

<sup>70</sup>Zn(<sup>36</sup>S,p3n $\gamma$ ) **1999Gi14,1999Gi02**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	D. De Frenne	NDS 110, 1745 (2009)	31-Dec-2008

E=130 MeV. Measured E $\gamma$ ,  $\gamma\gamma$ , I $\gamma$ ,  $\gamma\gamma(\theta)$ (DCO),  $\gamma$ (lin pol) using EUROGAM II array of 30 coaxial Ge detectors and 24 (4-element) clover type detectors all in Compton-suppression shields. Boson- Fermion-Fermion model calculations. The level scheme is from **1999Gi14**, except for the two unconnected bands which are from **1999Gi02**.

<sup>102</sup>Rh Levels

E(level) <sup>†</sup>	J $\pi$ <sup>#</sup>	T <sub>1/2</sub>	E(level) <sup>†</sup>	J $\pi$ <sup>#</sup>
0	(1 <sup>-</sup> ,2 <sup>-</sup> )	207 d	4312.5 <sup>e</sup> 3	16 <sup>+</sup>
41.937 20	2 <sup>(-)</sup>		4588.9 <sup>b</sup> 4	(16 <sup>+</sup> )
105.220 20	(1 <sup>+</sup> ,2 <sup>+</sup> ,3 <sup>+</sup> )		4625.7 <sup>&amp;</sup> 3	17 <sup>-</sup>
140.68 10	6 <sup>+</sup>	3.742 y 10	4636.9 <sup>c</sup> 4	(16 <sup>+</sup> )
154.43 <sup>‡</sup> 10	5 <sup>+</sup>		5001.8 <sup>a</sup> 4	(17 <sup>+</sup> )
156.49 3			5063.6 <sup>d</sup> 4	(17 <sup>+</sup> )
178.5 4	(3) <sup>+</sup>		5232.4 <sup>@</sup> 4	18 <sup>-</sup>
242.2 3	7 <sup>+</sup>		5460.8 <sup>e</sup> 3	18 <sup>+</sup>
263.7 4	5 <sup>+</sup>		5538.7 <sup>c</sup> 4	(18 <sup>+</sup> )
297.24 13	7 <sup>+</sup>		5565.3 <sup>b</sup> 4	(18 <sup>+</sup> )
359.1 4			5926.6 <sup>&amp;</sup> 4	19 <sup>-</sup>
378.37 15	6 <sup>+</sup>		6023.9 <sup>d</sup> 4	(19 <sup>+</sup> )
399.2 4	(5,6,7)		6088.7 <sup>a</sup> 5	(19 <sup>+</sup> )
476.6 3	7 <sup>+</sup>		6513.2 <sup>@</sup> 4	20 <sup>-</sup>
569.60 14	7 <sup>+</sup>		6615.3 <sup>c</sup> 4	(20 <sup>+</sup> )
615.6 4	(7,8,9)		6686.9 <sup>e</sup> 4	20 <sup>+</sup>
682.47 <sup>@</sup> 16	6 <sup>-</sup>		7175.5 <sup>d</sup> 5	(21 <sup>+</sup> )
708.15 23	8 <sup>+</sup>		7309.0 <sup>&amp;</sup> 4	21 <sup>-</sup>
730.6 <sup>&amp;</sup> 4	7 <sup>-</sup>		7797.6 <sup>@</sup> 5	22 <sup>-</sup>
761.0 <sup>@</sup> 3	8 <sup>-</sup>		7844.5 <sup>c</sup> 5	(22 <sup>+</sup> )
845.81 16	8 <sup>+</sup>		7991.2 <sup>e</sup> 5	22 <sup>+</sup>
907.4 <sup>&amp;</sup> 3	9 <sup>-</sup>		8482.9 <sup>d</sup> 5	(23 <sup>+</sup> )
1042.26 20	9 <sup>+</sup>		8693.9 <sup>&amp;</sup> 5	23 <sup>-</sup>
1186.6 3	9 <sup>+</sup>		8722.2 8	
1270.4 <sup>@</sup> 3	10 <sup>-</sup>		9109.6 <sup>@</sup> 5	24 <sup>-</sup>
1576.2 <sup>&amp;</sup> 3	11 <sup>-</sup>		9248.9 <sup>c</sup> 5	(24 <sup>+</sup> )
1598.61 <sup>e</sup> 21	10 <sup>+</sup>		9379.6 <sup>e</sup> 8	24 <sup>+</sup>
2038.3 <sup>@</sup> 3	12 <sup>-</sup>		9816.1 <sup>d</sup> 7	(25 <sup>+</sup> )
2165.8 4	11 <sup>+</sup>		10168.9 <sup>&amp;</sup> 11	25 <sup>-</sup>
2357.49 <sup>e</sup> 22	12 <sup>+</sup>		10482.6 <sup>@</sup> 7	26 <sup>-</sup>
2476.5 <sup>&amp;</sup> 3	13 <sup>-</sup>		10664.9 <sup>c</sup> 7	(26 <sup>+</sup> )
2964.9 <sup>@</sup> 3	14 <sup>-</sup>		10831.6 <sup>e</sup> 13	26 <sup>+</sup>
3266.20 <sup>e</sup> 24	14 <sup>+</sup>		11199.5 <sup>d</sup> 7	(27 <sup>+</sup> )
3493.9 <sup>&amp;</sup> 3	15 <sup>-</sup>		11693.9 <sup>&amp;</sup> 13	27 <sup>-</sup>
3505.0 4	13 <sup>+</sup>		12126.6 <sup>@</sup> 9	28 <sup>-</sup>
3538.6 <sup>a</sup> 4	(13 <sup>+</sup> )		12160.1 <sup>c</sup> 7	(28 <sup>+</sup> )
3831.5 <sup>b</sup> 3	(14 <sup>+</sup> )		12609.1 <sup>d</sup> 7	(29 <sup>+</sup> )
3917.7 <sup>c</sup> 4	(14 <sup>+</sup> )		13289.0 <sup>&amp;</sup> 14	29 <sup>-</sup>
4022.2 <sup>@</sup> 3	16 <sup>-</sup>		14168.1 <sup>d</sup> 9	(31 <sup>+</sup> )
4157.5 <sup>a</sup> 4	(15 <sup>+</sup> )		15978.2 <sup>d</sup> 10	(33 <sup>+</sup> )
4198.1 4			0+x <sup>f</sup>	
4264.0 <sup>d</sup> 4	(15 <sup>+</sup> )		1072+x <sup>f</sup>	

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$^{70}\text{Zn}(^{36}\text{S},\text{p}3\text{n}\gamma)$  **1999Gi14,1999Gi02** (continued) $^{102}\text{Rh}$  Levels (continued)

$E(\text{level})^\dagger$	$E(\text{level})^\dagger$	$E(\text{level})^\dagger$
$2272+x^f$	$6696+x^f$	$1502+y^g$
$3636+x^f$	$8378+x^f$	$3080+y^g$
$5110+x^f$	$0+y^g$	$4763+y^g$
		$6598+y^g$

$^\dagger$  From least-squares fit to  $E_\gamma$ 's (by evaluator).

