

¹¹⁹Sn(¹⁸O,4n γ) 1987Ma57

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Yu. Khazov and A. Rodionov, F. G. Kondev		NDS 112, 855 (2011)	31-Oct-2010

1987Ma57: ¹¹⁹Sn(¹⁸O,4n γ), E=75 MeV; measured γ , $\gamma\gamma(\theta)$, $\gamma(t)$; deduced levels, J^π , band structure, DCO values, B(M1)/B(E2) ratios. Tandem, pulsed beam, four Ge detectors with BGO anti-Compton shields, seven BGO and four NaI(Tl) crystals. Cranked shell model.

Other: 1991Pa04.

¹³³Ce Levels

E(level) [†]	J^π [‡]	$T_{1/2}$ [#]	Comments
0.0 ^b	1/2 ⁺	97 min 4	$T_{1/2}$: from 'Adopted Levels'.
37.3 ^{& 6}	9/2 ⁻	4.9 h 4	E(level), $T_{1/2}$: from 'Adopted Levels'.
134.2 ^{b 4}	3/2 ⁺		
207.3 ^{& 8}	11/2 ⁻		
317.8 ^{b 4}	5/2 ⁺		B(M1;J→J-1)/B(E2;J→J-2)=0.40 7.
570.4 ^{b 5}	7/2 ⁺		B(M1;J→J-1)/B(E2;J→J-2)=0.22 2.
592.1 ^{& 7}	13/2 ⁻		B(M1;J→J-1)/B(E2;J→J-2)=1.8 2.
815.6 ^{b 6}	9/2 ⁺		B(M1;J→J-1)/B(E2;J→J-2)=0.39 20.
827.0 ^{& 7}	15/2 ⁻		B(M1;J→J-1)/B(E2;J→J-2)=1.2 2.
1200.4 8	15/2 ⁻		
1200.7 ^{b 6}	11/2 ⁺		B(M1;J→J-1)/B(E2;J→J-2)=0.28 5.
1343.5 ^{& 7}	17/2 ⁻		B(M1;J→J-1)/B(E2;J→J-2)=0.84 13.
1445.1 ^{b 7}	13/2 ⁺		
1589.8 ^{& 8}	19/2 ⁻		B(M1;J→J-1)/B(E2;J→J-2)=2.9 3.
1897.5 ^{@ 7}	15/2 ⁺		
1932.1 ^{b 7}	15/2 ⁺		
2096.4 ^{@ 7}	17/2 ⁺		
2199.2 ^{& 8}	21/2 ⁻		B(M1;J→J-1)/B(E2;J→J-2)=1.5 2.
2297.2 ^{@ 7}	19/2 ⁺		
2415.8 ^{c 8}	(19/2)		
2456.6 ^{@ 8}	21/2 ⁺		
2485.8 ^{& 8}	23/2 ⁻		B(M1;J→J-1)/B(E2;J→J-2)=1.9 2.
2501.7? 9			
2621.3 ^{c 8}	(21/2)		
2646.1 ^{@ 8}	23/2 ⁺		
2679.3 8	23/2 ⁻		
2743.8 ^{e 8}	(21/2)		
2844.9 ^{c 9}	(23/2)		
2881.1 ^{@ 8}	25/2 ⁺		B(M1;J→J-1)/B(E2;J→J-2)=18 3.
2959.4 ^{e 8}	(23/2)		
3128.4 ^{c 10}	(25/2)		
3129.0 ^{& 9}	25/2 ⁻		
3175.6 ^{@ 8}	27/2 ⁺		B(M1;J→J-1)/B(E2;J→J-2)=15 3.
3235.90 ^{a 90}	23/2 ⁻		
3235.9 ^{e 10}	(25/2)		
3332.8 ^{d 9}	(25/2 ⁺)		E(level): energy value of this bandhead remains uncertain as definite decay path from this band is unknown.
3376.0 ^{a 8}	25/2 ⁻		

Continued on next page (footnotes at end of table)

¹¹⁹Sn(¹⁸O,4n γ) **1987Ma57** (continued)

¹³³Ce Levels (continued)

E(level) [†]	J π [‡]	Comments
3432.9& 8	27/2 ⁻	
3434.1 ^c 11	(27/2)	
3530.7 ^a 8	27/2 ⁻	
3533.1@ 9	29/2 ⁺	B(M1;J \rightarrow J-1)/B(E2;J \rightarrow J-2)=11 2.
3571.4 ^e 11	(27/2)	
3755.9 ^d 10	(29/2 ⁺)	
3771.2 ^a 9	29/2 ⁻	
3780.6 ^c 12	(29/2)	
3917.7@ 9	31/2 ⁺	B(M1;J \rightarrow J-1)/B(E2;J \rightarrow J-2)=8.1 12.
3971.5 ^e 12	(29/2)	
4066.1 ^a 9	31/2 ⁻	B(M1;J \rightarrow J-1)/B(E2;J \rightarrow J-2)=12 2.
4212.6? ^c 13	(31/2)	
4245.3 ^d 11	(33/2 ⁺)	
4375.3@ 9	33/2 ⁺	B(M1;J \rightarrow J-1)/B(E2;J \rightarrow J-2)=7.2 12.
4403.9& 10	(31/2 ⁻)	
4408.2 ^a 9	33/2 ⁻	B(M1;J \rightarrow J-1)/B(E2;J \rightarrow J-2)=9.2 10.
4799.3 ^a 9	35/2 ⁻	B(M1;J \rightarrow J-1)/B(E2;J \rightarrow J-2)=9.0 12.
4831.5@ 10	35/2 ⁺	
4888.3 ^d 11	(37/2 ⁺)	
5215.1 ^a 10	37/2 ⁻	B(M1;J \rightarrow J-1)/B(E2;J \rightarrow J-2)=7.8 8.
5365.3? [@] 14	(37/2 ⁺)	
5655.8 ^d 12	(41/2 ⁺)	
5669.7 ^a 10	39/2 ⁻	B(M1;J \rightarrow J-1)/B(E2;J \rightarrow J-2)=5.5 7.
6543.8 ^d 13	(45/2 ⁺)	
7536.8 ^d 14	(49/2 ⁺)	

[†] From a least-squares fit to E γ 's.

