^{24}Mg(^{58}Ni,2pγ) 2003Si06

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 105, 223 (2005)	22-Jun-2005

2003Si06: E=200 MeV. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma(\theta)$ using the Gammasphere comprised of 100 HPGe detectors each with a BGO Compton-suppressed shield in conjunction with the Argonne Fragment Mass Analyzer.

^{80}Sr Levels

E(level)[†]	J$^\pi$[#]	E(level)[†]	J$^\pi$[#]	E(level)[†]	J$^\pi$[#]	E(level)[†]	J$^\pi$[#]
0.0[@]	0^+	3765.0[@] *4*	10^+	6469.1[f] *5*	$13^{(-)}$	9486.8 *7*	
385.40[@] *16*	2^+	4056.0[b] *3*	(8)	6494.7[a] *5*	13^+	9844.7 *7*	
979.80[@] *20*	4^+	4156.1[d] *4*	(8^-)	6666.8[c] *6*	(13)	9881.8[b] *7*	(18)
1141.00[&] *16*	2^+	4168.8[a] *3*	9^+	7106.7 *6*		10538.1[f] *7*	$19^{(-)}$
1570.23[a] *19*	3^+	4378.8[f] *3*	$9^{(-)}$	7155.8[b] *5*	(14)	10878.3[@] *7*	20^+
1762.80[@] *25*	6^+	4470.0[c] *4*	(9)	7307.6[e] *9*		10956.6[a] *7*	(19^+)
1831.34[&] *20*	4^+	4632.3 *4*	(9^-)	7631.0[d] *6*	(14^-)	10962.4[c] *10*	
2295.48[a] *21*	5^+	4650.5 *5*	(9)	7729.9[f] *5*	$15^{(-)}$	11073.5 *7*	
2640.72[&] *25*	6^+	4676.8[&] *8*	10^+	7751.8[@] *5*	16^+	11307.1 *11*	
2699.7[@] *3*	8^+	4896.9[e] *4*		7834.5[‡a] *6*	(15^+)	11358.6 *9*	
2835.2[b] *4*	(4)	4922.5[b] *3*	(10)	7866.7[‡a] *6*	(15^+)	12071.4[f] *9*	$21^{(-)}$
2897.2 *3*	(5)	4951.3[@] *4*	12^+	7974.0[c] *6*	(15)	12629.5[@] *10*	(22^+)
3047.2[d] *3*	(5^-)	5149.0[d] *5*	(10^-)	8140.9 *11*		12708.6[a] *13*	(21^+)
3171.59[a] *24*	7^+	5273.7[a] *3*	11^+	8499.5[b] *5*	(16)	12813.7 *8*	
3312.9[d] *3*	(6^-)	5349.1[f] *4*	$11^{(-)}$	8714.8[e] *10*		13722.0[f] *9*	(23^-)
3393.3[b] *3*	(6)	5500.4[c] *5*	(11)	9098.2[f] *5*	$17^{(-)}$	14746.1[@] *12*	(24^+)
3579.9 *3*	$7^{(-)}$	5957.8[b] *4*	(12)	9321.9 *10*		15575.2[f] *11*	(25^-)
3584.5[&] *4*	8^+	6022.2[e] *7*		9330.5[@] *6*	18^+		
3601.9[f] *3*	$7^{(-)}$	6275.9[@] *5*	14^+	9341.2[a] *6*	(17^+)		
3714.3 *3*	(7^-)	6288.2[d] *5*	(12^-)	9417.3[c] *8*			

[†] From least-squares fit to Eγ's.

[‡] either of the two levels: 7834.5 or 7866.7 is 15^+ member of γ band.

[#] As proposed by 2003Si06 based on $\gamma(\theta)$ data and band assignments. The assignments are the same As In Adopted Levels except that parentheses have been added when strong arguments are lacking.

[@] Band(A): g.s. band.

[&] Band(B): γ band, α=0.

[a] Band(b): γ band, α=1.

[b] Band(C): Side band based on (6).

[c] Band(D): Side band based on (9).

[d] Band(E): Side band based on (5^-).

[e] Band(F): Side band.

[f] Band(G): Side band based on (7^-).

