

$^{148}\text{Sm}(\text{n},\text{n}'\gamma)$ 1997Go20

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 117, 1 (2014)	1-Oct-2013

1997Go20: E=reactor fast neutrons, measured $E\gamma$, $I\gamma$, $\gamma(\theta)$, and linear polarization of γ -rays.

Reactor fast neutrons: measured: γ (1978AhZX,1977Ak06), $\gamma(\theta)$ (1985GoZL). Other: 1997GoZR.

All data are from 1997Go20, unless indicated otherwise.

See also (n, γ) E=0.020-1.0 keV dataset for data of 1997Go20.

 ^{148}Sm Levels

E(level) [†]	J ^π [‡]	Comments
0.0	0 ⁺	
550.256 8	2 ⁺	
1161.534 15	3 ⁻	
1180.234 14	4 ⁺	
1424.45 3	0 ⁺	
1454.061 14	2 ⁺	
1465.136 11	1 ⁻	
1594.264 18	5 ⁻	
1664.225 15	2 ⁺	
1733.483 21	4 ⁺	
1894.95 3	4 ⁺	
1903.776 18	3 ⁺	J ^π : 3 ⁺ ; J ^π =3 ⁻ ruled out by linear-polarization data.
1905.91 3	6 ⁺	
1920.97 6	0 ⁺	
1972.476 21	2 ⁺	
2031.40 5	4 ⁻	J ^π : 4 ⁻ .
2057.94 5	2 ⁻	
2095.170 20	6 ⁺	
2110.956 25	4 ⁺	
2128.49 4	7 ⁻	
2146.35 3	2 ⁺	J ^π : 2 ⁺ ; J ^π =2 ⁻ and 3 ⁺ ruled out by linear-polarization data.
2147.528 24	5 ⁺	
2194.05 5	6 ⁺	
2204.99 15	0 ⁺	
2208.85 7	(1,2 ⁺)	J ^π : 2 ⁺ .
2214.24 6	5 ⁺	J ^π : 5 ⁺ .
2228.07 5	4 ⁺	
2284.37 13	(1,2 ⁺)	J ^π : 1.
2313.57 8	2 ⁺	J ^π : 2 ⁺ .
2327.10 5	4 ⁺	J ^π : 4 ⁺ .
2327.62 9	3 ⁺	J ^π : 3 ⁺ .
2339.21 9	3 ⁻	J ^π : 3 ⁻ .
2374.35 6	5 ⁺ ,6 ⁺	
2381.67 10	3 ⁺ ,4 ⁺	J ^π : 3 ⁺ ,4 ⁺ .
2390.45 6	3 ⁺	J ^π : 3 ⁺ .
2392.09 17	7 ⁺	
2442.41 9	(2 ⁺)	J ^π : 2 ⁺ .
2467.38 8	3 ⁽⁻⁾	J ^π : 3 ⁻ ; $\pi=-$ based on small primary-capture $I\gamma$.
2472.48 16	1	J ^π : 1.
2490.00 5	4 ⁺	
2513.50 18	1	J ^π : 1.
2524.920 25	4 ⁺	
2532.54 6	4 ⁻ ,5 ⁻	J ^π : (5 ⁻).
2539.82 17	3 ⁻	J ^π : 3 ⁻ .
2567.89 19	2 ⁺	J ^π : 2 ⁺ .

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$^{148}\text{Sm}(\text{n},\text{n}'\gamma)$ **1997Go20 (continued)** ^{148}Sm Levels (continued)

