^{58}Ni(^{58}Ni,4pnγ) 2000St03

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 110, 1239 (2009)	1-Feb-2008

E=250 MeV. Measured Eγ, $\gamma\gamma$, Iγ, $\gamma\gamma(\theta)$(DCO) using the GAMMASPHERE array of 83 HPGe detectors coupled with the MICROBALL array of 95 CsI(Tl) charged-particle detectors.

^{111}Te Levels

E(level)[†]	J$^{\pi}$[‡]	$T_{1/2}$	Comments
0.0[&]	(5/2$^+$)		
117.1[&] *3*	(7/2$^+$)		
538.0 *10*	(7/2$^+$)		
768.1[&] *4*	(9/2$^+$)		
824.0 *10*	(9/2$^+$)		
839.4[#] *6*	11/2$^-$	32.2 ns *14*	$T_{1/2}$: performed at Stony Brook Linac accelerator using prompt and delayed coincidence measurements.
882.1[&] *4*	(11/2$^+$)		
1378.5[#] *6*	15/2$^-$		
1519.7[&] *5*	(13/2$^+$)		
1757.4[&] *5*	(15/2$^+$)		
2061.9[#] *6*	19/2$^-$		
2292.6[&] *5*	(17/2$^+$)		
2495.6[@] *6*	(17/2$^-$)		
2635.3[&] *5*	(19/2$^+$)		
2673.7 *6*			
2777.3[#] *6*	23/2$^-$		
3050.5[@] *6*	(21/2$^-$)		
3382.6[c] *6*	(23/2$^-$)		
3738.6[a] *6*	(23/2$^+$)		
3756.3[@] *6*	(25/2$^-$)		
3768.4[#] *6*	27/2$^-$		
3823.5 *7*			
3880.6 *6*			
4127.1[c] *6*	(27/2$^-$)		
4315.2[a] *6*	(27/2$^+$)		
4430.8[b] *7*	(29/2)		
4556.5[@] *6*	(29/2$^-$)		
4707.3 *7*			
4731.4[#] *7*	31/2$^-$		
4887.2[c] *6*	(31/2$^-$)		
5007.8[a] *6*	(31/2$^+$)		
5345.7[@] *6*	(33/2$^-$)		
5353.4[b] *7*	(33/2)		
5486.0 *8*			
5706.5[#] *7*	35/2$^-$		
5796.3[a] *7*	(35/2$^+$)		
6071.2[b] *7*	(37/2)		
6356.6 *8*			
6653.4[a] *7*	(39/2$^+$)		
6819.2[#] *8*	(39/2$^-$)		

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^{58}Ni(^{58}Ni,4pnγ) 2000St03 (continued)

^{111}Te Levels (continued)

E(level)†	Jπ‡	E(level)†	E(level)†	Jπ‡
6990.2[b] 8	(41/2)	7752.0[b] 8	8727.5[a] 9	(47/2+)
7491.5 8		7873.9 8	9863.2[a] 9	(51/2+)
7677.0[a] 8	(43/2+)	8652.4[b] 9	9957.8[b] 9	

† From least-squares fit to Eγ′s (by evaluator).
‡ From γ multipolarities and band assignments.
# Band(A): ΔJ=2, band, based on 11/2−.
@ Band(B): ΔJ=2, band, based on (17/2−).
& Band(C): ΔJ=1, band, based on (7/2+).
a Band(D): ΔJ=2, band, based on (23/2+).
b Band(E): ΔJ=2, band, based on (29/2).
c Band(F): ΔJ=2, band, based on (23/2−).