$^\ddagger$  From Adopted Levels for  $^{102}\text{Rh}$ .

$^\#$  Unless noted otherwise, from  $\gamma\gamma(\theta)$ (DCO),  $\gamma$ (lin pol) and observed band structure (1999Gi14) Numerical values are the same as the adopted ones but here no parentheses given.

$^\textcircled{A}$  Band(A):  $\pi g_{9/2} \nu h_{11/2}$ ,  $\alpha=0$ .

$^\&$  Band(a):  $\pi g_{9/2} \nu h_{11/2}$ ,  $\alpha=1$ .

$^a$  Band(B):  $\pi g_{9/2} \nu (d_{5/2} h_{11/2}^2)$ ,  $\alpha=1$ .

$^b$  Band(b):  $\pi g_{9/2} \nu (d_{5/2} h_{11/2}^2)$ ,  $\alpha=0$ .

$^c$  Band(C):  $\pi g_{9/2} \nu (g_{7/2} h_{11/2}^2)$ ,  $\alpha=0$ .

$^d$  Band(c):  $\pi g_{9/2} \nu (g_{7/2} h_{11/2}^2)$ ,  $\alpha=1$ .

$^e$  Band(D):  $\pi p_{1/2} \nu h_{11/2}$ ,  $\alpha=0$ .

$^f$  Band(E):  $\Delta J=2$  band #1. This band from 1999Gi02 only.

$^g$  Band(F):  $\Delta J=2$  band #2 this band from 1999Gi02 only.

 $\gamma(^{102}\text{Rh})$ 

DCO gated by E2 transitions where not quoted.

$E_\gamma^\ddagger$	$I_\gamma^\ddagger$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult. $^\textcircled{A}$	Comments
13.7 $^\ddagger$ 10		154.43	5 $^+$	140.68	6 $^+$		
22		178.5	(3) $^+$	156.49			
30		761.0	8 $^-$	730.6	7 $^-$		
41.938 $^\ddagger$ 20		41.937	2 $^{(-)}$	0	(1 $^-$ , 2 $^-$ )		
48		730.6	7 $^-$	682.47	6 $^-$		
51.274 $^\ddagger$ 19		156.49		105.220	(1 $^+$ , 2 $^+$ , 3 $^+$ )		
81.2 3	11	378.37	6 $^+$	297.24	7 $^+$		
85.16 $^\ddagger$ 5		263.7	5 $^+$	178.5	(3) $^+$		
98.8 $^\ddagger$ 1		140.68	6 $^+$	41.937	2 $^{(-)}$		
101.7 5	9	242.2	7 $^+$	140.68	6 $^+$		
105.216 $^\ddagger$ 16		105.220	(1 $^+$ , 2 $^+$ , 3 $^+$ )	0	(1 $^-$ , 2 $^-$ )		
117.3 5	4	476.6	7 $^+$	359.1		D	DCO=1.23 24 (Gated by M1+E2).
135.6 5	6	399.2	(5,6,7)	263.7	5 $^+$	D	DCO=1.19 25 (Gated by M1+E2). (For 135.6+136.4+136.7).
136.4 5	7	378.37	6 $^+$	242.2	7 $^+$	D	DCO=1.19 25 (Gated by M1+E2). (For 135.6+136.4+136.7).
136.7 5	4	178.5	(3) $^+$	41.937	2 $^{(-)}$	D	DCO=1.19 25 (Gated by M1+E2). (For 135.6+136.4+136.7).
138.6 5	1	708.15	8 $^+$	569.60	7 $^+$	D	DCO=0.42 7.
146.3 1	100	907.4	9 $^-$	761.0	8 $^-$	D	DCO=0.24 2.
156.6 1	40	297.24	7 $^+$	140.68	6 $^+$	D	DCO=0.38 5.
196.6 5	7	1042.26	9 $^+$	845.81	8 $^+$	D	DCO=0.65 11.

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$^{70}\text{Zn}(^{36}\text{S},\text{p}3\text{n}\gamma)$  **1999Gi14,1999Gi02** (continued) $\gamma(^{102}\text{Rh})$  (continued)

