

$^{120}\text{Sn}(^{31}\text{P},4\text{n}\gamma)$ 1998Sc32,1995Sc17,1996Ni10

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	N. Nica and B. Singh		NDS 181, 1 (2022)	9-Mar-2022

1998Sc32,1995Sc17,1996Ni10 compiled for XUNDL by B. Singh (McMaster).

1998Sc32: $^{120}\text{Sn}(^{31}\text{P},4\text{n}\gamma)$, E=152 MeV; 1995Sc17: same, and $^{122}\text{Sn}(^{31}\text{P},6\text{n}\gamma)$, E=160 MeV. Measured $E\gamma$, $I\gamma$, $\gamma\gamma$, $\gamma\gamma(\theta)(\text{DCO})$ using an array of 12 Compton-suppressed Ge detectors.

1994Me03: $^{120}\text{Sn}(^{31}\text{P},4\text{n}\gamma)$, E=140, 150 MeV. Measured $\gamma\gamma$, (ce) γ .

1996Ni10: $^{100}\text{Mo}(^{51}\text{V},4\text{n}\gamma)$ E=230 MeV. Measured $E\gamma$, $\gamma\gamma\gamma$ using GASP (40 Ge detector array and particle detector array) and 8π array. Deduced super-deformed band.

1979Br28: $^{151}\text{Eu}(\alpha,8\text{n}\gamma)$, E=68-110 MeV. Measured $E\gamma$, $I\gamma$, I(ce), $T_{1/2}$.

All γ rays reported by 1994Me03 are confirmed by 1995Sc17 and 1998Sc32, but the ordering of the transitions in some of the cascades is different in 1994Me03.

 ^{147}Tb Levels

E(level) [†]	$J^{\pi\ddagger}$	$T_{1/2}$	Comments
50.6	11/2 ⁻	1.83 min 6	E(level): from Adopted Levels. Additional information 1.
1316.4 2	15/2 ⁺	4.8 ns 6	$T_{1/2}$: from Adopted Levels.
1601.2 2	13/2 ⁺		$T_{1/2}$: from 1979Br28.
1988.1 2	15/2 ⁻		
2088.2 2	17/2 ⁺		
2575.5 3	19/2 ⁻		
2714.6 3	19/2 ⁺		
2785.1 2	21/2 ⁺		
3042.4 2	23/2 ⁺	3.5 ns 4	$T_{1/2}$: from 1979Br28.
3189.7 2	25/2 ⁺		
3206.2 4	23/2 ⁺		J^{π} : 25/2 ⁺ in 1995Sc17.
3381.1 3	25/2 ⁺		
3471.1 2	27/2 ⁺		
3572.0 3			
3889.0 2	27/2 ⁻		
4508.2 2	29/2 ⁻		
4723.0 2	29/2 ⁺		
5003.7 3	31/2 ⁻		
5131.1 4	(29/2 ⁺)		
5199.7 4			
5276.6 3	(29/2 ⁺)		
5296.7 2	31/2 ⁻		
5321.0 2	29/2 ⁺		
5393.8 4			
5491.6 3			
5502.1 3			
5503.7 3			
5581.5 4			
5586.8 3			
5631.0 3	31/2 ⁽⁺⁾		
5649.9 2	31/2 ⁺		
5665.1 4			
5665.4 3			
5700.5 3			
5766.9 3	33/2 ⁺		
5880.0 3	33/2 ⁽⁺⁾		
5924.6 3	35/2 ⁻		

Continued on next page (footnotes at end of table)

$^{120}\text{Sn}(^{31}\text{P},4n\gamma)$ **1998Sc32,1995Sc17,1996Ni10** (continued) ^{147}Tb Levels (continued)

E(level) [†]	J ^π [‡]	E(level) [†]	J ^π [‡]	T _{1/2}	E(level) [†]	J ^π [‡]
5966.0 3	33/2 ⁺	7650.0 4		1.8 ns	10552.2 5	
5980.5 3	35/2 ⁻	7714.4 3	41/2 ⁻		10731.7 4	55/2 ⁽⁺⁾
6018.8 5		7761.8 3	43/2 ⁽⁻⁾		10822.2 5	
6107.0 4		7776.8 4			10897.1 4	(51/2 ⁺)
6124.6 3	(33/2 ⁺)	7806.5 4			11036.4 4	57/2 ⁽⁺⁾
6201.7 3	37/2 ⁻	7843.7 4	(41/2)		11315.9 5	
6250.0 4		8118.9 4			11449.8 4	
6388.5 4		8221.9 4			11497.0 5	
6422.7 3	39/2 ⁻	8237.0			11637.8 4	59/2 ⁽⁻⁾
6448.3 4		8240.5 4			11840.8 5	
6549.8 3	35/2 ⁻	8276.8 4	(43/2)		11929.4 4	
6617.5 3	35/2 ⁽⁺⁾	8433.7 4	(45/2)		12082.9 4	59/2 ⁽⁺⁾
6664.6 3	35/2 ⁺	8449.5 4	45/2 ⁽⁻⁾		12372.5 4	61/2 ⁽⁺⁾
6738.2 3	37/2 ⁺	8506.3 5			12662.0 5	(61/2)
6755.5 3	(39/2)	8538.1 4			12813.7 4	63/2 ⁽⁺⁾
6797.6 4		8616.2 4			13317.1 4	65/2 ⁽⁺⁾
6821.4 3	35/2 ⁽⁺⁾	8751.2 3	47/2 ⁽⁻⁾		13823.7 5	67/2 ⁽⁺⁾
6903.8 3	39/2 ⁽⁺⁾	8773.2 4	47/2 ⁽⁺⁾		13908.2 6	
6904.7 3	37/2 ⁺	8856.6 3	47/2 ⁽⁻⁾		14344.3 6	
6960.5 3	37/2 ⁽⁺⁾	8967.9 4			x [#]	J
7022.2 3	37/2 ⁻	9036.4 3	49/2 ⁽⁺⁾		826+x [#]	J+2
7261.5 3	41/2 ⁽⁺⁾	9507.8 5			1710+x [#]	J+4
7271.8 3	37/2 ⁺	9731.0 4	49/2 ⁽⁺⁾		2651+x [#]	J+6
7275.1 4		9920.5 4	(51/2 ⁺)		3649+x [#]	J+8
7306.9 4		9955.2 4	53/2 ⁽⁺⁾		4704+x [#]	J+10
7311.1 3		9974.3 5			5815+x [#]	J+12
7336.3 3	39/2 ⁻	10346.1 6			6982+x [#]	J+14
7506.2 3	39/2 ⁺	10380.5 4			8206+x [#]	J+16
7540.3 3	39/2 ⁽⁻⁾	10428.8 4	(53/2 ⁺)		9487+x [#]	J+18

[†] From least-squares fit to E_γ's, assuming Δ(E_γ)=0.3 when not available.[‡] From **1998Sc32** and **1995Sc17** (see Adopted Levels dataset for adopted J^π values).[#] Band(A): Super-deformed band (**1996Ni10**). $\gamma(^{147}\text{Tb})$