γ(^{111}Te)

Eγ	Iγ	Ei(level)	Jiπ	Ef	Jfπ	Mult.†	Comments
(16)		839.4	11/2−	824.0	(9/2+)	(E1)	seen In delayed spectrum.
117.1 3	23.0 3	117.1	(7/2+)	0.0	(5/2+)	M1,E2	Mult.: DCO= 0.5 2.
273.2 3	1.8 4	3050.5	(21/2−)	2777.3	23/2−	D	Mult.: DCO= 0.5 4.
342.4 3	1.4 3	2635.3	(19/2+)	2292.6	(17/2+)	M1,E2	
358.4 3	1.0 3	4127.1	(27/2−)	3768.4	27/2−	E2	
364.7 3	2.0 3	6071.2	(37/2)	5706.5	35/2−	D	Mult.: DCO= 0.5 2.
373.3 3	1.8 4	3756.3	(25/2−)	3382.6	(23/2−)	M1,E2	
376.7 3	1.8 4	3050.5	(21/2−)	2673.7		M1,E2	
415.0 3	4.9 7	3050.5	(21/2−)	2635.3	(19/2+)	E1	Mult.: DCO= 0.6 2.
429.0 3	1.3 3	4556.5	(29/2−)	4127.1	(27/2−)	D	Mult.: DCO= 0.5 2.
433.3 3	1.4 4	2495.6	(17/2−)	2061.9	19/2−	E2	
434.6 3	1.8 3	4315.2	(27/2+)	3880.6		E2	
451.3 3	2.5 6	5007.8	(31/2+)	4556.5	(29/2−)	E1	
458.8 3	1.6 3	5345.7	(33/2−)	4887.2	(31/2−)	M1,E2	Mult.: DCO= 0.4 2.
534.7 3	0.7 3	2292.6	(17/2+)	1757.4	(15/2+)	M1,E2	
538		538.0	(7/2+)	0.0	(5/2+)		Eγ: only given in the level scheme figure.
539.1 3	100 4	1378.5	15/2−	839.4	11/2−	E2	Mult.: DCO= 1.1 1.
555.1 3	1.8 3	3050.5	(21/2−)	2495.6	(17/2−)	E2	
558.8 3	5.6 7	4315.2	(27/2+)	3756.3	(25/2−)	E1	Mult.: DCO= 0.4 2.
576.6 3	5.3 7	4315.2	(27/2+)	3738.6	(23/2+)	E2	Mult.: DCO= 1.3 3.
605.0 3	5.5 7	3382.6	(23/2−)	2777.3	23/2−	M1,E2	Mult.: DCO= 1.2 2.
622.1 3	3.7 5	5353.4	(33/2)	4731.4	31/2−	D	Mult.: DCO= 0.43 13.
637.8 3	1.5 3	1519.7	(13/2+)	882.1	(11/2+)	M1,E2	
650.9 3	6.9 8	768.1	(9/2+)	117.1	(7/2+)	M1,E2	
662.3 3	16.4 11	4430.8	(29/2)	3768.4	27/2−	D	Mult.: DCO= 0.50 8.
682.9 3	95.0 4	2061.9	19/2−	1378.5	15/2−	E2	Mult.: DCO= 1.1 1.
692.7 3	10.9 6	5007.8	(31/2+)	4315.2	(27/2+)	E2	Mult.: DCO= 1.0 3.
706.0 3	10.3 6	3756.3	(25/2−)	3050.5	(21/2−)	E2	
715.0 3	79.0 3	2777.3	23/2−	2061.9	19/2−		Mult.: DCO= 1.0 1.
717.8 3	15.4 16	6071.2	(37/2)	5353.4	(33/2)		Mult.: DCO= 1.0 1.
723		839.4	11/2−	117.1	(7/2+)	M2	Eγ: weak γ seen in delayed spectrum. Mult.: E3 admixture , if any, is weak.
744.6 3	5.3 7	4127.1	(27/2−)	3382.6	(23/2−)	E2	Mult.: DCO= 1.0 3.
751.6 3	6.0 7	1519.7	(13/2+)	768.1	(9/2+)	E2	

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^{58}Ni(^{58}Ni,4pnγ) 2000St03 (continued)