^{24}Mg(^{58}Ni,2pγ) 2003Si06 (continued)

γ(^{80}Sr)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
266.2 2	1.5 1	3312.9	(6$^-$)	3047.2	(5$^-$)	A_2=−0.55 8; A_4=−0.04 11
385.6 2	92.9 23	385.40	2$^+$	0.0	0$^+$	A_2=+0.01 1; A_4=−0.03 1
401.2 2	1.2 1	3714.3	(7$^-$)	3312.9	(6$^-$)	A_2=−0.52 13; A_4=+0.07 20
429.1 2	1.9 1	1570.23	3$^+$	1141.00	2$^+$	A_2=−0.03 9; A_4=−0.02 10
441.0 3	0.7 1	4156.1	(8$^-$)	3714.3	(7$^-$)	
463.9 2	1.0 1	2295.48	5$^+$	1831.34	4$^+$	
496.0 2	1.9 1	3393.3	(6)	2897.2	(5)	
530.8 2	1.5 4	3171.59	7$^+$	2640.72	6$^+$	
558.1 2	0.9 1	3393.3	(6)	2835.2	(4)	
590.2 3	0.9 1	1570.23	3$^+$	979.80	4$^+$	
594.6 2	79.9 20	979.80	4$^+$	385.40	2$^+$	A_2=+0.12 1; A_4=−0.04 1
662.3 2	5.9 2	4056.0	(8)	3393.3	(6)	A_2=+0.23 3; A_4=−0.07 3
666.6 3	1.9 1	3714.3	(7$^-$)	3047.2	(5$^-$)	A_2=+0.34 11; A_4=+0.05 16
683.1 3	1.2 1	3579.9	7$^{(-)}$	2897.2	(5)	A_2=+0.07 9
690.4 2	1.6 1	1831.34	4$^+$	1141.00	2$^+$	A_2=+0.15 7; A_4=−0.08 9
725.2 2	7.0 2	2295.48	5$^+$	1570.23	3$^+$	A_2=+0.19 3; A_4=−0.08 4
754.0 3	1.7 1	4922.5	(10)	4168.8	9$^+$	
755.9 3	2.5 1	1141.00	2$^+$	385.40	2$^+$	A_2=+0.07 4; A_4=−0.02 5
776.7 2	5.7 2	4378.8	9$^{(-)}$	3601.9	7$^{(-)}$	A_2=+0.12 5; A_4=0.00 7
782.8 2	63.6 16	1762.80	6$^+$	979.80	4$^+$	A_2=+0.22 1; A_4=−0.06 1
799.1 2	5.0 1	4378.8	9$^{(-)}$	3579.9	7$^{(-)}$	A_2=+0.24 4; A_4=−0.04 5
809.3 2	1.9 1	2640.72	6$^+$	1831.34	4$^+$	A_2=+0.07 9; A_4=−0.34 12
843.6 2	2.9 1	4156.1	(8$^-$)	3312.9	(6$^-$)	A_2=+0.23 6; A_4=+0.03 8
851.5 2	1.5 1	1831.34	4$^+$	979.80	4$^+$	A_2=−0.06 9; A_4=+0.13 11 Additional information 1.
866.3 2	7.2 2	4922.5	(10)	4056.0	(8)	A_2=+0.28 3; A_4=+0.01 4
876.6 2	8.0 2	3171.59	7$^+$	2295.48	5$^+$	A_2=+0.20 3; A_4=−0.05 4
884.7 2	5.6 2	4056.0	(8)	3171.59	7$^+$	A_2=−0.11 5; A_4=+0.11 7
902.1 3	0.9 1	3601.9	7$^{(-)}$	2699.7	8$^+$	A_2=−0.14 17; A_4=−0.12 22
918.0 2	1.9 1	4632.3	(9$^-$)	3714.3	(7$^-$)	A_2=+0.38 9; A_4=−0.26 12
936.8 2	48.6 12	2699.7	8$^+$	1762.80	6$^+$	A_2=+0.26 1; A_4=−0.11 1
943.8 2	3.1 1	3584.5	8$^+$	2640.72	6$^+$	A_2=+0.23 6; A_4=+0.04 8
970.3 2	8.7 2	5349.1	11$^{(-)}$	4378.8	9$^{(-)}$	A_2=+0.23 2; A_4=−0.09 3
992.8 3	4.0 3	5149.0	(10$^-$)	4156.1	(8$^-$)	A_2=+0.03 13; A_4=+0.11 18
997.4 2	7.2 3	4168.8	9$^+$	3171.59	7$^+$	A_2=+0.23 5; A_4=−0.14 7
1017.2 2	2.3 1	3312.9	(6$^-$)	2295.48	5$^+$	A_2=+0.07 8; A_4=+0.03 11
1030.8 4	2.1 3	5500.4	(11)	4470.0	(9)	A_2=+0.30 8; A_4=−0.25 11
1035.3 2	6.8 3	5957.8	(12)	4922.5	(10)	A_2=+0.32 5; A_4=+0.05 7
1065.4 2	36.9 10	3765.0	10$^+$	2699.7	8$^+$	A_2=+0.27 1; A_4=−0.11 2
1092.3 7	1.9 3	4676.8	10$^+$	3584.5	8$^+$	A_2=+0.25 12
1097.3 3	4.2 3	3393.3	(6)	2295.48	5$^+$	A_2=−0.31 7; A_4=−0.12 11
1104.9 2	4.8 2	5273.7	11$^+$	4168.8	9$^+$	A_2=+0.22 4; A_4=−0.14 6
1120.0 2	7.9 3	6469.1	13$^{(-)}$	5349.1	11$^{(-)}$	A_2=+0.25 3; A_4=−0.12 3
1125.3 5	2.3 2	6022.2		4896.9		A_2=+0.34 5; A_4=+0.00 7
1132.4 3	4.3 2	4896.9		3765.0	10$^+$	A_2=+0.26 5; A_4=−0.10 7
1139.2 2	2.8 3	6288.2	(12$^-$)	5149.0	(10$^-$)	
1140.8 2	7.1 2	1141.00	2$^+$	0.0	0$^+$	A_2=+0.01 12; A_4=+0.01 15
1166.4 2	5.1 2	6666.8	(13)	5500.4	(11)	A_2=+0.21 4; A_4=−0.19 5
1185.0 2	4.9 12	1570.23	3$^+$	385.40	2$^+$	
1186.3 2	27.9 11	4951.3	12$^+$	3765.0	10$^+$	A_2=+0.24 1; A_4=−0.08 2
1198.0 2	5.1 2	7155.8	(14)	5957.8	(12)	A_2=+0.24 4; A_4=−0.03 5
1221.0 3	5.1 2	6494.7	13$^+$	5273.7	11$^+$	A_2=+0.19 5; A_4=−0.05 6
1260.8 2	6.7 2	7729.9	15$^{(-)}$	6469.1	13$^{(-)}$	A_2=+0.29 5; A_4=−0.02 6
1285.4 6	2.4 3	7307.6		6022.2		
1307.2 3	2.4 1	7974.0	(15)	6666.8	(13)	A_2=+0.33 9; A_4=−0.23 13