[‡] From multiplicities (DCO values), band assignment, and configurations as given in 1987Ma57.

T_{1/2} < 8 ns from γ (t) measurements for all states, except as stated.

@ Band(A): Band based on 15/2⁺ state; possible 3-qp configuration= ν 9/2[514] (h_{11/2}) \otimes π (h_{11/2},g_{7/2}).

& Band(B): Band based on 9/2⁻ state; configuration= ν 9/2[514] (h_{11/2}).

^a Band(C): Band based on 23/2⁻ state; possible 3-qp configuration= ν 9/2[514] (h_{11/2}) \otimes π (h_{11/2}²).

^b Band(D): Band based on 1/2⁺ state; configuration= ν 1/2[400] (s_{1/2}).

^c Band(E): Band based on the (19/2) state.

^d Band(F): Band based on the (25/2⁺) state; configuration= ν 1/2[660] (i_{13/2}) \otimes π (h_{11/2}²).

^e Band(G): Band based on the (21/2) state;

γ (¹³³Ce)

E γ [†]	I γ [‡]	E _i (level)	J π _i	E _f	J π _f	Mult.#	I _(γ+ce) ^a	Comments
134.0 5	2.6 3	134.2	3/2 ⁺	0.0	1/2 ⁺	(M1)	3.9 4	R(DCO)=0.88 3.
140.0 5	2.1 2	3376.0	25/2 ⁻	3235.90	23/2 ⁻	(M1)	3.0 3	R(DCO)=0.93 5, the value obtained from total projection of correlation matrix.
154.7 4	15.5 16	3530.7	27/2 ⁻	3376.0	25/2 ⁻	(M1)	20.9 21	R(DCO)=0.64 7.
159.5 3	54 4	2456.6	21/2 ⁺	2297.2	19/2 ⁺	(M1)	71 7	R(DCO)=0.70 1.
164.0 5	<1.5	2096.4	17/2 ⁺	1932.1	15/2 ⁺	[M1+E2]	<2.0	

Continued on next page (footnotes at end of table)

¹¹⁹Sn(¹⁸O,4n γ) **1987Ma57** (continued)

$\gamma(^{133}\text{Ce})$ (continued)