γ(^{111}Te) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	Comments
760.1 *3*	3.8 *5*	4887.2	(31/2$^-$)	4127.1	(27/2$^-$)	E2	
761.8 *3*	3.1 *5*	7752.0		6990.2	(41/2)		
765.0 *3*	21.0 *3*	882.1	(11/2$^+$)	117.1	(7/2$^+$)	E2	Mult.: DCO= 0.9 *2*.
773.0 *3*	3.7 *4*	2292.6	(17/2$^+$)	1519.7	(13/2$^+$)	E2	
778.7 *3*	1.8 *2*	5486.0		4707.3			
788.5 *3*	11.1 *7*	5796.3	(35/2$^+$)	5007.8	(31/2$^+$)	E2	Mult.: DCO= 1.0 *3*.
788.9 *3*	2.0 *7*	5345.7	(33/2$^-$)	4556.5	(29/2$^-$)	E2	
800.1 *3*	7.0 *9*	4556.5	(29/2$^-$)	3756.3	(25/2$^-$)	E2	
824		824.0	(9/2$^+$)	0.0	(5/2$^+$)		E_γ: only given in the level scheme figure.
838.1 *3*	1.8 *5*	7491.5		6653.4	(39/2$^+$)		
857.1 *3*	7.7 *9*	6653.4	(39/2$^+$)	5796.3	(35/2$^+$)	E2	Mult.: DCO= 1.1 *3*.
870.6 *3*	1.1 *3*	6356.6		5486.0			
875.1 *3*	17.3 *12*	1757.4	(15/2$^+$)	882.1	(11/2$^+$)		Mult.: DCO= 1.1 *2*.
878.2 *3*	12.8 *13*	2635.3	(19/2$^+$)	1757.4	(15/2$^+$)		Mult.: DCO= 1.1 *2*.
883.7 *3*	1.8 *3*	7873.9		6990.2	(41/2)		
900.4 *3*	1.3 *3*	8652.4		7752.0			
919.0 *3*	6.0 *8*	6990.2	(41/2)	6071.2	(37/2)		Mult.: DCO= 0.9 *1*.
922.4 *3*	13.5 *15*	5353.4	(33/2)	4430.8	(29/2)		Mult.: DCO= 0.9 *1*.
938.9 *3*	2.1 *4*	4707.3		3768.4	27/2$^-$		
963.1 *3*	15.5 *16*	4731.4	31/2$^-$	3768.4	27/2$^-$	E2	Mult.: DCO= 1.0 *1*.
975.1 *3*	5.8 *8*	5706.5	35/2$^-$	4731.4	31/2$^-$	E2	Mult.: DCO= 1.0 *2*.
989.0 *3*	3.5 *7*	3050.5	(21/2$^-$)	2061.9	19/2$^-$	M1,E2	
991.1 *3*	51.0 *20*	3768.4	27/2$^-$	2777.3	23/2$^-$	E2	Mult.: DCO= 1.1 *1*.
1023.6 *3*	3.8 *5*	7677.0	(43/2$^+$)	6653.4	(39/2$^+$)	E2	
1046.2 *3*	1.1 *3*	3823.5		2777.3	23/2$^-$		
1050.5 *3*	2.1 *5*	8727.5	(47/2$^+$)	7677.0	(43/2$^+$)	E2	
1103.3 *3*	5.8 *8*	3738.6	(23/2$^+$)	2635.3	(19/2$^+$)	E2	Mult.: DCO= 1.0 *3*.
1112.7 *3*	1.4 *4*	6819.2	(39/2$^-$)	5706.5	35/2$^-$	E2	
1117.8 *3*	1.8 *4*	2495.6	(17/2$^-$)	1378.5	15/2$^-$	M1,E2	
1119.1 *3*	3.5 *7*	4887.2	(31/2$^-$)	3768.4	27/2$^-$	E2	Mult.: DCO= 1.1 *3*.
1135.7 *3*	1.1 *3*	9863.2	(51/2$^+$)	8727.5	(47/2$^+$)	E2	
1245.4 *3*	1.8 *4*	3880.6		2635.3	(19/2$^+$)	E2	
1295.1 *3*	2.1 *4*	2673.7		1378.5	15/2$^-$	E2	
1305.4 *3*	1.4 *3*	9957.8		8652.4			
1320.7 *3*	2.3 *5*	3382.6	(23/2$^-$)	2061.9	19/2$^-$	E2	

[†] From DCO ratios, E2 assignments are based on DCO ratios consistent with stretched Q. D are stretched dipole.

