^{58}Ni(^{32}S,2αpγ) 1997Sc17,2002Ka61

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 199,271 (2025)	1-Sep-2024

Other: 1993Mi11 (E=120, 125 MeV).

2002Ka61: E=135 MeV. Measured lifetimes by Doppler-shift attenuation method using the GAMMASPHERE array (95 Compton-suppressed Ge detectors and MICROBALL array with 95 CsI(Tl) scintillators).

1997Sc17: E=135 MeV, thin target, GAMMASPHERE array (36 Compton-suppressed Ge detectors and 95 CsI-detector microball); measured Eγ, Iγ, γγγ coin, DCO ratios (unstated); γ energy resolution<6 keV at 1 MeV after kinematic Doppler-shift correction had been applied to γ spectrum. Supersedes 1996ScZZ.

1993Mi11: E(^{32}S)=120, 125 MeV; 15 or 20 Compton-suppressed Ge detector array, neutron and γ multiplicity filter. Measurements were reported along with authors' ^{58}Ni(^{28}Si,αpγ) reaction work; see (^{28}Si,αpγ) dataset.

^{81}Y Levels

E(level)[†]	J^{π}[‡]	$T_{1/2}$[#]	Comments
0.0[m]	5/2$^+$		
113.37[k] *10*	3/2$^-$		
149.67[l] *10*	7/2$^+$		
268.81[m] *13*	9/2$^+$		
288.47[j] *15*	5/2$^-$		
343.46[i] *20*	(1/2$^-$)		
536.60[k] *17*	7/2$^-$		
607.45[i] *22*	(5/2$^-$)		
663.5[h] *4*	(5/2$^-$)		
682.5[l] *3*	11/2$^+$		
824.94[j] *22*	9/2$^-$		
838.2[m] *3*	13/2$^+$	3.0 ps *4*	$T_{1/2}$: from Adopted Levels. Q(transition)=3.59 *+28−23* (2002Ka61).
1106.5[i] *3*	(9/2$^-$)		
1165.8[k] *3*	11/2$^-$		
1249.5[h] *5*	(9/2$^-$)		
1480.5[l] *5*	15/2$^+$	>0.69 ps	Q(transition)<2.5 (2002Ka61).
1528.2[j] *4*	13/2$^-$		
1548.7[e] *8*	(13/2$^+$)		
1650.9[m] *5*	17/2$^+$	0.68 ps *+32−17*	$T_{1/2}$: determined from spectra gated from above the transition. Q(transition)=2.9 *5* (2002Ka61).
1750.1[a] *9*	(17/2$^+$)		
1781.0[i] *8*	(13/2$^-$)		
1950.0[k] *4*	15/2$^-$		
1992.2[h] *6*	(13/2$^-$)		
2371.1[j] *5*	17/2$^-$	0.53 ps *+43−19*	$T_{1/2}$: determined from spectra gated from above the transition. Q(transition)=2.6 *7* (2002Ka61).
2413.7[e] *8*	(17/2$^+$)		
2510.8[l] *8*	19/2$^+$	0.28 ps *+12−8*	Q(transition)=2.2 *4* (2002Ka61).
2592.1[i] *11*	(17/2$^-$)	>0.69 ps	Q(transition)<2.7 (2002Ka61).
2683.3[m] *9*	21/2$^+$	0.26 ps *+5−4*	$T_{1/2}$: determined from spectra gated from above the transition. Q(transition)=2.52 *+23−21* (2002Ka61).
2857.9[k] *6*	19/2$^-$	0.44 ps *+42−18*	Q(transition)=2.2 *+7−6* (2002Ka61).
2864.8[h] *8*	(17/2$^-$)		
2915.2[a] *10*	(21/2$^+$)		

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^{58}Ni(^{32}S,2αpγ) 1997Sc17,2002Ka61 (continued)

^{81}Y Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	Comments
3339.9[j] *7*	21/2⁻	0.26 ps *+12−8*	$T_{1/2}$: determined from spectra gated from above the transition. Q(transition)=2.6 *+5−4* (2002Ka61).
3359.1[g] *8*	(19/2⁻)		
3410.5[e] *10*	(21/2⁺)		
3556.8[i] *15*	(21/2⁻)	0.20 ps *+21−12*	Q(transition)=3.2 *+18−10* (2002Ka61).
3737.3[h] *8*	(21/2⁻)		
3742.9[l] *11*	(23/2⁺)	0.16 ps *+9−7*	Q(transition)=1.9 *+6−4* (2002Ka61).
3893.0[k] *11*	(23/2⁻)	0.44 ps *+15−11*	Q(transition)=1.81 *+28−24* (2002Ka61).
3908.8[m] *13*	25/2⁺	0.15 ps *4*	$T_{1/2}$: determined from spectra gated from above the transition. Q(transition)=2.06 *+36−23* (2002Ka61).
3989.4[a] *12*	(25/2⁺)		
4181.3[g] *8*	(23/2⁻)	0.7 ps *+62−5*	Q(transition)=0.7 *+6−5* from 1323γ, 2.4 *+24−17* from 822γ (2002Ka61).
4436.9[j] *13*	25/2⁻	0.17 ps *+12−8*	$T_{1/2}$: determined from spectra gated from above the transition. Q(transition)=2.5 *+9−6* (2002Ka61).
4548.8[e] *12*	(25/2⁺)		
4699.6[h] *13*	(25/2⁻)		
4713.7[i] *20*	(25/2⁻)	0.82[@] ps *+66−22*	Q(transition)>1.0 (2002Ka61).
5029.1[c] *16*	(27/2⁺)		
5088.7[k] *14*	(27/2⁻)	0.10 ps *+10−8*	Q(transition)=2.6 *+24−8* (2002Ka61).
5135.0[l] *16*	(27/2⁺)	0.25[@] ps *+10−8*	Q(transition)>1.2 (2002Ka61).
5211.3[g] *12*	(27/2⁻)	0.30 ps *12*	Q(transition)=2.7 *+8−4* (2002Ka61).
5264.8[m] *17*	29/2⁺	0.062 ps *28*	Q(transition)=2.5 *+8−4* (2002Ka61).
5494.1[a] *18*	(29/2⁺)		
5662.0[j] *17*	29/2⁻	0.12 ps *+6−5*	Q(transition)=2.3 *+7−4* (2002Ka61).
5741.7[f] *17*	(29/2⁻)	0.18 ps *+12−10*	Q(transition)=1.6 *+8−4* (2002Ka61).
5751.6[h] *17*	(29/2⁻)		
5832.2[e] *15*	(29/2⁺)		
6043.2[i] *24*	(29/2⁻)		
6385.1[g] *14*	(31/2⁻)	0.37[@] ps *+22−14*	Q(transition)>0.8 from 1297γ, >1.26 from 1174γ (2002Ka61).
6468.6[k] *20*	(31/2⁻)	0.35[@] ps *+17−12*	Q(transition)>1.0 (2002Ka61).
6506.1[c] *18*	(31/2⁺)		
6623.4[m] *19*	33/2⁺	0.083 ps *21*	Q(transition)=2.09 *+32−22* (2002Ka61).
6669.7[l] *22*	(31/2⁺)		
6891.4[h] *20*	(33/2⁻)		
6909.1[j] *18*	33/2⁻	0.14 ps *+14−11*	Q(transition)=1.3 *+16−4* from 1167γ, 1.7 *+21−5* from 1247γ (2002Ka61).
6945.0[a] *22*	(33/2⁺)		
7087.7[f] *19*	(33/2⁻)	0.05 ps *+6−4*	Q(transition)=1.1 *+10−4* from 1347γ, 2.2 *+19−7* from 1425γ (2002Ka61).
7310.4[e] *18*	(33/2⁺)		
7509[i] *3*	(33/2⁻)		
7709.3[g] *19*	(35/2⁻)		
7863.1 *24*	(35/2⁻)		
7891.0 *24*	(35/2⁻)		
7927.3 *25*	(35/2⁻)		
7944.7[c] *23*	(35/2⁺)		
8073.8[m] *24*	37/2⁺	0.08 ps *+5−4*	Q(transition)=1.9 *+9−4* (2002Ka61).
8096 *3*	(35/2⁻)		
8157[l] *3*	(35/2⁺)		
8273.5[j] *23*	(37/2⁻)	0.10 ps *+15−8*	Q(transition)=1.9 *+22−7* (2002Ka61).
8498.8[a] *23*	(37/2⁺)		