E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. #	δ [@]	$I_{(\gamma+ce)}$ ^a	Comments
170.2 2	143 14	207.3	11/2 ⁻	37.3	9/2 ⁻	M1+E2	-0.16 8	181 18	R(DCO)=0.58 1.
183.5 5	<1.6	317.8	5/2 ⁺	134.2	3/2 ⁺	(M1)		<2.0	R(DCO)=0.74 5.
189.5 3	56 6	2646.1	23/2 ⁺	2456.6	21/2 ⁺	(M1)		67 7	R(DCO)=0.66 1.
198.8 4	9.0 9	2096.4	17/2 ⁺	1897.5	15/2 ⁺	(M1)		10.5 10	R(DCO)=0.77 4.
200.7 3	47 4	2297.2	19/2 ⁺	2096.4	17/2 ⁺	[M1]		55 5	
205.5 4	8.6 9	2621.3	(21/2)	2415.8	(19/2)	(M1)		10.4 11	R(DCO)=0.60 14.
215.5 5	6.8 7	2959.4	(23/2)	2743.8	(21/2)	(M1)		7.7 7	R(DCO)=0.85 2.
223.6 4	9.9 10	2844.9	(23/2)	2621.3	(21/2)	(M1)		11.1 11	R(DCO)=0.79 11.
234.9 4	22.4 23	827.0	15/2 ⁻	592.1	13/2 ⁻	M1+E2	-0.07 7	24.9 25	R(DCO)=0.72 4.
235.0 3	50 5	2881.1	25/2 ⁺	2646.1	23/2 ⁺	[M1]		55 5	
240.6 4	32 4	3771.2	29/2 ⁻	3530.7	27/2 ⁻	M1+E2	-0.03 8	35 4	
246 ^b		815.6	9/2 ⁺	570.4	7/2 ⁺				E_γ : from fig.1 of 1987Ma57, not listed in Table I.
246 ^b		1445.1	13/2 ⁺	1200.7	11/2 ⁺				E_γ : from fig.1 of 1987Ma57, not listed in Table I.
246.5 4 (247)	11.5 12	1589.8 3376.0	19/2 ⁻ 25/2 ⁻	1343.5 3129.0	17/2 ⁻ 25/2 ⁻	(M1+E2)		12.6 13	R(DCO)=0.76 14. E_γ : is calculated by evaluators as level energy difference according to level scheme (fig.1 of 1987Ma57).
253.0 5	2.6 3	570.4	7/2 ⁺	317.8	5/2 ⁺	(M1)		2.8 3	R(DCO)=0.79 6.
276.5 5	8.9 8	3235.9	(25/2)	2959.4	(23/2)	(M1)		9.5 9	R(DCO)=0.70 19.
283.5 4	10.0 10	3128.4	(25/2)	2844.9	(23/2)	(M1)		11.0 11	R(DCO)=0.69 9.
287.0 5		2485.8	23/2 ⁻	2199.2	21/2 ⁻	[M1+E2]		<2.0	
294.6 4	31 3	3175.6	27/2 ⁺	2881.1	25/2 ⁺	(M1)		33 3	R(DCO)=0.75 3.
294.9 4	27.4 30	4066.1	31/2 ⁻	3771.2	29/2 ⁻	M1+E2	-0.10 7	29 3	
304.0 5	<1.9	3432.9	27/2 ⁻	3129.0	25/2 ⁻	[M1+E2]		<2.0	
305.7 5	4.2 4	3434.1	(27/2)	3128.4	(25/2)	[M1]		4.4 4	
318.0 5	2.4 3	317.8	5/2 ⁺	0.0	1/2 ⁺	[E2]		2.5 3	
319.6 5	<2.0	2415.8	(19/2)	2096.4	17/2 ⁺	[M1+E2]		<2.0	Mult.: ambiguous, may be E1 (I γ value is the same) because of parity of the band E is not determined.
335.5 5	5.8 6	3571.4	(27/2)	3235.9	(25/2)	[M1]		6.1 6	
338.0 5	<1.9	3771.2	29/2 ⁻	3432.9	27/2 ⁻	[E2]		<2.0	
342.0 4	21.8 21	4408.2	33/2 ⁻	4066.1	31/2 ⁻	M1+E2	-0.09 13	22.8 23	R(DCO)=0.69 9.
346.5 5	2.2 2	3780.6	(29/2)	3434.1	(27/2)	(M1)		2.3 2	R(DCO)=0.73 3.
349.0 5	<2.0	2646.1	23/2 ⁺	2297.2	19/2 ⁺	[E2]		<2.0	
357.5 4	21.5 21	3533.1	29/2 ⁺	3175.6	27/2 ⁺	(M1)		22.3 22	R(DCO)=0.72 8.
360.0 5		2456.6	21/2 ⁺	2096.4	17/2 ⁺			<2.0	
365.0 ^{&}		2297.2	19/2 ⁺	1932.1	15/2 ⁺				E_γ : is calculated by evaluators as level energy difference according to level scheme (fig.1 of 1987Ma57).
384.5 4	22.7 22	3917.7	31/2 ⁺	3533.1	29/2 ⁺	(M1)		23.4 23	R(DCO)=0.54 8.
384.7 3	50 5	592.1	13/2 ⁻	207.3	11/2 ⁻	M1+E2	-0.25 13	51 5	
385		1200.7	11/2 ⁺	815.6	9/2 ⁺				E_γ : from fig.1 of 1987Ma57, not listed in Table I.
391.1 4	12.0 12	4799.3	35/2 ⁻	4408.2	33/2 ⁻	M1+E2	-0.10 7	12.4 12	R(DCO)=0.48 11.
399.4 5	<2.0	2297.2	19/2 ⁺	1897.5	15/2 ⁺	(E2)		<2.0	R(DCO)=1.0 4.
400.1 5		3971.5	(29/2)	3571.4	(27/2)				
405.4 ^{&}		2501.7?		2096.4	17/2 ⁺				E_γ : is calculated by evaluators as level energy difference according to level scheme (fig.1 of 1987Ma57).

Continued on next page (footnotes at end of table)

¹¹⁹Sn(¹⁸O,4n γ) **1987Ma57** (continued)

γ (¹³³Ce) (continued)