E _γ [†]	I _γ [‡]	E _i (level)	J _i ^π	E _f	J _f ^π	Mult. [#]	δ [#]
(14.8 ^a)		7776.8		7761.8	43/2 ⁽⁻⁾		
47.9 ^a		7761.8	43/2 ⁽⁻⁾	7714.4	41/2 ⁻		
61.2 ^a		7336.3	39/2 ⁻	7275.1			
63.3 ^a		5649.9	31/2 ⁺	5586.8			
70.5 ^a		2785.1	21/2 ⁺	2714.6	19/2 ⁺		
90.0 ^a		3471.1	27/2 ⁺	3381.1	25/2 ⁺	M1 ^{&}	
100.0 ^a		2088.2	17/2 ⁺	1988.1	15/2 ⁻		
112.1 ^a		7761.8	43/2 ⁽⁻⁾	7650.0			
120.8 1	6.14 14	6738.2	37/2 ⁺	6617.5	35/2 ⁽⁺⁾	M1+E2	-0.25 10
129.1 ^a		5631.0	31/2 ⁽⁺⁾	5502.1			
139.2 2	1.81 11	6960.5	37/2 ⁽⁺⁾	6821.4	35/2 ⁽⁺⁾	M1+E2	-0.20 10
146.4 ^a		5649.9	31/2 ⁺	5503.7			

Continued on next page (footnotes at end of table)

$^{120}\text{Sn}(^{31}\text{P},4n\gamma)$ **1998Sc32,1995Sc17,1996Ni10** (continued) $\gamma(^{147}\text{Tb})$ (continued)

E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [#]	δ [#]	Comments
147.4 <i>I</i>	32.5	3189.7	25/2 ⁺	3042.4	23/2 ⁺	M1(+E2)	+0.05 5	
147.8 <i>a</i>		5649.9	31/2 ⁺	5502.1				
153.6 <i>a</i>		12082.9	59/2 ⁽⁺⁾	11929.4				
156.9 <i>a</i>		8433.7	(45/2)	8276.8	(43/2)			
157.7 <i>a</i>		5924.6	35/2 ⁻	5766.9	33/2 ⁺			
158.5 <i>a</i>		5649.9	31/2 ⁺	5491.6				
163.3 <i>a</i>		5665.4		5502.1				
165.5 <i>I</i>	13.92 22	6903.8	39/2 ⁽⁺⁾	6738.2	37/2 ⁺	M1(+E2)	-0.05 5	
180.0 2	14.3	9036.4	49/2 ⁽⁺⁾	8856.6	47/2 ⁽⁻⁾	E1(+M2)	0.00 5	
181.0 <i>a</i>		11497.0		11315.9				
191.3 <i>a</i>		3381.1	25/2 ⁺	3189.7	25/2 ⁺	M1+E2 &		
193.2 <i>a</i>		8433.7	(45/2)	8240.5				
196.7 <i>a</i>		8433.7	(45/2)	8237.0				
208.2 <i>I</i>	32.1 3	7714.4	41/2 ⁻	7506.2	39/2 ⁺	E1(+M2)	0.00 +5-2	
209.8 <i>a</i>		2785.1	21/2 ⁺	2575.5	19/2 ⁻			
212.0 <i>a</i>		8433.7	(45/2)	8221.9				
213.1 <i>a</i>		8751.2	47/2 ⁽⁻⁾	8538.1				
221.1 <i>a</i>		6422.7	39/2 ⁻	6201.7	37/2 ⁻	M1+E2 &		
221.2 2	9.4	7761.8	43/2 ⁽⁻⁾	7540.3	39/2 ⁽⁻⁾	E2		$\delta(\text{M3/E2})=0.00 +5-2.$
224.2 <i>a</i>		5924.6	35/2 ⁻	5700.5				
224.4 <i>a</i>		9955.2	53/2 ⁽⁺⁾	9731.0	49/2 ⁽⁺⁾			
224.6 <i>a</i>		7022.2	37/2 ⁻	6797.6				
229.6 <i>a</i>		8506.3		8276.8	(43/2)			
234.4 <i>I</i>	10.96 22	7506.2	39/2 ⁺	7271.8	37/2 ⁺	M1+E2	+0.08 4	
240.1 <i>I</i>	9.38 22	6904.7	37/2 ⁺	6664.6	35/2 ⁺	M1(+E2)	+0.04 4	
249.0 <i>I</i>	22.0 3	5880.0	33/2 ⁽⁺⁾	5631.0	31/2 ⁽⁺⁾	M1(+E2)	+0.05 5	
257.4 <i>I</i>	82.8 5	3042.4	23/2 ⁺	2785.1	21/2 ⁺	M1,E2		Mult.: E2, $\Delta J=1$ transition in 1994Me03; M1, $\Delta J=1$ transition in 1983St07.
259.6 <i>a</i>		5924.6	35/2 ⁻	5665.1				
263.1 <i>I</i>	12.66 23	9036.4	49/2 ⁽⁺⁾	8773.2	47/2 ⁽⁺⁾	M1+E2	+0.17 2	
269.0 <i>a</i>		7540.3	39/2 ⁽⁻⁾	7271.8	37/2 ⁺			
271.6 <i>a</i>		5665.4		5393.8				
276.1 <i>a</i>		6664.6	35/2 ⁺	6388.5				
277.1 <i>I</i>	9.85 24	6201.7	37/2 ⁻	5924.6	35/2 ⁻	M1+E2	-0.25 5	
281.4 <i>I</i>	67.8 5	3471.1	27/2 ⁺	3189.7	25/2 ⁺	M1(+E2)	-0.05 5	
285.2 <i>I</i>	61.3 5	9036.4	49/2 ⁽⁺⁾	8751.2	47/2 ⁽⁻⁾	E1		
289.6 <i>I</i>	23.7 3	12372.5	61/2 ⁽⁺⁾	12082.9	59/2 ⁽⁺⁾	M1+E2	-0.17 7	
301.2 <i>a</i>		8538.1		8237.0				
301.6 2	9.0	8751.2	47/2 ⁽⁻⁾	8449.5	45/2 ⁽⁻⁾	M1(+E2)	+0.05 5	
304.6 2	3.8 4	11036.4	57/2 ⁽⁺⁾	10731.7	55/2 ⁽⁺⁾	D(+Q)	0.00 10	
310.0 <i>I</i>	18.5 3	5631.0	31/2 ⁽⁺⁾	5321.0	29/2 ⁺	M1(+E2)	+0.05 5	
314.1 <i>I</i>	28.7 4	7336.3	39/2 ⁻	7022.2	37/2 ⁻	M1+E2	+0.27 3	
316.1 <i>I</i>	54.7 5	5966.0	33/2 ⁺	5649.9	31/2 ⁺	M1+E2	+0.20 5	
318.5 <i>a</i>		8856.6	47/2 ⁽⁻⁾	8538.1				
323.7 <i>a</i>		8773.2	47/2 ⁽⁺⁾	8449.5	45/2 ⁽⁻⁾			
328.9 <i>I</i>	12.6 3	5649.9	31/2 ⁺	5321.0	29/2 ⁺	M1(+E2)	+0.10 10	
330.6 <i>a</i>		8449.5	45/2 ⁽⁻⁾	8118.9				
332.8 <i>I</i>	5.56 26	6755.5	(39/2)	6422.7	39/2 ⁻	D(+Q)	0.00 10	
339.0 <i>a</i>		3381.1	25/2 ⁺	3042.4	23/2 ⁺	M1+E2 &		
339.1 <i>a</i>		7650.0		7311.1				