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^{58}Ni(^{32}S,2αpγ) 1997Sc17,2002Ka61 (continued)

^{81}Y Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	Comments
8517.2[f] 23	(37/2⁻)	0.22[@] ps 7	Q(transition)>1.1 (2002Ka61).
8581.3[d] 24	(37/2⁻)		
8912.9[e] 24	(37/2⁺)		
9166.2[g] 25	(39/2⁻)		
9320[c] 3	(39/2⁺)		
9588[m] 3	(41/2⁺)	0.028 ps +55−21	Q(transition)=2.7 +27−12 (2002Ka61).
9805[j] 3	(41/2⁻)	0.021 ps +55−14	Q(transition)=3.0 +22−15 (2002Ka61).
9812[a] 3	(39/2⁺)		
9975[a] 3	(41/2⁺)		
10061[d] 3	(41/2⁻)		
10191[f] 3	(41/2⁻)		
10776[g] 3	(43/2⁻)		
10881[c] 3	(43/2⁺)		
11228[m] 4	(45/2⁺)	0.05 ps +10−4	Q(transition)=1.7 +28−7 (2002Ka61).
11518[j] 4	(45/2⁻)	0.11[@] ps +10−6	Q(transition)>1.0 (2002Ka61).
11539[a] 4	(45/2⁺)		
11614[d] 4	(45/2⁻)		
12011[f] 4	(45/2⁻)		
12569[g] 4	(47/2⁻)		
12576[c] 4	(47/2⁺)		
13082[m] 4	(49/2⁺)	0.12[@] ps +22−8	Q(transition)>0.8 (2002Ka61).
13276[a] 4	(49/2⁺)		
13420[j] 4	(49/2⁻)		
14097[f] 4	(49/2⁻)		
14480[c] 4	(51/2⁺)		
14804?[g] 4	(51/2⁻)		
15242[m] 5	(53/2⁺)		
15521?[j] 5	(53/2⁻)		
15570? 5	(53/2⁻)		
16438?[f] 5	(53/2⁻)		
16782?[c] 5	(55/2⁺)		
17664?[m] 5	(57/2⁺)		
0+x[&b]			
1225.0+x[b] 12			
2659.6+x[b] 19			
4261.5+x[b] 25			
6034+x[b] 3			
8004+x[b] 4			

† From a least-squares fit to Eγ.
‡ Probable values, deduced by 1997Sc17 from apparent band structure and unstated DCO ratio data. Data are consistent with adopted values, but adopted values are shown in parentheses.
# Authors′ average of DSAM data at three or four angles (2002Ka61), corrected for side-feeding unless noted to the contrary. Values determined from spectra gated from above the transition are indicated. The authors′ model-dependent Q(transition) values calculated from the measured $T_{1/2}$ data are given in comments.
@ Effective half-life (2002Ka61); not corrected for side-feeding.

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^{58}Ni(^{32}S,2αpγ) 1997Sc17,2002Ka61 (continued)

^{81}Y Levels (continued)

& x>5.3 MeV.
a Member of a π=(+) sequence of states which feed members of 5/2[422], α=+1/2 band. No extended band structure(s) connected with transitions from these levels could be established by 1997Sc17.
b Band(A): π=(+) band. This band populates the 25/2+ and 29/2+ members of g.s. band. From γγ coin and intensity balances, 1997Sc17 deduce that bandhead for this band lies above the 5265-keV 29/2+ member of the g.s. band, but could not identify transition(s) which connect(s) to that band.
c Band(B): π=+, α=−1/2 band. Possibly approaching termination near highest J observed.
d Band(C): Possible π=−, α=+1/2 band fragment.
e Band(D): π=+, α=+1/2 band.
f Band(E): π=−, α=+1/2 band. Possibly approaching termination near highest J observed.
g Band(F): π=−, α=−1/2 band.
h Band(G): 5/2[303], α=+1/2 band.
i Band(H): 1/2[301], α=+1/2 band.
j Band(I): K$^{\pi}$=3/2−, α=+1/2 band. Suggested configuration is 3/2[301] in 1997Sc17.
k Band(i): K$^{\pi}$=3/2−, α=−1/2 band. See comment on signature partner band.
l Band(j): 5/2[422], α=−1/2 band.
m Band(J): 5/2[422], α=+1/2 band. Possibly approaching termination near highest J observed.