Continued on next page (footnotes at end of table)

^{24}Mg(^{58}Ni,2pγ) 2003Si06 (continued)

γ(^{80}Sr) (continued)

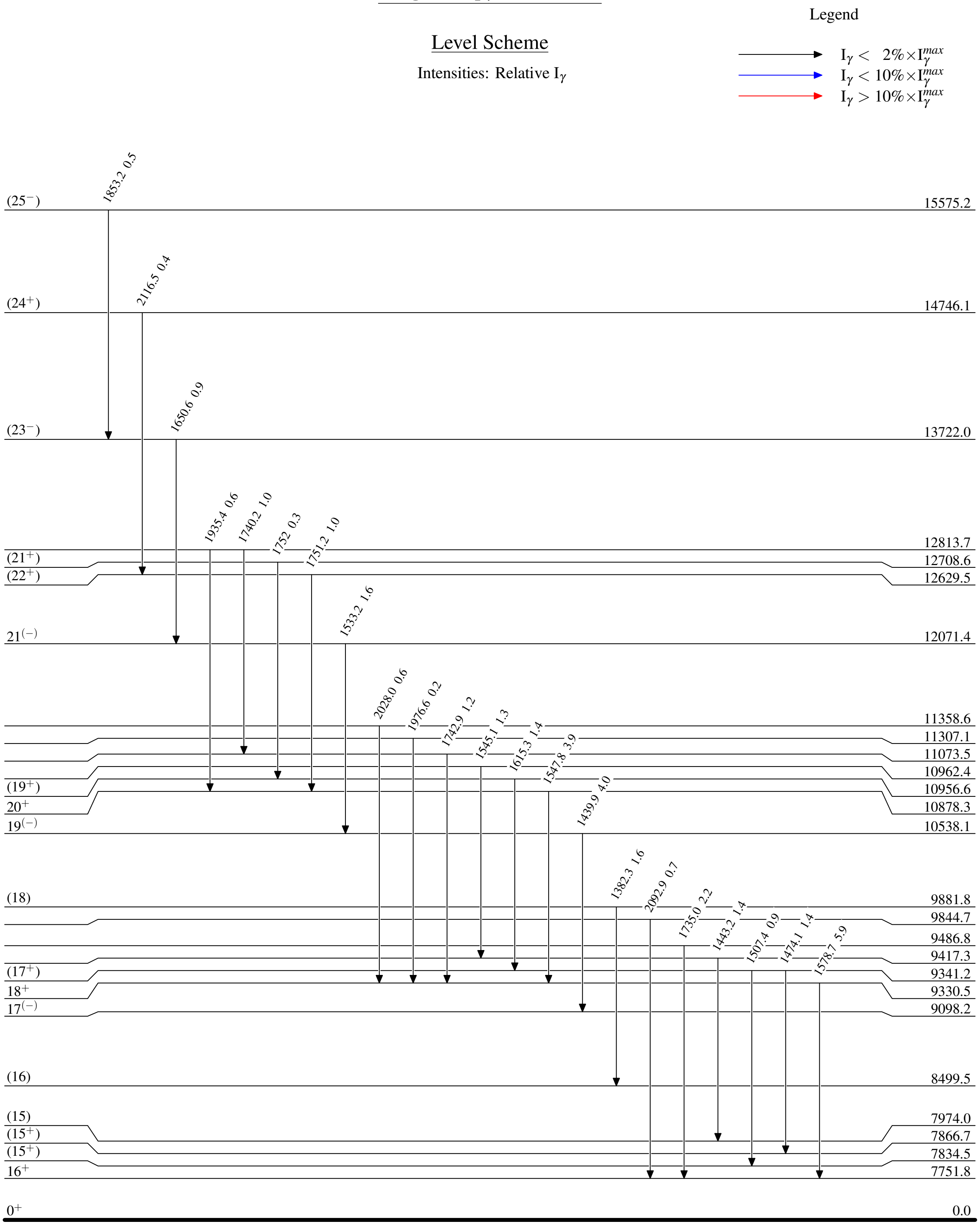
E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
1316.0 *2*	8.0 *2*	2295.48	5$^+$	979.80	4$^+$		A_2=+0.20 *4*; A_4=+0.04 *5*
1324.6 *2*	16.8 *5*	6275.9	14$^+$	4951.3	12$^+$		A_2=+0.32 *2*; A_4=−0.02 *3*
1340.0 *3*	1.8 *1*	7834.5	(15$^+$)	6494.7	13$^+$		A_2=+0.34 *12*
1342.8 *3*	0.9 *2*	7631.0	(14$^-$)	6288.2	(12$^-$)		
1343.7 *2*	3.2 *1*	8499.5	(16)	7155.8	(14)		A_2=+0.30 *4*; A_4=−0.06 *5*
1368.3 *2*	5.9 *2*	9098.2	17$^{(-)}$	7729.9	15$^{(-)}$		A_2=+0.34 *4*; A_4=−0.23 *6*
1371.7 *3*	1.3 *2*	7866.7	(15$^+$)	6494.7	13$^+$		
1382.3 *5*	1.6 *1*	9881.8	(18)	8499.5	(16)		A_2=+0.38 *12*
1407.2 *4*	2.2 *2*	8714.8		7307.6			
1408.8 *5*		3171.59	7$^+$	1762.80	6$^+$		
1439.9 *4*	4.0 *2*	10538.1	19$^{(-)}$	9098.2	17$^{(-)}$		A_2=+0.19 *4*; A_4=+0.07 *5*
1443.2 *4*	1.4 *1*	9417.3		7974.0	(15)		
1444.6 *4*		1831.34	4$^+$	385.40	2$^+$		E_γ: poor fit; level energy difference=1445.9.
1474.1 *4*	1.4 *2*	9341.2	(17$^+$)	7866.7	(15$^+$)		
1475.9 *2*	9.9 *3*	7751.8	16$^+$	6275.9	14$^+$		A_2=+0.33 *3*; A_4=−0.09 *4*
1507.4 *5*	0.9 *2*	9341.2	(17$^+$)	7834.5	(15$^+$)		
1508.7 *3*	2.1 *3*	5273.7	11$^+$	3765.0	10$^+$		
1533.2 *5*	1.6 *3*	12071.4	21$^{(-)}$	10538.1	19$^{(-)}$		A_2=+0.38 *7*; A_4=−0.05 *9*
1545.1 *6*	1.3 *2*	10962.4		9417.3			
1547.8 *3*	3.9 *2*	10878.3	20$^+$	9330.5	18$^+$		A_2=+0.30 *6*; A_4=−0.20 *9*