Continued on next page (footnotes at end of table)

$^{120}\text{Sn}(^{31}\text{P},4n\gamma)$ **1998Sc32,1995Sc17,1996Ni10** (continued) $\gamma(^{147}\text{Tb})$ (continued)

E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [#]	$\delta^\#$	Comments
346.5 ^a		7306.9		6960.5	37/2 ⁽⁺⁾			
354.4 ^a		5631.0	31/2 ⁽⁺⁾	5276.6	(29/2 ⁺)			
357.7 <i>l</i>	11.2 3	7261.5	41/2 ⁽⁺⁾	6903.8	39/2 ⁽⁺⁾	M1(+E2)	-0.05 5	
367.6 ^a		6617.5	35/2 ⁽⁺⁾	6250.0				
373.5 ^a		5649.9	31/2 ⁺	5276.6	(29/2 ⁺)			
375.8 <i>l</i>	13.3 3	7336.3	39/2 ⁻	6960.5	37/2 ⁽⁺⁾	D(+Q)	0.00 5	
378.1 <i>l</i>	67.1 8	7714.4	41/2 ⁻	7336.3	39/2 ⁻	M1(+E2)	+0.05 5	
382.2 ^a		3572.0		3189.7	25/2 ⁺			
391.0 ^a		11840.8		11449.8				
403.2 ^a		7714.4	41/2 ⁻	7311.1				
404.5 <i>l</i>	110.5 8	3189.7	25/2 ⁺	2785.1	21/2 ⁺	E2		
406.5 ^a		7311.1		6904.7	37/2 ⁺			
407.6 ^a		7714.4	41/2 ⁻	7306.9				
421.1 ^a		3206.2	23/2 ⁺	2785.1	21/2 ⁺	M1+E2		Mult.: from $\alpha(\text{K})\text{exp}$ and $\gamma(\theta)$ in 1983St07 .
425.3 ^a		10380.5		9955.2	53/2 ⁽⁺⁾			
428.7 ^a		3471.1	27/2 ⁺	3042.4	23/2 ⁺			
431.5 ^a		7336.3	39/2 ⁻	6904.7	37/2 ⁺			
433.0 3	3.2 5	8276.8	(43/2)	7843.7	(41/2)	D(+Q)	-0.07 7	
441.2 <i>l</i>	18.8 6	12813.7	63/2 ⁽⁺⁾	12372.5	61/2 ⁽⁺⁾	M1+E2	-0.34 8	
441.9 ^a		6107.0		5665.1				
461.6 ^a		8967.9		8506.3				
465.6 ^a		5665.4		5199.7				
467.7 ^a		6448.3		5980.5	35/2 ⁻			
468.9 ^a		8118.9		7650.0				
487.1 ^a		2088.2	17/2 ⁺	1601.2	13/2 ⁺			
495.4 <i>l</i>	23.2 4	5003.7	31/2 ⁻	4508.2	29/2 ⁻	M1(+E2)	+0.05 5	
498.2 <i>l</i>	12.7 3	6422.7	39/2 ⁻	5924.6	35/2 ⁻	E2		$\delta(\text{M3/E2})=0.00 +15-5$.
501.2 ^a		6201.7	37/2 ⁻	5700.5				
503.4 <i>l</i>	8.8 6	13317.1	65/2 ⁽⁺⁾	12813.7	63/2 ⁽⁺⁾	M1+E2	-0.80 55	
506.6 2	5.8 4	13823.7	67/2 ⁽⁺⁾	13317.1	65/2 ⁽⁺⁾	M1+E2	-0.85 45	
508.3 2	5.6 4	10428.8	(53/2 ⁺)	9920.5	(51/2 ⁺)	M1(+E2)	+0.02 12	
520.6 ^a		14344.3		13823.7	67/2 ⁽⁺⁾			
522.6		8237.0		7714.4	41/2 ⁻			
526.0 ^a		8240.5		7714.4	41/2 ⁻			
534.0 ^a		5665.1		5131.1	(29/2 ⁺)			
534.1 ^a		8967.9		8433.7	(45/2)			
545.0 ^a		7806.5		7261.5	41/2 ⁽⁺⁾			
552.6 ^a		11449.8		10897.1	(51/2 ⁺)			
585.8 ^a		12082.9	59/2 ⁽⁺⁾	11497.0				
587.6 ^a		2575.5	19/2 ⁻	1988.1	15/2 ⁻			
601.4 ^a		7506.2	39/2 ⁺	6904.7	37/2 ⁺			
601.4 2	16.8	11637.8	59/2 ⁽⁻⁾	11036.4	57/2 ⁽⁺⁾	(E1(+M2))	-0.10 10	
607.2 3	5.9 7	7271.8	37/2 ⁺	6664.6	35/2 ⁺	M1+E2	+0.20 5	
613.5 ^a		6738.2	37/2 ⁺	6124.6	(33/2 ⁺)			
625.0 ^a		6018.8		5393.8				
628.0 ^a		5924.6	35/2 ⁻	5296.7	31/2 ⁻	E2 ^{&}		
631.6 ^a		10552.2		9920.5	(51/2 ⁺)			
636.3 <i>l</i>	9.4 4	7540.3	39/2 ⁽⁻⁾	6903.8	39/2 ⁽⁺⁾	(E1(+M2))	0.00 +5-15	
668.6 ^a		6250.0		5581.5				
669.8 3	5.0 6	6549.8	35/2 ⁻	5880.0	33/2 ⁽⁺⁾	(E1(+M2))	0.00 +10-15	
683.8 <i>l</i>	20.6 4	5980.5	35/2 ⁻	5296.7	31/2 ⁻	E2		$\delta(\text{M3/E2})=0.00 1$.

Continued on next page (footnotes at end of table)

$^{120}\text{Sn}(^{31}\text{P},4n\gamma)$ **1998Sc32,1995Sc17,1996Ni10** (continued) $\gamma(^{147}\text{Tb})$ (continued)