$E_\gamma$ †	$I_\gamma$ †	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult. @	Comments
204.5 5	4	359.1		154.43	5 <sup>+</sup>	D	DCO=0.66 11 (For 204.5+205.9).
205.9 5	6	682.47	6 <sup>-</sup>	476.6	7 <sup>+</sup>	D	DCO=0.66 11 (For 204.5+205.9).
213.0 5	6	476.6	7 <sup>+</sup>	263.7	5 <sup>+</sup>	D	Mult.: D in conflict with $J^\pi$ initial and final state. DCO=0.97 25 (Gated by M1+E2).
216.4 5	3	615.6	(7,8,9)	399.2	(5,6,7)		
223.6 3	10	378.37	6 <sup>+</sup>	154.43	5 <sup>+</sup>	D	DCO=1.6 4 (Gated by M1+E2).
231.5 5	4	708.15	8 <sup>+</sup>	476.6	7 <sup>+</sup>	D	DCO=0.42 8 (For 231.5+234.4).
234.4 5	2	476.6	7 <sup>+</sup>	242.2	7 <sup>+</sup>	D	DCO=0.42 8 (For 231.5+234.4).
237.9 3	12	378.37	6 <sup>+</sup>	140.68	6 <sup>+</sup>	D	DCO=1.38 25 (Gated by M1+E2).
272.4 5	1	569.60	7 <sup>+</sup>	297.24	7 <sup>+</sup>	D	DCO=1.22 25 (Gated by M1+E2).
276.2 1	20	845.81	8 <sup>+</sup>	569.60	7 <sup>+</sup>	D	DCO=0.45 7.
283.3 5	6	682.47	6 <sup>-</sup>	399.2	(5,6,7)	D	DCO=1.11 22 (Gated by M1+E2).
292.9 3	11	3831.5	(14 <sup>+</sup> )	3538.6	(13 <sup>+</sup> )	M1+E2	DCO=0.65 7. Pol=-0.05 27.
304.1 1	35	682.47	6 <sup>-</sup>	378.37	6 <sup>+</sup>	D	DCO=0.42 3.
305.8 1	95	1576.2	11 <sup>-</sup>	1270.4	10 <sup>-</sup>	M1+E2	DCO=1.37 14 (Gated by M1+E2). Pol=-0.61 8.
318.5 5	3	615.6	(7,8,9)	297.24	7 <sup>+</sup>		
325.9 1	22	4157.5	(15 <sup>+</sup> )	3831.5	(14 <sup>+</sup> )	M1+E2	DCO=0.49 7 (For 325.9+326.8). Pol=-0.26 12.
326.8 5	4	3831.5	(14 <sup>+</sup> )	3505.0	13 <sup>+</sup>	D	DCO=0.49 7 (For 325.9+326.8).
334.4 3	16	1042.26	9 <sup>+</sup>	708.15	8 <sup>+</sup>	D	DCO=1.18 14 (Gated by M1+E2).
346.2 5	4	4264.0	(15 <sup>+</sup> )	3917.7	(14 <sup>+</sup> )		
352.1 5	7	730.6	7 <sup>-</sup>	378.37	6 <sup>+</sup>	D	DCO=1.25 15 (Gated by M1+E2).
363.0 1	100	1270.4	10 <sup>-</sup>	907.4	9 <sup>-</sup>	M1+E2	DCO=0.50 4. Pol=-0.24 5.
373.5 5	9	4636.9	(16 <sup>+</sup> )	4264.0	(15 <sup>+</sup> )	M1+E2	DCO=0.87 7 (Gated by M1+E2). Pol=-0.59 32.
385.4 5	6	682.47	6 <sup>-</sup>	297.24	7 <sup>+</sup>	D	DCO=1.33 15 (Gated by M1+E2).
411.4 5	3	708.15	8 <sup>+</sup>	297.24	7 <sup>+</sup>	D	DCO=0.73 11 (For 411.4+412.6+412.9).
412.6 5	4	3917.7	(14 <sup>+</sup> )	3505.0	13 <sup>+</sup>	M1+E2	DCO=0.73 11 (For 411.4+412.6+412.9). Pol=-0.43 14.
412.9 1	22	5001.8	(17 <sup>+</sup> )	4588.9	(16 <sup>+</sup> )	M1+E2	DCO=0.73 11 (For 411.4+412.6+412.9). Pol=-0.43 14.
416.2 5	4	9109.6	24 <sup>-</sup>	8693.9	23 <sup>-</sup>		
426.6 3	14	5063.6	(17 <sup>+</sup> )	4636.9	(16 <sup>+</sup> )	M1+E2	DCO=0.83 4 (Gated by M1+E2). Pol=-0.34 32.
426.7 5	5	1042.26	9 <sup>+</sup>	615.6	(7,8,9)		
428.9 1	20	569.60	7 <sup>+</sup>	140.68	6 <sup>+</sup>	D	DCO=0.55 7 (For 428.9+431.3).
431.3 1	22	4588.9	(16 <sup>+</sup> )	4157.5	(15 <sup>+</sup> )	M1+E2	DCO=0.65 10 (For 428.9+431.3). Pol=-0.61 18.
433.1 5	1	4264.0	(15 <sup>+</sup> )	3831.5	(14 <sup>+</sup> )		
433.4 5	7	730.6	7 <sup>-</sup>	297.24	7 <sup>+</sup>	D	DCO=0.84 10 (Gated by M1+E2).
438.2 1	75	2476.5	13 <sup>-</sup>	2038.3	12 <sup>-</sup>	M1+E2	DCO=0.56 5. Pol=-0.25 10.
438.7 5	5	4636.9	(16 <sup>+</sup> )	4198.1			
440.2 5	5	682.47	6 <sup>-</sup>	242.2	7 <sup>+</sup>		
449.1 5	4	12609.1	(29 <sup>+</sup> )	12160.1	(28 <sup>+</sup> )		
462.1 1	80	2038.3	12 <sup>-</sup>	1576.2	11 <sup>-</sup>	M1+E2	DCO=0.47 3. Pol=-0.09 7.
463.7 3	14	761.0	8 <sup>-</sup>	297.24	7 <sup>+</sup>	D	DCO=0.75 11 (Gated by M1+E2).
474.8 5	2	5063.6	(17 <sup>+</sup> )	4588.9	(16 <sup>+</sup> )	M1+E2	DCO=1.07 9 (Gated by M1+E2). Pol=-0.53 24.
475.4 3	10	5538.7	(18 <sup>+</sup> )	5063.6	(17 <sup>+</sup> )	D	DCO=1.07 9 (Gated by M1+E2).
479.6 5	3	4636.9	(16 <sup>+</sup> )	4157.5	(15 <sup>+</sup> )		

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$^{70}\text{Zn}(^{36}\text{S},\text{p}3\text{n}\gamma)$  **1999Gi14,1999Gi02** (continued) $\gamma(^{102}\text{Rh})$  (continued)

$E_\gamma$ †	$I_\gamma$ †	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult. @	Comments
485.2 1	22	6023.9	(19 <sup>+</sup> )	5538.7	(18 <sup>+</sup> )	M1+E2	DCO=1.05 10 (Gated by M1+E2). Pol=-0.30 30.
488.4 1	65	2964.9	14 <sup>-</sup>	2476.5	13 <sup>-</sup>	M1+E2	DCO=0.45 4. Pol=-0.41 22.
489		7797.6	22 <sup>-</sup>	7309.0	21 <sup>-</sup>		
501.2 5	3	5565.3	(18 <sup>+</sup> )	5063.6	(17 <sup>+</sup> )		
509.7 5	4	1270.4	10 <sup>-</sup>	761.0	8 <sup>-</sup>		
522.8 5	6	6088.7	(19 <sup>+</sup> )	5565.3	(18 <sup>+</sup> )		
526.1 5	7	6615.3	(20 <sup>+</sup> )	6088.7	(19 <sup>+</sup> )	D	DCO=1.12 9 (Gated by M1+E2). (For 526.1+527.9+528.5+528.9).
527.9 3	16	682.47	6 <sup>-</sup>	154.43	5 <sup>+</sup>	D	DCO=1.12 9 (Gated by M1+E2). (For 526.1+527.9+528.5+528.9).
528.5 1	38	4022.2	16 <sup>-</sup>	3493.9	15 <sup>-</sup>	M1+E2	DCO=1.12 9 (Gated by M1+E2). (For 526.1+527.9+528.5+528.9).
528.9 1	43	3493.9	15 <sup>-</sup>	2964.9	14 <sup>-</sup>	M1+E2	DCO=1.12 9 (Gated by M1+E2). (For 526.1+527.9+528.5+528.9).
537.2 3	10	5538.7	(18 <sup>+</sup> )	5001.8	(17 <sup>+</sup> )	M1+E2	DCO=0.89 10 (Gated by M1+E2). Pol=-0.39 12.
548.6 5	4	845.81	8 <sup>+</sup>	297.24	7 <sup>+</sup>		
556.4 1	44	1598.61	10 <sup>+</sup>	1042.26	9 <sup>+</sup>	D	DCO=0.71 10.
560.0 3	18	7175.5	(21 <sup>+</sup> )	6615.3	(20 <sup>+</sup> )	M1+E2	DCO=0.62 12 (For 560.0+562.8). Pol=-0.40 22.
562.8 5	8	5565.3	(18 <sup>+</sup> )	5001.8	(17 <sup>+</sup> )	D	DCO=0.62 12 (For 560.0+562.8).
567.7 5	7	708.15	8 <sup>+</sup>	140.68	6 <sup>+</sup>		
586.4 3	12	6513.2	20 <sup>-</sup>	5926.6	19 <sup>-</sup>		
591.4 3	16	6615.3	(20 <sup>+</sup> )	6023.9	(19 <sup>+</sup> )		
<sup>x</sup> 598.0 <sup>#</sup> 5	3						Assignment (17 <sup>-</sup> ) to (16 <sup>-</sup> ) in 1999Gi14 should be ignored.
603.6 1	34	4625.7	17 <sup>-</sup>	4022.2	16 <sup>-</sup>	M1+E2	DCO=0.89 7 (Gated by M1+E2). Pol=-1.25 62.
606.7 1	21	5232.4	18 <sup>-</sup>	4625.7	17 <sup>-</sup>	D	DCO=1.31 28 (Gated by M1+E2).
638.5 3	10	8482.9	(23 <sup>+</sup> )	7844.5	(22 <sup>+</sup> )		
668.8 3	19	1576.2	11 <sup>-</sup>	907.4	9 <sup>-</sup>		
668.9 3	16	7844.5	(22 <sup>+</sup> )	7175.5	(21 <sup>+</sup> )		
<sup>x</sup> 684.0 <sup>#</sup> 5	2						Assignment (19 <sup>-</sup> ) to (18 <sup>-</sup> ) in 1999Gi14 should be ignored.
694.3 3	10	5926.6	19 <sup>-</sup>	5232.4	18 <sup>-</sup>		
731.0 5	4	8722.2		7991.2	22 <sup>+</sup>		
745.1 3	18	1042.26	9 <sup>+</sup>	297.24	7 <sup>+</sup>	E2	DCO=0.85 14. Pol=+0.26 31.
752.6 3	11	1598.61	10 <sup>+</sup>	845.81	8 <sup>+</sup>	Q	DCO=0.86 13.
758.3 5	2	4588.9	(16 <sup>+</sup> )	3831.5	(14 <sup>+</sup> )		
758.9 1	55	2357.49	12 <sup>+</sup>	1598.61	10 <sup>+</sup>	E2	DCO=0.93 14. Pol=+0.92 17.
759.1 5	1	4264.0	(15 <sup>+</sup> )	3505.0	13 <sup>+</sup>		
765.9 3	10	9248.9	(24 <sup>+</sup> )	8482.9	(23 <sup>+</sup> )		
767.8 3	12	2038.3	12 <sup>-</sup>	1270.4	10 <sup>-</sup>	E2	DCO=1.84 18 (Gated by M1+E2). Pol=+0.66 35.
795.6 5	3	7309.0	21 <sup>-</sup>	6513.2	20 <sup>-</sup>		
844.8 5	4	5001.8	(17 <sup>+</sup> )	4157.5	(15 <sup>+</sup> )		
889.3 3	12	1186.6	9 <sup>+</sup>	297.24	7 <sup>+</sup>	E2	DCO=1.77 24 (Gated by M1+E2). Pol=+1.01 32.
890		1598.61	10 <sup>+</sup>	708.15	8 <sup>+</sup>		
900.3 1	45	2476.5	13 <sup>-</sup>	1576.2	11 <sup>-</sup>	E2	DCO=2.03 20 (Gated by M1+E2). (For 900.3+902.0). Pol=+0.81 33.