E(level) [†]	J^π [‡]	Comments
2570.65 7	4 ⁽⁻⁾	J^π : 4 ⁻ ; $\pi=-$ because of small primary-capture I_γ .
2583.77 7	4 ⁽⁻⁾	J^π : 4 ⁻ ; $\pi=-$ because of small primary-capture I_γ .
2633.24 11	3 ⁻	J^π : 3 ⁻ .
2640.77 6	5 ⁺	J^π : 5 ⁺ .
2673.12 9	4 ⁺	J^π : 3 ⁺ , 4 ⁺ .
2683.22 6	4 ⁻ , 5 ⁻	
2697.74 16	3 ⁺ , 4 ⁺	J^π : 3 ⁺ , 4 ⁺ .
2701.8 3	4 ⁽⁻⁾ , (3 ⁻)	J^π : 4 ⁻ , (3 ⁻); $\pi=-$ from small primary-capture I_γ .
2704.6 5	(1, 2 ⁺)	J^π : 1.
2713.27 7	3 ⁺ , 4 ⁺	J^π : 3 ⁺ , 4 ⁺ .
2723.72 9	4 ⁺	J^π : 3 ⁺ , 4 ⁺ .
2727.19 9	5 ⁺	J^π : 5, 6.
2734.6 5	(3)	
2753.15 6	3 ⁺	J^π : 3 ⁺ .
2801.75 11	5 ⁺	
2806.74 10	3 ⁺ , 4 ⁺	J^π : 3 ⁺ , 4 ⁺ .
2815.46 11	4 ⁻	
2828.15 15		
2847.3 5	(3 ⁻ , 4 ⁻)	
2861.09 8	4 ⁻ , 5 ⁻	J^π : 3 ⁺ , 4 ⁺ .
2861.87 12	3 ⁺ , 4 ⁺	J^π : 3 ⁺ , 4 ⁺ .
2928.72 16	(4, 5, 6) ⁺	
2931.98? 20		
2967.2 5	3 ⁺ , 4 ⁺	J^π : 3 ⁺ , 4 ⁺ .
2980.51 19	3 ⁺ , 4 ⁺	J^π : 3 ⁺ , 4 ⁺ .
2992.26 14	3 ⁺ , 4 ⁺	J^π : 3 ⁺ , 4 ⁺ .
3014.1 6	3 ⁻ , 4 ⁻	J^π : 3 ⁻ .
3050.9 5		
3063.25 22	3 ⁻	J^π : 3 ⁻ .
3107.8 4	3 ⁺ , 4 ⁺	J^π : 3 ⁺ , 4 ⁺ .
3138.46 11	3 ⁽⁻⁾ , 4 ⁽⁻⁾	J^π : 3 ⁻ , 4 ⁻ ; $\pi=-$ from small primary-capture I_γ .
3221.2 4		
3276.2 5		

[†] From a least-squares fit to E_γ data.[‡] From Adopted Levels. Supporting assignments from this reaction based on $\gamma(\theta)$, primary capture I_γ/E_γ^5 , and linear-polarization data are given in comments. $\gamma(^{148}\text{Sm})$

E_γ	I_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [#]
222.56 6	0.109 13	2128.49	7 ⁻	1905.91	6 ⁺	
241.70 10	0.069 12	2147.528	5 ⁺	1905.91	6 ⁺	
288.10 7	0.101 20	2194.05	6 ⁺	1905.91	6 ⁺	
^x 301.7 4	0.152 15					
308.29 11	0.146 16	1972.476	2 ⁺	1664.225	2 ⁺	
311.61 5	0.164 20	1905.91	6 ⁺	1594.264	5 ⁻	
377.50 8	0.064 12	2110.956	4 ⁺	1733.483	4 ⁺	
414.026 & 21	3.75 & 10	1594.264	5 ⁻	1180.234	4 ⁺	
414.026 & 21	3.75 & 10	2147.528	5 ⁺	1733.483	4 ⁺	
432.71 3	0.96 3	1594.264	5 ⁻	1161.534	3 ⁻	E2 @

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$^{148}\text{Sm}(\text{n},\text{n}'\gamma)$ **1997Go20** (continued) $\gamma(^{148}\text{Sm})$ (continued)