E_γ [†]	I_γ [‡]	E_i (level)	J_i^π	E_f	J_f^π	Mult. [#]	δ [@]	$I_{(\gamma+ce)}$ ^a	Comments
415.6 5	6.7 7	5215.1	37/2 ⁻	4799.3	35/2 ⁻	(M1)		6.9 7	R(DCO)=0.45 3.
423.1 4	10.3 13	3755.9	(29/2 ⁺)	3332.8	(25/2 ⁺)	(E2)		10.5 13	R(DCO)=1.06 17.
424.5 5	2.3 4	2881.1	25/2 ⁺	2456.6	21/2 ⁺	[E2]		2.3 4	
432.0 & 5	<2.0	4212.6?	(31/2)	3780.6	(29/2)	[M1]		<2.0	ce(K)/($\gamma+ce$)=0.0188 3; ce(L)/($\gamma+ce$)=0.00248 4; ce(M)/($\gamma+ce$)=0.000517 8; ce(N ⁺)/($\gamma+ce$)=0.0001349 20 ce(N)/($\gamma+ce$)=0.0001148 17; ce(O)/($\gamma+ce$)=1.87×10 ⁻⁵ 3; ce(P)/($\gamma+ce$)=1.434×10 ⁻⁶ 21
436.1 5	3.1 3	570.4	7/2 ⁺	134.2	3/2 ⁺	(E2)		3.1 3	R(DCO)=0.90 7.
446 &		2743.8	(21/2)	2297.2	19/2 ⁺				E_γ : from fig.1 of 1987Ma57 , not listed in Table I.
454.4 5	6.5 7	5669.7	39/2 ⁻	5215.1	37/2 ⁻	[M1+E2]		6.6 7	
456.5 4	12.4 12	4831.5	35/2 ⁺	4375.3	33/2 ⁺	(M1)		12.6 13	R(DCO)=0.62 16.
457.9 5		4375.3	33/2 ⁺	3917.7	31/2 ⁺				
489.4 4	14.6 19	4245.3	(33/2 ⁺)	3755.9	(29/2 ⁺)	(E2)		14.8 19	R(DCO)=1.14 10.
497.4 5	<2	815.6	9/2 ⁺	317.8	5/2 ⁺	[E2]		<2.0	
503.0 5	4.0 4	2959.4	(23/2)	2456.6	21/2 ⁺	[M1+E2]		4.0 4	
516.8 4	22.6 23	1343.5	17/2 ⁻	827.0	15/2 ⁻	M1+E2	-0.45 9	22.9 23	R(DCO)=0.54 4.
518.6 5	<2.0	2415.8	(19/2)	1897.5	15/2 ⁺	[E2]		<2.0	Mult.: ambiguous, may be M2 (I_γ value is about the same) because of parity of the band E is not determined.
529.5 5	3.8 4	3175.6	27/2 ⁺	2646.1	23/2 ⁺	[E2]		3.8 4	
535.5 5	3.1 4	4066.1	31/2 ⁻	3530.7	27/2 ⁻	[E2]		3.1 4	
554.9 4	18.7 18	592.1	13/2 ⁻	37.3	9/2 ⁻	(E2)		18.9 19	R(DCO)=1.12 2.
608.5 4	16.3 17	1200.4	15/2 ⁻	592.1	13/2 ⁻	(M1+E2)		16.7 17	R(DCO)=0.69 10. Mult.: from γ (lq) 1974Gi01 .
609.5 5	8.0 8	2199.2	21/2 ⁻	1589.8	19/2 ⁻	M1+E2	-0.35 14	8.0 8	
619.7 3	99 10	827.0	15/2 ⁻	207.3	11/2 ⁻	(E2)		100 10	R(DCO)=1.16 1.
629.4 5	3.4 3	1445.1	13/2 ⁺	815.6	9/2 ⁺	(E2)		3.4 3	R(DCO)=1.82 14.
630.5 5		1200.7	11/2 ⁺	570.4	7/2 ⁺				
636.9 5	4.5 4	4408.2	33/2 ⁻	3771.2	29/2 ⁻	[E2]		4.5 4	
643		3129.0	25/2 ⁻	2485.8	23/2 ⁻				E_γ : from fig.1 of 1987Ma57 , not listed in Table I.
643.0 4	14.6 19	4888.3	(37/2 ⁺)	4245.3	(33/2 ⁺)	(E2)		14.7 19	R(DCO)=1.09 12.
651.5 5		2096.4	17/2 ⁺	1445.1	13/2 ⁺	(E2)			R(DCO)=1.30 12.
652.0 5	3.8 4	3533.1	29/2 ⁺	2881.1	25/2 ⁺	[E2]		3.8 4	
653 &		3332.8	(25/2 ⁺)	2679.3	23/2 ⁻				E_γ : is calculated by evaluators as level energy difference according to level scheme (fig.1 of 1987Ma57).
697.0 5	<2.0	1897.5	15/2 ⁺	1200.7	11/2 ⁺	[E2]		<2.0	
731.0 5	<2.0	1932.1	15/2 ⁺	1200.7	11/2 ⁺	[E2]		<2.0	
733.5 5	5.5 5	4799.3	35/2 ⁻	4066.1	31/2 ⁻	[E2]		5.5 5	
742.0 5	5.0 5	3917.7	31/2 ⁺	3175.6	27/2 ⁺	(E2)		5.0 5	R(DCO)=1.2 5.
750		3235.90	23/2 ⁻	2485.8	23/2 ⁻				E_γ : from fig.1 of 1987Ma57 , not listed in Table I.
751.2 4	33 3	1343.5	17/2 ⁻	592.1	13/2 ⁻	[E2]		33 3	
762.7 3	52 5	1589.8	19/2 ⁻	827.0	15/2 ⁻	[E2]		52 5	R(DCO)=1.03 5.
767.5 5	6.8 9	5655.8	(41/2 ⁺)	4888.3	(37/2 ⁺)	(E2)		6.8 9	R(DCO)=1.10 17.
806.8 5	3.0 3	5215.1	37/2 ⁻	4408.2	33/2 ⁻	[E2]		3.0 3	
831.1 & 5	2.3 2	3332.8	(25/2 ⁺)	2501.7?		[M1]		2.3 2	
842.4 5	<2.0	4375.3	33/2 ⁺	3533.1	29/2 ⁺	[E2]		<2.0	

Continued on next page (footnotes at end of table)

¹¹⁹Sn(¹⁸O,4n γ) **1987Ma57 (continued)**

$\gamma(^{133}\text{Ce})$ (continued)