γ(^{81}Y)

E$_i$(level)	J$^{\pi}_i$	E$_{\gamma}$†	I$_{\gamma}$‡	E$_f$	J$^{\pi}_f$
113.37	3/2−	113.4 *1*		0.0	5/2+
149.67	7/2+	149.7 *1*		0.0	5/2+
268.81	9/2+	119.2 *1*		149.67	7/2+
		268.4 *3*		0.0	5/2+
288.47	5/2−	175.3 *2*		113.37	3/2−
		288.4 *3*		0.0	5/2+
343.46	(1/2−)	230.1 *2*		113.37	3/2−
536.60	7/2−	248.3 *2*		288.47	5/2−
		386.5 *4*		149.67	7/2+
		423.2 *4*		113.37	3/2−
		536.5 *5*		0.0	5/2+
607.45	(5/2−)	264.0 *3*		343.46	(1/2−)
		319.0 *3*		288.47	5/2−
		493.8 *5*		113.37	3/2−
663.5	(5/2−)	375.0 *4*		288.47	5/2−
		549.9 *5*		113.37	3/2−
682.5	11/2+	414.0 *4*		268.81	9/2+
		532.6 *5*		149.67	7/2+
824.94	9/2−	288.6 *3*		536.60	7/2−
		536.3 *5*		288.47	5/2−
		556.0 *6*		268.81	9/2+
		674.9 *7*		149.67	7/2+
838.2	13/2+	155.7 *2*	13	682.5	11/2+
		569.3 *6*	87	268.81	9/2+
1106.5	(9/2−)	281.8 *3*		824.94	9/2−
		498.9 *5*		607.45	(5/2−)
		569.4 *6*		536.60	7/2−
1165.8	11/2−	340.8 *3*		824.94	9/2−
		483.1 *5*		682.5	11/2+
		629.1 *6*		536.60	7/2−
		897.8 *9*		268.81	9/2+
1249.5	(9/2−)	585.8 *6*		663.5	(5/2−)
		713.0 *7*		536.60	7/2−

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^{58}Ni(^{32}S,2αpγ) 1997Sc17,2002Ka61 (continued)

γ(^{81}Y) (continued)

E$_i$(level)	J$_i^\pi$	E$_\gamma$†	I$_\gamma$‡	E$_f$	J$_f^\pi$	Comments
1480.5	15/2+	642.5 *6*	41	838.2	13/2+	
		798.2 *8*	59	682.5	11/2+	
1528.2	13/2−	362.3 *4*		1165.8	11/2−	
		703.1 *7*		824.94	9/2−	
		845.8 *8*		682.5	11/2+	
1548.7	(13/2+)	866.2 *9*		682.5	11/2+	
1650.9	17/2+	170.5 *2*	2	1480.5	15/2+	
		813.1 *8*	98	838.2	13/2+	
1750.1	(17/2+)	911.8 *9*		838.2	13/2+	
1781.0	(13/2−)	674.5 *7*		1106.5	(9/2−)	
1950.0	15/2−	421.9 *4*		1528.2	13/2−	
		783.8 *8*		1165.8	11/2−	
		1112.3 *11*		838.2	13/2+	
1992.2	(13/2−)	742.5 *7*		1249.5	(9/2−)	
		826.3 *8*		1165.8	11/2−	
2371.1	17/2−	421.1 *4*	11	1950.0	15/2−	
		720.2 *7*	<4	1650.9	17/2+	I(720γ)+I(890γ)=4.
		842.4 *8*	85	1528.2	13/2−	
		890.1 *9*	<4	1480.5	15/2+	I(720γ)+I(890γ)=4.
2413.7	(17/2+)	864.9 *9*		1548.7	(13/2+)	
		932.7 *9*		1480.5	15/2+	
2510.8	19/2+	859.9 *9*	24	1650.9	17/2+	
		1030.3 *10*	76	1480.5	15/2+	
2592.1	(17/2−)	811.1 *8*	100	1781.0	(13/2−)	
2683.3	21/2+	1032.8 *10*	100	1650.9	17/2+	
2857.9	19/2−	486.3 *5*	7	2371.1	17/2−	
		907.9 *9*	75	1950.0	15/2−	
		1208.7 *12*	18	1650.9	17/2+	
2864.8	(17/2−)	872.2 *9*		1992.2	(13/2−)	
2915.2	(21/2+)	1164.7 *12*		1750.1	(17/2+)	
		1264.5 *13*		1650.9	17/2+	
3339.9	21/2−	481.9 *5*	11	2857.9	19/2−	
		969.2 *10*	89	2371.1	17/2−	
3359.1	(19/2−)	494.6 *5*		2864.8	(17/2−)	
		1409.7 *14*		1950.0	15/2−	
		1709.7 *17*		1650.9	17/2+	
3410.5	(21/2+)	996.2 *10*		2413.7	(17/2+)	
		1760.5 *18*		1650.9	17/2+	
3556.8	(21/2−)	964.6 *10*	100	2592.1	(17/2−)	
3737.3	(21/2−)	378.7 *4*		3359.1	(19/2−)	
		870.9 *9*		2864.8	(17/2−)	
3742.9	(23/2+)	1059.6 *11*	12	2683.3	21/2+	
		1232.1 *12*	88	2510.8	19/2+	
3893.0	(23/2−)	1035.2 *10*	100	2857.9	19/2−	
3908.8	25/2+	1226.0 *12*	100	2683.3	21/2+	
3989.4	(25/2+)	1074.1 *11*		2915.2	(21/2+)	
		1306.3 *13*		2683.3	21/2+	
4181.3	(23/2−)	444.1 *4*	11	3737.3	(21/2−)	
		821.9 *8*	49	3359.1	(19/2−)	
		1322.6 *13*	40	2857.9	19/2−	
4436.9	25/2−	1097.0 *11*	100	3339.9	21/2−	
4548.8	(25/2+)	1137.8 *11*		3410.5	(21/2+)	
		1865.5 *19*		2683.3	21/2+	
4699.6	(25/2−)	962.3 *10*		3737.3	(21/2−)	
4713.7	(25/2−)	1156.9 *12*	100	3556.8	(21/2−)	

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^{58}Ni(^{32}S,2αpγ) 1997Sc17,2002Ka61 (continued)

γ(^{81}Y) (continued)

