

¹⁵⁴Sm(⁷Li,4n γ) **1998Ha27**

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Full Evaluation	N. Nica	NDS 132, 1 (2016)	4-Dec-2015

All data are from **1998Ha27** from ¹⁵⁰Nd(¹¹B,4n γ) at E=55 MeV and ¹⁵⁴Sm(⁷Li,4n γ) at 35 MeV. Measured E γ , I γ , $\gamma\gamma$, $\gamma\gamma(\theta)$ (DCO) using arrays of escape-suppressed Ge detectors.

A dataset for the data in **1998Ha27** was compiled for the XUNDL database by J. Chenkin and B. Singh (McMaster University) and D. Radford (ORNL) in June 1999.

Other experiments:

1976SiZT: ¹⁵⁴Sm(⁷Li,4n γ) at 24 to 36 MeV. Abstract only. Sees levels up to (31/2⁺) in 3/2[411] band at 2085 keV and to (27/2⁻) in 5/2[532] band.

1993RiZZ: Private communication replaced by **1998Ha27**.

¹⁵⁷Tb Levels

E(level) [†]	J π [‡]	E(level) [†]	J π [‡]	E(level) [†]	J π [‡]	E(level) [†]	J π [‡]
0.0 ^{&}	3/2 ⁺	970.5 ^b 2	15/2 ⁺	2086.2 ^d 3	27/2 ⁻	3813.5 ^d 4	39/2 ⁻
60.8 [@] 2	5/2 ⁺	974.2 ^c 2	17/2 ⁻	2108.6 ^a 3	25/2 ⁺	4080.5 ^b 7	(39/2 ⁺)
143.8 ^{&} 2	7/2 ⁺	1033.8 ^e 5	(13/2 ⁺)	2328.3 [@] 4	29/2 ⁺	4082.2 ^{?#} 12	(39/2 ⁻)
252.5 [@] 2	9/2 ⁺	1047.3 [#] 4	(11/2 ⁻)	2372.6 ^b 4	27/2 ⁺	4089.3 [@] 4	41/2 ⁺
326.4 ^c 2	5/2 ⁻	1082.9 ^{&} 3	19/2 ⁺	2393.9 [#] 9	(27/2 ⁻)	4152.9 ^c 4	(41/2 ⁻)
327.5 ^a 4	5/2 ⁺	1141.2 ^d 2	19/2 ⁻	2420.8 ^c 3	29/2 ⁻	4349.7 ^a 5	(41/2 ⁺)
357.5 ^d 2	7/2 ⁻	1166.3 ^a 2	17/2 ⁺	2582.7 ^{&} 4	31/2 ⁺	4381.8 ^{&} 5	43/2 ⁺
377.5 ^{&} 2	11/2 ⁺	1220.5 ^f 7	(15/2 ⁺)	2644.0 ^d 4	31/2 ⁻	4401.8 ^d 5	43/2 ⁻
407.9 ^b 3	7/2 ⁺	1261.0 [#] 4	(15/2 ⁻)	2649.7 ^a 4	29/2 ⁺	4669.1 ^{?b} 9	(43/2 ⁺)
425.7 ^c 2	9/2 ⁻	1317.1 [@] 3	21/2 ⁺	2887.1 [@] 4	33/2 ⁺	4747.9 [@] 5	(45/2 ⁺)
513.8 ^a 2	9/2 ⁺	1376.9 ^b 3	19/2 ⁺	2920.7 [#] 10	(31/2 ⁻)	4777.9 ^c 5	(45/2 ⁻)
517.5 ^d 2	11/2 ⁻	1390.2 ^c 3	21/2 ⁻	2930.9 ^b 4	31/2 ⁺	4945.6 ^a 7	(45/2 ⁺)
531.9 [@] 2	13/2 ⁺	1426.5 ^{?e} 7	(17/2 ⁺)	2993.1 ^c 4	33/2 ⁻	5033.9 ^d 5	(47/2 ⁻)
571.8 ^f 4	(7/2 ⁺)	1535.8 ^{&} 3	23/2 ⁺	3152.5 ^{&} 4	35/2 ⁺	5061.7 ^{&} 7	(47/2 ⁺)
643.4 ^b 2	11/2 ⁺	1556.5 [#] 5	(19/2 ⁻)	3216.0 ^a 4	33/2 ⁺	5307.6 ^{?b} 10	(47/2 ⁺)
647.8 ^c 2	13/2 ⁻	1580.0 ^d 3	23/2 ⁻	3229.9 ^d 4	35/2 ⁻	5456.4 [@] 7	(49/2 ⁺)
693.5 ^{&} 2	15/2 ⁺	1608.5 ^a 3	21/2 ⁺	3472.4 [@] 4	37/2 ⁺	5727.9 ^d 7	(51/2 ⁻)
708.8 ^e 4	(9/2 ⁺)	1800.8 [@] 3	25/2 ⁺	3487.5 [#] 11	(35/2 ⁻)	5794.8 ^{&} 9	(51/2 ⁺)
783.0 ^d 2	15/2 ⁻	1849.4 ^b 3	23/2 ⁺	3511.0 ^b 5	35/2 ⁺	6217.5 ^{?@} 9	(53/2 ⁺)
796.9 ^a 2	13/2 ⁺	1878.9 ^c 3	25/2 ⁻	3570.9 ^c 4	(37/2 ⁻)	6581.7 ^{?&} 10	(55/2 ⁺)
859.8 ^f 4	(11/2 ⁺)	1935.0 [#] 7	(23/2 ⁻)	3748.9 ^{&} 4	39/2 ⁺		
890.2 [@] 2	17/2 ⁺	2040.1 ^{&} 3	27/2 ⁺	3785.6 ^a 5	37/2 ⁺		

[†] From least-squares fit to γ energies (with uncertainties assigned by XUNDL compilers and confirmed by evaluator).

[‡] Spin and parity assignments are based on the previous work of **1971Wi24** and **1972Ti05**, and from **1998Ha27** (from γ -ray multipolarities measured by the DCO ratio method and level scheme arguments).

Band(A): ($\pi=-$, $\alpha=-1/2$), (11/2⁻) band.

@ Band(B): $\pi 3/2[411]$, $\alpha=+1/2$ band.

& Band(b): $\pi 3/2[411]$, $\alpha=-1/2$ band.

^a Band(C): $\pi 5/2[413]$, $\alpha=+1/2$ band.

^b Band(c): $\pi 5/2[413]$, $\alpha=-1/2$ band.

^c Band(D): $\pi 5/2[532]$, $\alpha=+1/2$ band.

^d Band(d): $\pi 5/2[532]$, $\alpha=-1/2$ band.