E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [#]	$I_{(\gamma+ce)}$ ^a	Comments
847.1 & 5	4.3 4	3332.8	(25/2 ⁺)	2485.8	23/2 ⁻	[E1]	4.3 4	R(DCO)=0.85 4.
851.0 5	<2.0	3530.7	27/2 ⁻	2679.3	23/2 ⁻		<2.0	
856.0 5	7.9 8	2199.2	21/2 ⁻	1343.5	17/2 ⁻	(E2)	7.9 8	R(DCO)=1.22 27.
870.5 5	3.1 3	5669.7	39/2 ⁻	4799.3	35/2 ⁻	(E2)	3.1 3	R(DCO)=1.08 27.
888.0 5	<2.0	6543.8	(45/2 ⁺)	5655.8	(41/2 ⁺)	(E2)	<2.0	R(DCO)=1.05 20.
890.5 5	<2.0	3376.0	25/2 ⁻	2485.8	23/2 ⁻	[M1+E2]	<2.0	R(DCO)=1.58 6, the value obtained from total projection of correlation matrix.
896.0 4	33 3	2485.8	23/2 ⁻	1589.8	19/2 ⁻	(E2)	33 3	R(DCO)=1.02 8.
896.4 5	4.6 5	2096.4	17/2 ⁺	1200.4	15/2 ⁻	[E1]	4.6 5	
913.3 5	1.7 2	4831.5	35/2 ⁺	3917.7	31/2 ⁺	(E2)	1.7 2	R(DCO)=1.29 21.
930.0 5	3.9 4	3129.0	25/2 ⁻	2199.2	21/2 ⁻	[E2]	3.9 4	
946.9 4	24.5 25	3432.9	27/2 ⁻	2485.8	23/2 ⁻	(E2)	24.6 25	R(DCO)=1.03 18.
954.0 4	22.5 22	2297.2	19/2 ⁺	1343.5	17/2 ⁻	[E1]	22.5 22	R(DCO)=0.51 9.
971.0 5	4.6 5	4403.9	(31/2 ⁻)	3432.9	27/2 ⁻	[E2]	4.6 5	
990 &		5365.3?	(37/2 ⁺)	4375.3	33/2 ⁺			E_γ : from fig.1 of 1987Ma57, not listed in Table I.
993.0 5	<2.0	7536.8	(49/2 ⁺)	6543.8	(45/2 ⁺)	[E2]	<2.0	
1031.5 5	<2.0	2621.3	(21/2)	1589.8	19/2 ⁻	[E1]	<2.0	R(DCO)=0.57 33. Mult.: ambiguous, may be M1+E2 (I_γ value is the same) because of parity of the band E is not determined.
1045.4 5	8.3 8	3530.7	27/2 ⁻	2485.8	23/2 ⁻	(E2)	8.3 8	R(DCO)=1.05 24.
1071.6 5	5.8 6	2415.8	(19/2)	1343.5	17/2 ⁻	[E1]	5.8 6	Mult.: ambiguous, may be M1+E2 (I_γ value is the same) because of parity of the band E is not determined. R(DCO)=0.78 28.
1089.0 5	<2.0	2679.3	23/2 ⁻	1589.8	19/2 ⁻	(E2)	<2.0	R(DCO)=1.9 4.
1154.0 5	<2.0	2743.8	(21/2)	1589.8	19/2 ⁻	[E1]	<2.0	Mult.: ambiguous, may be M1+E2 (I_γ value is the same) because of parity of the band G is not determined.
1176.5 5	5.5 5	3376.0	25/2 ⁻	2199.2	21/2 ⁻	(E2)	5.5 5	R(DCO)=1.72 5.
1269.3 4	27 3	2096.4	17/2 ⁺	827.0	15/2 ⁻	[E1]	27 3	R(DCO)=0.91 2.
1305.4 5	5.5 5	1897.5	15/2 ⁺	592.1	13/2 ⁻	[E1]	5.5 5	R(DCO)=1.09 5, the value obtained from total projection of correlation matrix.

[†] Evaluators assigned ΔE_γ according to author's statement in Table 1 (1987Ma57) that the $\Delta E_\gamma=0.2$ keV for the strong transitions, rising to 0.5 keV for the weak ones: $\Delta E_\gamma=0.2$ keV for $I(\gamma+ce) \geq 120$, $\Delta E_\gamma=0.3$ keV for $120 > I(\gamma+ce) \geq 50$, $\Delta E_\gamma=0.4$ keV for $50 > I(\gamma+ce) \geq 10$, $\Delta E_\gamma=0.5$ keV for others; $\Delta E_\gamma=1$ keV for transitions taken from fig.1.

[‡] Calculated by evaluators from $I(\gamma+ce)$ using ¹³³Ce level scheme in fig. 2 (1987Ma57) and theoretical $\alpha(\text{tot})$ from BrIcc code 2008Ki07.

[#] For the stretched quadrupole (E2) transitions $R(\text{DCO}) > 1.0$, for stretched dipole (M1) transitions $R(\text{DCO}) < 0.9$; gating transition is 619.7 keV, E2 (1987Ma57).

[@] Obtained from fig. 1 of 1991Pa04 by evaluators.

[&] Uncertain placement in the ¹³³Ce level scheme (1987Ma57).

^a Except where stated, according to author's statement (1987Ma57) $\Delta(I(\gamma+ce)) < 10\%$ (evaluators assumed =10%).

^b Multiply placed.