E$_i$(level)	J^π_i	E$_γ$†	I$_γ$‡	E$_f$	J^π_f
5029.1	(27/2$^+$)	1286.0 *13*		3742.9	(23/2$^+$)
5088.7	(27/2$^-$)	1195.9 *12*	100	3893.0	(23/2$^-$)
5135.0	(27/2$^+$)	1392.3 *14*	100	3742.9	(23/2$^+$)
5211.3	(27/2$^-$)	1029.9 *10*	100	4181.3	(23/2$^-$)
5264.8	29/2$^+$	1356.0 *14*	100	3908.8	25/2$^+$
5494.1	(29/2$^+$)	1585.1 *16*		3908.8	25/2$^+$
5662.0	29/2$^-$	1224.8 *12*	100	4436.9	25/2$^-$
5741.7	(29/2$^-$)	1305.1 *13*	100	4436.9	25/2$^-$
5751.6	(29/2$^-$)	1052.0 *11*		4699.6	(25/2$^-$)
5832.2	(29/2$^+$)	1282.8 *13*		4548.8	(25/2$^+$)
		1925.1 *19*		3908.8	25/2$^+$
6043.2	(29/2$^-$)	1329.5 *13*		4713.7	(25/2$^-$)
6385.1	(31/2$^-$)	1173.6 *12*	60	5211.3	(27/2$^-$)
		1296.7 *13*	40	5088.7	(27/2$^-$)
6468.6	(31/2$^-$)	1379.9 *14*	100	5088.7	(27/2$^-$)
6506.1	(31/2$^+$)	1371.3 *14*		5135.0	(27/2$^+$)
		1476.8 *15*		5029.1	(27/2$^+$)
6623.4	33/2$^+$	1129.2 *11*	1	5494.1	(29/2$^+$)
		1359.0 *14*	99	5264.8	29/2$^+$
6669.7	(31/2$^+$)	1534.7 *15*		5135.0	(27/2$^+$)
6891.4	(33/2$^-$)	1139.8 *11*		5751.6	(29/2$^-$)
6909.1	33/2$^-$	1167.0 *12*	30	5741.7	(29/2$^-$)
		1247.4 *12*	70	5662.0	29/2$^-$
6945.0	(33/2$^+$)	1679.9 *17*		5264.8	29/2$^+$
7087.7	(33/2$^-$)	1346.7 *13*	17	5741.7	(29/2$^-$)
		1424.9 *14*	83	5662.0	29/2$^-$
7310.4	(33/2$^+$)	1478.4 *15*		5832.2	(29/2$^+$)
		2045.1 *20*		5264.8	29/2$^+$
7509	(33/2$^-$)	1465.6 *15*		6043.2	(29/2$^-$)
7709.3	(35/2$^-$)	1324.1 *13*		6385.1	(31/2$^-$)
7863.1	(35/2$^-$)	1394.5 *14*		6468.6	(31/2$^-$)
7891.0	(35/2$^-$)	1422.4 *14*		6468.6	(31/2$^-$)
7927.3	(35/2$^-$)	1458.7 *15*		6468.6	(31/2$^-$)
7944.7	(35/2$^+$)	1438.6 *14*		6506.1	(31/2$^+$)
8073.8	37/2$^+$	1450.4 *15*	100	6623.4	33/2$^+$
8096	(35/2$^-$)	1627.0 *16*		6468.6	(31/2$^-$)
8157	(35/2$^+$)	1487.4 *15*		6669.7	(31/2$^+$)
8273.5	(37/2$^-$)	1364.4 *14*	100	6909.1	33/2$^-$
8498.8	(37/2$^+$)	1553.5 *16*		6945.0	(33/2$^+$)
		1875.8 *19*		6623.4	33/2$^+$
8517.2	(37/2$^-$)	1429.5 *14*	100	7087.7	(33/2$^-$)
8581.3	(37/2$^-$)	1493.6 *15*		7087.7	(33/2$^-$)
8912.9	(37/2$^+$)	1602.5 *16*		7310.4	(33/2$^+$)
9166.2	(39/2$^-$)	1456.9 *15*		7709.3	(35/2$^-$)
9320	(39/2$^+$)	1374.8 *14*		7944.7	(35/2$^+$)
9588	(41/2$^+$)	1514.6 *15*	100	8073.8	37/2$^+$
9805	(41/2$^-$)	1531.9 *15*	100	8273.5	(37/2$^-$)
9812	(39/2$^+$)	1738.2 *17*		8073.8	37/2$^+$
9975	(41/2$^+$)	1901.6 *19*		8073.8	37/2$^+$
10061	(41/2$^-$)	1479.5 *15*		8581.3	(37/2$^-$)
10191	(41/2$^-$)	1673.3 *17*		8517.2	(37/2$^-$)
10776	(43/2$^-$)	1609.5 *16*		9166.2	(39/2$^-$)
10881	(43/2$^+$)	1561.2 *16*		9320	(39/2$^+$)
11228	(45/2$^+$)	1639.6 *16*	100	9588	(41/2$^+$)
11518	(45/2$^-$)	1712.4 *17*	100	9805	(41/2$^-$)

Continued on next page (footnotes at end of table)

^{58}Ni(^{32}S,2αpγ) 1997Sc17,2002Ka61 (continued)

γ(^{81}Y) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[‡]	E_f	J^π_f
11539	(45/2$^+$)	1950.9 *20*		9588	(41/2$^+$)
11614	(45/2$^-$)	1553.1 *16*		10061	(41/2$^-$)
12011	(45/2$^-$)	1820.7 *18*		10191	(41/2$^-$)
12569	(47/2$^-$)	1792.9 *18*		10776	(43/2$^-$)
12576	(47/2$^+$)	1695.3 *17*		10881	(43/2$^+$)
13082	(49/2$^+$)	1854.0 *19*	100	11228	(45/2$^+$)
13276	(49/2$^+$)	2048.1 *20*		11228	(45/2$^+$)
13420	(49/2$^-$)	1902.5 *19*		11518	(45/2$^-$)
14097	(49/2$^-$)	2085.4 *21*		12011	(45/2$^-$)
14480	(51/2$^+$)	1904.1 *19*		12576	(47/2$^+$)
14804?	(51/2$^-$)	2235.5[#] *22*		12569	(47/2$^-$)
15242	(53/2$^+$)	2160.2 *22*		13082	(49/2$^+$)
15521?	(53/2$^-$)	2100.2[#] *21*		13420	(49/2$^-$)
15570?	(53/2$^-$)	2149.2[#] *21*		13420	(49/2$^-$)
16438?	(53/2$^-$)	2340.9[#] *23*		14097	(49/2$^-$)
16782?	(55/2$^+$)	2301.8[#] *23*		14480	(51/2$^+$)
17664?	(57/2$^+$)	2421.3[#] *24*		15242	(53/2$^+$)
1225.0+x		1225.0 *12*		0+x	
2659.6+x		1434.6 *14*		1225.0+x	
4261.5+x		1601.9 *16*		2659.6+x	
6034+x		1772.3 *18*		4261.5+x	
8004+x		1969.9 *20*		6034+x	

† From 1997Sc17.
‡ % photon branching from parent level from 2002Ka61; uncertainty unstated by authors.
\# Placement of transition in the level scheme is uncertain.