$^{154}\text{Sm}(\text{}^7\text{Li}, 4n\gamma)$ **1998Ha27** (continued) ^{157}Tb Levels (continued)^e Band(E): ($\pi=+$, $\alpha=+1/2$) ($7/2^+$) band.^f Band(e): ($\pi=+$, $\alpha=-1/2$) ($7/2^+$) band. $\gamma(^{157}\text{Tb})$

The authors state that stretched E2 transitions have DCO values near 1.0 and $\Delta J = 1$ transitions with small mixing ratios have values near 0.5, but explicit multipolarities are not given.

E_γ †	I_γ ‡	E_i (level)	J_i^π	E_f	J_f^π	Comments
60.8 5		60.8	$5/2^+$	0.0	$3/2^+$	E_γ : from 1971Wi24 and/or 1972Ti05 as quoted in 1998Ha27.
68.3		425.7	$9/2^-$	357.5	$7/2^-$	E_γ : from the Adopted Levels, Gammas dataset; 63.8 quoted by 1998Ha27 is a misprint.
83.1 2		143.8	$7/2^+$	60.8	$5/2^+$	I_γ : ≈ 60 in (${}^7\text{Li}, 4n\gamma$).
91.7 2	38 2	517.5	$11/2^-$	425.7	$9/2^-$	
99.1		425.7	$9/2^-$	326.4	$5/2^-$	E_γ : from 1971Wi24 and/or 1972Ti05 as quoted in 1998Ha27.
105.7 5		513.8	$9/2^+$	407.9	$7/2^+$	I_γ : < 1 in (${}^7\text{Li}, 4n\gamma$).
108.8 2	93 4	252.5	$9/2^+$	143.8	$7/2^+$	DCO= 0.88 3.
125.1 2	91 4	377.5	$11/2^+$	252.5	$9/2^+$	DCO= 0.83 2.
129.2 5		643.4	$11/2^+$	513.8	$9/2^+$	I_γ : < 1 in (${}^7\text{Li}, 4n\gamma$).
130.4 2	61 3	647.8	$13/2^-$	517.5	$11/2^-$	DCO= 0.91 4.
135.2 2	48 2	783.0	$15/2^-$	647.8	$13/2^-$	DCO= 0.84 2.
137.3 5		708.8	$(9/2^+)$	571.8	$(7/2^+)$	I_γ : < 1 in (${}^7\text{Li}, 4n\gamma$).
143.8 2	≈ 15	143.8	$7/2^+$	0.0	$3/2^+$	I_γ : ≈ 10 in (${}^7\text{Li}, 4n\gamma$).
151.2 5		859.8	$(11/2^+)$	708.8	$(9/2^+)$	I_γ : < 1 in (${}^7\text{Li}, 4n\gamma$).
153.3 5		796.9	$13/2^+$	643.4	$11/2^+$	I_γ : 1.1 1 in (${}^7\text{Li}, 4n\gamma$).
154.4 2	60 3	531.9	$13/2^+$	377.5	$11/2^+$	DCO= 0.80 2.
156.2 5	1.3 3	513.8	$9/2^+$	357.5	$7/2^-$	
160.0 2	8.1 4	517.5	$11/2^-$	357.5	$7/2^-$	DCO= 1.2 2.
161.6 2	55 3	693.5	$15/2^+$	531.9	$13/2^+$	DCO= 0.76 2.
167.0 2	39 2	1141.2	$19/2^-$	974.2	$17/2^-$	DCO= 0.70 3.
173.5 5		790.5	$15/2^+$	796.9	$13/2^+$	I_γ : 1.5 1 in (${}^7\text{Li}, 4n\gamma$).
173.9 5		1033.8	$(13/2^+)$	859.8	$(11/2^+)$	I_γ : < 1 in (${}^7\text{Li}, 4n\gamma$).
186.3 5	1.0 2	513.8	$9/2^+$	327.5	$5/2^+$	
189.9 2	24 1	1580.0	$23/2^-$	1390.2	$21/2^-$	DCO= 0.69 5.
191.1 2	47 2	974.2	$17/2^-$	783.0	$15/2^-$	DCO= 0.77 3.
191.7 2	43 2	252.5	$9/2^+$	60.8	$5/2^+$	DCO= 0.88 2.
192.8 2	35 2	1082.9	$19/2^+$	890.2	$17/2^+$	DCO= 0.84 3.
195.9 5		1166.3	$17/2^+$	970.5	$15/2^+$	I_γ : 1.5 1 in (${}^7\text{Li}, 4n\gamma$).
196.8 2	41 2	890.2	$17/2^+$	693.5	$15/2^+$	DCO= 0.75 2.
207.2 2	15.1 7	2086.2	$27/2^-$	1878.9	$25/2^-$	DCO= 0.61 4.
211.0 5		1376.9	$19/2^+$	1166.3	$17/2^+$	I_γ : 1.0 1 in (${}^7\text{Li}, 4n\gamma$).
213.9 5	2.3 2	1261.0	$(15/2^-)$	1047.3	$(11/2^-)$	
217.7 2	2.0 3	643.4	$11/2^+$	425.7	$9/2^-$	DCO= 0.76 6.
218.6 2	22 1	1535.8	$23/2^+$	1317.1	$21/2^+$	DCO= 0.71 2.
222.2 2	28 1	647.8	$13/2^-$	425.7	$9/2^-$	DCO= 0.97 5.
223.1 2	9.3 6	2644.0	$31/2^-$	2420.8	$29/2^-$	
231.8 5		1608.5	$21/2^+$	1376.9	$19/2^+$	I_γ : < 1 in (${}^7\text{Li}, 4n\gamma$).
233.7 2	85 6	377.5	$11/2^+$	143.8	$7/2^+$	DCO= 0.90 1.
234.1 2	26 1	1317.1	$21/2^+$	1082.9	$19/2^+$	DCO= 0.76 4.
235.5 2	2.3 3	643.4	$11/2^+$	407.9	$7/2^+$	DCO= 0.97 8.
236.7 5	5.0 4	3229.9	$35/2^-$	2993.1	$33/2^-$	
239.2 2	16.1 8	2040.1	$27/2^+$	1800.8	$25/2^+$	DCO= 0.60 3.
242.5 5	3.9 3	3813.5	$39/2^-$	3570.9	$(37/2^-)$	
245.3 5		571.8	$(7/2^+)$	326.4	$5/2^-$	I_γ : 1.1 1 in (${}^7\text{Li}, 4n\gamma$).