E_γ	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [#]	$\delta^\#$	Comments
449.66 9	0.171 14	1903.776	3 ⁺	1454.061	2 ⁺			
468.44 6	0.124 15	2374.35	5 ⁺ ,6 ⁺	1905.91	6 ⁺			
486.18 16	0.196 21	2392.09	7 ⁺	1905.91	6 ⁺			
501.21 6	0.18 5	2095.170	6 ⁺	1594.264	5 ⁻			
516.71 6	0.20 3	2110.956	4 ⁺	1594.264	5 ⁻			
534.24 4	0.37 4	2128.49	7 ⁻	1594.264	5 ⁻			
^x 544.6 4	0.058 12							
550.273 9	100	550.256	2 ⁺	0.0	0 ⁺	E2 [@]		
553.17 ^{&} 3	2.3 ^{&} 5	2147.528	5 ⁺	1594.264	5 ⁻			
553.22 ^{&} 3	2.3 ^{&} 5	1733.483	4 ⁺	1180.234	4 ⁺			
571.96 3	1.46 6	1733.483	4 ⁺	1161.534	3 ⁻	E1(+M2) [@]	<0.4	
592.82 8	0.29 4	2057.94	2 ⁻	1465.136	1 ⁻			
599.58 9	0.077 14	2194.05	6 ⁺	1594.264	5 ⁻			
611.272 16	15.4 4	1161.534	3 ⁻	550.256	2 ⁺	E1(+M2) [@]	<0.4	
619.03 9	0.049 10	2524.920	4 ⁺	1905.91	6 ⁺			
620.23 25	0.049 10	2214.24	5 ⁺	1594.264	5 ⁻			
629.975 14	17.5 4	1180.234	4 ⁺	550.256	2 ⁺	E2 [@]		
^x 641.8 4	0.040 11							
657.02 8	0.092 9	2110.956	4 ⁺	1454.061	2 ⁺			
666.7 3	0.079 14	2570.65	4 ⁽⁻⁾	1903.776	3 ⁺			
^x 708.0 3	0.094 16							
714.72 5	0.66 3	1894.95	4 ⁺	1180.234	4 ⁺			
723.58 5	0.35 4	1903.776	3 ⁺	1180.234	4 ⁺			
725.65 3	1.08 4	1905.91	6 ⁺	1180.234	4 ⁺			
734.08 15	0.092 9	2640.77	5 ⁺	1905.91	6 ⁺			
756.61 11	0.052 10	2490.00	4 ⁺	1733.483	4 ⁺			
^x 762.3 6	0.055 10							
778.19 11	0.081 13	2442.41	(2 ⁺)	1664.225	2 ⁺			
780.09 10	0.040 13	2374.35	5 ⁺ ,6 ⁺	1594.264	5 ⁻			
788.22 7	0.079 11	2683.22	4 ⁻ ,5 ⁻	1894.95	4 ⁺			
^x 808.6 3	0.12 3							
810.65 14	0.19 3	1972.476	2 ⁺	1161.534	3 ⁻			
819.2 4	0.096 15	2284.37	(1,2 ⁺)	1465.136	1 ⁻			
^x 821.7 8	0.040 13							
869.86 4	1.58 5	2031.40	4 ⁻	1161.534	3 ⁻	M1+E2		Mult.: A ₂ =-0.56 10, A ₄ =-0.07 13. δ: -0.23 8 or -2.3 8.
874.19 3	2.26 6	1424.45	0 ⁺	550.256	2 ⁺	E2 [@]		γ(θ) isotropic; A ₂ =0.002 9, A ₄ =-0.002 12.
885.6 8	0.032 10	2339.21	3 ⁻	1454.061	2 ⁺			
^x 890.8 4	0.071 11							
896.39 5	1.30 4	2057.94	2 ⁻	1161.534	3 ⁻	M1+E2	>+0.2	Mult.: A ₂ =-0.19 6, A ₄ =0.10 7.
903.815 19	4.15 11	1454.061	2 ⁺	550.256	2 ⁺	M1+E2	+2.32 10	Mult.: A ₂ =0.167 9, A ₄ =-0.033 12. δ: weighted average of +2.33 11 (1997Go20), and +2.26 22 (1985GoZL).
914.916 ^{&} 15	1.95 ^{&} 5	1465.136	1 ⁻	550.256	2 ⁺			
914.916 ^{&} 15	1.95 ^{&} 5	2095.170	6 ⁺	1180.234	4 ⁺			
930.68 ^{&} 3	0.624 ^{&} 20	2110.956	4 ⁺	1180.234	4 ⁺			Mult.: M1+E2, δ=-0.91 9; A ₂ =-0.15 3, A ₄ =-0.06 4 (1997Go20); M1+E2, δ=-0.80 7 (1985GoZL); however, since this γ is doubly placed, this result is suspect.
930.68 ^{&} 3	0.624 ^{&} 20	2524.920	4 ⁺	1594.264	5 ⁻			

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$^{148}\text{Sm}(\text{n},\text{n}'\gamma)$ **1997Go20** (continued) $\gamma(^{148}\text{Sm})$ (continued)