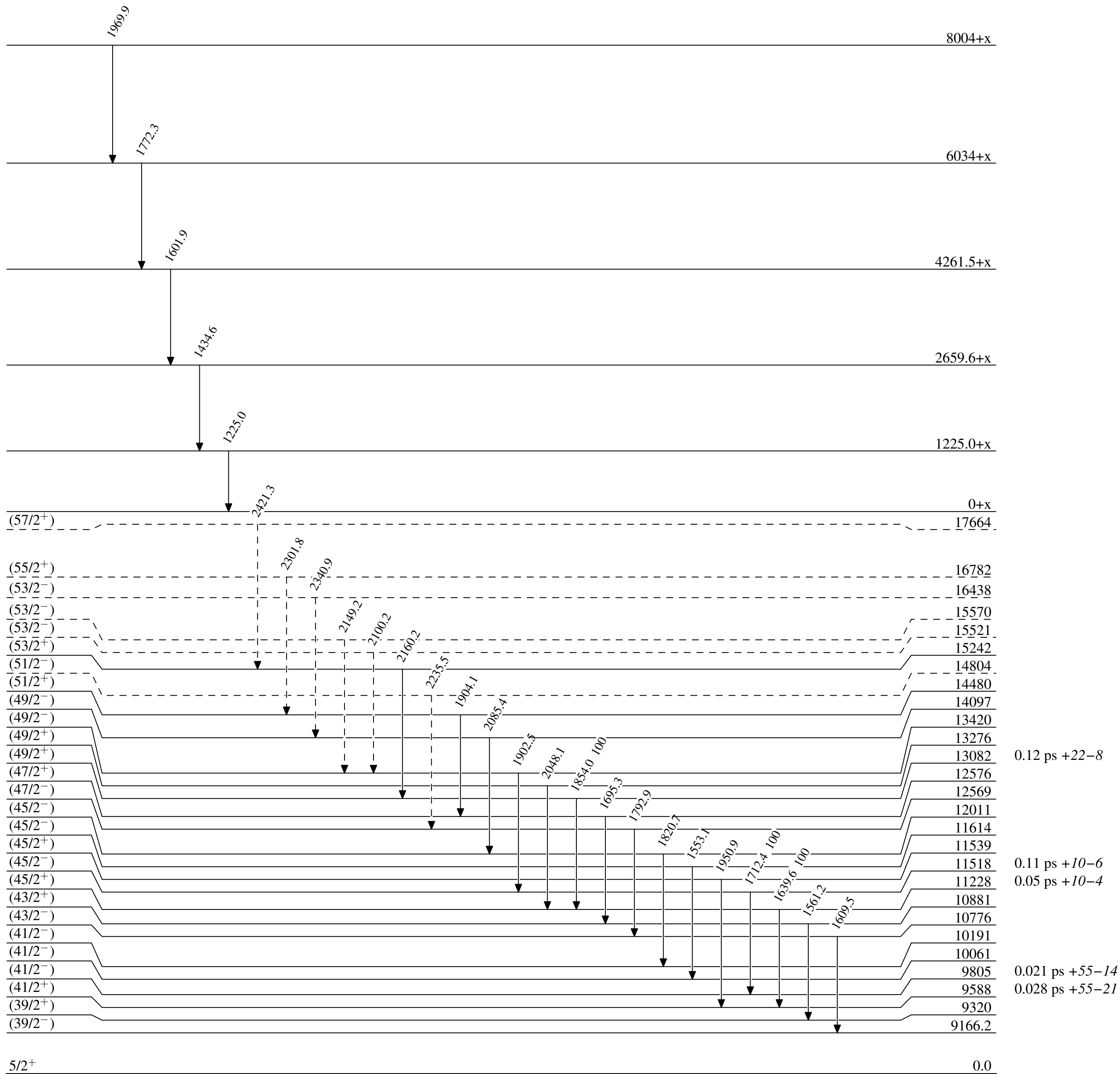
$^{58}Ni(^{32}S,2\alpha p\gamma)$ 1997Sc17,2002Ka61

Legend

Level Scheme

Intensities: % photon branching from each level

- - - - - ► γ Decay (Uncertain)

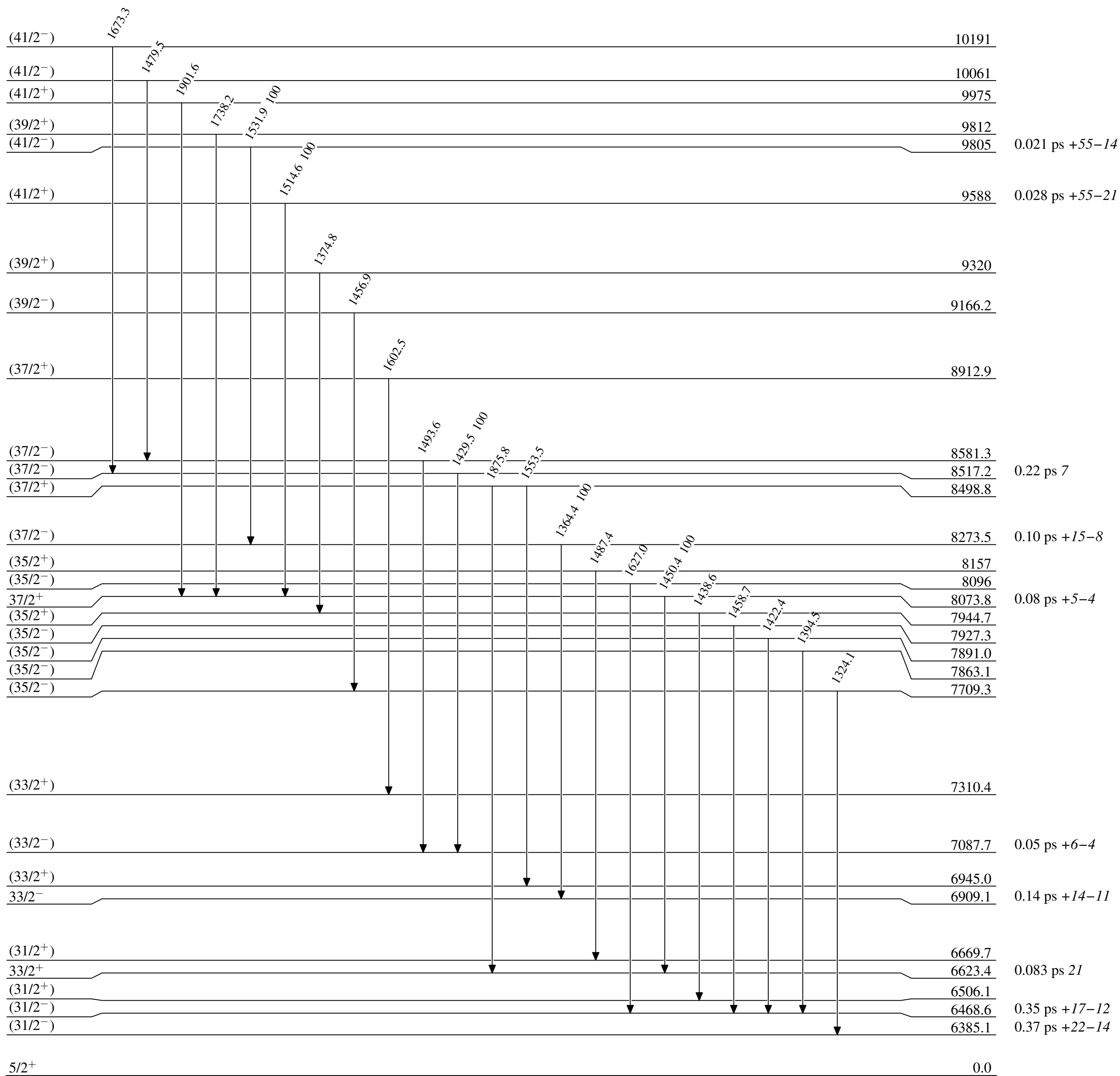


$^{81}_{39}Y_{42}$

$^{58}Ni(^{32}S,2\alpha p\gamma)$ 1997Sc17,2002Ka61

Level Scheme (continued)