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Level Scheme

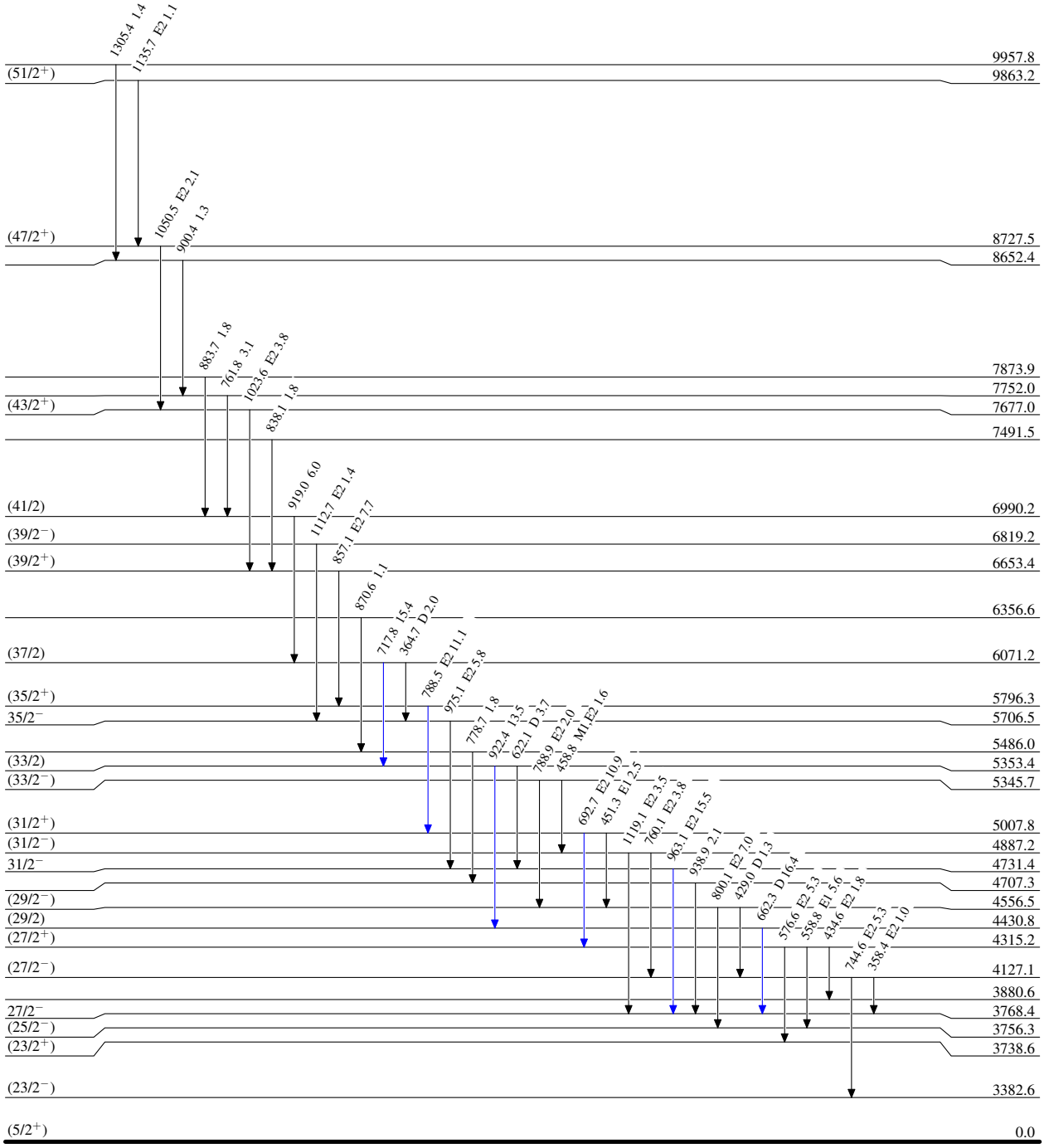
Intensities: Type not specified

Legend

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