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$^{154}\text{Sm}(^7\text{Li},4n\gamma)$ **1998Ha27** (continued) $\gamma(^{157}\text{Tb})$ (continued)

E_γ †	I_γ ‡	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
249.0 2	34 2	1390.2	21/2 ⁻	1141.2	19/2 ⁻	DCO= 0.71 3.
249.0# 5	1.8 5	4401.8	43/2 ⁻	4152.9	(41/2 ⁻)	
251.2 2	7.5 6	783.0	15/2 ⁻	531.9	13/2 ⁺	DCO= 0.57 6.
254.4 2	11.1 6	2582.7	31/2 ⁺	2328.3	29/2 ⁺	DCO= 0.72 4.
255.8# 5	<1	5033.9	(47/2 ⁻)	4777.9	(45/2 ⁻)	
264.9 2	26 1	1800.8	25/2 ⁺	1535.8	23/2 ⁺	DCO= 0.69 2.
265.0 2	23 1	517.5	11/2 ⁻	252.5	9/2 ⁺	DCO= 0.85 2.
265.3 2	7.8 4	3152.5	35/2 ⁺	2887.1	33/2 ⁺	
265.6 2	46 2	783.0	15/2 ⁻	517.5	11/2 ⁻	DCO= 0.85 2.
266.6 5		327.5	5/2 ⁺	60.8	5/2 ⁺	I_γ : 1.3 1 in ($^7\text{Li},4n\gamma$). DCO= 0.80 7.
270.2 2	10.3 7	647.8	13/2 ⁻	377.5	11/2 ⁺	DCO= 0.60 4.
276.3 5	4.6 4	3748.9	39/2 ⁺	3472.4	37/2 ⁺	
279.4 2	82 4	531.9	13/2 ⁺	252.5	9/2 ⁺	DCO= 1.06 3.
279.4 2	3.6 5	796.9	13/2 ⁺	517.5	11/2 ⁻	DCO= 0.67 3.
280.8 5		974.2	17/2 ⁻	693.5	15/2 ⁺	I_γ : 4 1 in ($^7\text{Li},4n\gamma$).
281.8 2	37 2	425.7	9/2 ⁻	143.8	7/2 ⁺	DCO= 0.56 2.
283.1 2	5.5 4	796.9	13/2 ⁺	513.8	9/2 ⁺	I_γ : 14.0 6 in ($^7\text{Li},4n\gamma$).
287.7 5		859.8	(11/2 ⁺)	571.8	(7/2 ⁺)	I_γ : <1 in ($^7\text{Li},4n\gamma$).
288.2 2	17.6 9	2328.3	29/2 ⁺	2040.1	27/2 ⁺	DCO= 0.63 3.
292.8 5	2.4 3	4381.8	43/2 ⁺	4089.3	41/2 ⁺	
295.6 5	4.1 3	1556.5	(19/2 ⁻)	1261.0	(15/2 ⁻)	
296.8 2	≈170	357.5	7/2 ⁻	60.8	5/2 ⁺	DCO= 0.63 3.
298.8 2	30 1	1878.9	25/2 ⁻	1580.0	23/2 ⁻	DCO= 0.60 1.
304.3 2	10.3 6	2887.1	33/2 ⁺	2582.7	31/2 ⁺	DCO= 0.76 8.
315.9 2	100	693.5	15/2 ⁺	377.5	11/2 ⁺	I_γ : 100 in ($^7\text{Li},4n\gamma$). DCO= 1.00 2.
319.9 2	8.0 4	3472.4	37/2 ⁺	3152.5	35/2 ⁺	
322.7 2	2.8 3	970.5	15/2 ⁺	647.8	13/2 ⁻	DCO= 0.58 3.
325.1 5		1033.8	(13/2 ⁺)	708.8	(9/2 ⁺)	I_γ : <1 in ($^7\text{Li},4n\gamma$).
326.4 2	≈30	326.4	5/2 ⁻	0.0	3/2 ⁺	DCO= 0.66 4.
326.4 2	59 3	974.2	17/2 ⁻	647.8	13/2 ⁻	I_γ : 54 3 in ($^7\text{Li},4n\gamma$). DCO= 0.92 2.
326.9 2	7.8 7	970.5	15/2 ⁺	643.4	11/2 ⁺	I_γ : 22.9 9 in ($^7\text{Li},4n\gamma$). DCO= 0.98 3.
327.6 5		327.5	5/2 ⁺	0.0	3/2 ⁺	I_γ : ≈3 in ($^7\text{Li},4n\gamma$). DCO= 0.78 9.
334.6 2	18.2 9	2420.8	29/2 ⁻	2086.2	27/2 ⁻	DCO= 0.66 4.
339.3# 5	4.4 4	4152.9	(41/2 ⁻)	3813.5	39/2 ⁻	
340.3 5	4.4 3	4089.3	41/2 ⁺	3748.9	39/2 ⁺	
340.9 2	8.6 4	3570.9	(37/2 ⁻)	3229.9	35/2 ⁻	
347.1 5		407.9	7/2 ⁺	60.8	5/2 ⁺	I_γ : 3.9 3 in ($^7\text{Li},4n\gamma$).
349.2 2	11.7 6	2993.1	33/2 ⁻	2644.0	31/2 ⁻	
351.2 5		708.8	(9/2 ⁺)	357.5	7/2 ⁻	I_γ : <1 in ($^7\text{Li},4n\gamma$).
358.2 2	84 4	1141.2	19/2 ⁻	783.0	15/2 ⁻	DCO= 1.01 2.
358.3 2	82 4	890.2	17/2 ⁺	531.9	13/2 ⁺	DCO= 1.01 2.
360.7 5		1220.5	(15/2 ⁺)	859.8	(11/2 ⁺)	I_γ : <1 in ($^7\text{Li},4n\gamma$).
369.3 2	8.6 6	1166.3	17/2 ⁺	796.9	13/2 ⁺	I_γ : 18.7 9 in ($^7\text{Li},4n\gamma$). DCO= 0.81 4.
370.0 2	2.8 3	513.8	9/2 ⁺	143.8	7/2 ⁺	I_γ : 10.5 7 in ($^7\text{Li},4n\gamma$). DCO= 0.81 4.
376.0# 5	2.3 3	4777.9	(45/2 ⁻)	4401.8	43/2 ⁻	
378.5 5	3.3 3	1935.0	(23/2 ⁻)	1556.5	(19/2 ⁻)	
383.3 2	2.4 3	1166.3	17/2 ⁺	783.0	15/2 ⁻	DCO= 0.58 7.
389.4 2	105 5	1082.9	19/2 ⁺	693.5	15/2 ⁺	DCO= 1.02 2.

