4622.0	12^-	E2	
611		2473.1	6^-	1862.4	6^+		
639.7†		1048.4	4^+	408.9	2^+	E2	
664.3	2.8 *3*	4383.2	11^-	3718.8	10^+	E1	pol=+0.05 *2*.
724.6†		4907.7	14^+	4183.1	12^+	E2	
731.1	0.44 *4*	5628.1	15^-	4897.2	13^-	E2	
737.6	11 *1*	4143.0	12^-	3405.2	10^-	E2	pol=+0.09 *2*.
763		1811.6	(4)	1048.4	4^+		
783‡		4187.0	10^-	3405.2	10^-		
783.1	1.5 *3*	4383.2	11^-	3600.1	(9^-)	(E2)	
789.4	11 *1*	4541.2	13^-	3751.9	11^-	E2	
814.4†		1862.4	6^+	1048.4	4^+	E2	
817.5†		5725.4	16^+	4907.7	14^+	E2	
819.1	0.76 *21*	6048.1	16^-	5229.1	14^-	E2	
844		2705.8	7^-	1862.4	6^+		
872.2†		6597.6	18^+	5725.4	16^+	(E2)	
877.3	6.9 *5*	5020.4	14^-	4143.0	12^-	E2	
894		3600.1	(9^-)	2705.8	7^-		
895.5	0.16 *2*	6523.6	17^-	5628.1	15^-	E2	
908.2†		3718.8	10^+	2810.5	8^+	E2	
947.4	1.3 *2*	5968.0	16^-	5020.4	14^-	E2	
947.9†		2810.5	8^+	1862.4	6^+	E2	
953.2†		9538	24^+	8584.6	22^+		
955.5	4.4 *4*	5496.6	15^-	4541.2	13^-	E2	
978		2026.7	(5)	1048.4	4^+		
985		7582.6	20^+	6597.6	18^+		
990.3†		10528	26^+	9538	24^+		

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^{120}Sn(^{18}O,4nγ) 2004La03 (continued)

γ(^{134}Ce) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
996‡		7043.9	(18$^-$)	6048.1	16$^-$		
1002		8584.6	22$^+$	7582.6	20$^+$		
1006.0	5.9 *4*	6026.4	16$^-$	5020.4	14$^-$	E2	
1030.0	<0.2	4187.0	10$^-$	3157.1	9$^-$	M1	
1044.7	2.0 *2*	7071.1	18$^-$	6026.4	16$^-$	E2	
1074.2†		11602	28$^+$	10528	26$^+$		
1125.2	28 *2*	2173.6	5$^-$	1048.4	4$^+$	E1	pol=+0.04 *1*.
1161.2†		12763	30$^+$	11602	28$^+$		
1245.1†		14008	32$^+$	12763	30$^+$		
1323.2†		15332	34$^+$	14008	32$^+$		
1450.2	<0.2	5593.1	14$^-$	4143.0	12$^-$	E2	pol=+0.17 *8*.

† From 1990GaZD.
‡ Placement of transition in the level scheme is uncertain.