1578.7 *3*	5.9 *3*	9330.5	18$^+$	7751.8	16$^+$		A_2=+0.31 *5*; A_4=−0.13 *7*
1592.0 *8*	0.8 *2*	9321.9		7729.9	15$^{(-)}$		A_2=+0.4 *25*
1615.3 *4*	1.4 *1*	10956.6	(19$^+$)	9341.2	(17$^+$)		
1650.6 *4*	0.9 *1*	13722.0	(23$^-$)	12071.4	21$^{(-)}$		
1734.6 *6*	2.1 *3*	5500.4	(11)	3765.0	10$^+$		A_2=+0.10 *6*; A_4=−0.20 *8*
1735.0 *5*	2.2 *5*	9486.8		7751.8	16$^+$		
1740.2 *5*	1.0 *3*	12813.7		11073.5			
1742.9 *4*	1.2 *1*	11073.5		9330.5	18$^+$		
1751.2 *7*	1.0 *1*	12629.5	(22$^+$)	10878.3	20$^+$		
1752 *1*	0.3 *1*	12708.6	(21$^+$)	10956.6	(19$^+$)		
1770.5 *3*	1.8 *1*	4470.0	(9)	2699.7	8$^+$		A_2=−0.26 *13*; A_4=+0.02 *16*
1817.0 *3*	7.1 *2*	3579.9	7$^{(-)}$	1762.80	6$^+$	D†	A_2=−0.10 *4*; A_4=−0.07 *5*
1839.0 *2*	5.0 *2*	3601.9	7$^{(-)}$	1762.80	6$^+$	D†	A_2=−0.40 *5*; A_4=−0.04 *6*
1853.2 *5*	0.5 *1*	15575.2	(25$^-$)	13722.0	(23$^-$)		
1854.8 *7*	2.5 *2*	2835.2	(4)	979.80	4$^+$		A_2=+0.20 *8*; A_4=−0.21 *11*
1865 *1*	0.3 *2*	8140.9		6275.9	14$^+$		
1917.4 *3*	2.2 *1*	2897.2	(5)	979.80	4$^+$		A_2=−0.27 *11*; A_4=−0.11 *15*
1935.4 *6*	0.6 *1*	12813.7		10878.3	20$^+$		
1950.8 *4*	1.4 *1*	4650.5	(9)	2699.7	8$^+$		A_2=+0.26 *18*; A_4=−0.32 *25*
1976.6 *9*	0.2 *1*	11307.1		9330.5	18$^+$		
2028.0 *7*	0.6 *1*	11358.6		9330.5	18$^+$		
2068.3 *4*	0.8 *1*	3047.2	(5$^-$)	979.80	4$^+$		A_2=−0.48 *17*; A_4=−0.33 *23*
2092.9 *5*	0.7 *1*	9844.7		7751.8	16$^+$		A_2=−0.12 *20*
2116.5 *7*	0.4 *1*	14746.1	(24$^+$)	12629.5	(22$^+$)		
2155.4 *4*	1.4 *1*	7106.7		4951.3	12$^+$		
2195.7 *5*	1.4 *1*	4896.9		2699.7	8$^+$		