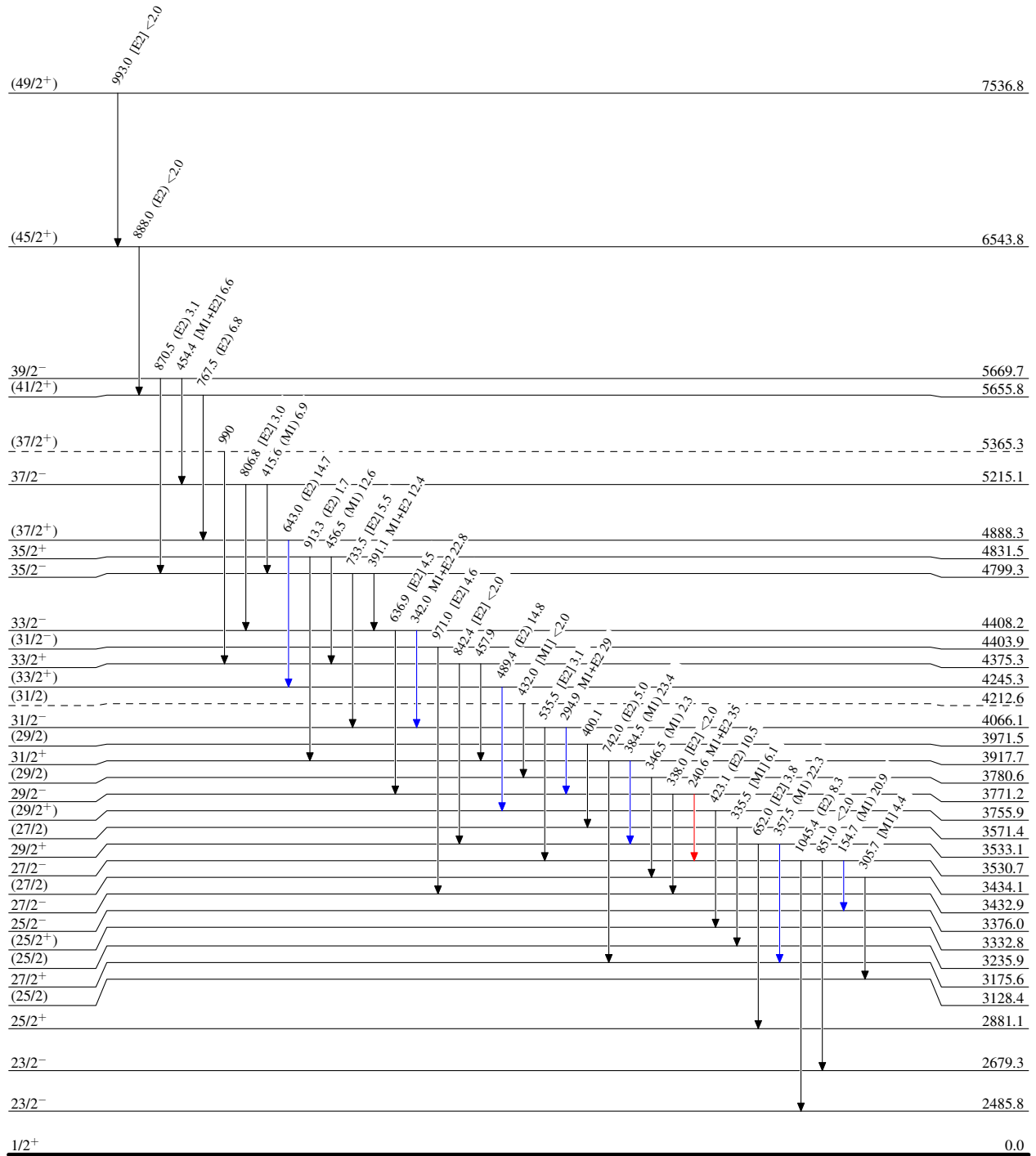
$^{119}\text{Sn}(^{18}\text{O},4n\gamma)$ 1987Ma57

Level Scheme

Intensities: Relative $I_{(\gamma+ce)}$

Legend

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



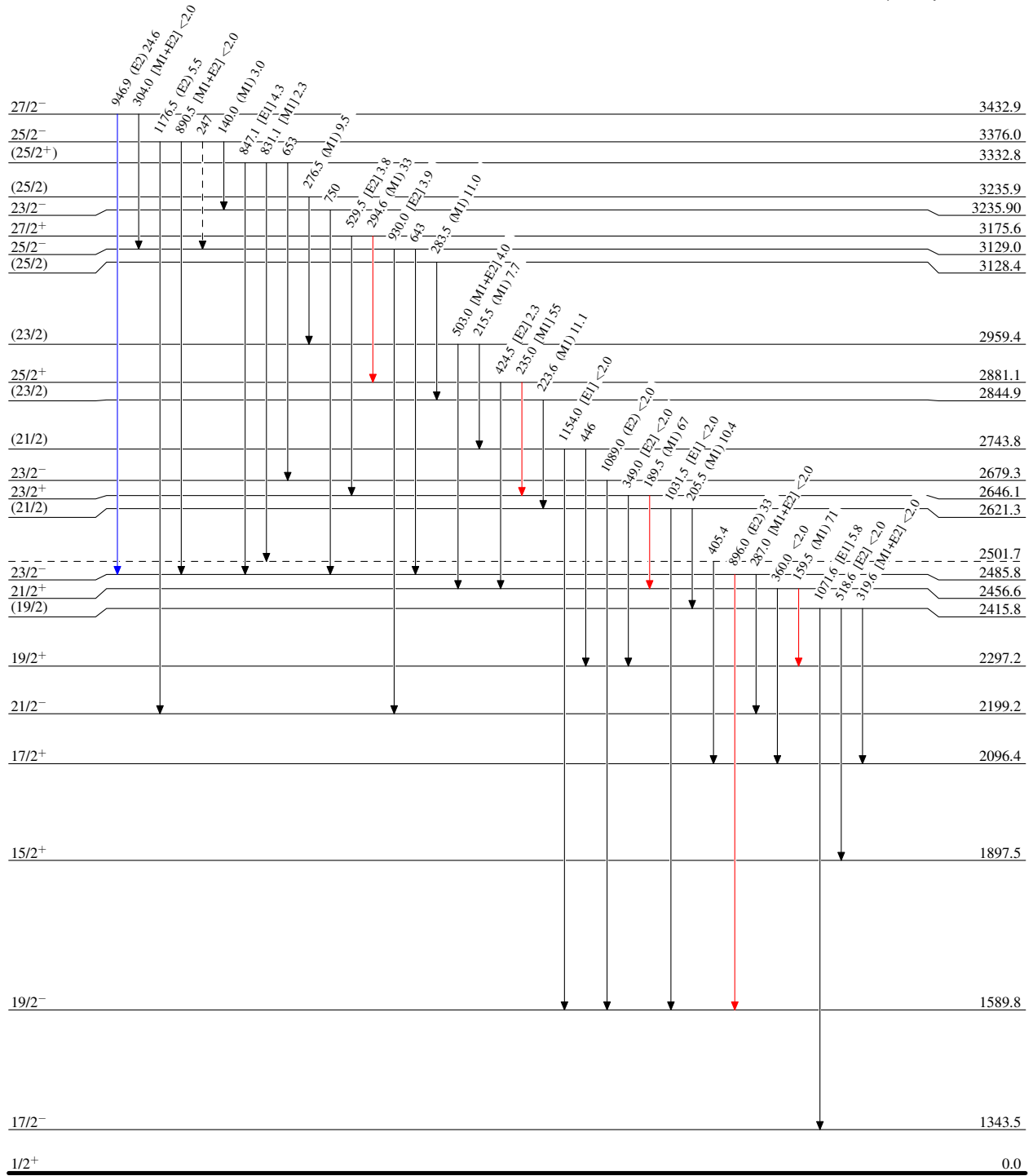
$^{119}\text{Sn}(^{18}\text{O},4n\gamma)$ 1987Ma57