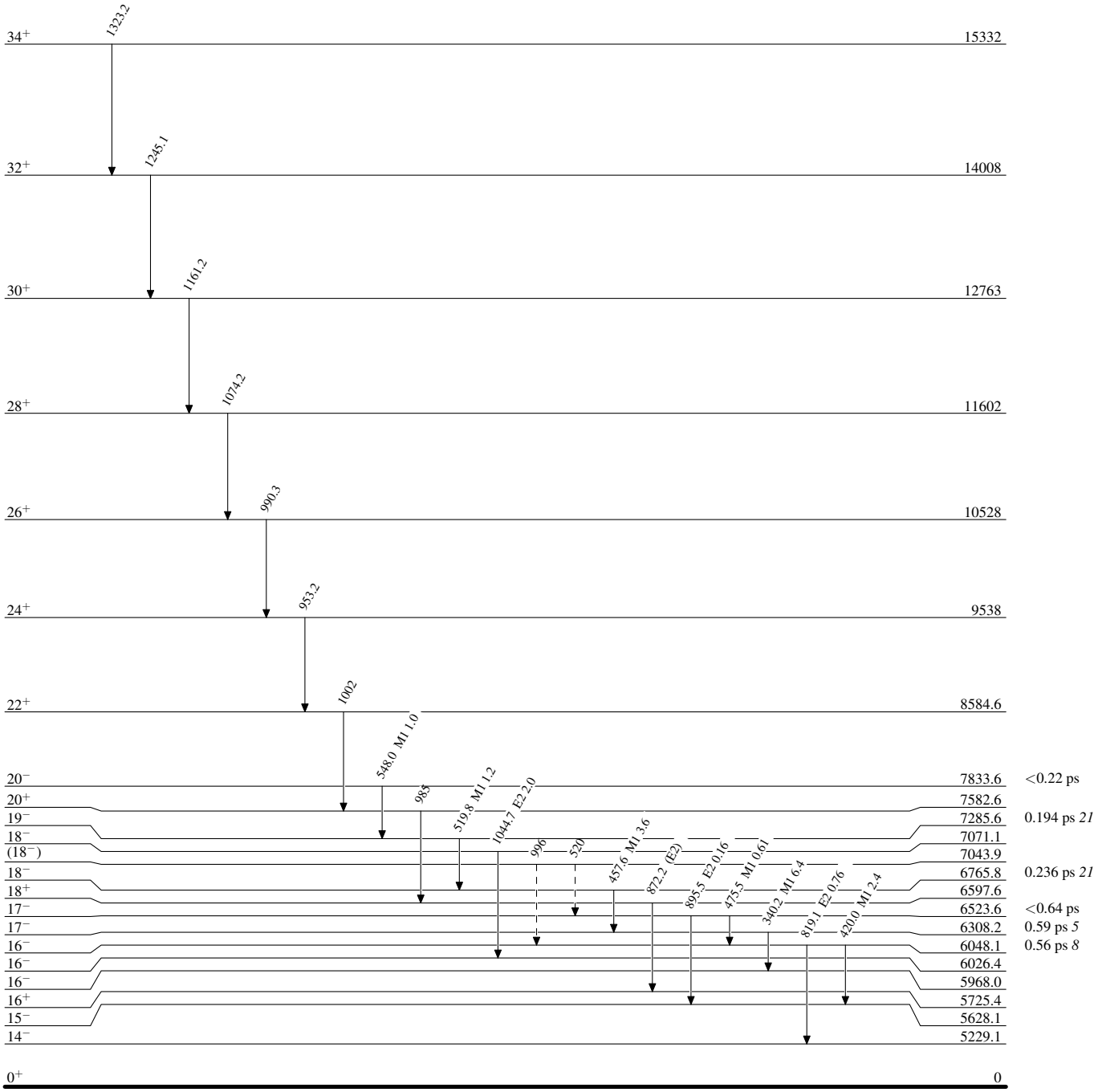
^{120}Sn(^{18}O,4nγ) 2004La03

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)