E_γ [†]	I_γ [‡]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [#]	δ [#]	Comments
687.6 ^a		8449.5	45/2 ⁽⁻⁾	7761.8	43/2 ⁽⁻⁾	Q		Mult.: $\Delta J=2$ (1994Mc03).
696.8 ^a		5700.5		5003.7	31/2 ⁻			
696.9 1	191.4 12	2785.1	21/2 ⁺	2088.2	17/2 ⁺	E2		
698.6 1	18.8 3	6664.6	35/2 ⁺	5966.0	33/2 ⁺	M1+E2	+0.55 13	
699.3 1	47.0 6	3889.0	27/2 ⁻	3189.7	25/2 ⁺	E1		
718.1 ^a		11449.8		10731.7	55/2 ⁽⁺⁾			
737.5 1	19.1 5	6617.5	35/2 ⁽⁺⁾	5880.0	33/2 ⁽⁺⁾	M1+E2	-0.10 5	
738.5 ^a		6388.5		5649.9	31/2 ⁺			
757.3 2	4.68 30	6738.2	37/2 ⁺	5980.5	35/2 ⁻	E1(+M2)	0.00 10	
763.2 ^a		5766.9	33/2 ⁺	5003.7	31/2 ⁻			
763.7 ^a		11315.9		10552.2				
771.8 1	182.3 12	2088.2	17/2 ⁺	1316.4	15/2 ⁺	M1+E2	+0.10 5	
776.2 ^a		8538.1		7761.8	43/2 ⁽⁻⁾			
776.4 2	6.0	10731.7	55/2 ⁽⁺⁾	9955.2	53/2 ⁽⁺⁾	(M1(+E2))	-0.15 20	
782.8 2	5.5 3	6549.8	35/2 ⁻	5766.9	33/2 ⁺	E1(+M2)	0.00 +20-2	
786.3 ^a		7336.3	39/2 ⁻	6549.8	35/2 ⁻			
809.4 ^a		7714.4	41/2 ⁻	6904.7	37/2 ⁺			
811.0 2	7.9 5	7714.4	41/2 ⁻	6903.8	39/2 ⁽⁺⁾	(E1(+M2))	0.00 +10-5	E_γ : level-energy difference=810.5.
826 [@]		826+x	J+2	x	J			
831.7 ^a		6797.6		5966.0	33/2 ⁺			
833.9 ^a		4723.0	29/2 ⁺	3889.0	27/2 ⁻			
835.8 ^a		6960.5	37/2 ⁽⁺⁾	6124.6	(33/2 ⁺)			
838.3 ^a		10346.1		9507.8				
867.0 ^a		10822.2		9955.2	53/2 ⁽⁺⁾			
876.1 ^a		5880.0	33/2 ⁽⁺⁾	5003.7	31/2 ⁻			
884 [@]		1710+x	J+4	826+x	J+2			
884.1 1	4.0 5	9920.5	(51/2 ⁺)	9036.4	49/2 ⁽⁺⁾	(M1+E2)	+1.00 10	
891.6 ^a		9507.8		8616.2				
893.1 ^a		11929.4		11036.4	57/2 ⁽⁺⁾			
901.8 ^a		8616.2		7714.4	41/2 ⁻			
915.1 ^a		7022.2	37/2 ⁻	6107.0				
918.8 1	67.0 9	9955.2	53/2 ⁽⁺⁾	9036.4	49/2 ⁽⁺⁾	E2		
920.8 ^a		5924.6	35/2 ⁻	5003.7	31/2 ⁻			
924.2 ^a		6904.7	37/2 ⁺	5980.5	35/2 ⁻			
926.7 2	8.0 4	5649.9	31/2 ⁺	4723.0	29/2 ⁺	M1+E2	+0.12 5	
938.8 ^a		6904.7	37/2 ⁺	5966.0	33/2 ⁺			
941 [@]		2651+x	J+6	1710+x	J+4			
941.5 2	5.2 4	6821.4	35/2 ⁽⁺⁾	5880.0	33/2 ⁽⁺⁾	D(+Q)	+0.05 5	
944.5 ^a		13317.1	65/2 ⁽⁺⁾	12372.5	61/2 ⁽⁺⁾			
957.8 1	15.6 5	9731.0	49/2 ⁽⁺⁾	8773.2	47/2 ⁽⁺⁾	M1+E2	+0.29 9	
960.6 ^a		8221.9		7261.5	41/2 ⁽⁺⁾			
977.6 ^a		5700.5		4723.0	29/2 ⁺			
989.4 1	62.6 11	8751.2	47/2 ⁽⁻⁾	7761.8	43/2 ⁽⁻⁾	E2		
996.4 1	21.9 5	8773.2	47/2 ⁽⁺⁾	7776.8		(E1(+M2))	-0.04 6	
998 [@]		3649+x	J+8	2651+x	J+6			
1011.2 ^a		8773.2	47/2 ⁽⁺⁾	7761.8	43/2 ⁽⁻⁾			
1014.6 ^a		6664.6	35/2 ⁺	5649.9	31/2 ⁺			
1024.2 ^a		12662.0	(61/2)	11637.8	59/2 ⁽⁻⁾	E1 &		
1037.0 1	27.1 5	4508.2	29/2 ⁻	3471.1	27/2 ⁺	E1		
1041.7 2	7.4 4	7022.2	37/2 ⁻	5980.5	35/2 ⁻	M1(+E2)	-0.05 5	
1044.0 ^a		5766.9	33/2 ⁺	4723.0	29/2 ⁺			

Continued on next page (footnotes at end of table)

$^{120}\text{Sn}(^{31}\text{P},4n\gamma)$ **1998Sc32,1995Sc17,1996Ni10** (continued) $\gamma(^{147}\text{Tb})$ (continued)

$E_\gamma^\dagger$	$I_\gamma^\ddagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [#]	$\delta^\#$	Comments
1046.4 2	10.6 4	12082.9	59/2 ⁽⁺⁾	11036.4	57/2 ⁽⁺⁾	M1+E2	+1.1 4	
1055 [@]		4704+x	J+10	3649+x	J+8			
1069.3 ^a		11449.8		10380.5				
1081.3 1	37.9 7	11036.4	57/2 ⁽⁺⁾	9955.2	53/2 ⁽⁺⁾	E2		
1083.6 ^a		7506.2	39/2 ⁺	6422.7	39/2 ⁻			
1088.2 ^a		7843.7	(41/2)	6755.5	(39/2)			
1094.8 1	12.5 4	8856.6	47/2 ⁽⁻⁾	7761.8	43/2 ⁽⁻⁾	E2		$\delta(\text{M3/E2})=0.00 +30-5$.
1097.3 ^a		7022.2	37/2 ⁻	5924.6	35/2 ⁻	D+Q		Mult.: $\Delta J=1$ (1994Me03) for a 1099 γ .
1111 [@]		5815+x	J+12	4704+x	J+10			
1114.9 ^a		5003.7	31/2 ⁻	3889.0	27/2 ⁻			
1118.0 ^a		7540.3	39/2 ⁽⁻⁾	6422.7	39/2 ⁻			
1120.8 ^a		6124.6	(33/2 ⁺)	5003.7	31/2 ⁻			
1150.8 ^a		4723.0	29/2 ⁺	3572.0				
1166.1 2	5.2 3	10897.1	(51/2 ⁺)	9731.0	49/2 ⁽⁺⁾	(M1+E2)	+0.28 3	
1167 [@]		6982+x	J+14	5815+x	J+12			
1223.1 ^a		9974.3		8751.2	47/2 ⁽⁻⁾			
1224 [@]		8206+x	J+16	6982+x	J+14			
1246.1 ^a		13908.2		12662.0	(61/2)			
1251.9 1	12.9 4	4723.0	29/2 ⁺	3471.1	27/2 ⁺	M1(+E2)	0.00 5	
1265.5 ^a		1316.4	15/2 ⁺	50.6	11/2 ⁻	M2+E3 ^{&}		
1281 [@]		9487+x	J+18	8206+x	J+16			
1294.6 ^a		7275.1		5980.5	35/2 ⁻			
1306.2 ^a		7271.8	37/2 ⁺	5966.0	33/2 ⁺			
1392.5 ^a		10428.8	(53/2 ⁺)	9036.4	49/2 ⁽⁺⁾			
1398.2 ^a		2714.6	19/2 ⁺	1316.4	15/2 ⁺			
1407.6 1	35.2 6	5296.7	31/2 ⁻	3889.0	27/2 ⁻	E2		
1550.7 ^a		1601.2	13/2 ⁺	50.6	11/2 ⁻			
1850.0 2	10.4 4	5321.0	29/2 ⁺	3471.1	27/2 ⁺	M1+E2	-0.90 15	
1922.7 ^a		5393.8		3471.1	27/2 ⁺			
1937.5 ^a		1988.1	15/2 ⁻	50.6	11/2 ⁻			
1941.4 ^a		5131.1	(29/2 ⁺)	3189.7	25/2 ⁺			
2010.0 ^a		5199.7		3189.7	25/2 ⁺			
2020.6 ^a		5491.6		3471.1	27/2 ⁺			
2031.2 ^a		5502.1		3471.1	27/2 ⁺			
2038.0 ^a		2088.2	17/2 ⁺	50.6	11/2 ⁻			
2087.1 ^a		5276.6	(29/2 ⁺)	3189.7	25/2 ⁺			
2110.6 ^a		5581.5		3471.1	27/2 ⁺			
2115.9 ^a		5586.8		3471.1	27/2 ⁺			
2131.6 ^a		5321.0	29/2 ⁺	3189.7	25/2 ⁺			
2160.2 ^a 5		5631.0	31/2 ⁽⁺⁾	3471.1	27/2 ⁺			
2179.0 ^a		5649.9	31/2 ⁺	3471.1	27/2 ⁺			
2314.1 ^a		5503.7		3189.7	25/2 ⁺			