† Preliminary γ(lin pol) measurement suggests E1 (2001GeZV) In reaction: ^{54}Fe(^{28}Si,2pγ) At 90 MeV.

$^{24}Mg(^{58}Ni,2p\gamma)$ 2003Si06

Level Scheme

Intentities: Relative I_γ



$^{80}_{38}Sr_{42}$

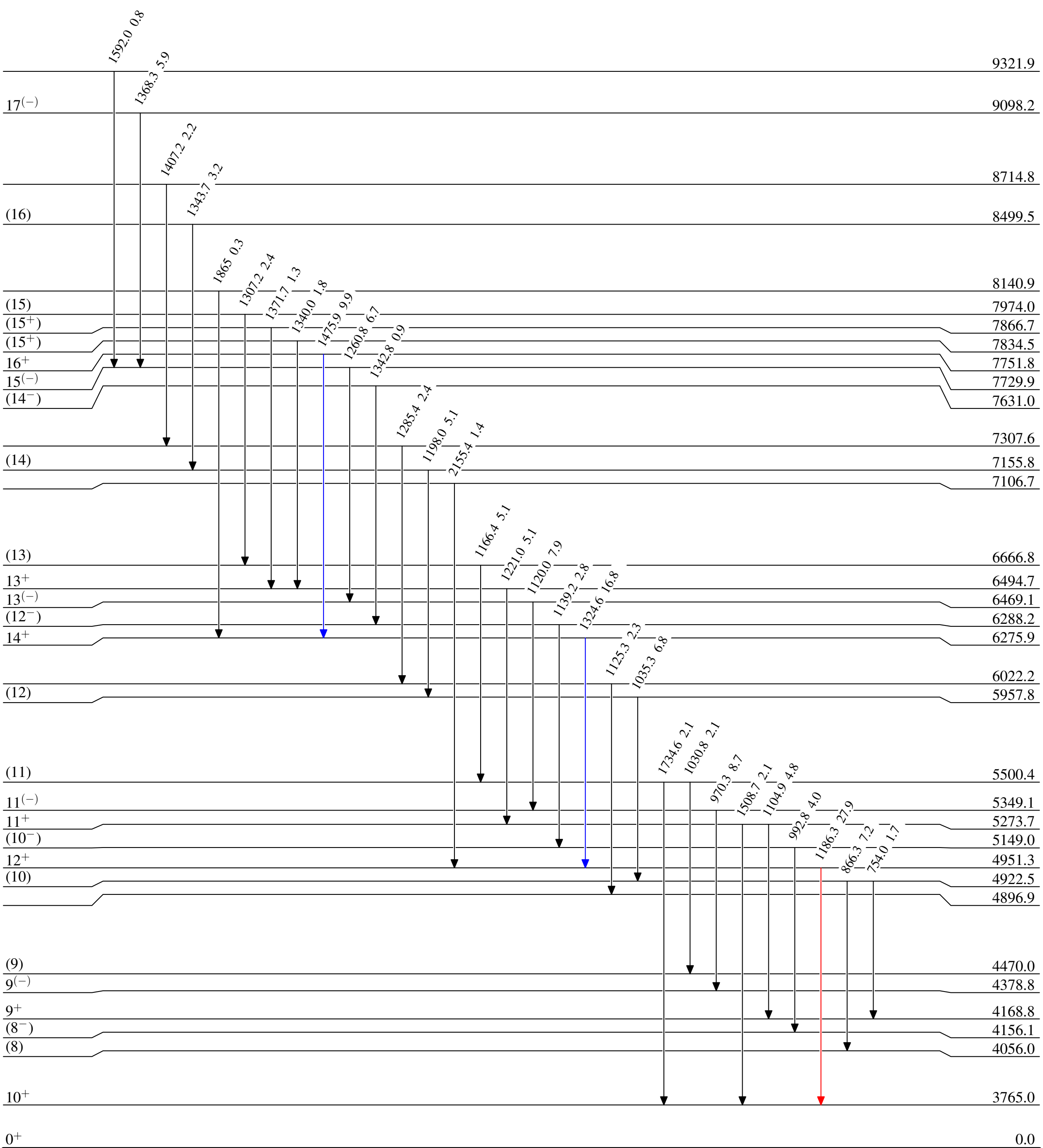
$^{24}Mg(^{58}Ni,2p\gamma)$ 2003Si06

Level Scheme (continued)