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$^{70}\text{Zn}(^{36}\text{S},\text{p}3\text{n}\gamma)$  **1999Gi14,1999Gi02 (continued)** $\gamma(^{102}\text{Rh})$  (continued)

$E_\gamma$ †	$I_\gamma$ †	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult. @	Comments
902.0 5	4	5538.7	(18 <sup>+</sup> )	4636.9	(16 <sup>+</sup> )	Q	DCO=2.03 20 (Gated by M1+E2). (For 900.3+902.0). DCO=1.17 20. Pol=+0.71 29.
908.7 1	50	3266.20	14 <sup>+</sup>	2357.49	12 <sup>+</sup>	E2	
926.2 3	19	2964.9	14 <sup>-</sup>	2038.3	12 <sup>-</sup>	Q	DCO=2.16 20 (Gated by M1+E2).
931.8 3	11	4198.1		3266.20	14 <sup>+</sup>		
<sup>x</sup> 967.0# 5	7						Assignment (13 <sup>-</sup> ) to 12 <sup>-</sup> in 1999Gi14 should be ignored.
976.7 5	1	5565.3	(18 <sup>+</sup> )	4588.9	(16 <sup>+</sup> )		
979.1 3	12	2165.8	11 <sup>+</sup>	1186.6	9 <sup>+</sup>	Q	DCO=1.84 30 (Gated by M1+E2).
1017.4 1	28	3493.9	15 <sup>-</sup>	2476.5	13 <sup>-</sup>	Q	DCO=2.8 4 (Gated by M1+E2).
1021.4 5	6	6023.9	(19 <sup>+</sup> )	5001.8	(17 <sup>+</sup> )		
1046.3 1	40	4312.5	16 <sup>+</sup>	3266.20	14 <sup>+</sup>	E2	DCO=0.86 14. Pol=+0.02 32.
1049.6 5	3	6615.3	(20 <sup>+</sup> )	5565.3	(18 <sup>+</sup> )		
1057.2 1	22	4022.2	16 <sup>-</sup>	2964.9	14 <sup>-</sup>	Q	DCO=1.22 14 (Gated by M1+E2).
1072		1072+x		0+x			
1076.6 3	10	6615.3	(20 <sup>+</sup> )	5538.7	(18 <sup>+</sup> )	Q	DCO=0.66 7 (Gated by M1+E2).
1087.1 5	4	6088.7	(19 <sup>+</sup> )	5001.8	(17 <sup>+</sup> )		
1131.8 1	26	4625.7	17 <sup>-</sup>	3493.9	15 <sup>-</sup>	Q	DCO=1.34 20 (Gated by M1+E2).
1142.6 5	2	4636.9	(16 <sup>+</sup> )	3493.9	15 <sup>-</sup>		
1148.2 5	5	3505.0	13 <sup>+</sup>	2357.49	12 <sup>+</sup>		
1148.3 1	30	5460.8	18 <sup>+</sup>	4312.5	16 <sup>+</sup>	E2	DCO=1.04 17 (For 1148.3+1151.8). Pol=+1.02 40.
1151.8 3	10	7175.5	(21 <sup>+</sup> )	6023.9	(19 <sup>+</sup> )	Q	DCO=1.04 17 (For 1148.3+1151.8).
1181.3 5	4	3538.6	(13 <sup>+</sup> )	2357.49	12 <sup>+</sup>		
1200		2272+x		1072+x			
1210.3 3	14	5232.4	18 <sup>-</sup>	4022.2	16 <sup>-</sup>		
1226.1 3	17	6686.9	20 <sup>+</sup>	5460.8	18 <sup>+</sup>	Q	DCO=0.82 13.
1229.3 3	10	7844.5	(22 <sup>+</sup> )	6615.3	(20 <sup>+</sup> )		
1280.7 3	10	6513.2	20 <sup>-</sup>	5232.4	18 <sup>-</sup>		
1284.2 3	13	7797.6	22 <sup>-</sup>	6513.2	20 <sup>-</sup>	E2	DCO=0.61 6 (Gated by M1+E2). Pol=+1.52 82.
1299.0 5	5	4264.0	(15 <sup>+</sup> )	2964.9	14 <sup>-</sup>		
1300.8 1	32	5926.6	19 <sup>-</sup>	4625.7	17 <sup>-</sup>	E2	DCO=0.70 4 (Gated by M1+E2). Pol=+1.10 65.
1304.3 3	10	7991.2	22 <sup>+</sup>	6686.9	20 <sup>+</sup>	Q	DCO=0.90 16.
1307.3 3	15	8482.9	(23 <sup>+</sup> )	7175.5	(21 <sup>+</sup> )	E2	DCO=0.82 10 (Gated by M1+E2). Pol=+1.10 58.
1311.8 3	10	9109.6	24 <sup>-</sup>	7797.6	22 <sup>-</sup>		
1333.1 5	8	9816.1	(25 <sup>+</sup> )	8482.9	(23 <sup>+</sup> )		
1355.2 3	10	3831.5	(14 <sup>+</sup> )	2476.5	13 <sup>-</sup>		
1364		3636+x		2272+x			
1372.7 5	2	3538.6	(13 <sup>+</sup> )	2165.8	11 <sup>+</sup>		
1373.0 5	8	10482.6	26 <sup>-</sup>	9109.6	24 <sup>-</sup>		
1382.7 3	17	7309.0	21 <sup>-</sup>	5926.6	19 <sup>-</sup>	E2	DCO=0.48 4 (Gated by M1+E2). Pol=+1.46 65.
1383.4 3	12	11199.5	(27 <sup>+</sup> )	9816.1	(25 <sup>+</sup> )		
1385.1 3	14	8693.9	23 <sup>-</sup>	7309.0	21 <sup>-</sup>		
1388.4 5	6	9379.6	24 <sup>+</sup>	7991.2	22 <sup>+</sup>		
1404.5 3	11	9248.9	(24 <sup>+</sup> )	7844.5	(22 <sup>+</sup> )		
1409.6 3	10	12609.1	(29 <sup>+</sup> )	11199.5	(27 <sup>+</sup> )		
1416.0 5	8	10664.9	(26 <sup>+</sup> )	9248.9	(24 <sup>+</sup> )		
1441.0 5	6	3917.7	(14 <sup>+</sup> )	2476.5	13 <sup>-</sup>		
1452		10831.6	26 <sup>+</sup>	9379.6	24 <sup>+</sup>		
1466.5 5	5	3505.0	13 <sup>+</sup>	2038.3	12 <sup>-</sup>		
1474		5110+x		3636+x			
1475		10168.9	25 <sup>-</sup>	8693.9	23 <sup>-</sup>		

