

$^{54}\text{Fe}(^{58}\text{Ni},2n2p\gamma)$ 1998La03,1998So24

Type	History		Literature Cutoff Date
	Author	Citation	
Full Evaluation	Jean Blachot	ENSDF	1-Jul-2008

1998La03: E=243 MeV. Measured $E\gamma$, $I\gamma$, $\gamma\gamma$, $\gamma(\theta)$ using gammasphere detector array consisting of 95 Compton-suppressed HPGe detectors.

1998So24: E=261 MeV. Measured $E\gamma$, $I\gamma$, $\gamma\Gamma$ using eurogam detector array of 4 cluster detectors.

1994Do22: $^{58}\text{Ni}(^{54}\text{Fe},xn\gamma)$ E= 270 MeV Nordball detector array.

1995Pa01: $^{58}\text{Ni}(^{54}\text{Fe},xn\gamma)$ E= 270 MeV Eurogam detector array.

Recoil-decay tagging method using double sided Si strip detector.

The level scheme is mainly from 1998La03. 1998So24 define the ground-state band up to 8^+ by the 897-758-664-625 cascade. Two other cascades shown by 1998So24 feed the 2048, 6^+ level: 662-803-830 cascade and 795-799(?)–1038 cascade. With the exception of tentative 799 γ , all other transitions are reported by 1998La03 but differently placed.

1994Do22 and 1995Pa01 have shown level scheme until the 8^+ . Their proposed 10^+ was not confirmed by 1998La03 an 1998So24.

 ^{108}Te Levels

E(level)	J^π	Comments
0.0 [†]	0^+	
625.20 [†] 20	2^+	
1289.0 [†] 3	4^+	
2047.9 [†] 4	6^+	
2443.4 [‡] 4	$5^{(-)}$	
2945.0 [†] 4	8^+	
2997.0 [‡] 4	$7^{(-)}$	
3644.4 5		
3661.0 [‡] 4	$9^{(-)}$	
3886.2 [†] 4	10^+	J^π : 9 (1998So24).
4491.1 [‡] 4	$11^{(-)}$	
4629.1 5		
4909.1 [†] 5	12^+	
5294.9 [‡] 5	$13^{(-)}$	
5980.3 [†] 5	14^+	
6090.3 [‡] 5	$15^{(-)}$	
7128.6 [‡] 5	$17^{(-)}$	
7951.3 6		
8067.3 [‡] 6	$19^{(-)}$	
8929.5 6		
9327.2 [‡] 6	(21^-)	
9791.4 7		
10545.8 [‡] 7		

[†] Band(A): g.s. band.

[‡] Band(B): Band based on $5^{(-)}$.

$^{54}\text{Fe}(^{58}\text{Ni},2n2p\gamma)$ **1998La03,1998So24** (continued) $\gamma(^{108}\text{Te})$