Intensities: % photon branching from each level

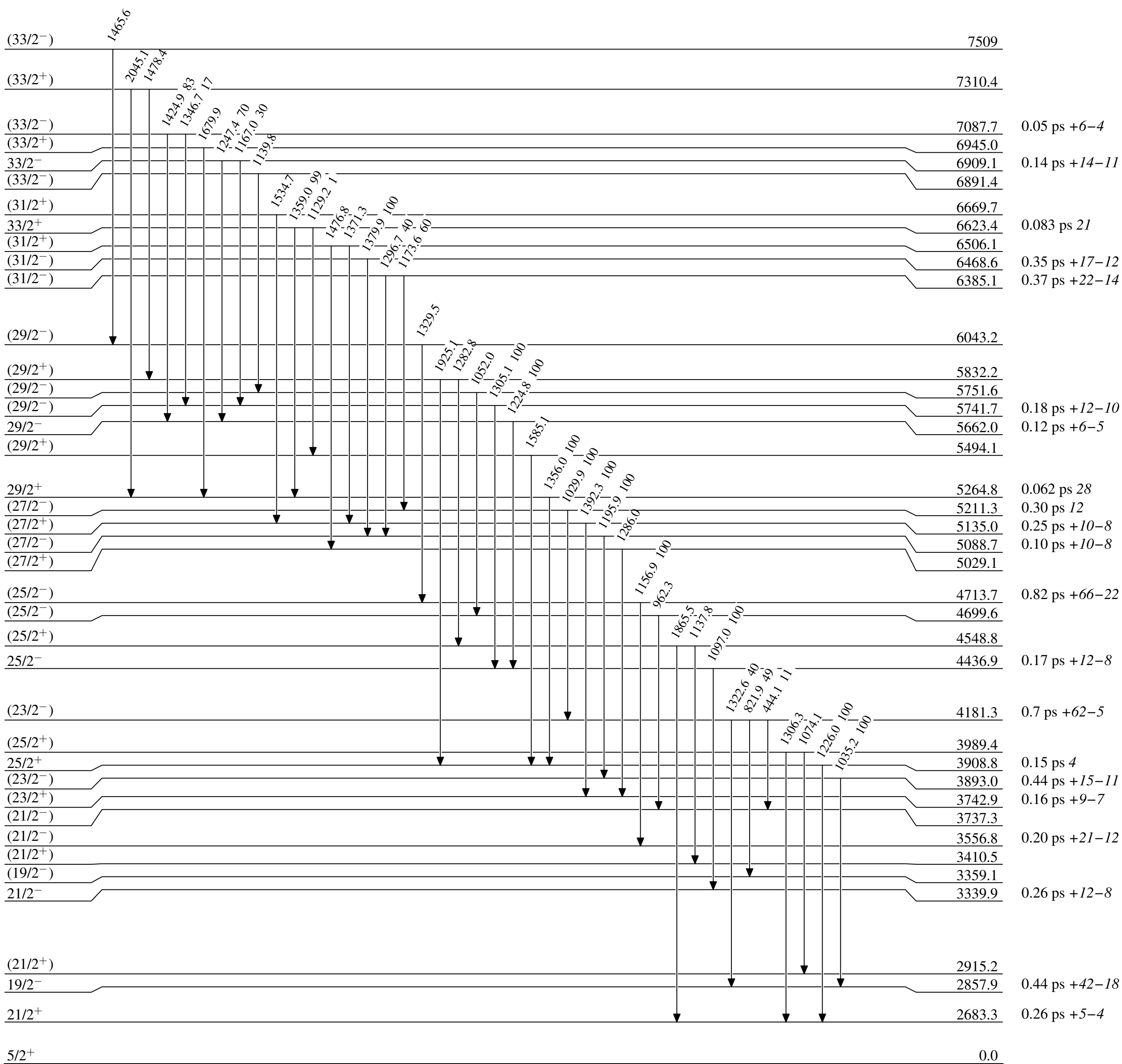


$^{81}_{39}Y_{42}$

$^{58}Ni(^{32}S,2\alpha p\gamma)$ 1997Sc17,2002Ka61

Level Scheme (continued)