Continued on next page (footnotes at end of table)

$^{70}\text{Zn}(^{36}\text{S},\text{p}3\text{n}\gamma)$  **1999Gi14,1999Gi02** (continued) $\gamma(^{102}\text{Rh})$  (continued)

$E_\gamma^\dagger$	$I_\gamma^\dagger$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	$E_\gamma^\dagger$	$I_\gamma^\dagger$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$		
1495.2	5	8	12160.1	(28 <sup>+</sup> )	10664.9	(26 <sup>+</sup> )	1595.0	5	2	13289.0	29 <sup>-</sup>	11693.9	27 <sup>-</sup>
1502			1502+y		0+y								
1525.0	5	3	11693.9	27 <sup>-</sup>	10168.9	25 <sup>-</sup>	1644.0	5	5	12126.6	28 <sup>-</sup>	10482.6	26 <sup>-</sup>
1559.0	5	8	14168.1	(31 <sup>+</sup> )	12609.1	(29 <sup>+</sup> )	1682			8378+x		6696+x	
1578			3080+y		1502+y		1683			4763+y		3080+y	
1586			6696+x		5110+x		1810.0	5	6	15978.2	(33 <sup>+</sup> )	14168.1	(31 <sup>+</sup> )
							1835			6598+y		4763+y	

<sup>†</sup> From 1999Gi14.  $\Delta(E_\gamma)=0.1$  keV for  $I_\gamma>20$ , 0.3 keV for  $I_\gamma=10-20$  and 0.5 keV for  $I_\gamma<10$ , based on a general comment by 1999Gi14.  $\Delta(I_\gamma)$  are 5% for strong and well resolved peaks, rising up to 30% for weak and unresolved lines.

<sup>‡</sup> From Adopted Levels for  $^{102}\text{Rh}$ .

# Transition related to deexcitation of  $\Delta J=2$  band #1 in 1999Gi02. But the exact placement is not established. Assignments given in 1999gi14 should be ignored. (as per E-mail reply to an enquiry from J. Gizon on June 9, 2000).

@ For mixed transitions no  $\delta$  given by 1999GI14,1999GI02.

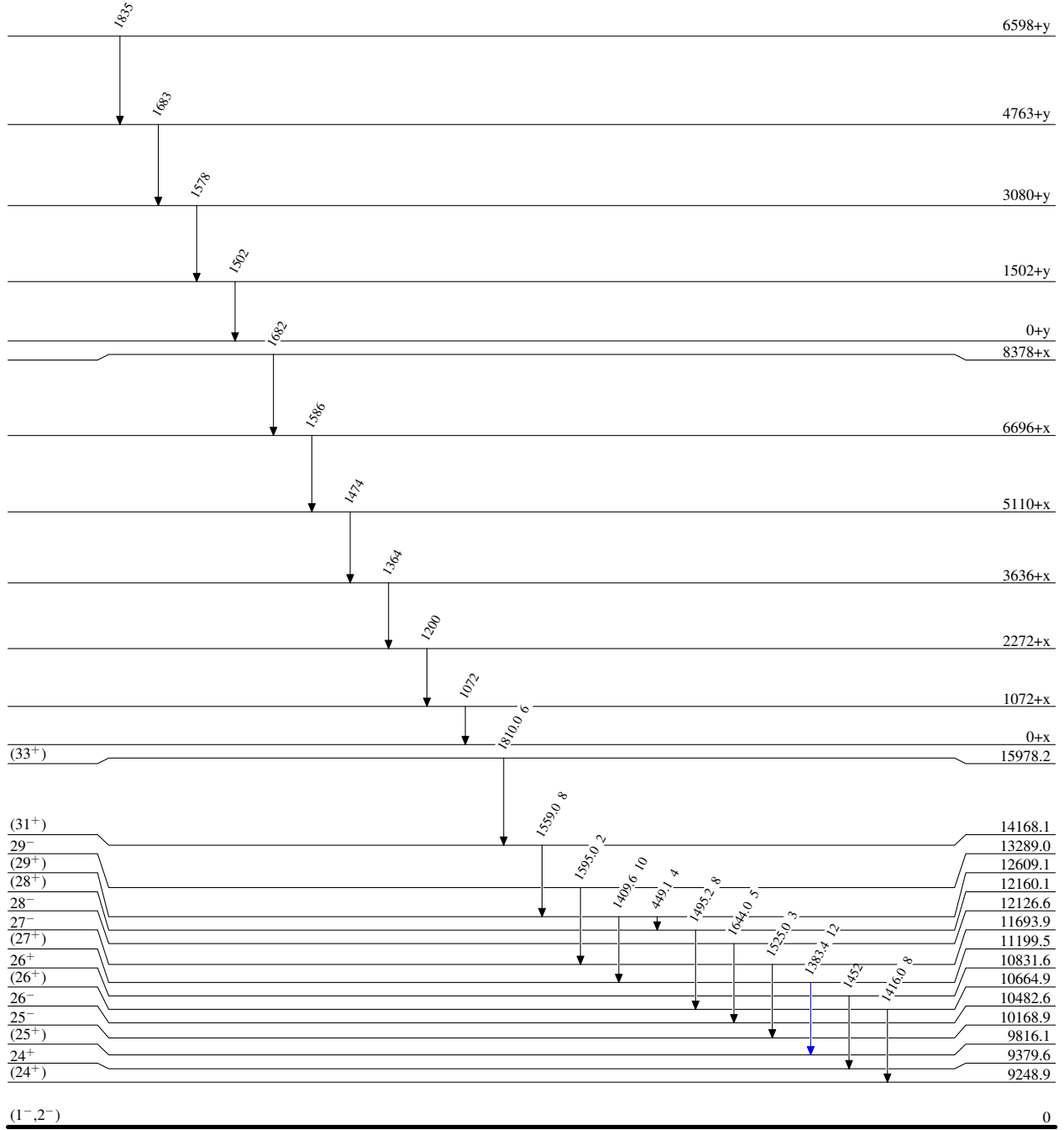
<sup>x</sup>  $\gamma$  ray not placed in level scheme.