[†] From 1998Sc32 for E_γ 's with uncertainties, from 1995Sc17 for others. For super-deformed band, values are from 1996Ni10.[‡] From 1998Sc32. Values quoted by 1998Sc32 are divided by 1000.[#] From DCO measurements (1998Sc32, no DCO values given), supposing that Q transitions are E2, and D+Q transitions are M1+E2; see Adopted Gammas for adopted multipolarities.[@] From 1996Ni10.

$^{120}\text{Sn}(^{31}\text{P},4\text{n}\gamma)$ [1998Sc32,1995Sc17,1996Ni10](#) (continued)

$\gamma(^{147}\text{Tb})$ (continued)

[&] From [1994Me03](#) based on ce and DCO data.

^a From [1995Sc17](#).

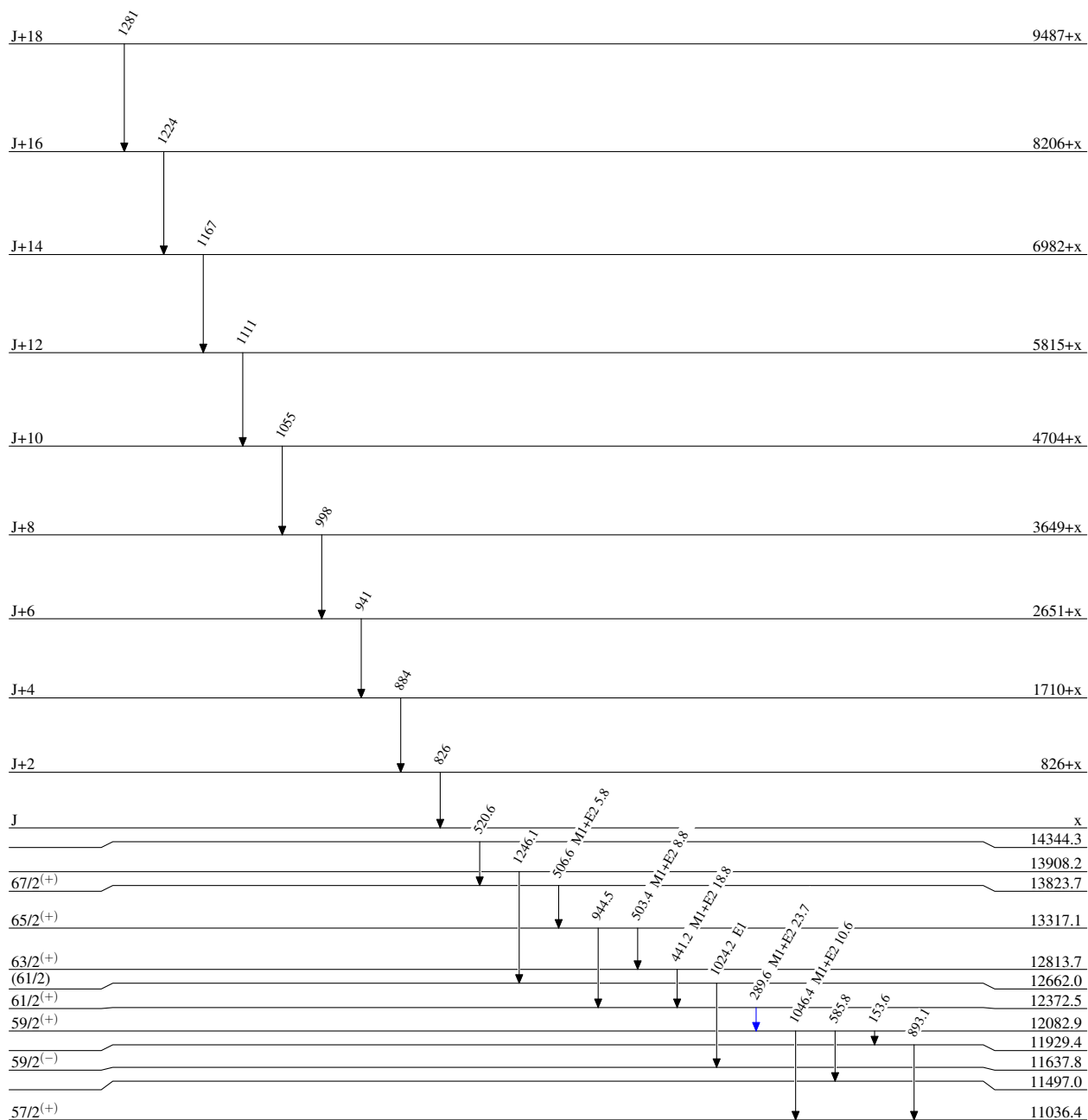
$^{120}\text{Sn}(^{31}\text{P},4\text{n}\gamma)$ 1998Sc32,1995Sc17,1996Ni10