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

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

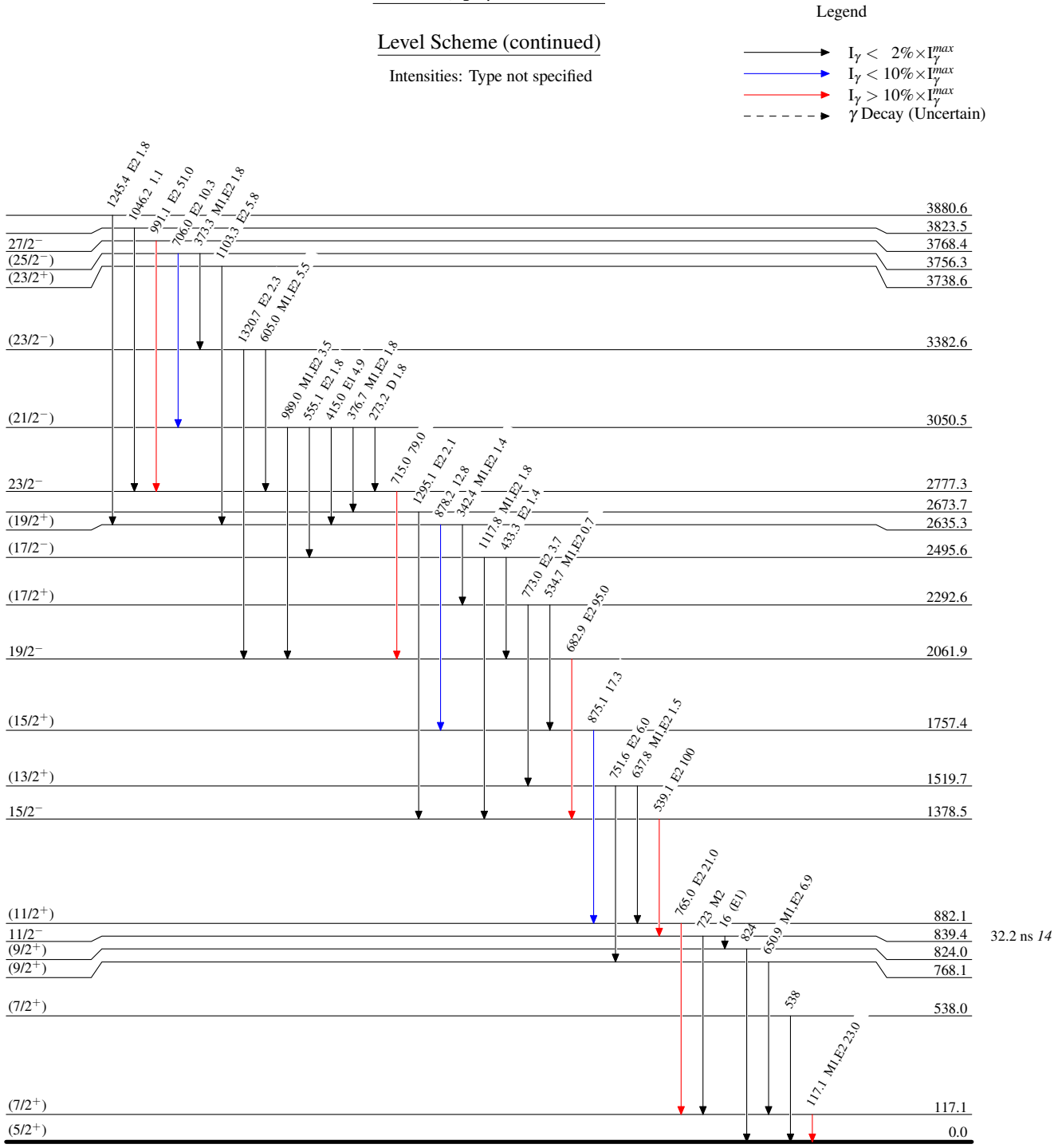


$^{111}_{52}Te_{59}$