<sup>70</sup>Zn(<sup>36</sup>S,p3n $\gamma$ ) 1999Gi14,1999Gi02

Level Scheme  
Intensities: Relative I <sub>$\gamma$</sub>

Legend

- ▶ I <sub>$\gamma$</sub>  < 2% × I <sub>$\gamma$</sub> <sup>max</sup>
- ▶ I <sub>$\gamma$</sub>  < 10% × I <sub>$\gamma$</sub> <sup>max</sup>
- ▶ I <sub>$\gamma$</sub>  > 10% × I <sub>$\gamma$</sub> <sup>max</sup>



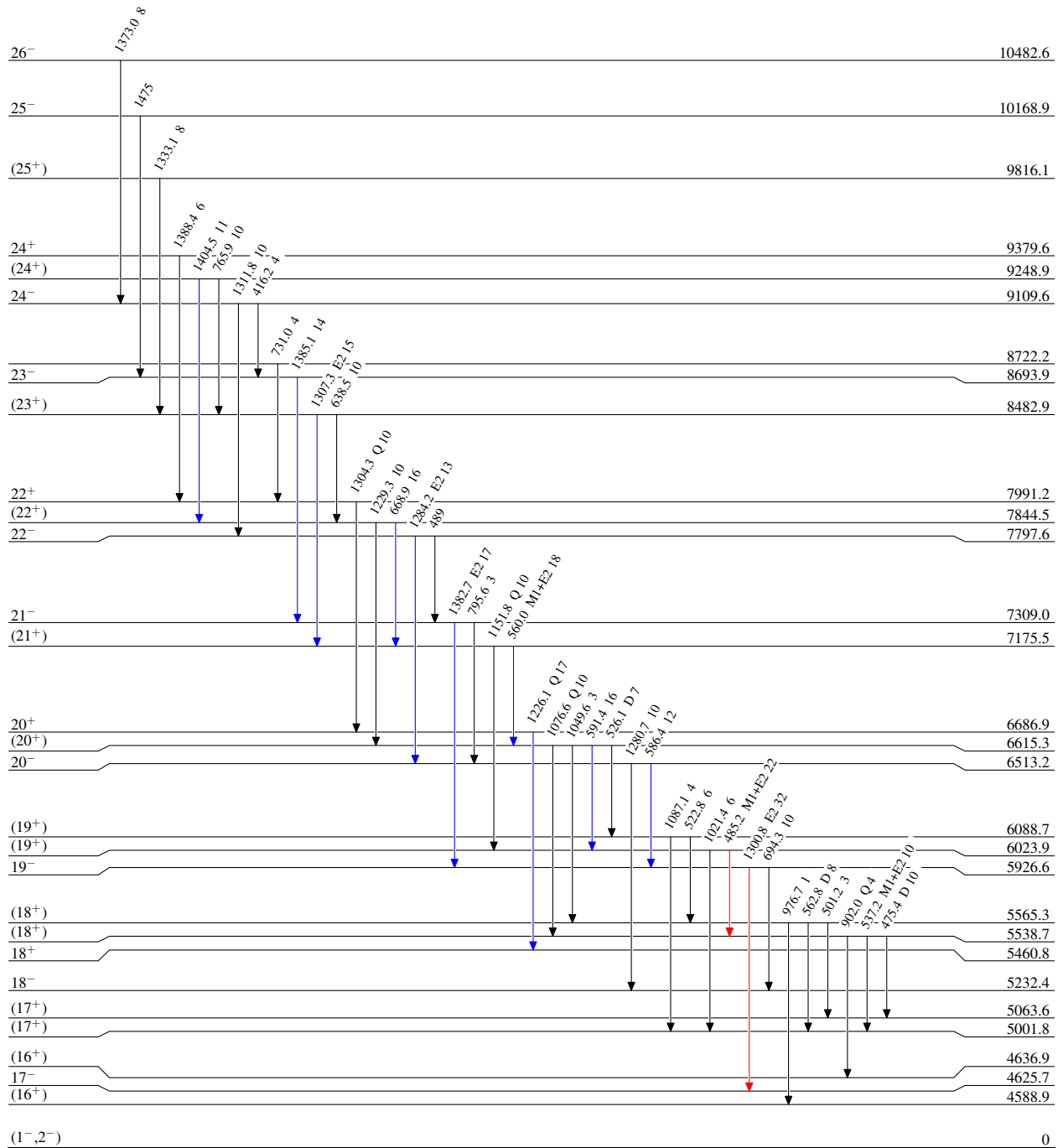
<sup>70</sup>Zn(<sup>36</sup>S,p3n $\gamma$ ) 1999Gi14,1999Gi02

Level Scheme (continued)

Intensities: Relative I $\gamma$

Legend

- I $\gamma$  < 2%  $\times$  I $\gamma$ <sup>max</sup>
- I $\gamma$  < 10%  $\times$  I $\gamma$ <sup>max</sup>
- I $\gamma$  > 10%  $\times$  I $\gamma$ <sup>max</sup>