Intensities: % photon branching from each level

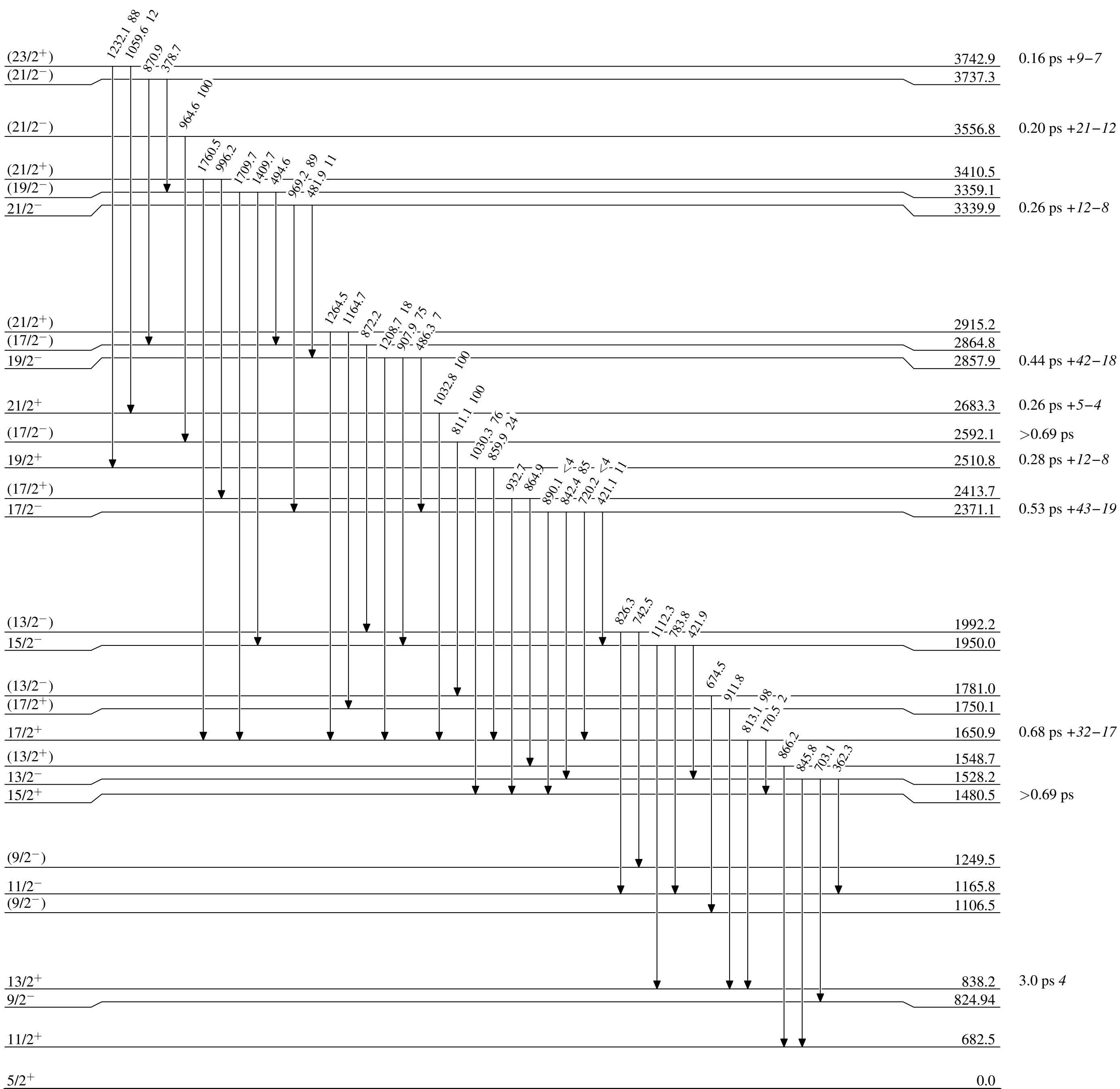


$^{81}_{39}Y_{42}$

$^{58}Ni(^{32}S,2\alpha p\gamma)$ 1997Sc17,2002Ka61

Level Scheme (continued)