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$^{154}\text{Sm}(\text{}^7\text{Li},4n\gamma)$ **1998Ha27** (continued) $\gamma(^{157}\text{Tb})$ (continued)

E_γ †	I_γ ‡	E_i (level)	J_i^π	E_f	J_f^π	Comments
390.8 2	2.5 4	643.4	11/2 ⁺	252.5	9/2 ⁺	I_γ : 9.2 4 in (${}^7\text{Li},4n\gamma$). DCO= 0.67 4.
392.7# 5		1426.5?	(17/2 ⁺)	1033.8	(13/2 ⁺)	I_γ : <1 in (${}^7\text{Li},4n\gamma$).
402.6 5	2.8 3	1376.9	19/2 ⁺	974.2	17/2 ⁻	DCO= 0.63 6.
406.5 2	10.7 7	1376.9	19/2 ⁺	970.5	15/2 ⁺	I_γ : 19.0 9 in (${}^7\text{Li},4n\gamma$). DCO= 0.97 5.
408.0 5		407.9	7/2 ⁺	0.0	3/2 ⁺	I_γ : \approx 5 in (${}^7\text{Li},4n\gamma$). DCO= 0.97 5.
416.0 2	50 2	1390.2	21/2 ⁻	974.2	17/2 ⁻	DCO= 1.02 4.
419.4 2	2.8 3	796.9	13/2 ⁺	377.5	11/2 ⁺	DCO= 0.46 3.
426.9 2	88 4	1317.1	21/2 ⁺	890.2	17/2 ⁺	DCO= 0.99 3.
434.2 5		859.8	(11/2 ⁺)	425.7	9/2 ⁻	I_γ : <1 in (${}^7\text{Li},4n\gamma$).
438.7 2	2.4 3	970.5	15/2 ⁺	531.9	13/2 ⁺	DCO= 0.31 3.
438.7 2	79 4	1580.0	23/2 ⁻	1141.2	19/2 ⁻	DCO= 1.00 4.
442.3 2	13.2 8	1608.5	21/2 ⁺	1166.3	17/2 ⁺	I_γ : 16.3 7 in (${}^7\text{Li},4n\gamma$). DCO= 0.98 4.
452.9 2	100 5	1535.8	23/2 ⁺	1082.9	19/2 ⁺	DCO= 0.95 2.
453.3 5		513.8	9/2 ⁺	60.8	5/2 ⁺	I_γ : 2.8 2 in (${}^7\text{Li},4n\gamma$).
458.9 5	3.1 3	2393.9	(27/2 ⁻)	1935.0	(23/2 ⁻)	
459.0 5		1849.4	23/2 ⁺	1390.2	21/2 ⁻	I_γ : 1.6 1 in (${}^7\text{Li},4n\gamma$).
467.2 5	2.0 3	1608.5	21/2 ⁺	1141.2	19/2 ⁻	
472.5 2	15 1	1849.4	23/2 ⁺	1376.9	19/2 ⁺	I_γ : 16.2 7 in (${}^7\text{Li},4n\gamma$). DCO= 0.99 5.
472.8 5	2.0 3	1166.3	17/2 ⁺	693.5	15/2 ⁺	DCO= 0.58 5.
473.5 5	1.3 2	1556.5	(19/2 ⁻)	1082.9	19/2 ⁺	
483.7 2	85 4	1800.8	25/2 ⁺	1317.1	21/2 ⁺	DCO= 0.94 2.
486.9 5	2.9 3	1376.9	19/2 ⁺	890.2	17/2 ⁺	DCO= 0.45 7.
488.7 2	42 2	1878.9	25/2 ⁻	1390.2	21/2 ⁻	DCO= 0.95 4.
500.1 2	13.4 4	2108.6	25/2 ⁺	1608.5	21/2 ⁺	I_γ : 12.6 6 in (${}^7\text{Li},4n\gamma$). DCO= 1.04 6.
504.4 2	89 4	2040.1	27/2 ⁺	1535.8	23/2 ⁺	DCO= 0.97 2.
506.2 2	74 4	2086.2	27/2 ⁻	1580.0	23/2 ⁻	DCO= 0.95 4.
523.2 2	13.7 8	2372.6	27/2 ⁺	1849.4	23/2 ⁺	DCO= 0.93 6.
525.5 5	3.3 4	1608.5	21/2 ⁺	1082.9	19/2 ⁺	
526.8 5	2.8 3	2920.7	(31/2 ⁻)	2393.9	(27/2 ⁻)	
527.5 2	65 3	2328.3	29/2 ⁺	1800.8	25/2 ⁺	DCO= 0.99 3.
528.7 5		2108.6	25/2 ⁺	1580.0	23/2 ⁻	I_γ : 1.7 1 in (${}^7\text{Li},4n\gamma$).
532.5 5		1849.4	23/2 ⁺	1317.1	21/2 ⁺	I_γ : 2.0 1 in (${}^7\text{Li},4n\gamma$).
541.1 2	12.7 7	2649.7	29/2 ⁺	2108.6	25/2 ⁺	DCO= 0.89 6.
542.0 2	37 2	2420.8	29/2 ⁻	1878.9	25/2 ⁻	DCO= 1.04 5.
542.6 2	61 3	2582.7	31/2 ⁺	2040.1	27/2 ⁺	DCO= 0.96 3.
544.3 5		796.9	13/2 ⁺	252.5	9/2 ⁺	I_γ : <1 in (${}^7\text{Li},4n\gamma$).
557.8 2	54 3	2644.0	31/2 ⁻	2086.2	27/2 ⁻	DCO= 1.02 4.
558.3 2	11.6 8	2930.9	31/2 ⁺	2372.6	27/2 ⁺	DCO= 1.02 4.
558.9 2	46 2	2887.1	33/2 ⁺	2328.3	29/2 ⁺	DCO= 1.05 5.
564.1 2	5.9 4	4349.7	(41/2 ⁺)	3785.6	37/2 ⁺	
566.3 2	11.6 6	3216.0	33/2 ⁺	2649.7	29/2 ⁺	DCO= 0.96 3.
566.8 5		3487.5	(35/2 ⁻)	2920.7	(31/2 ⁻)	I_γ : <1 in (${}^7\text{Li},4n\gamma$).
567.5 5	1.1 2	1261.0	(15/2 ⁻)	693.5	15/2 ⁺	
569.5# 5	3.3 3	4080.5?	(39/2 ⁺)	3511.0	35/2 ⁺	
569.6 2	8.6 6	3785.6	37/2 ⁺	3216.0	33/2 ⁺	DCO= 1.0 1.
569.9 2	37 2	3152.5	35/2 ⁺	2582.7	31/2 ⁺	DCO= 0.98 5.
572.3 2	29 1	2993.1	33/2 ⁻	2420.8	29/2 ⁻	DCO= 0.97 6.
572.5 5	3.1 5	2108.6	25/2 ⁺	1535.8	23/2 ⁺	
577.9 2	18.2 9	3570.9	(37/2 ⁻)	2993.1	33/2 ⁻	DCO= 1.0 1.