0 207 d



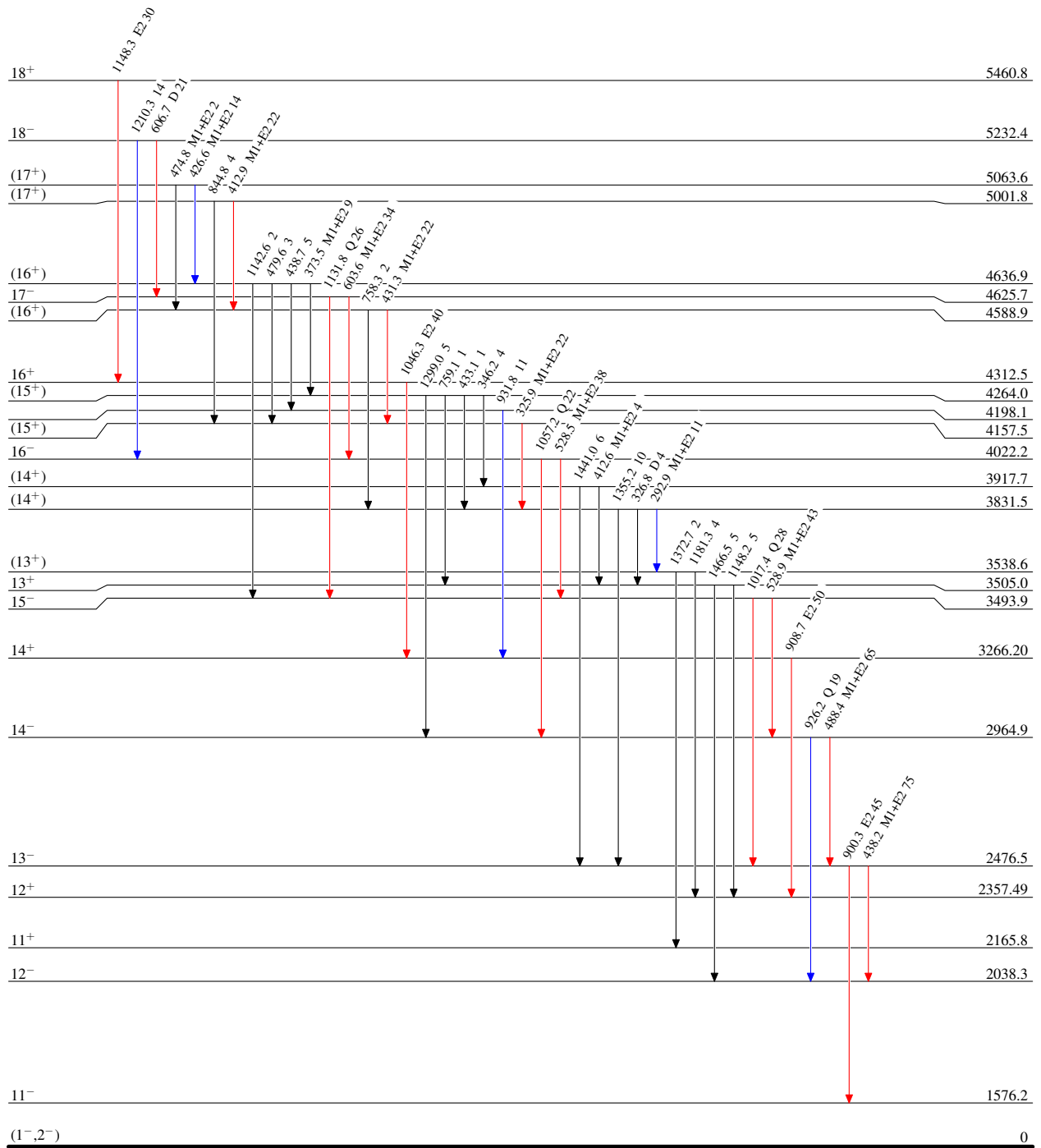
<sup>70</sup>Zn(<sup>36</sup>S,p3n $\gamma$ ) 1999Gi14,1999Gi02

Level Scheme (continued)

Intensities: Relative I <sub>$\gamma$</sub>

Legend

- I <sub>$\gamma$</sub>  < 2% × I <sub>$\gamma$</sub> <sup>max</sup>
- I <sub>$\gamma$</sub>  < 10% × I <sub>$\gamma$</sub> <sup>max</sup>
- I <sub>$\gamma$</sub>  > 10% × I <sub>$\gamma$</sub> <sup>max</sup>



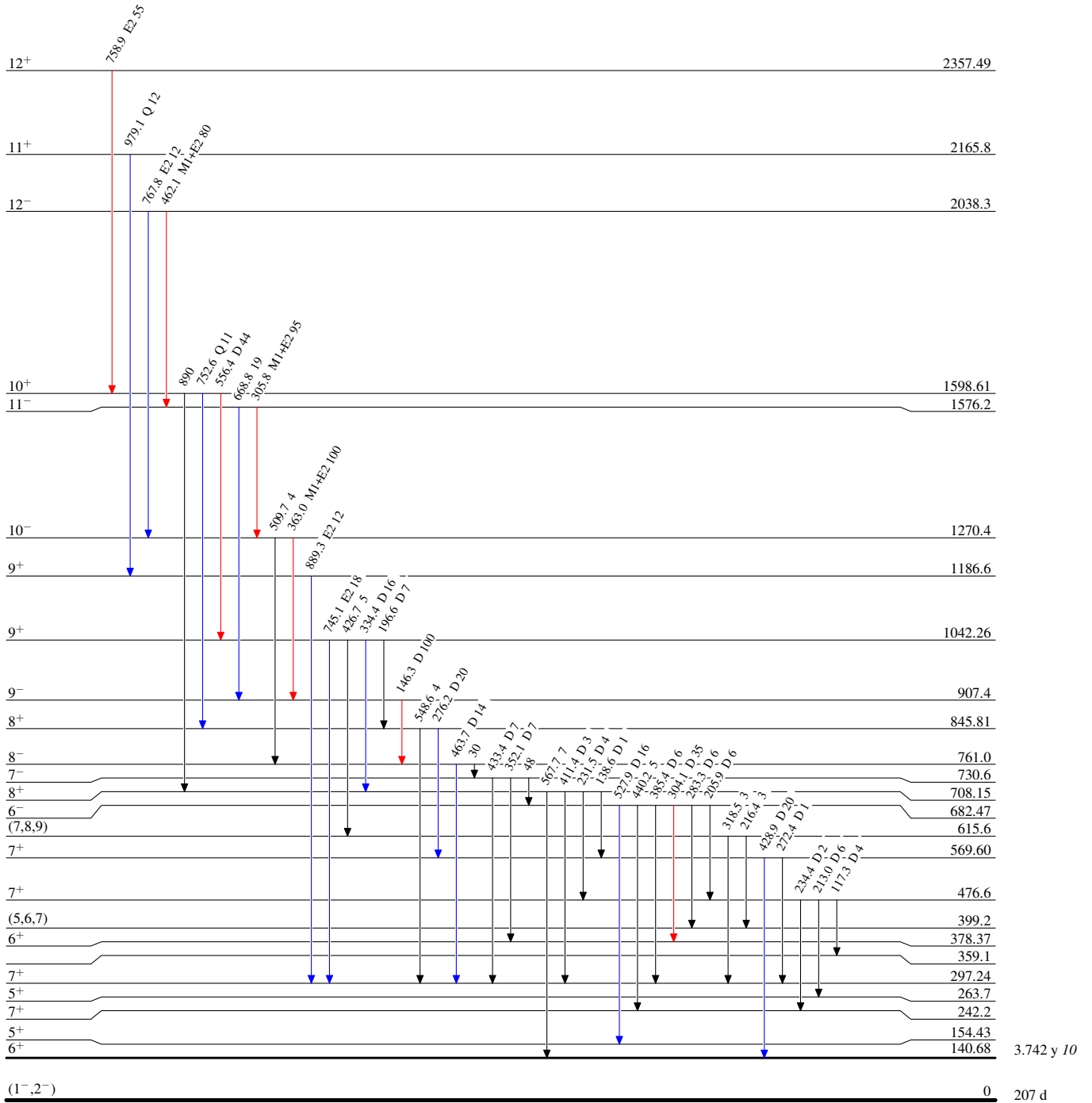
<sup>70</sup>Zn(<sup>36</sup>S,p3n $\gamma$ ) 1999Gi14,1999Gi02