E_γ †	I_γ †	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult.	Comments
385.8 2	4.9 5	5294.9	13 ⁽⁻⁾	4909.1	12 ⁺	(E1)	$A_2 < 0$.
395.5 2	8.4 12	2443.4	5 ⁽⁻⁾	2047.9	6 ⁺	(E1)	
553.6 2	17.1 15	2997.0	7 ⁽⁻⁾	2443.4	5 ⁽⁻⁾	E2	$A_2 = +0.26$ 4, $A_4 = -0.14$ 6.
604.9 2	9.0 7	4491.1	11 ⁽⁻⁾	3886.2	10 ⁺	(E1)	$A_2 = -0.51$ 4, $A_4 = -0.06$ 5.
625.2 2	100	625.20	2 ⁺	0.0	0 ⁺	E2	$A_2 = +0.32$ 3, $A_4 = -0.16$ 4.
663.8 2	100	1289.0	4 ⁺	625.20	2 ⁺	E2	$A_2 = +0.31$ 3, $A_4 = -0.15$ 4 for 663.8+664.1.
664.1 ‡ 2	34.2 17	3661.0	9 ⁽⁻⁾	2997.0	7 ⁽⁻⁾	E2#	$A_2 = +0.31$ 3, $A_4 = -0.15$ 4 for 664.1+663.8.
699.4 2	8.1 10	3644.4		2945.0	8 ⁺		
716.0 2	24.3 12	3661.0	9 ⁽⁻⁾	2945.0	8 ⁺	(E1)	$A_2 = -0.25$ 3, $A_4 = -0.02$ 4.
758.8 2	91 4	2047.9	6 ⁺	1289.0	4 ⁺	E2	$A_2 = +0.34$ 3, $A_4 = -0.15$ 4.
795.3 ‡ 2	35.1 15	6090.3	15 ⁽⁻⁾	5294.9	13 ⁽⁻⁾	E2	$A_2 = +0.31$ 3, $A_4 = -0.08$ 4.
803.9 ‡ 2	33.6 14	5294.9	13 ⁽⁻⁾	4491.1	11 ⁽⁻⁾	E2	$A_2 = +0.27$ 3, $A_4 = -0.08$ 4.
822.7 2	7.0 7	7951.3		7128.6	17 ⁽⁻⁾		
830.2 ‡ 2	36.2 17	4491.1	11 ⁽⁻⁾	3661.0	9 ⁽⁻⁾	E2#	$A_2 = +0.27$ 3, $A_4 = -0.03$ 4.
861.9 2	4.4 6	9791.4		8929.5			
897.0 2	56.9 25	2945.0	8 ⁺	2047.9	6 ⁺	E2	$A_2 = +0.32$ 3, $A_4 = -0.12$ 4.
938.7 2	14.8 11	8067.3	19 ⁽⁻⁾	7128.6	17 ⁽⁻⁾	E2	$A_2 = +0.28$ 4, $A_4 = -0.18$ 6 for 938.7+941.1.
941.1 2	24.4 17	3886.2	10 ⁺	2945.0	8 ⁺	E2#	$A_2 = +0.28$ 4, $A_4 = -0.18$ 6 for 941.1+938.7.
949.2 2	15.6 13	2997.0	7 ⁽⁻⁾	2047.9	6 ⁺	(E1)	$A_2 = -0.16$ 4, $A_4 = -0.04$ 5.
968.1 2	8.8 10	4629.1		3661.0	9 ⁽⁻⁾		
978.2 2	6.6 7	8929.5		7951.3			
1022.8 2	14.0 11	4909.1	12 ⁺	3886.2	10 ⁺	E2	$A_2 = +0.24$ 4, $A_4 = +0.02$ 6.
1038.3 ‡ 2	25.7 12	7128.6	17 ⁽⁻⁾	6090.3	15 ⁽⁻⁾	E2#	$A_2 = +0.27$ 3, $A_4 = -0.02$ 4.
1071.2 2	6.1 8	5980.3	14 ⁺	4909.1	12 ⁺	E2	$A_2 = +0.26$ 7, $A_4 = -0.17$ 10.
1154.5 2	8.9 18	2443.4	5 ⁽⁻⁾	1289.0	4 ⁺	(E1)	
1218.6 2	2.8 5	10545.8		9327.2	(21 ⁻)		
1259.9 2	3.5 5	9327.2	(21 ⁻)	8067.3	19 ⁽⁻⁾	(E2)	$A_2 > 0$.

† From 1998La03.

‡ Placement of this γ ray differs in 1998So24.