E_γ	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [#]	$\delta^\#$	Comments
936.38 ^a 10	0.086 16	2967.2	3 ⁺ ,4 ⁺	2031.40	4 ⁻			
938.27 5	0.129 18	2532.54	4 ⁻ ,5 ⁻	1594.264	5 ⁻			
949.48 10	0.108 15	2110.956	4 ⁺	1161.534	3 ⁻			
^x 956.2 5	0.166 15							
967.98 7	0.152 15	2147.528	5 ⁺	1180.234	4 ⁺			
976.49 10	0.061 9	2570.65	4 ⁽⁻⁾	1594.264	5 ⁻			
979.78 6	0.140 13	2713.27	3 ⁺ ,4 ⁺	1733.483	4 ⁺			
985.16 20	0.202 20	2146.35	2 ⁺	1161.534	3 ⁻			
989.50 6	0.184 18	2583.77	4 ⁽⁻⁾	1594.264	5 ⁻			
^x 996.4 5	0.056 10							
1014.02 8	0.253 15	2194.05	6 ⁺	1180.234	4 ⁺			
1033.99 6	0.46 3	2214.24	5 ⁺	1180.234	4 ⁺	M1+E2	-2.4 6	Mult.: $A_2=-0.60$ 4, $A_4=0.12$ 6.
1035.85 8	0.080 12	2490.00	4 ⁺	1454.061	2 ⁺			
1047.66 14	0.231 14	2228.07	4 ⁺	1180.234	4 ⁺			
1059.02 ^a 25	0.113 12	2513.50	1	1454.061	2 ⁺			
^x 1063.9 8	0.045 15							
1066.56 5	0.277 20	2228.07	4 ⁺	1161.534	3 ⁻			
1073.32 16	0.048 11	2806.74	3 ⁺ ,4 ⁺	1733.483	4 ⁺			
1082.02 14	0.071 11	2815.46	4 ⁻	1733.483	4 ⁺			
^x 1085.5 4	0.065 11							
1089.20 17	0.059 12	2683.22	4 ⁻ ,5 ⁻	1594.264	5 ⁻			
^x 1102.4 4	0.064 11							
1107.5 3	0.108 12	2701.8	4 ⁽⁻⁾ , (3 ⁻)	1594.264	5 ⁻			
1113.98 2	2.76 8	1664.225	2 ⁺	550.256	2 ⁺	M1+E2	-0.565 21	Mult.: $A_2=-0.091$ 8, $A_4=-0.012$ 11. δ : weighted average of -0.57 3 (1997Go20) and -0.56 3 (1985GoZL).
1128.04 ^{&} 15	0.051 ^{&} 11	2861.09	4 ⁻ ,5 ⁻	1733.483	4 ⁺			
1128.04 ^{&} 15	0.051 ^{&} 11	2861.87	3 ⁺ ,4 ⁺	1733.483	4 ⁺			
1132.78 11	0.077 12	2727.19	5 ⁺	1594.264	5 ⁻			
1146.86 4	0.513 20	2327.10	4 ⁺	1180.234	4 ⁺	M1+E2	-0.21 3	Mult.: $A_2=0.21$ 3, $A_4=-0.01$ 3. δ : weighted average of -0.19 5 (1997Go20), and -0.22 4 (1985GoZL).
1152.20 15	0.254 19	2313.57	2 ⁺	1161.534	3 ⁻	E1+M2	-0.10 9	Mult.: $A_2=0.00$ 4, $A_4=-0.05$ 6.
^x 1153.8 5	0.059 13							
1159.15 20	0.147 13	2339.21	3 ⁻	1180.234	4 ⁺			
1166.08 17	0.060 12	2327.62	3 ⁺	1161.534	3 ⁻			
1177.6 ^{&} 4	0.087 ^{&} 17	2339.21	3 ⁻	1161.534	3 ⁻			E_γ : assumed by the evaluator. 1172.6 4 (1997Go20) is considered to be a typographical error.
^x 1177.9 ^{&} 4	0.087 ^{&} 12							
^x 1181.0 6	0.117 25							
1183.19 6	0.23 3	1733.483	4 ⁺	550.256	2 ⁺			
^x 1197.3 5	0.050 11							
^x 1210.0 4	0.059 12							
1219.32 17	0.131 20	2673.12	4 ⁺	1454.061	2 ⁺			
1220.78 25	0.072 14	2815.46	4 ⁻	1594.264	5 ⁻			
1229.2 6	0.056 14	2390.45	3 ⁺	1161.534	3 ⁻			
1233.88 14	0.077 15	2828.15		1594.264	5 ⁻			
^x 1258.4 ^{&} 6	0.061 ^{&} 12							
1258.41 ^{&a} 10	0.061 ^{&} 12	2992.26	3 ⁺ ,4 ⁺	1733.483	4 ⁺			
1262.0 3	0.102 18	2442.41	(2 ⁺)	1180.234	4 ⁺			
1266.60 10	0.069 12	2861.09	4 ⁻ ,5 ⁻	1594.264	5 ⁻			

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$^{148}\text{Sm}(\text{n},\text{n}'\gamma)$ 1997Go20 (continued) $\gamma(^{148}\text{Sm})$ (continued)