Legend

Level Scheme (continued)

Intensities: Relative $I_{(\gamma+ce)}$

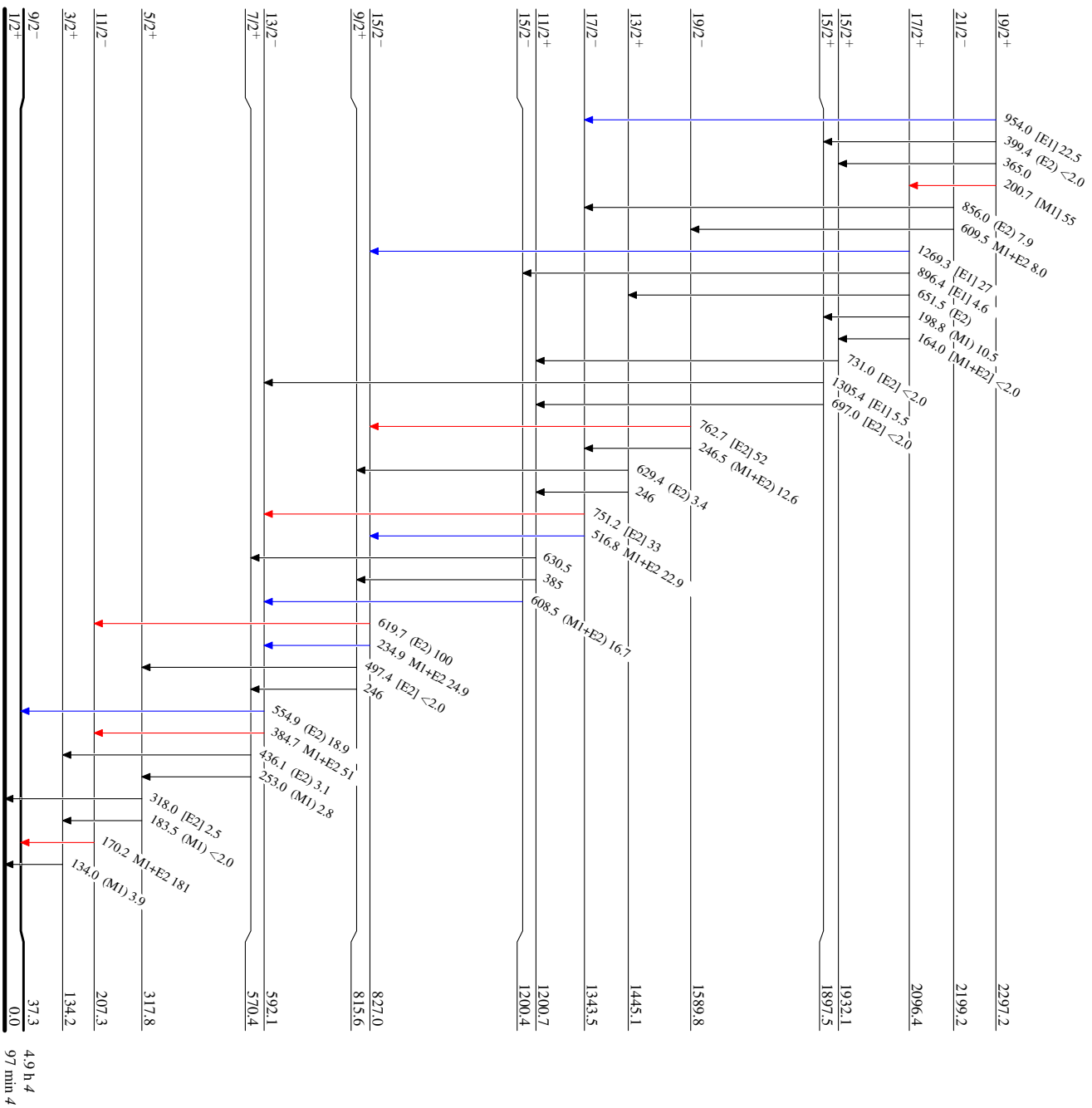
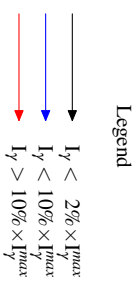
- ▶ $I_{\gamma} < 2\% \times I_{\gamma}^{max}$
- ▶ $I_{\gamma} < 10\% \times I_{\gamma}^{max}$
- ▶ $I_{\gamma} > 10\% \times I_{\gamma}^{max}$
- - - -▶ γ Decay (Uncertain)