^{58}Ni(^{58}Ni,4pnγ) 2000St03

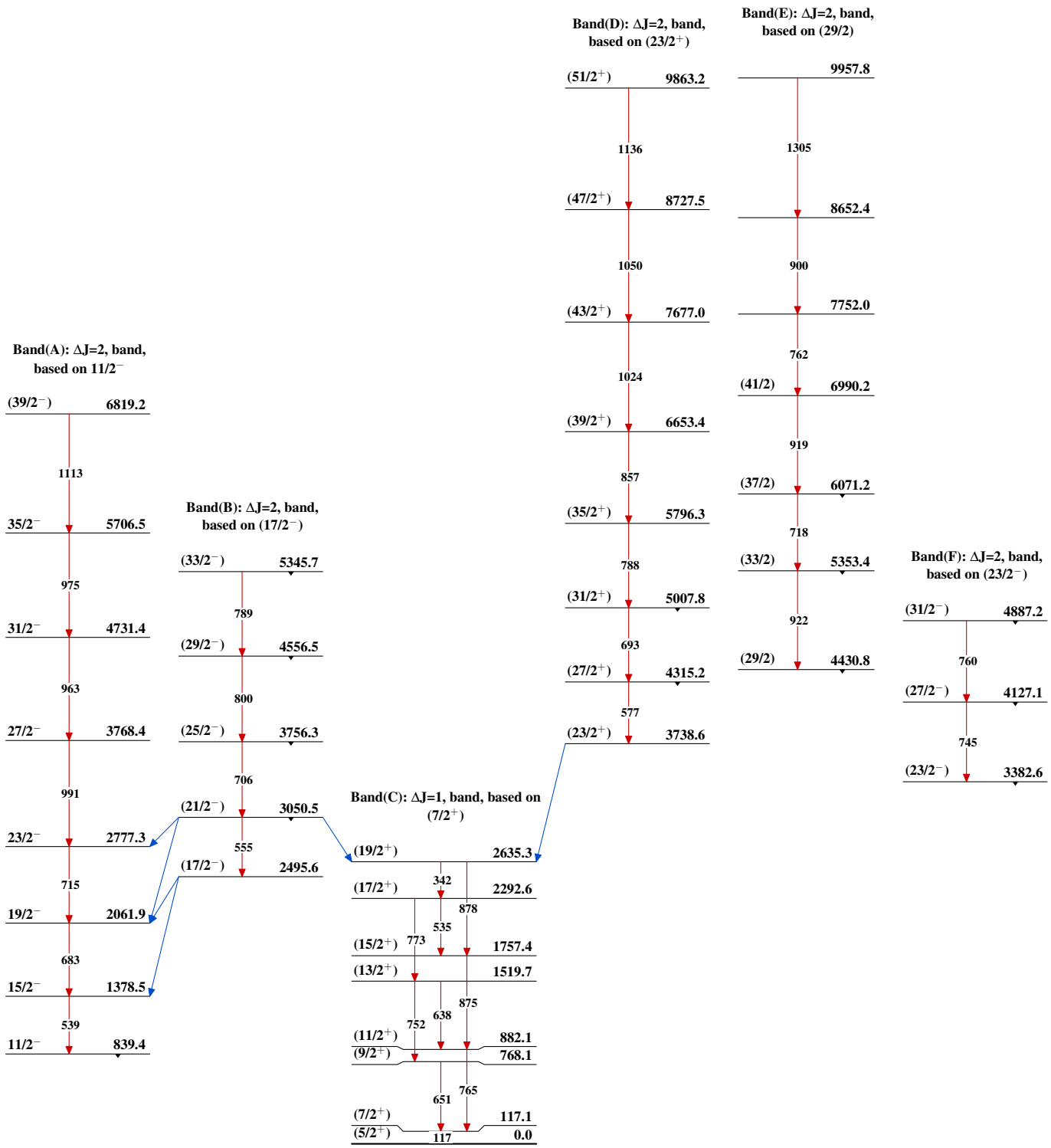
Level Scheme (continued)

Intensities: Type not specified



$^{111}_{52}Te_{59}$

^{58}Ni(^{58}Ni,4pnγ) 2000St03



$^{111}_{52}Te_{59}$