E_γ	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [#]	$\delta^\#$	Comments
1270.2 7	0.046 12	2734.6	(3)	1465.136	1 ⁻			
1305.75 10	0.100 12	2467.38	3 ⁽⁻⁾	1161.534	3 ⁻			
1309.73 15	0.103 12	2490.00	4 ⁺	1180.234	4 ⁺			
1328.51 9	0.237 14	2490.00	4 ⁺	1161.534	3 ⁻			
1344.67 & 3	1.19 & 4	1894.95	4 ⁺	550.256	2 ⁺			
1344.67 & 3	1.19 & 4	2524.920	4 ⁺	1180.234	4 ⁺			
^x 1346.7 4	0.131 26							
1353.509 17	1.73 5	1903.776	3 ⁺	550.256	2 ⁺	M1+E2	+8.2 12	Mult.: $A_2=0.19$ 2, $A_4=0.122$ 27. δ : other: +10 +6-2 (1985GoZL).
1362.67 17	0.030 12	2524.920	4 ⁺	1161.534	3 ⁻			
1370.71 6	0.615 20	1920.97	0 ⁺	550.256	2 ⁺			Mult.: $\gamma(\theta)$ isotropic; $A_2=0.00$ 4, $A_4=-0.06$ 5.
1378.31 23	0.163 13	2539.82	3 ⁻	1161.534	3 ⁻			
1399.02 22	0.056 10	3063.25	3 ⁻	1664.225	2 ⁺			
1409.05 8	0.147 15	2570.65	4 ⁽⁻⁾	1161.534	3 ⁻			
1422.216 20	1.54 4	1972.476	2 ⁺	550.256	2 ⁺	M1+E2	-0.556 24	Mult.: $A_2=-0.09$ 1, $A_4=-0.014$ 14. δ : weighted average of -0.56 3 (1997Go20) and -0.55 4 (1985GoZL).
^x 1449.6 4	0.080 16							
1454.039 20	3.96 12	1454.061	2 ⁺	0.0	0 ⁺	E2@		
1460.65 6	0.12 3	2640.77	5 ⁺	1180.234	4 ⁺			
1465.101 13	3.36 10	1465.136	1 ⁻	0.0	0 ⁺	E1@		
1471.61 16	0.093 12	2633.24	3 ⁻	1161.534	3 ⁻			
1477.3 4	0.032 10	2931.98?		1454.061	2 ⁺			
1492.79 10	0.108 12	2673.12	4 ⁺	1180.234	4 ⁺			
1503.02 11	0.089 11	2683.22	4 ⁻ ,5 ⁻	1180.234	4 ⁺			
1543.27 10	0.118 12	2723.72	4 ⁺	1180.234	4 ⁺			
1547.15 13	0.075 11	2727.19	5 ⁺	1180.234	4 ⁺			
1560.72 6	0.243 14	2110.956	4 ⁺	550.256	2 ⁺	E2		Mult.: $A_2=0.30$ 3, $A_4=-0.08$ 4.
^x 1563.5 5	0.080 11							
1572.5 6	0.055 11	2734.6	(3)	1161.534	3 ⁻			
^x 1584.3 7	0.037 11							
1596.08 3	1.09 3	2146.35	2 ⁺	550.256	2 ⁺	M1+E2	-0.11 5	Mult.: $A_2=0.11$ 2, $A_4=-0.02$ 3.
1621.51 11	0.060 11	2801.75	5 ⁺	1180.234	4 ⁺			
1626.38 18	0.067 11	2806.74	3 ⁺ ,4 ⁺	1180.234	4 ⁺			
1635.35 18	0.055 11	2815.46	4 ⁻	1180.234	4 ⁺			
1645.7 3	0.055 11	2806.74	3 ⁺ ,4 ⁺	1161.534	3 ⁻			
1654.72 15	0.315 18	2204.99	0 ⁺	550.256	2 ⁺			
1658.58 7	0.71 3	2208.85	(1,2 ⁺)	550.256	2 ⁺			
1664.20 2	1.25 4	1664.225	2 ⁺	0.0	0 ⁺	E2@		
1677.79 13	0.402 16	2228.07	4 ⁺	550.256	2 ⁺	E2@		
1681.02 22	0.090 11	2861.09	4 ⁻ ,5 ⁻	1180.234	4 ⁺			
1682.1 4	0.090 13	2861.87	3 ⁺ ,4 ⁺	1180.234	4 ⁺			
1734.04 19	0.230 14	2284.37	(1,2 ⁺)	550.256	2 ⁺			
^x 1741.5 ‡ 6	0.071 13							
1748.48 16	0.081 14	2928.72	(4,5,6) ⁺	1180.234	4 ⁺			
1763.26 8	0.602 24	2313.57	2 ⁺	550.256	2 ⁺	M1+E2	+2.2 5	Mult.: $A_2=0.16$ 3, $A_4=-0.03$ 4.
1777.35 10	0.55 5	2327.62	3 ⁺	550.256	2 ⁺			
1788.90 9	0.360 18	2339.21	3 ⁻	550.256	2 ⁺	E1+M2	+0.06 4	Mult.: $A_2=-0.13$ 4, $A_4=0.03$ 5.
1800.26 19	0.052 11	2980.51	3 ⁺ ,4 ⁺	1180.234	4 ⁺			
1810.94 25	0.046 12	2992.26	3 ⁺ ,4 ⁺	1180.234	4 ⁺			
^x 1814.1 6	0.056 12							
^x 1822.6 6	0.043 10							
1831.40 10	0.409 20	2381.67	3 ⁺ ,4 ⁺	550.256	2 ⁺	M1+E2	+0.46 8	Mult.: $A_2=0.24$ 5, $A_4=-0.04$ 7.