Level Scheme

Intensities: Relative I_γ

Legend

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

 $^{147}_{65}\text{Tb}_{82}$

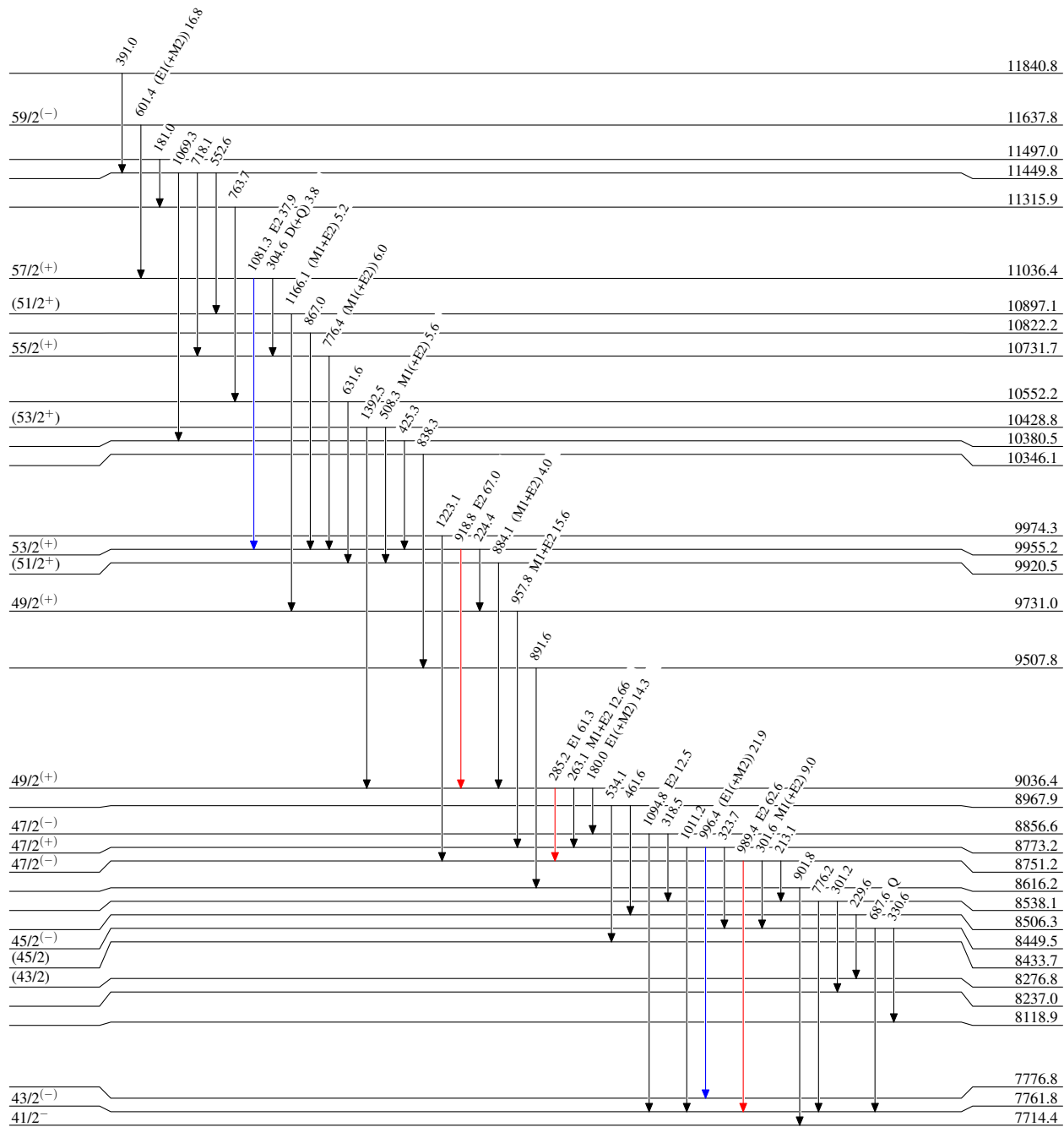
$^{120}\text{Sn}(^{31}\text{P},4n\gamma)$ 1998Sc32,1995Sc17,1996Ni10

Level Scheme (continued)

Intensities: Relative I_γ

Legend

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



1.8 ns

 $^{147}_{65}\text{Tb}_{82}$

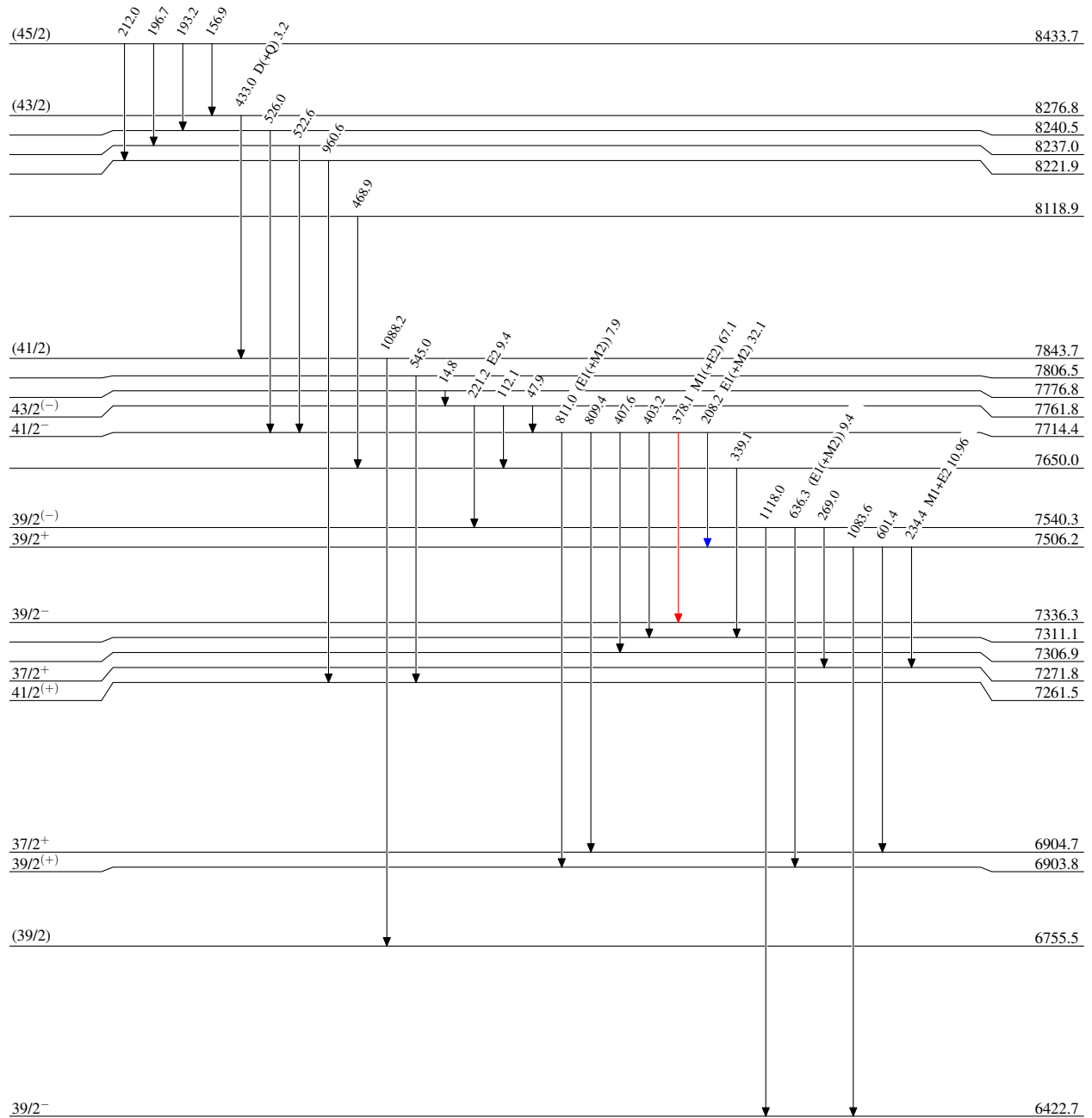
$^{120}\text{Sn}(^{31}\text{P},4n\gamma)$ 1998Sc32,1995Sc17,1996Ni10