Continued on next page (footnotes at end of table)

$^{154}\text{Sm}(^7\text{Li},4n\gamma)$ **1998Ha27** (continued) $\gamma(^{157}\text{Tb})$ (continued)

E_γ †	I_γ ‡	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
580.1 2	6.2 4	3511.0	35/2 ⁺	2930.9	31/2 ⁺	DCO= 1.1 1.
582.0 2	13.7 8	4152.9	(41/2 ⁻)	3570.9	(37/2 ⁻)	
583.7 2	25 1	3813.5	39/2 ⁻	3229.9	35/2 ⁻	DCO= 0.98 9.
585.3 2	29 1	3472.4	37/2 ⁺	2887.1	33/2 ⁺	DCO= 0.95 6.
585.8 2	34 2	3229.9	35/2 ⁻	2644.0	31/2 ⁻	DCO= 1.02 8.
588.3 2	10.6 6	4401.8	43/2 ⁻	3813.5	39/2 ⁻	DCO= 1.02 8.
588.6 # 5	2.9 3	4669.1?	(43/2 ⁺)	4080.5?	(39/2 ⁺)	
594.7 # 5		4082.2?	(39/2 ⁻)	3487.5	(35/2 ⁻)	I_γ : <1 in ($^7\text{Li},4n\gamma$).
595.9 5	4.1 4	4945.6	(45/2 ⁺)	4349.7	(41/2 ⁺)	
596.3 2	27 2	3748.9	39/2 ⁺	3152.5	35/2 ⁺	DCO= 0.94 8.
616.9 2	17 1	4089.3	41/2 ⁺	3472.4	37/2 ⁺	DCO= 1.00 5.
625.0 2	5.2 4	4777.9	(45/2 ⁻)	4152.9	(41/2 ⁻)	
632.1 2	6.2 4	5033.9	(47/2 ⁻)	4401.8	43/2 ⁻	
632.9 2	13.2 8	4381.8	43/2 ⁺	3748.9	39/2 ⁺	DCO= 0.9 1.
634.7 5		1166.3	17/2 ⁺	531.9	13/2 ⁺	I_γ : <1 in ($^7\text{Li},4n\gamma$).
638.5 # 5	2.4 3	5307.6?	(47/2 ⁺)	4669.1?	(43/2 ⁺)	
658.6 2	7.2 5	4747.9	(45/2 ⁺)	4089.3	41/2 ⁺	
669.6 5		1047.3	(11/2 ⁻)	377.5	11/2 ⁺	I_γ : 2.9 3 in ($^7\text{Li},4n\gamma$).
679.9 5	4.9 4	5061.7	(47/2 ⁺)	4381.8	43/2 ⁺	
694.0 5	3.6 3	5727.9	(51/2 ⁻)	5033.9	(47/2 ⁻)	
708.5 5	1.1 3	5456.4	(49/2 ⁺)	4747.9	(45/2 ⁺)	
733.1 5	1.3 3	5794.8	(51/2 ⁺)	5061.7	(47/2 ⁺)	
761.1 # 5	<1	6217.5?	(53/2 ⁺)	5456.4	(49/2 ⁺)	
786.9 # 5	<1	6581.7?	(55/2 ⁺)	5794.8	(51/2 ⁺)	
795.2 5		1047.3	(11/2 ⁻)	252.5	9/2 ⁺	I_γ : <1 in ($^7\text{Li},4n\gamma$).

† Uncertainty is assigned as 0.2 keV for $I_\gamma > 5$ and 0.5 keV for $I_\gamma \leq 5$, based on a general statement by [1998Ha27](#).





‡ From ($^{11}\text{B},4n\gamma$). Values from ($^7\text{Li},4n\gamma$) are also given by [1998Ha27](#) and are included here when other values are not available.

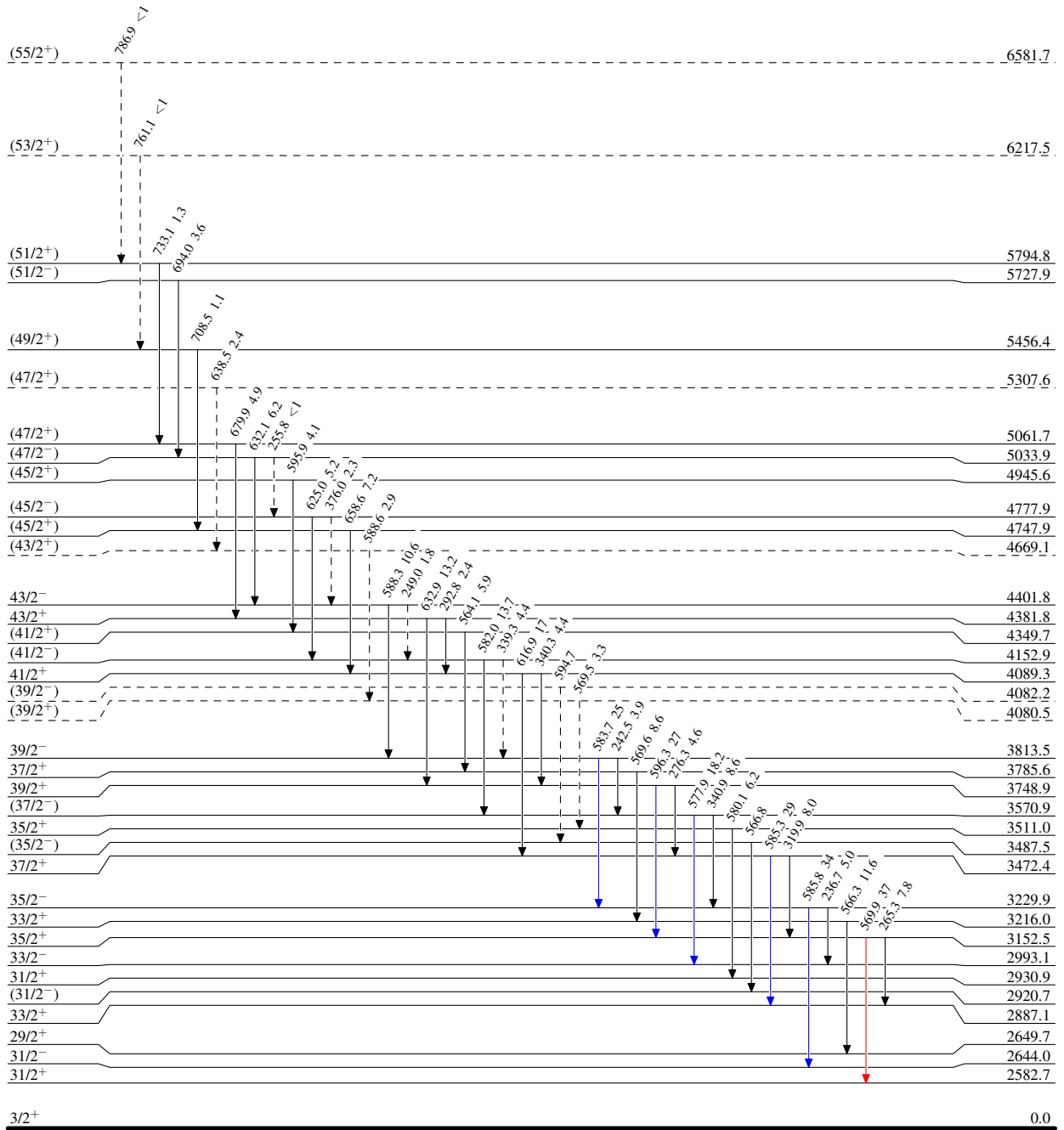
Placement of transition in the level scheme is uncertain.