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$^{148}\text{Sm}(\text{n},\text{n}'\gamma)$ **1997Go20** (continued) $\gamma(^{148}\text{Sm})$ (continued)

E_γ	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [#]	$\delta^\#$	Comments
1840.18 6	0.381 19	2390.45	3 ⁺	550.256	2 ⁺	M1+E2	-1.37 12	Mult.: $A_2=-0.52$ 4, $A_4=0.13$ 6.
^x 1858.4 3	0.061 13							
^x 1860.6 3	0.147 15							
1917.25 12	0.171 15	2467.38	3 ⁽⁻⁾	550.256	2 ⁺			
1922.28 25	0.157 15	2472.48	1	550.256	2 ⁺			
1972.8 3	0.152 12	1972.476	2 ⁺	0.0	0 ⁺			
1976.91 10	0.129 12	3138.46	3 ⁽⁻⁾ ,4 ⁽⁻⁾	1161.534	3 ⁻			
1989.52 25	0.123 13	2539.82	3 ⁻	550.256	2 ⁺			
2017.65 19	0.233 16	2567.89	2 ⁺	550.256	2 ⁺	M1+E2		Mult.: $A_2=-0.04$ 7, $A_4=0.08$ 10. δ : -0.46 19 or $1/\delta=+0.01$ 13.
2041.0 4	0.028 10	3221.2		1180.234	4 ⁺			
2083.03 14	0.330 20	2633.24	3 ⁻	550.256	2 ⁺	E1(+M2)	+0.02 9	Mult.: $A_2=-0.18$ 7, $A_4=0.01$ 9.
2132.67 ^a 14	0.113 12	2683.22	4 ⁻ ,5 ⁻	550.256	2 ⁺			
2147.47 16	0.208 17	2697.74	3 ⁺ ,4 ⁺	550.256	2 ⁺			
^x 2155.5 5	0.067 11							
2174.27 20	0.124 12	2723.72	4 ⁺	550.256	2 ⁺			
^x 2187.6 4	0.078 11							
2202.88 6	0.300 20	2753.15	3 ⁺	550.256	2 ⁺	M1+E2		Mult.: $A_2=-0.12$ 5, $A_4=0.03$ 7. δ : +0.05 6 or -5.6 +30-14.
2208.9 3	0.126 12	2208.85	(1,2 ⁺)	0.0	0 ⁺			
^x 2212.6 4	0.086 11							
2256.36 16	0.092 11	2806.74	3 ⁺ ,4 ⁺	550.256	2 ⁺			
2284.41 18	0.249 17	2284.37	(1,2 ⁺)	0.0	0 ⁺	D		Mult.: $A_2=-0.08$ 4, $A_4=0.02$ 6.
2297.0 5	0.061 11	2847.3	(3 ⁻ ,4 ⁻)	550.256	2 ⁺			
^x 2304.3 5	0.081 12							
2312.13 21	0.080 12	2861.87	3 ⁺ ,4 ⁺	550.256	2 ⁺			
2381.89 22	0.149 16	2931.98?		550.256	2 ⁺			
^x 2431.2 4	0.115 13							
2442.42 ^{&} 16	0.281 ^{&} 20	2442.41	(2 ⁺)	0.0	0 ⁺			Mult.: E2; $A_2=0.29$ 7, $A_4=0.04$ 9 (1997Go20). However, since this γ is doubly placed, this result is suspect.
2442.42 ^{&} 16	0.281 ^{&} 20	2992.26	3 ⁺ ,4 ⁺	550.256	2 ⁺			
2463.8 6	0.046 11	3014.1	3 ⁻ ,4 ⁻	550.256	2 ⁺			
2472.41 20	0.187 16	2472.48	1	0.0	0 ⁺	D		Mult.: $A_2=-0.19$ 7, $A_4=0.02$ 9.
^x 2478.8 9	0.037 11							
2500.6 5	0.044 11	3050.9		550.256	2 ⁺			
2513.48 18	0.254 20	2513.50	1	0.0	0 ⁺	D		Mult.: $A_2=-0.11$ 5, $A_4=0.08$ 7.
^x 2533.1 7	0.047 12							
2557.5 4	0.047 12	3107.8	3 ⁺ ,4 ⁺	550.256	2 ⁺			
2567.0 10	0.069 13	2567.89	2 ⁺	0.0	0 ⁺			
^x 2699.2 8	0.052 15							
2704.6 5	0.103 20	2704.6	(1,2 ⁺)	0.0	0 ⁺			
2725.9 5	0.050 16	3276.2		550.256	2 ⁺			
^x 2763.0 8	0.060 17							