Intensities: Relative I_γ

Legend

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



$^{80}_{38}Sr_{42}$

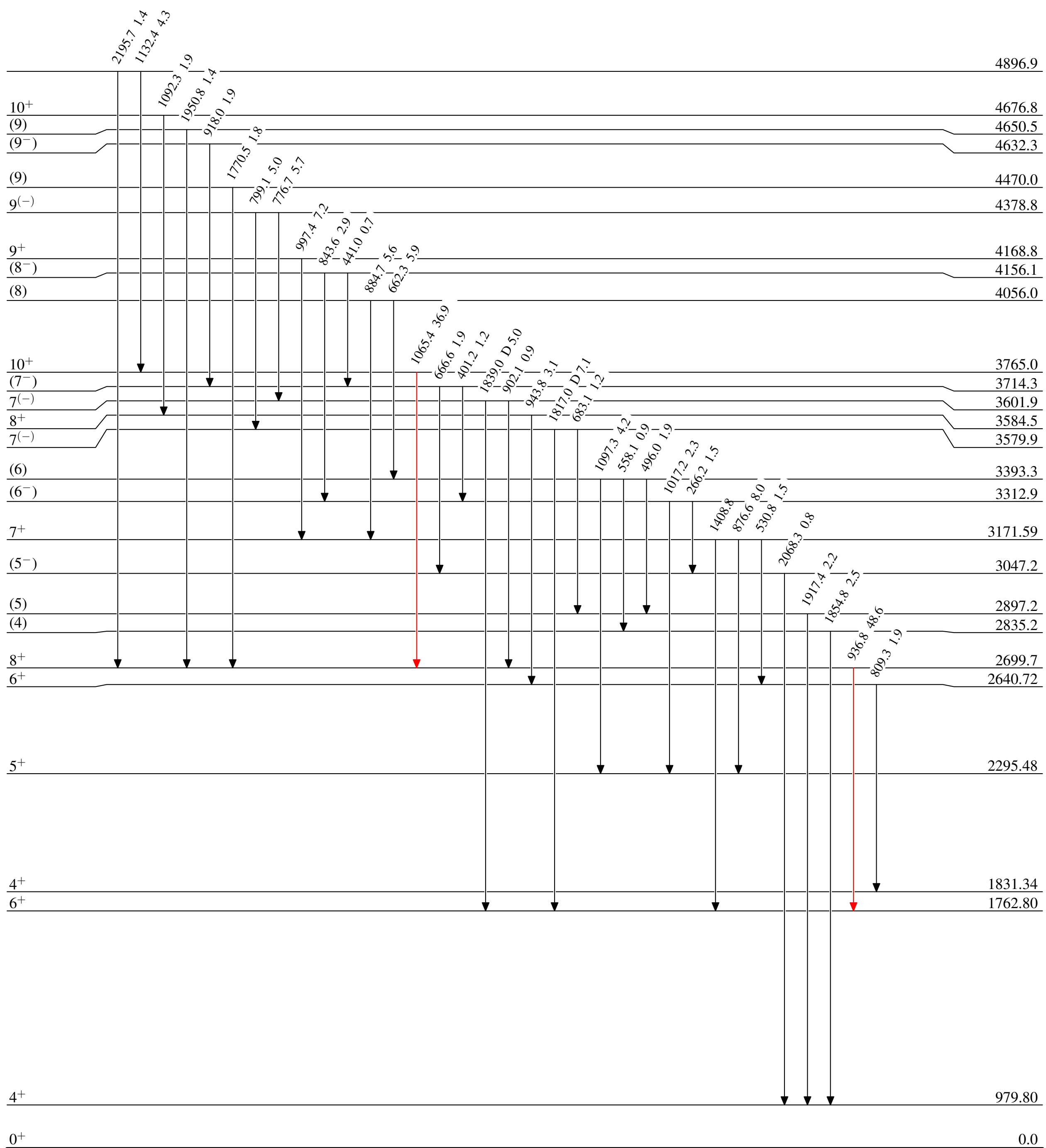
^{24}Mg(^{58}Ni,2pγ) 2003Si06

Level Scheme (continued)

Intensities: Relative I_γ