$^{154}\text{Sm}(^7\text{Li},4n\gamma)$ 1998Ha27

Legend

Level Scheme
Intensities: Relative I_γ

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






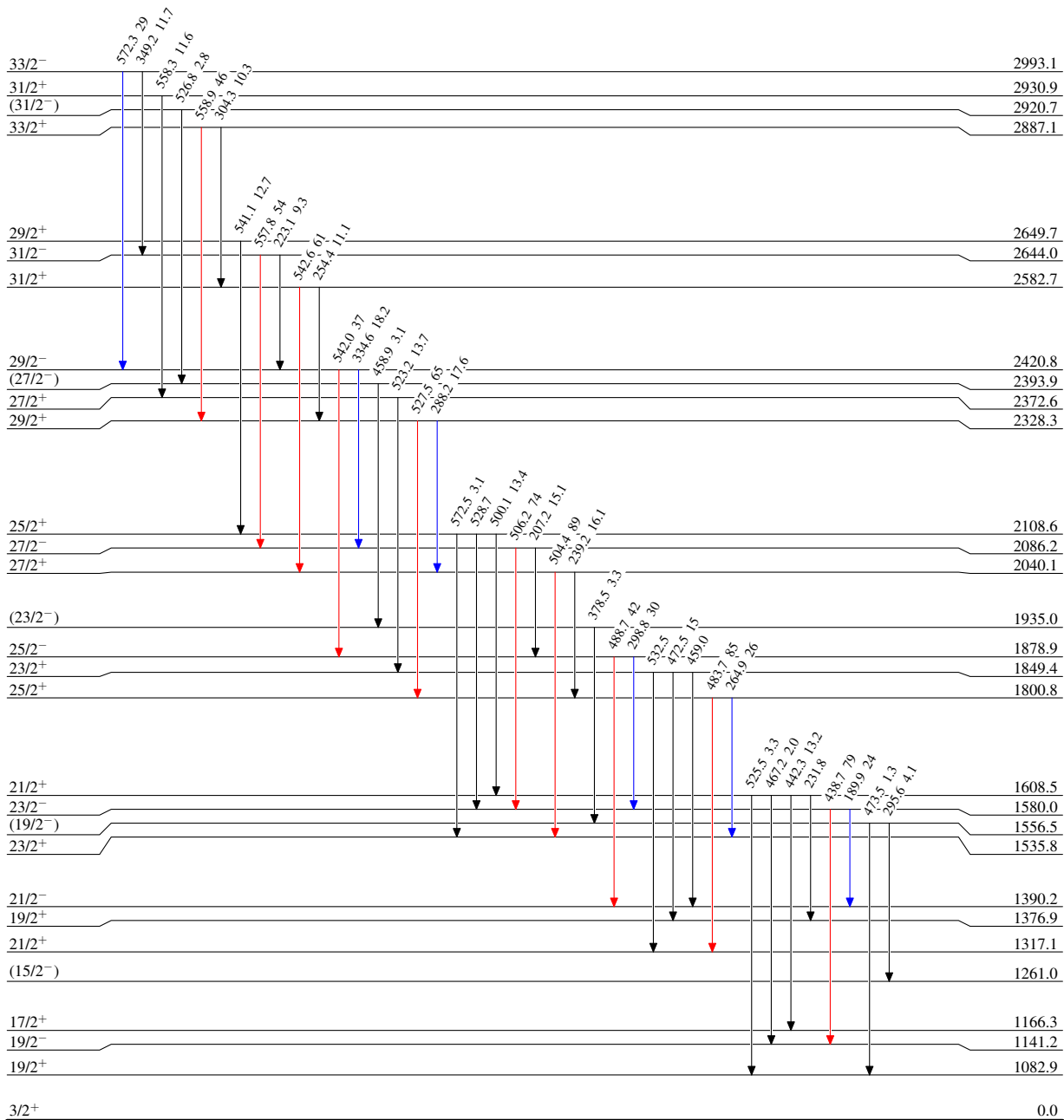
¹⁵⁴Sm(⁷Li,4n γ) 1998Ha27

Level Scheme (continued)

Intensities: Relative I _{γ}

Legend

-  I _{γ} < 2% × I _{γ} ^{max}
-  I _{γ} < 10% × I _{γ} ^{max}
-  I _{γ} > 10% × I _{γ} ^{max}



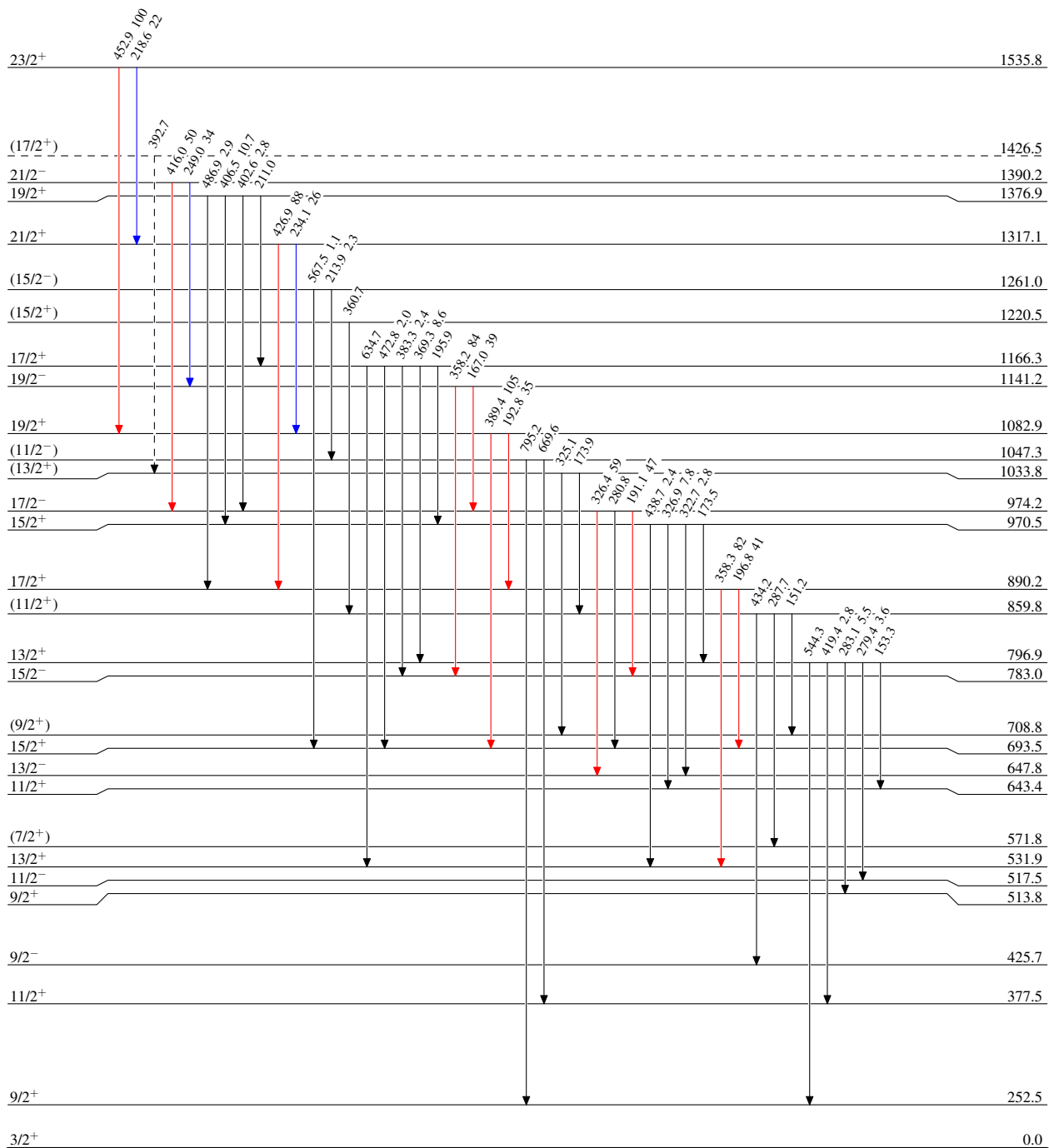
$^{154}\text{Sm}(^7\text{Li},4n\gamma)$ 1998Ha27