[†] Relative intensities.[‡] Multiplet.[#] From $\gamma(\theta)$ and linear-polarization data.[@] Multipolarity known from earlier work that is confirmed by the present data of 1997Go20.[&] Multiply placed with undivided intensity.^a Placement of transition in the level scheme is uncertain.^x γ ray not placed in level scheme.

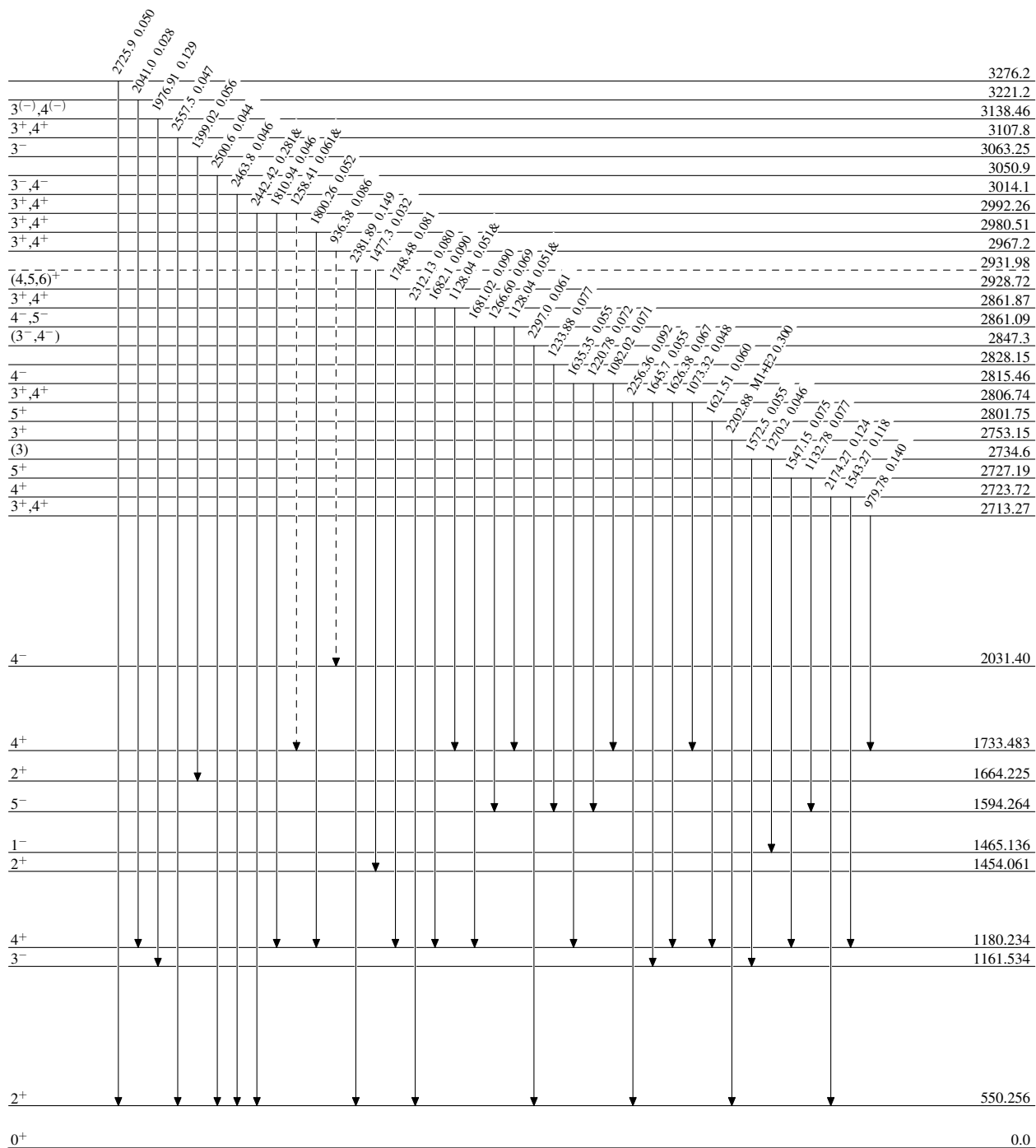
$^{148}\text{Sm}(n,n'\gamma)$ 1997Go20

Level Scheme