Legend

Level Scheme (continued)

Intensities: Relative I_γ

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


 $^{147}_{65}\text{Tb}_{82}$

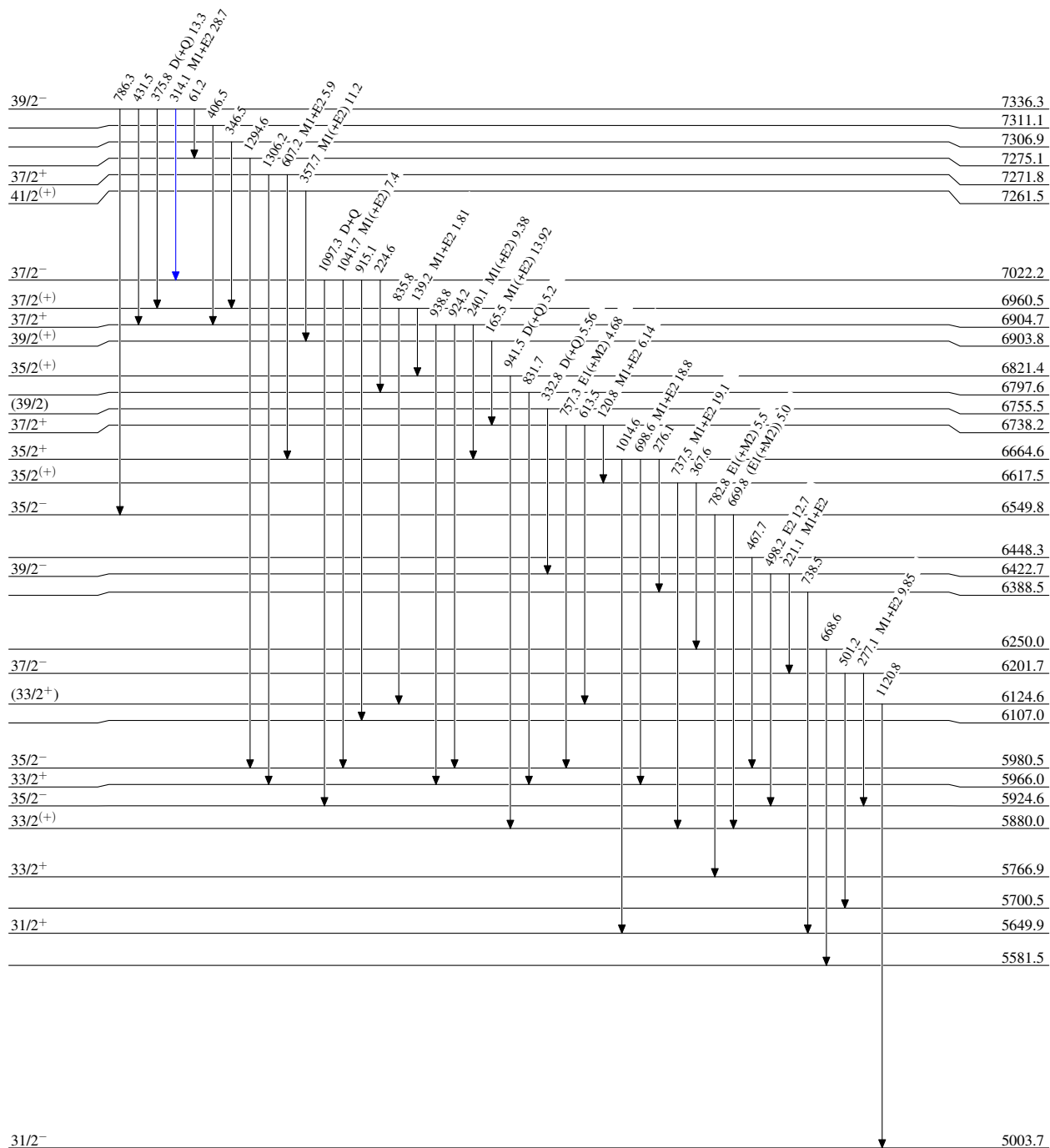
$^{120}\text{Sn}(^{31}\text{P},4n\gamma)$ 1998Sc32,1995Sc17,1996Ni10

Level Scheme (continued)

Intensities: Relative I_γ

Legend

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



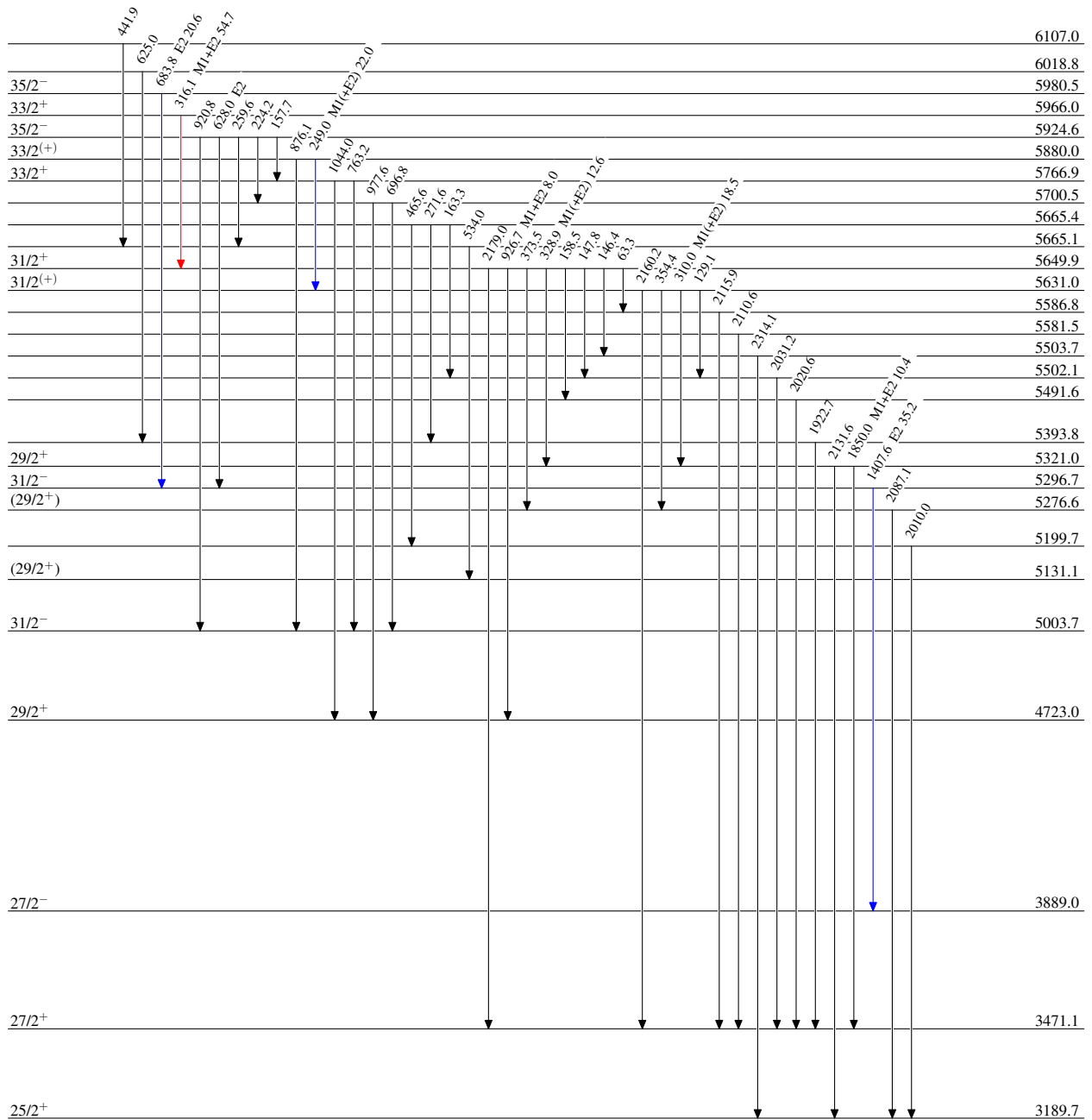
$^{120}\text{Sn}(^{31}\text{P},4n\gamma)$ 1998Sc32,1995Sc17,1996Ni10