Legend

Level Scheme (continued)

Intensities: Relative I_γ

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



$^{157}\text{Tb}_{92}$

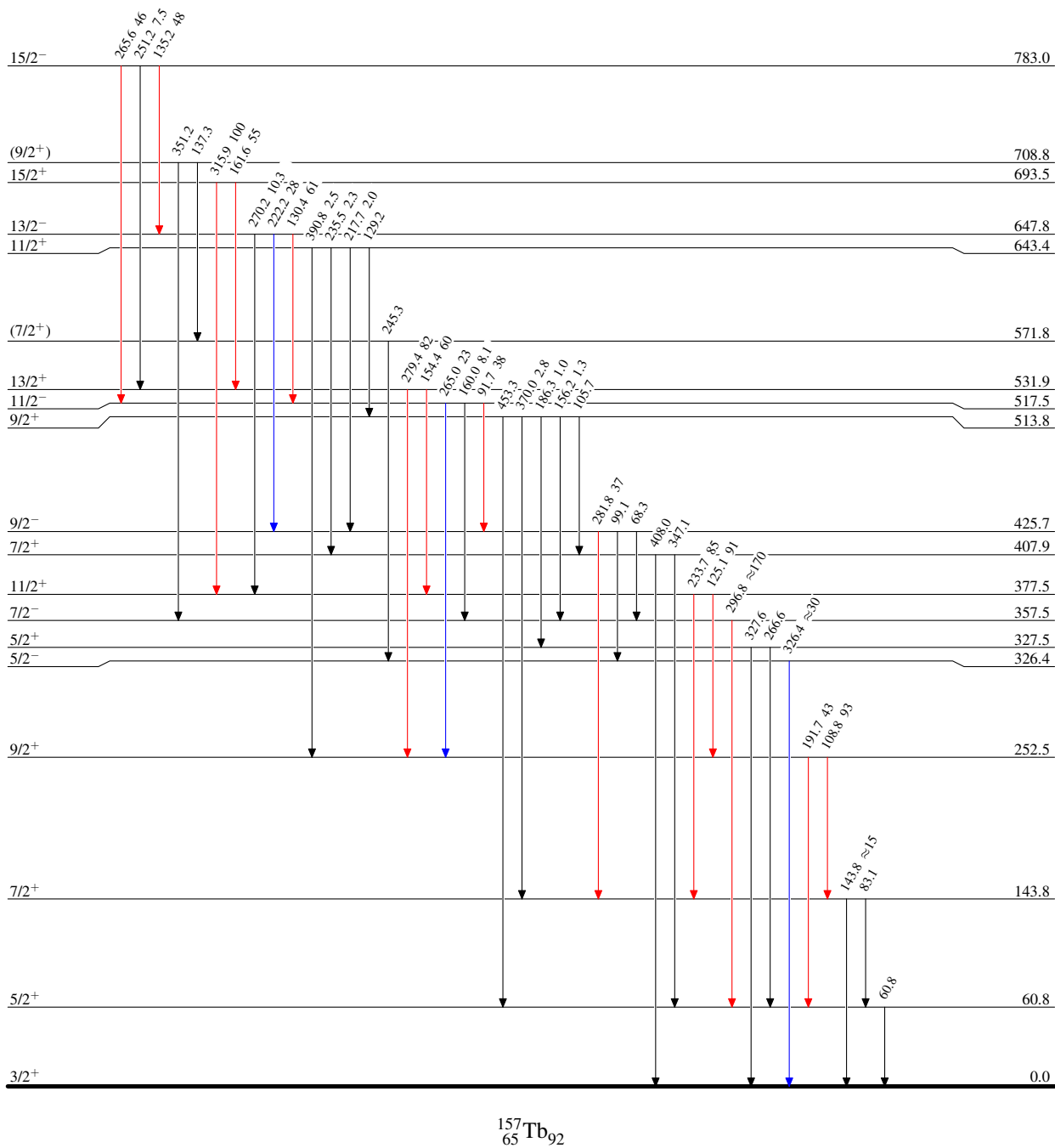
$^{154}\text{Sm}(^7\text{Li},4n\gamma)$ 1998Ha27