Legend

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

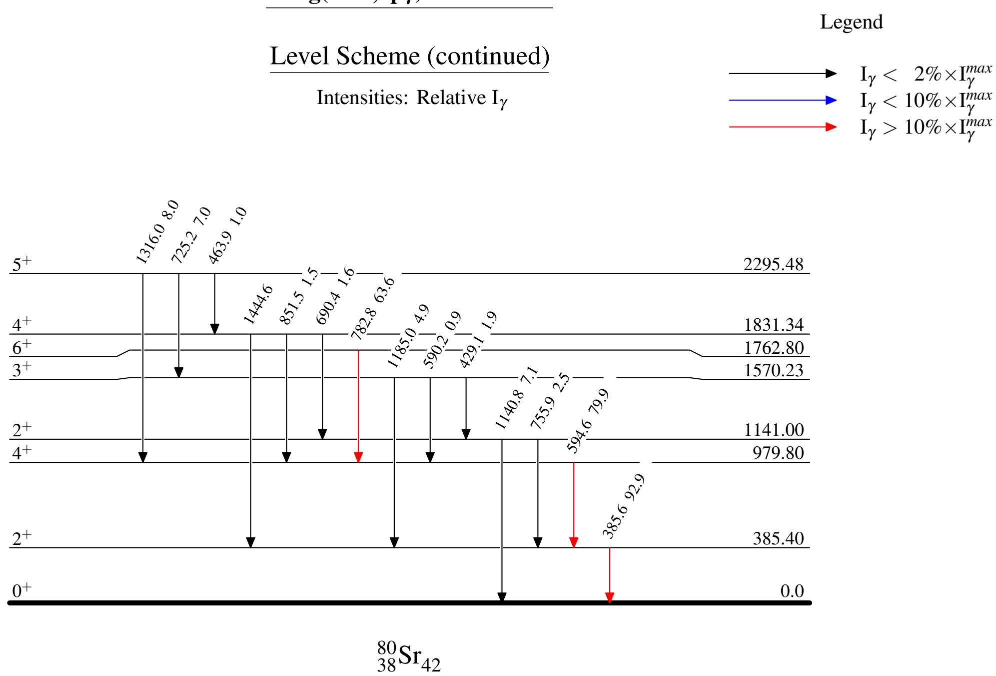


$^{80}_{38}Sr_{42}$

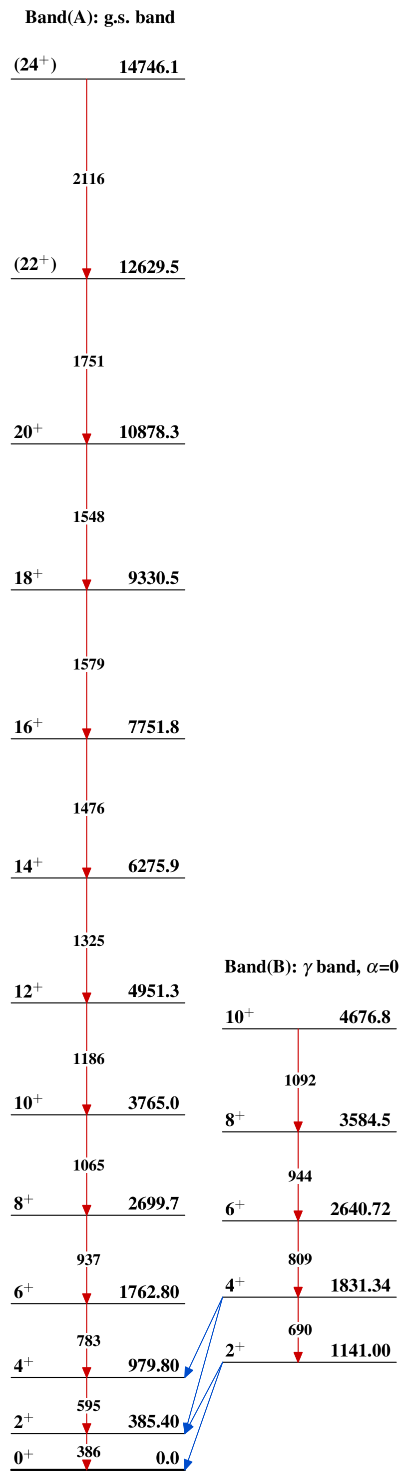
$^{24}Mg(^{58}Ni,2p\gamma)$ 2003Si06

Level Scheme (continued)