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

Legend

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



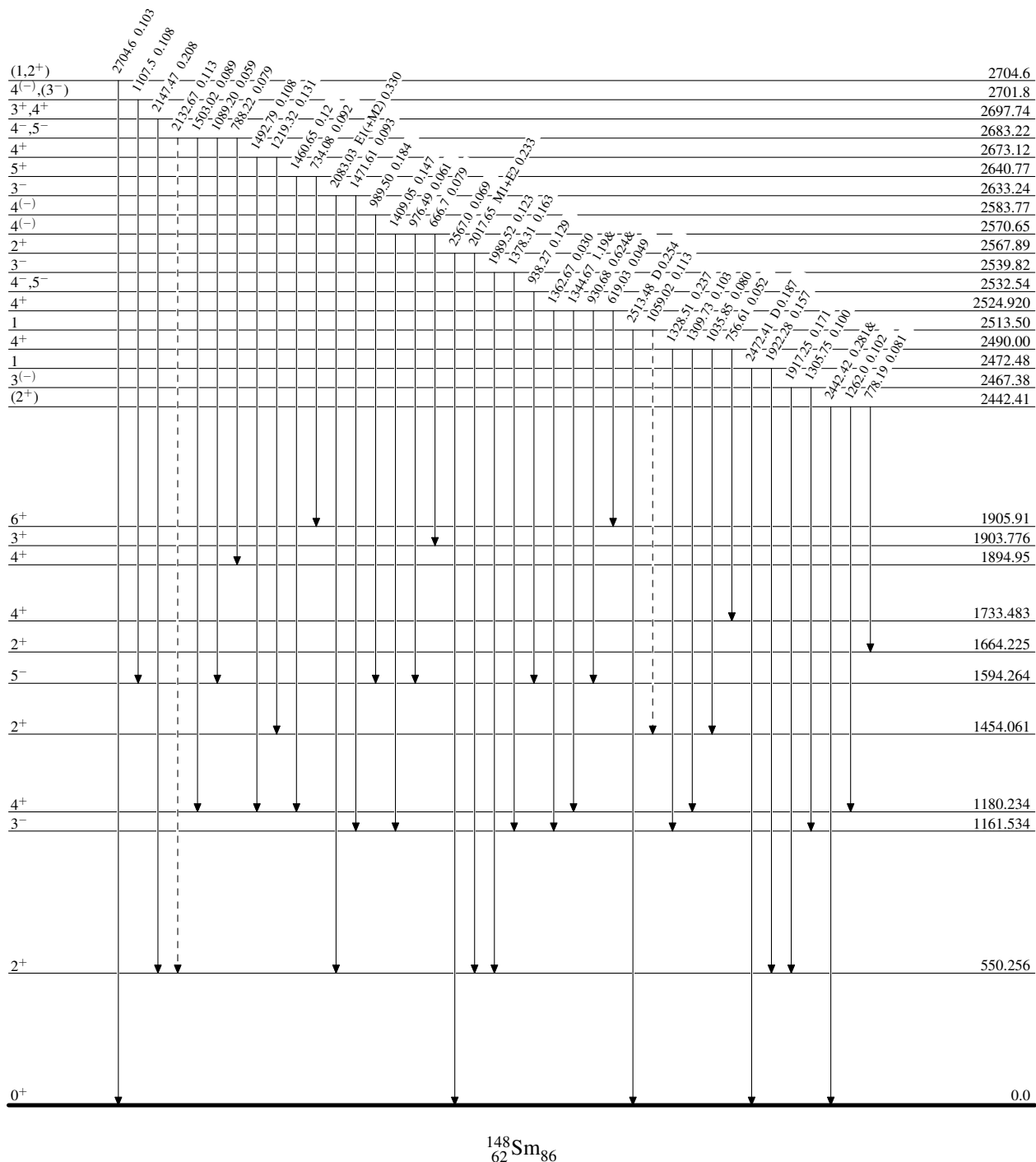
$^{148}\text{Sm}(n,n'\gamma)$ 1997Go20

Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

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)

 $^{148}_{62}\text{Sm}_{86}$

¹⁴⁸Sm(n,γ) ¹⁹⁹Gd₂₀

Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