Intensities: % photon branching from each level

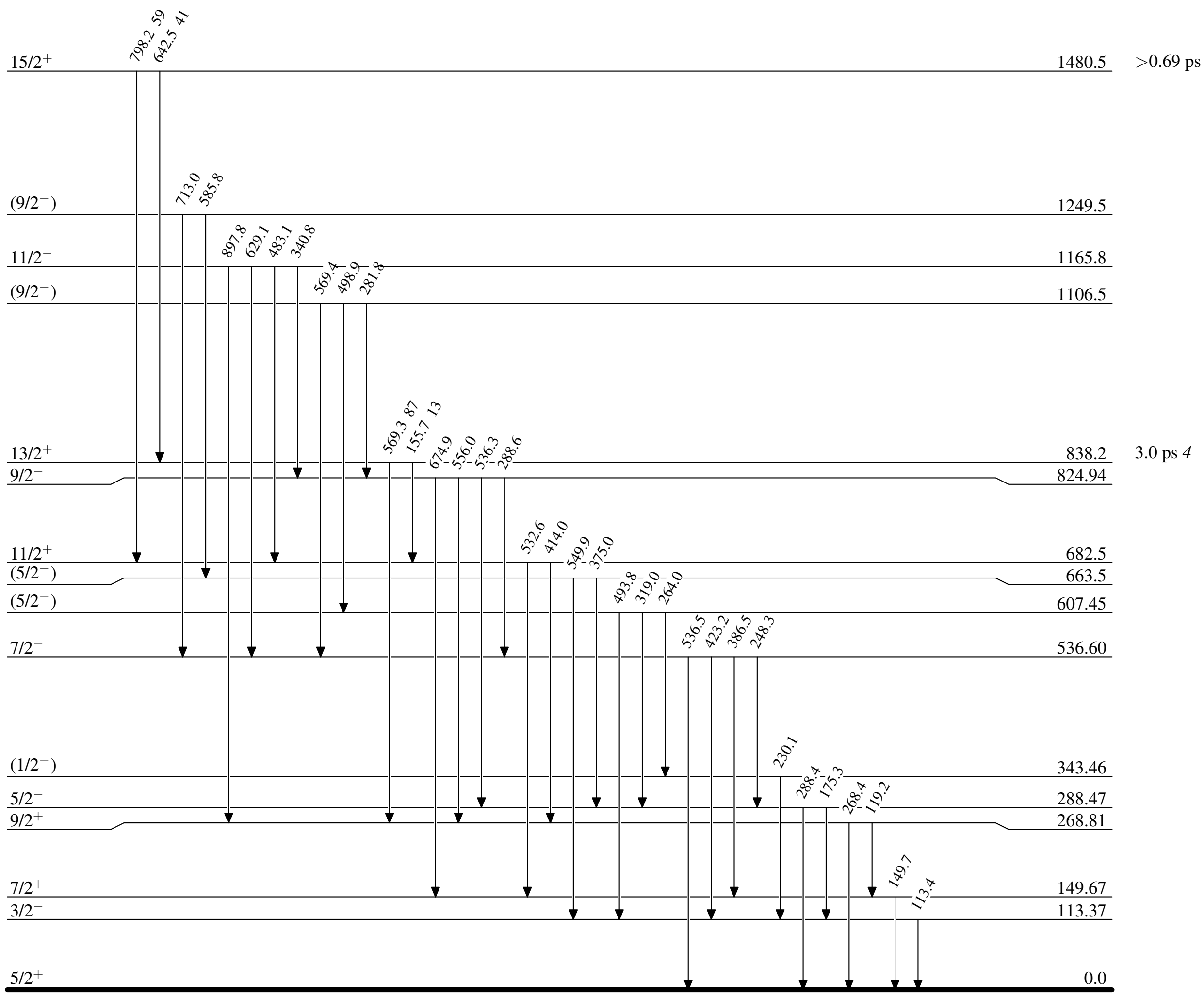


$^{81}_{39}Y_{42}$

^{58}Ni(^{32}S,2αpγ) 1997Sc17,2002Ka61

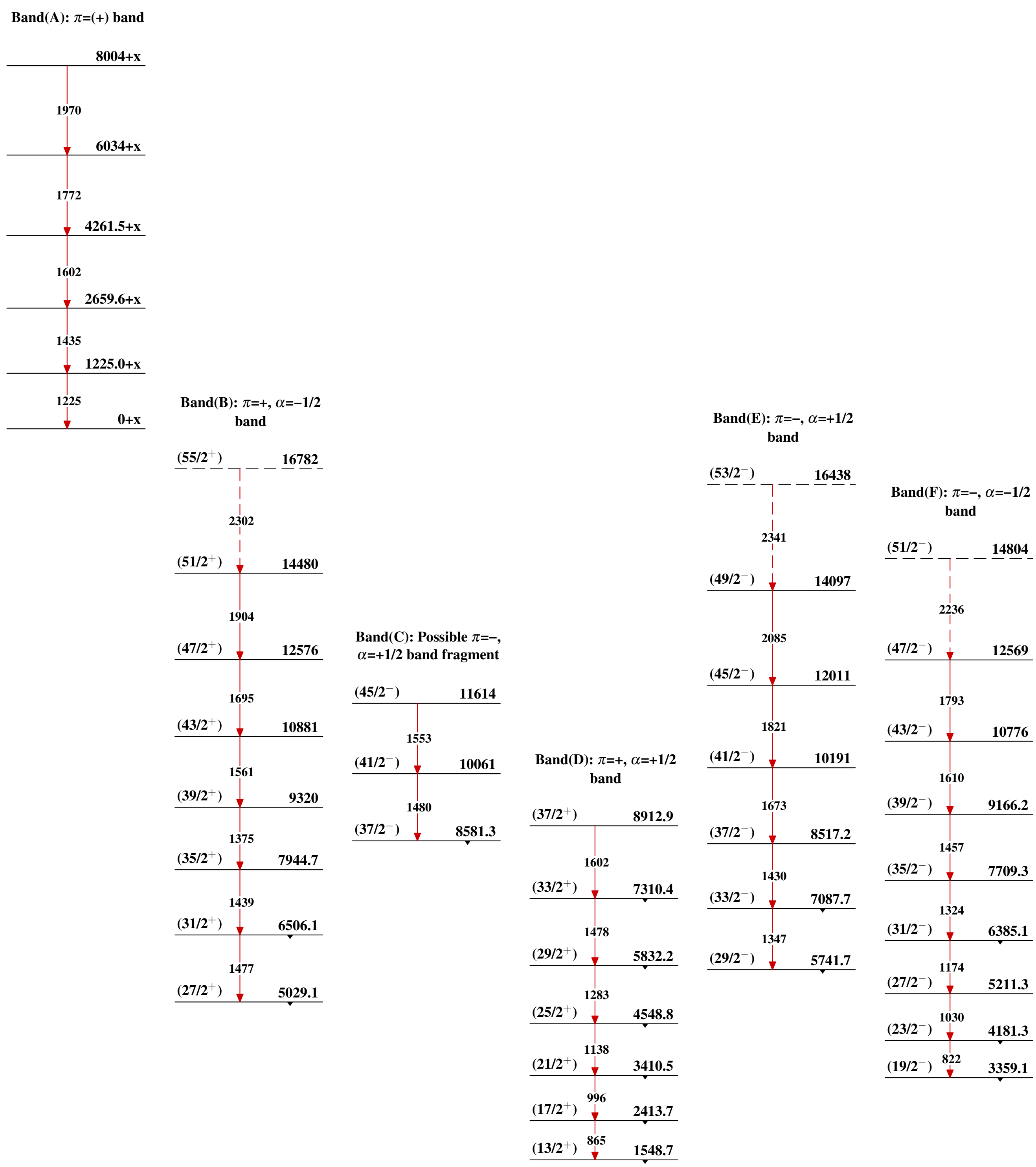
Level Scheme (continued)

Intensities: % photon branching from each level



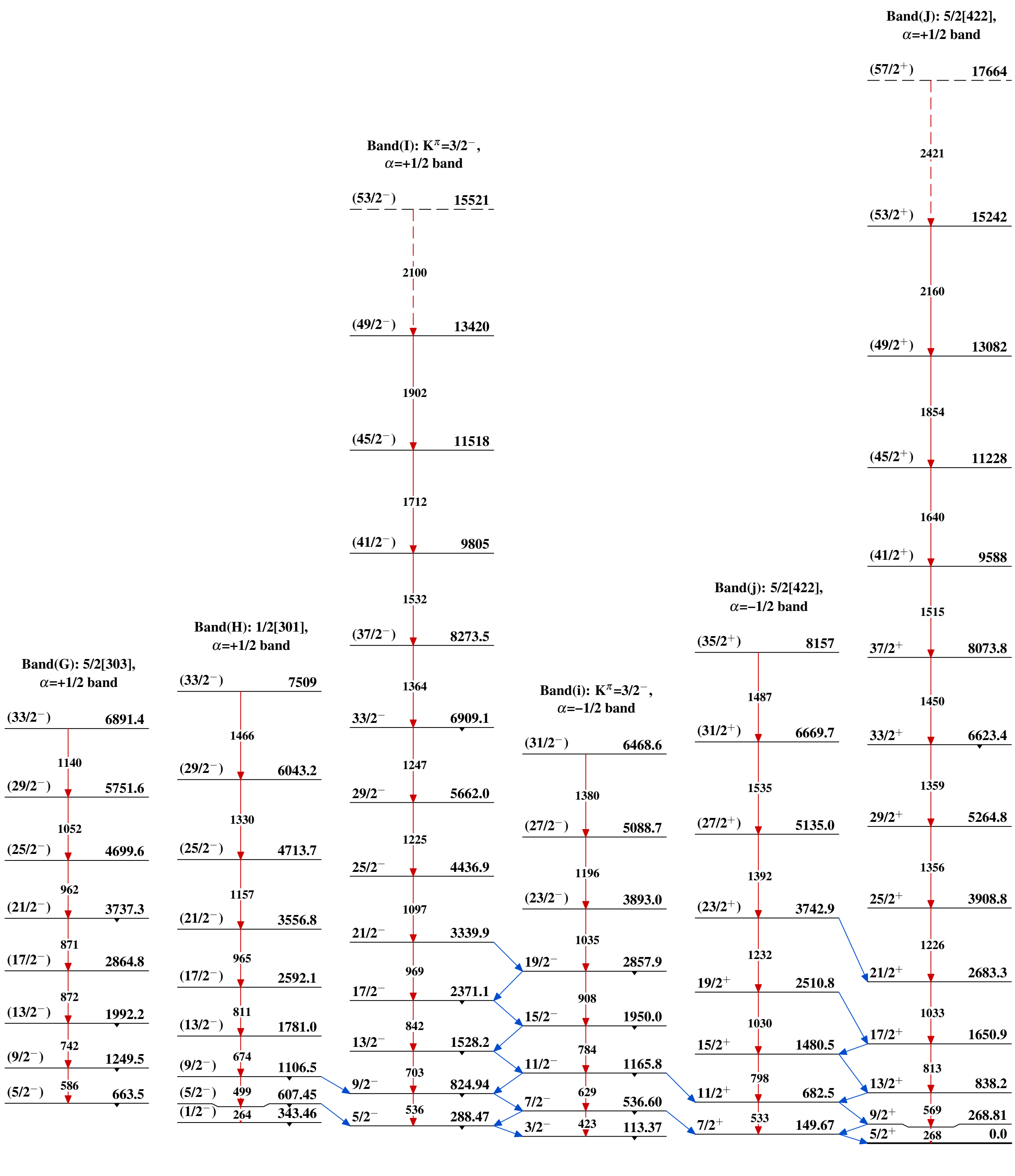
$^{81}_{39}Y_{42}$

$^{58}Ni(^{32}S,2\alpha p\gamma)$ 1997Sc17,2002Ka61



$^{81}_{39}Y_{42}$

^{58}Ni(^{32}S,2αpγ) 1997Sc17,2002Ka61 (continued)



$^{81}_{39}Y_{42}$