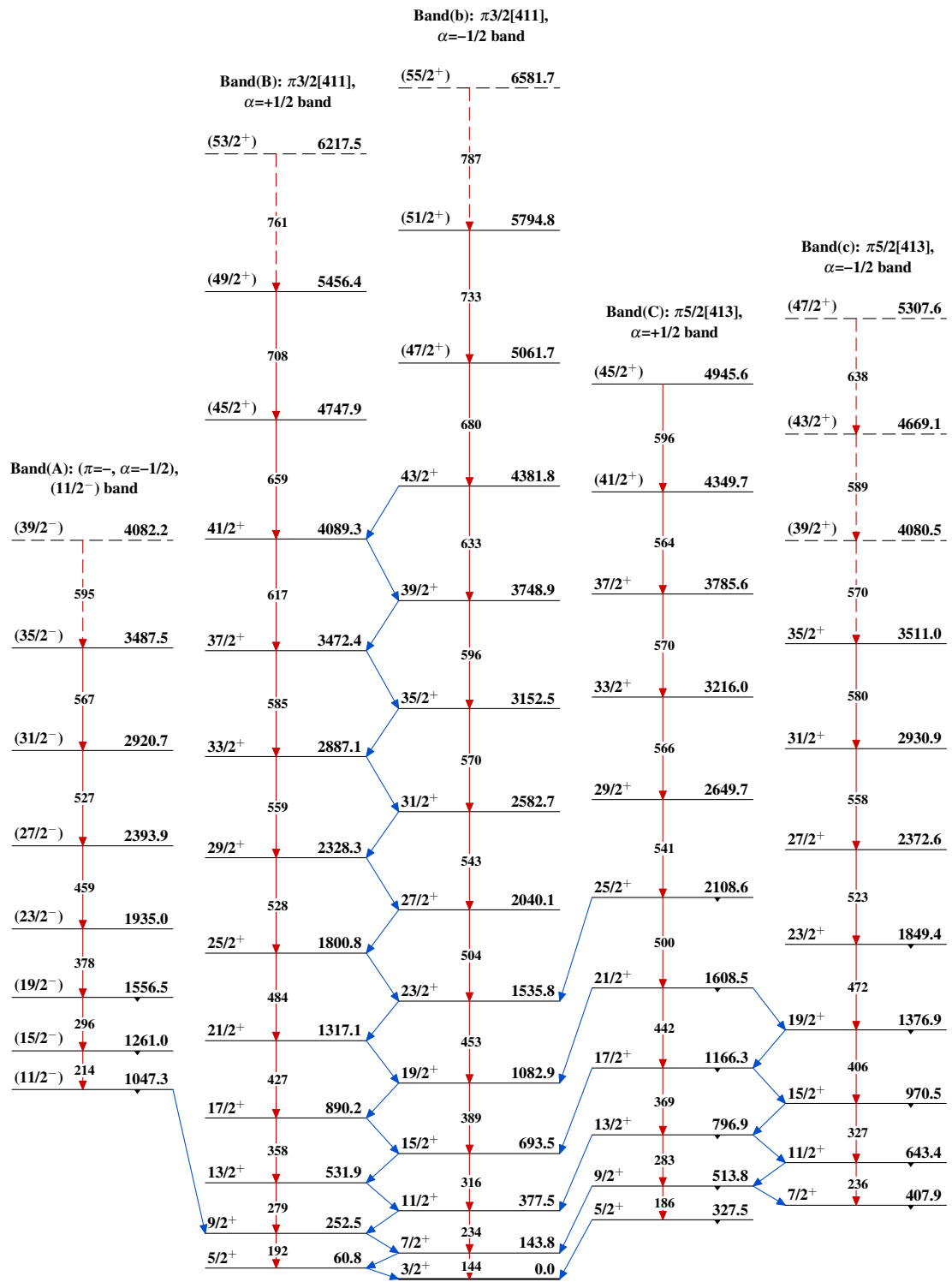
Level Scheme (continued)

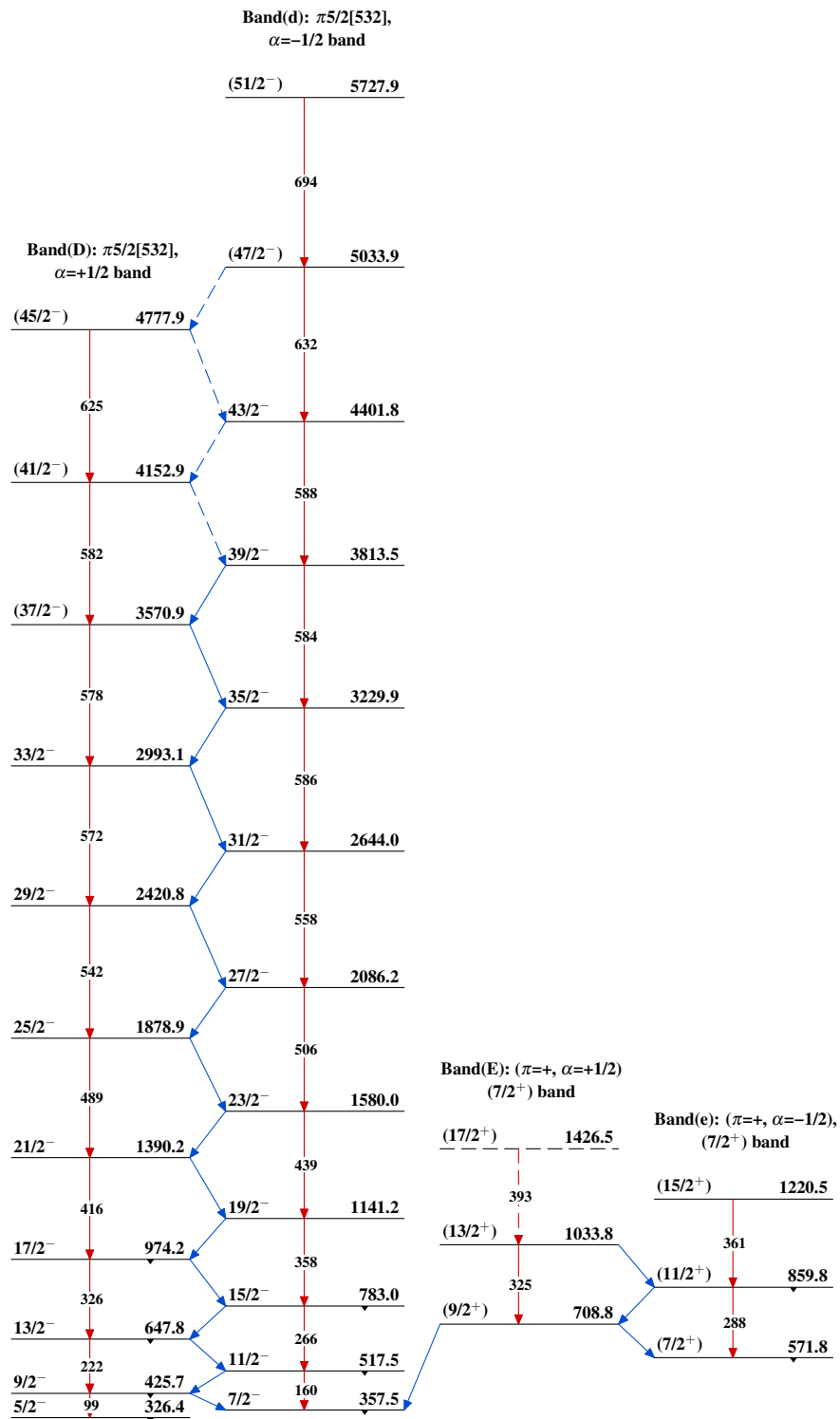
Intensities: Relative I_γ

Legend

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



$^{154}\text{Sm}(^7\text{Li},4n\gamma)$ 1998Ha27 $^{157}\text{Tb}_{92}$

$^{154}\text{Sm}(^7\text{Li},4n\gamma)$ 1998Ha27 (continued) $^{157}\text{Tb}_{92}$