$^{134}_{58}Ce_{76}$

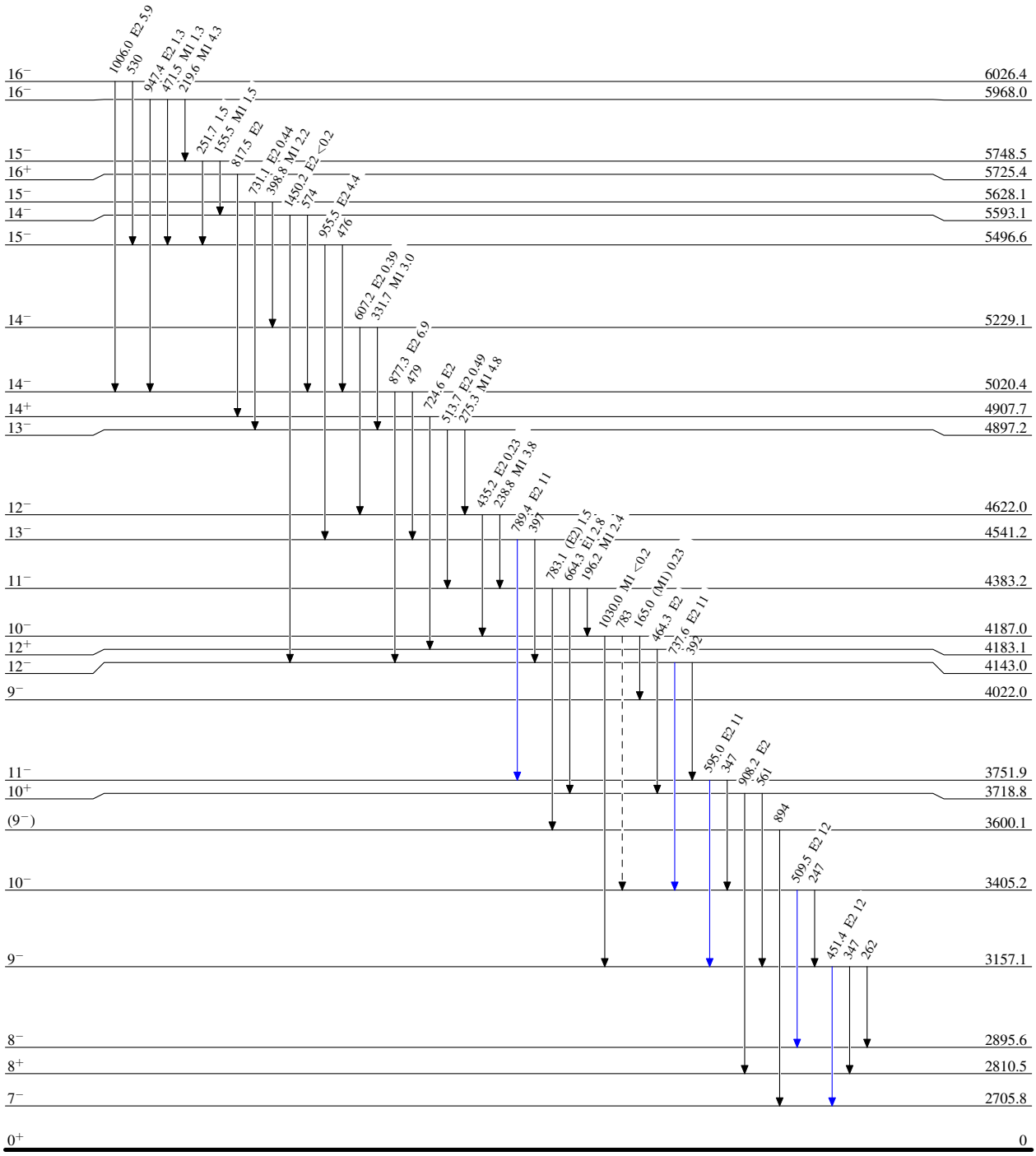
^{120}Sn(^{18}O,4nγ) 2004La03

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)