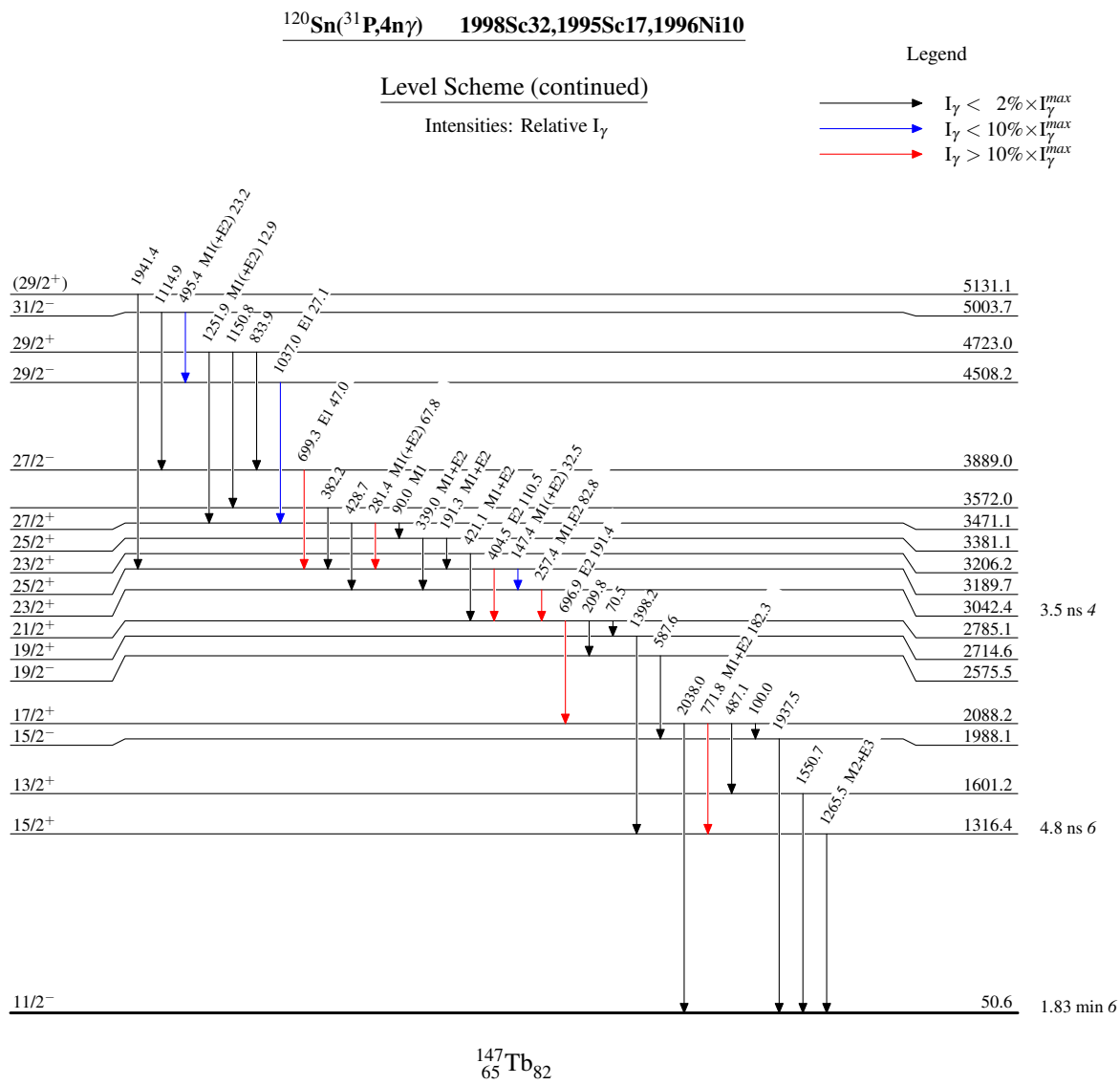
Level Scheme (continued)

Intensities: Relative I_γ

Legend

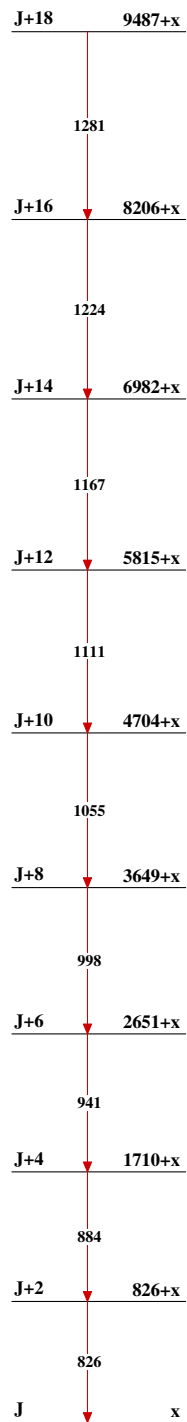
- $\longrightarrow$ $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
 $\longrightarrow$ $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
 $\longrightarrow$ $I_\gamma > 10\% \times I_\gamma^{\text{max}}$

 $^{147}_{65}\text{Tb}_{82}$



$^{120}\text{Sn}(^{31}\text{P},4\text{n}\gamma)$ 1998Sc32,1995Sc17,1996Ni10

Band(A): Super-deformed
band (1996Ni10)



$^{147}_{65}\text{Tb}_{82}$