Intensities: Relative I_γ

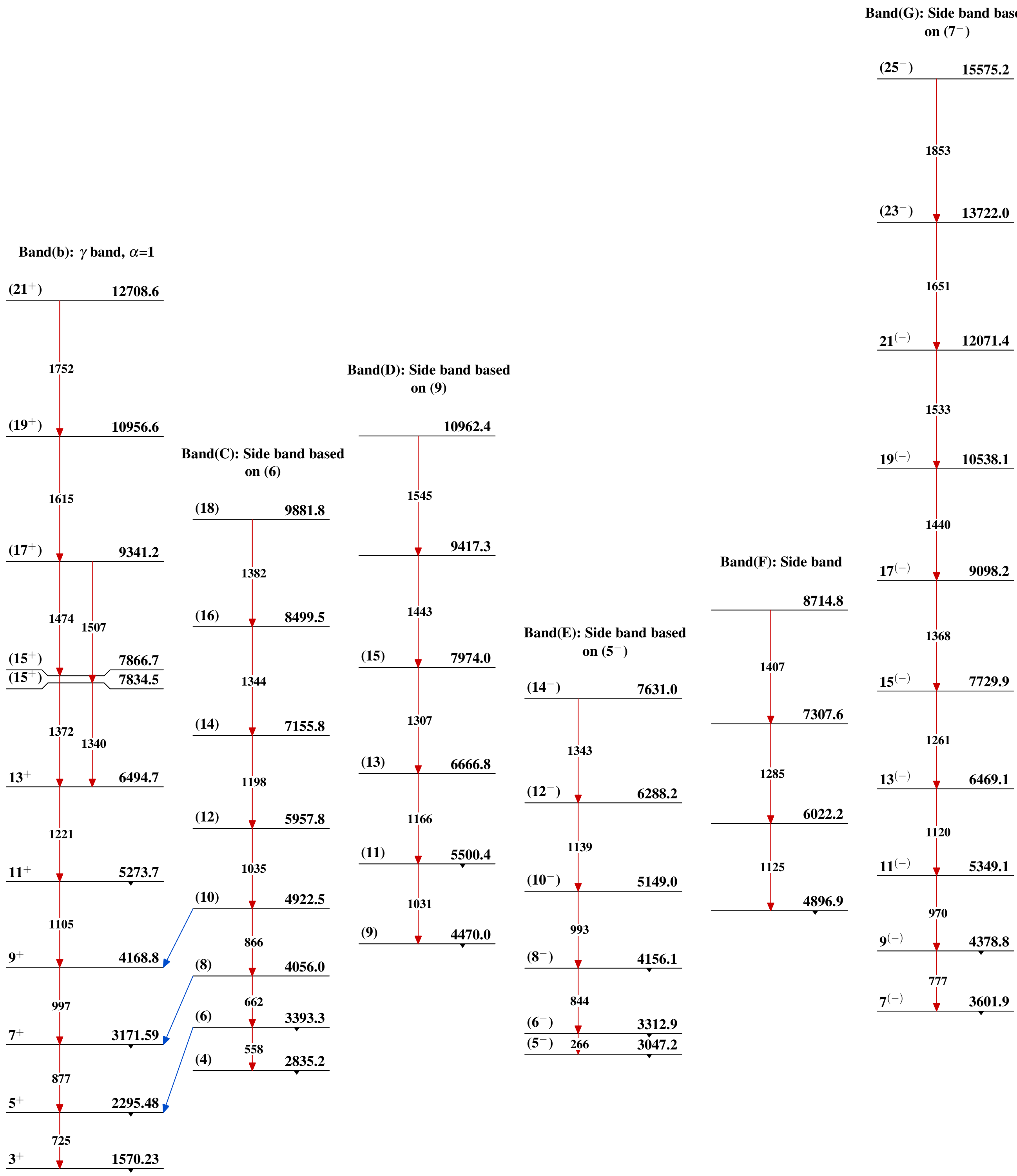


$^{24}Mg(^{58}Ni,2p\gamma)$ 2003Si06



$^{80}_{38}Sr_{42}$

^{24}Mg(^{58}Ni,2pγ) 2003Si06 (continued)



$^{80}_{38}Sr_{42}$