¹¹⁹Sn(18O,4nγ) **1987Ma57**

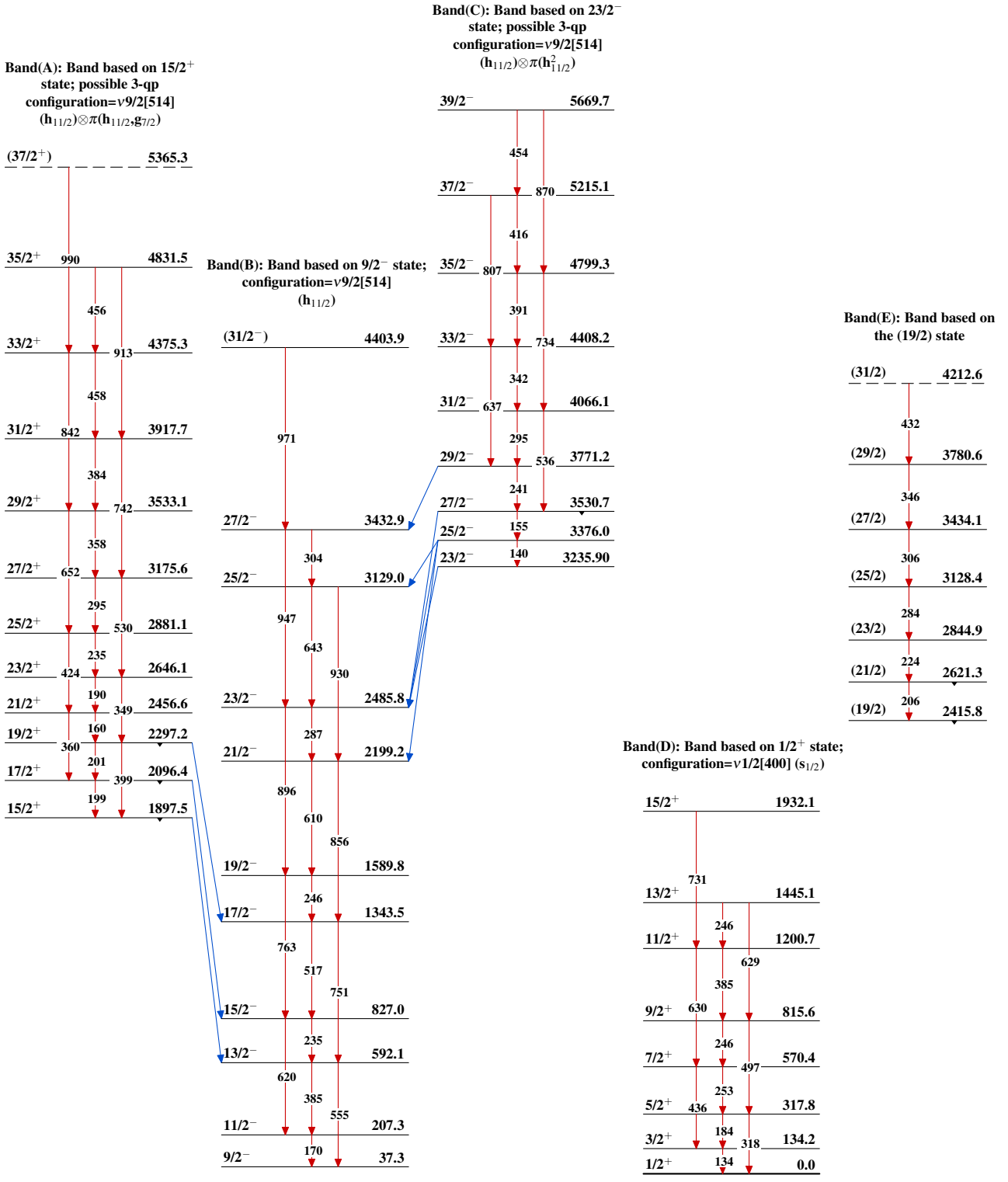
Level Scheme (continued)

Intensities: Relative I_{γ+ce}



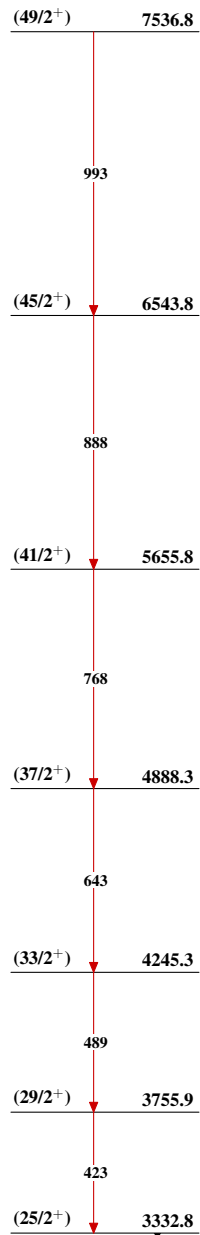
¹³³Ce₇₅
58

$^{119}\text{Sn}(^{18}\text{O},4n\gamma)$ 1987Ma57



$^{119}\text{Sn}(^{18}\text{O},4n\gamma)$ 1987Ma57 (continued)

Band(F): Band based on
the $(25/2^+)$ state;
configuration= $\nu 1/2[660]$
 $(i_{13/2}) \otimes \pi(h_{11/2}^2)$



Band(G): Band based on
the $(21/2)$ state;