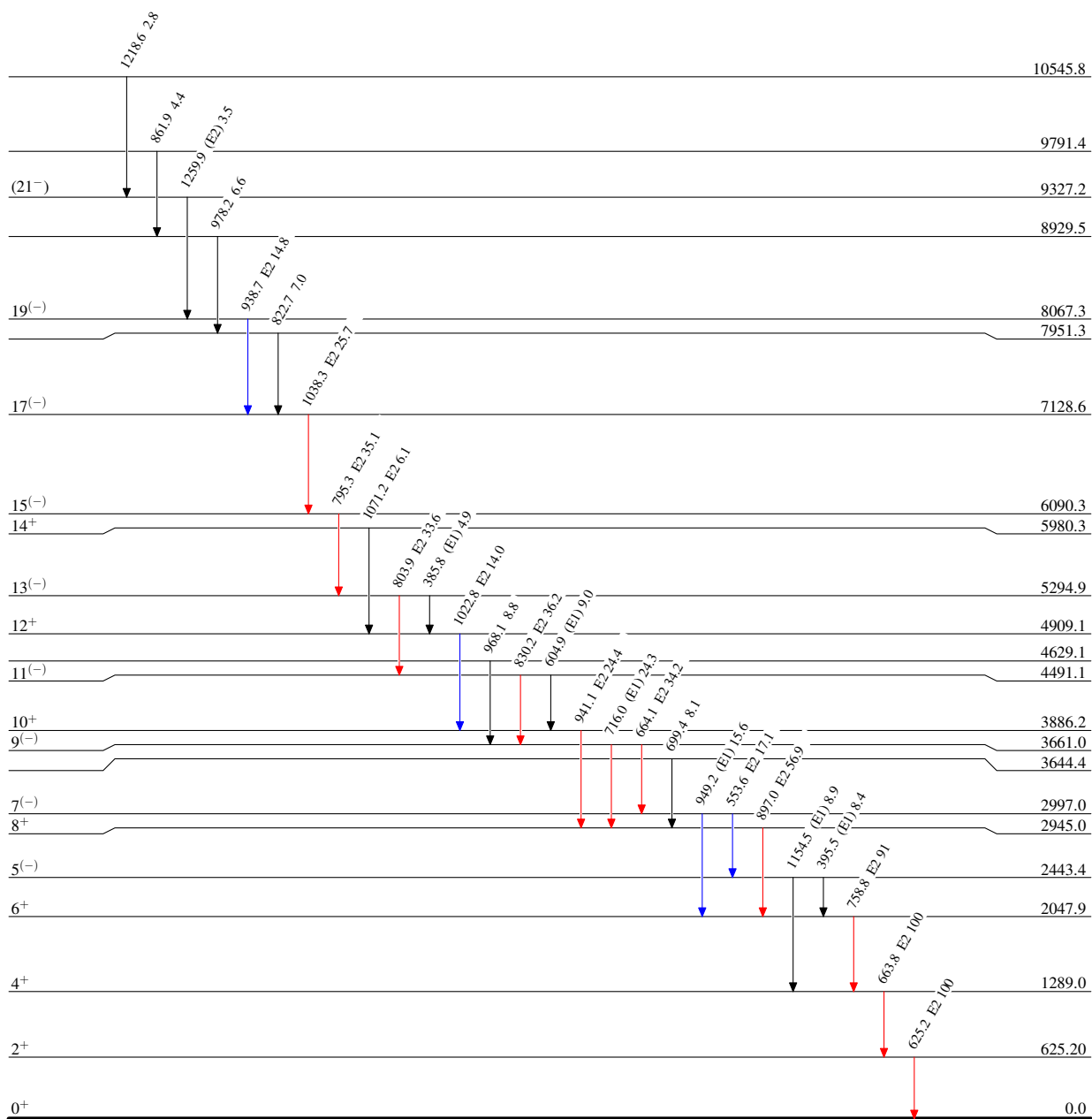
Dipole assigned by 1998So24.

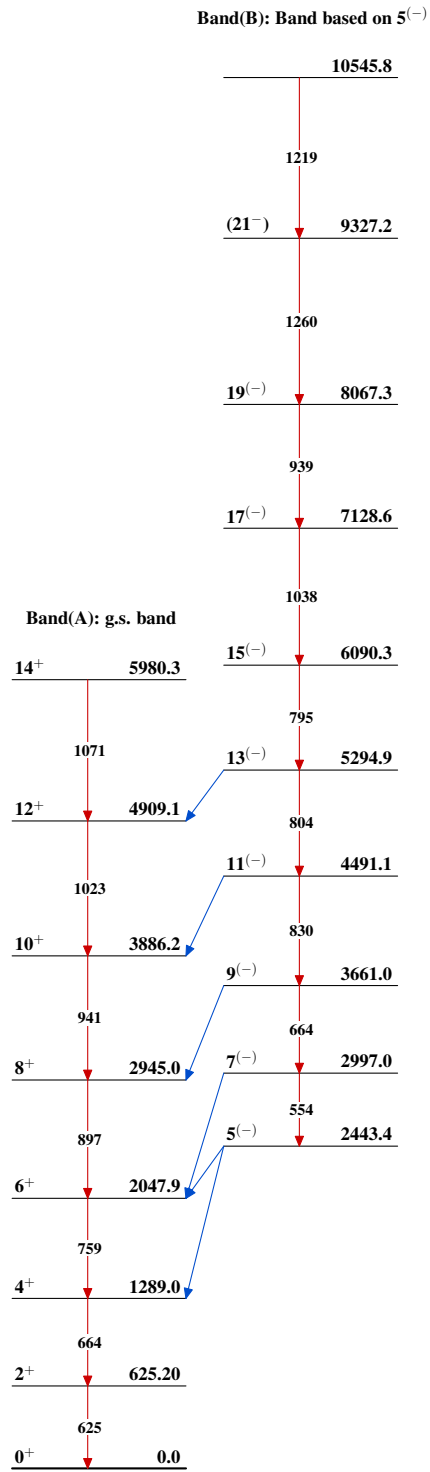
$^{54}\text{Fe} (^{58}\text{Ni}, 2n2p\gamma)$ 1998La03, 1998So24

Level Scheme
 Intensities: Relative I_γ

Legend

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

 $^{108}_{52}\text{Te}_{56}$

$^{54}\text{Fe}({}^{58}\text{Ni}, 2n2p\gamma)$ 1998La03, 1998So24 $^{108}_{52}\text{Te}_{56}$