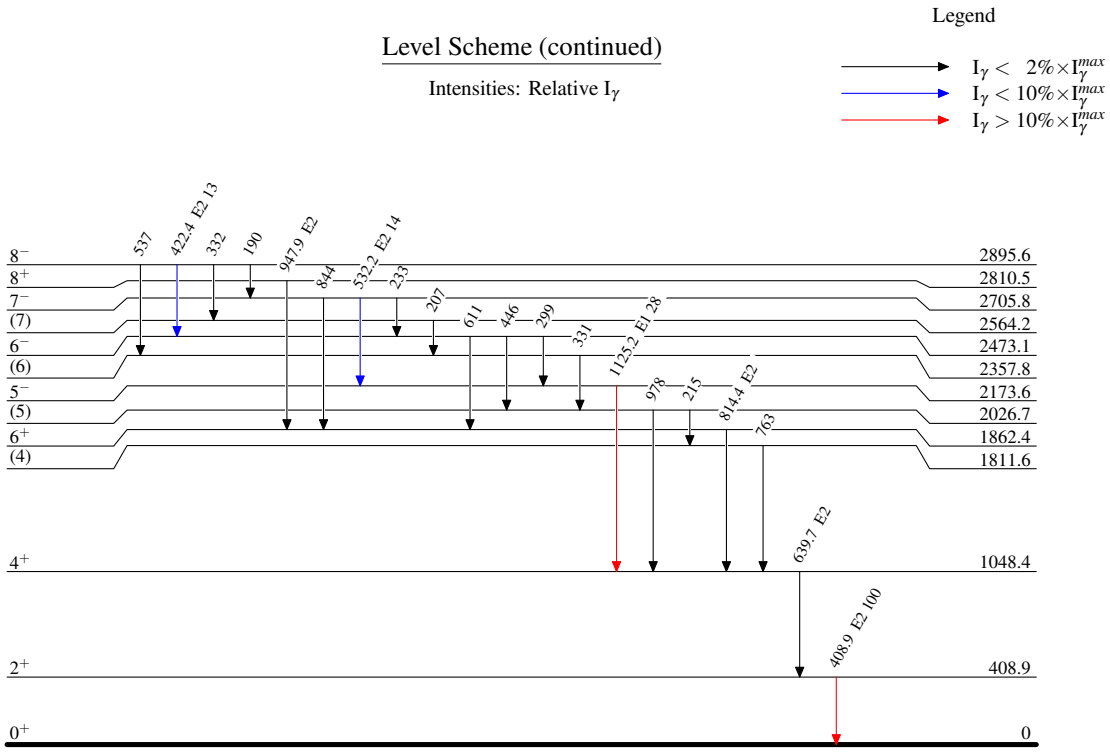


$^{134}_{58}Ce_{76}$

^{120}Sn(^{18}O,4nγ) 2004La03

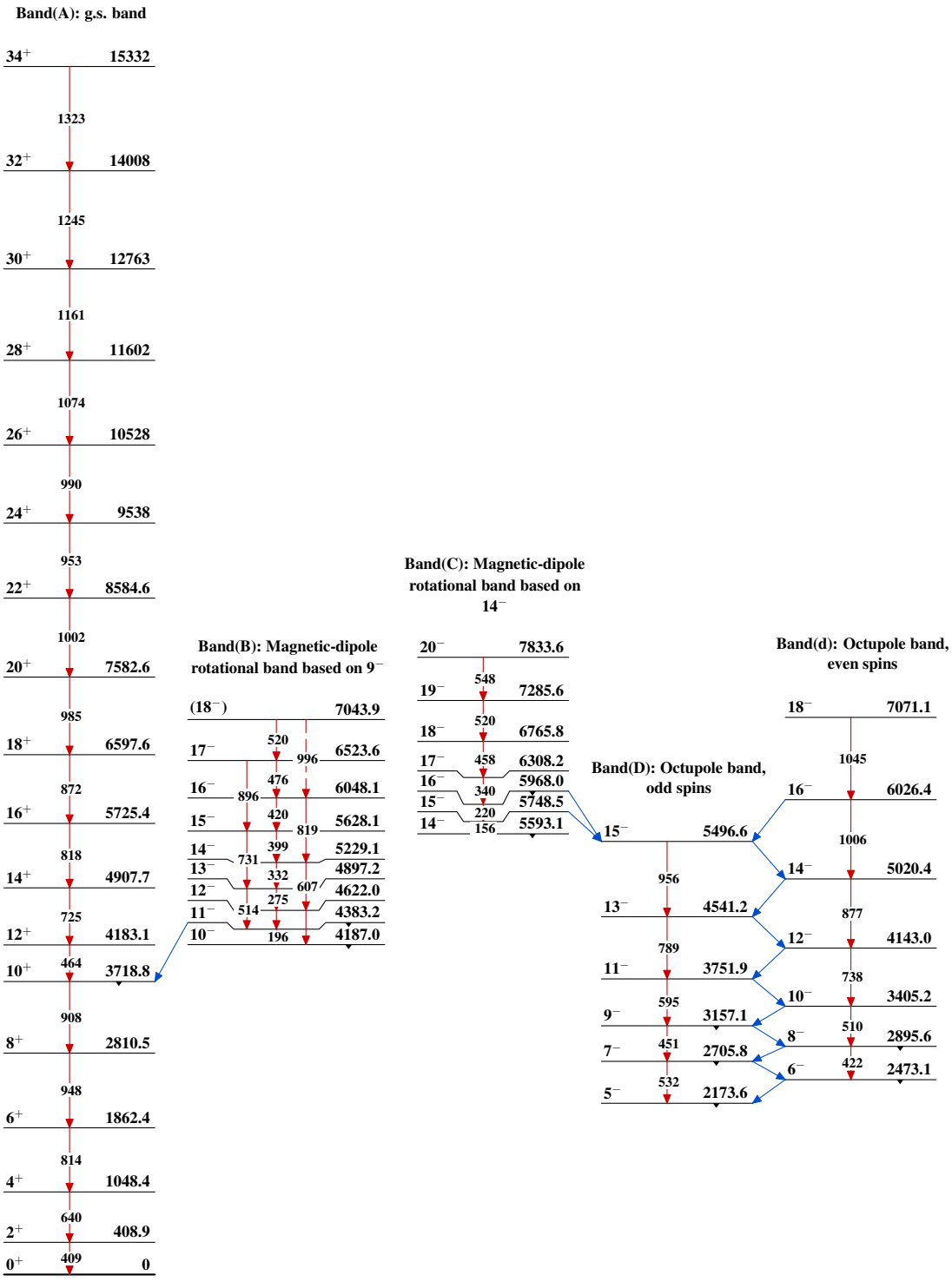
Level Scheme (continued)

Intensities: Relative I_γ



$^{134}_{58}Ce_{76}$

^{120}Sn(^{18}O,4nγ) 2004La03



$^{134}_{58}Ce_{76}$