Level Scheme (continued)

Intensities: Relative I $\gamma$

Legend

- I $\gamma$  < 2% × I $\gamma$ <sup>max</sup>
- I $\gamma$  < 10% × I $\gamma$ <sup>max</sup>
- I $\gamma$  > 10% × I $\gamma$ <sup>max</sup>



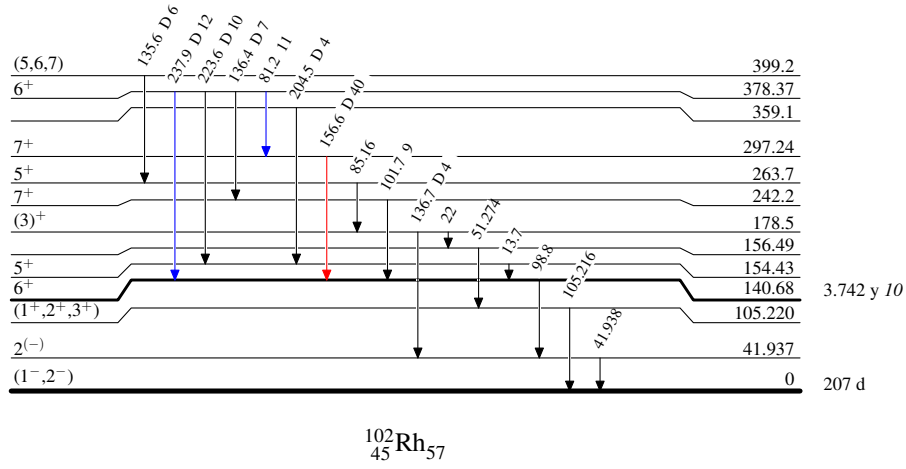
$^{70}\text{Zn}(^{36}\text{S},\text{p}3\text{n}\gamma)$  1999Gi14,1999Gi02

Level Scheme (continued)

Intensities: Relative  $I_\gamma$

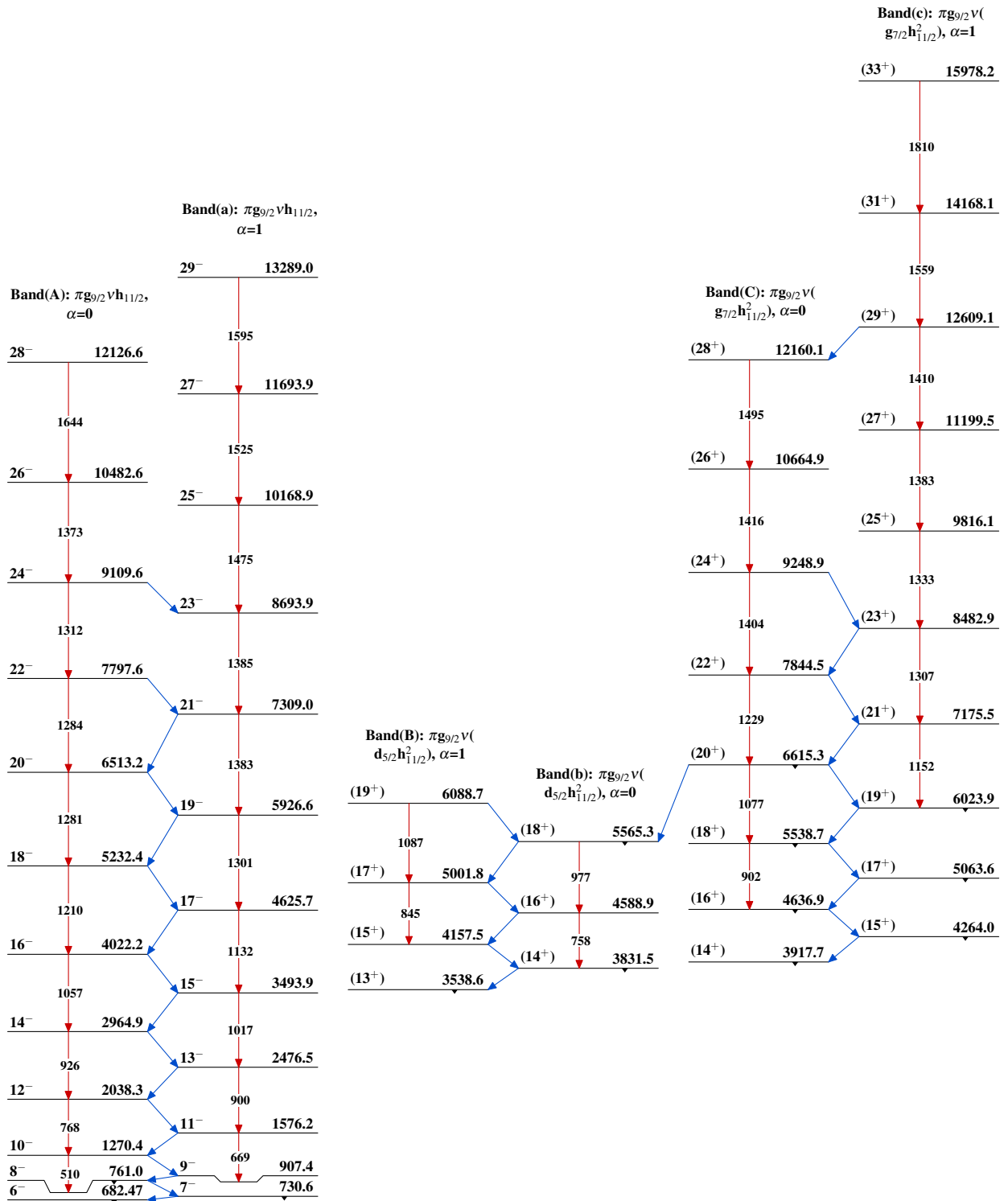
Legend

- $\blacktriangleright$   $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- $\color{blue}\blacktriangleright$   $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- $\color{red}\blacktriangleright$   $I_\gamma > 10\% \times I_\gamma^{\text{max}}$



$^{102}_{45}\text{Rh}_{57}$

$^{70}\text{Zn}(^{36}\text{S},\text{p}3\text{n}\gamma)$  1999Gi14,1999Gi02



$^{70}\text{Zn}(^{36}\text{S,p3n}\gamma)$  1999Gi14,1999Gi02 (continued)