

$^{50}\text{Cr}(^{58}\text{Ni}, 3\text{p}\alpha\gamma)$  **2004So05**

Type	History		
	Author	Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	ENSDF	1-Jul-2006

**2004So05:** E=261 MeV; Measured  $E_\gamma$ ,  $I_\gamma$ ,  $\gamma\gamma$ ,  $\gamma(\theta)$ , (charged particle)  $\gamma$ -coin with NORDBALL array of 15 BGO shielded Ge detectors and 30 BaF<sub>2</sub> crystals. The charged particles were detected by a 21-element  $\Delta E$ -type silicon ball.

 $^{101}\text{Ag}$  Levels

E(level) <sup>†</sup>	J <sup>π</sup>	E(level) <sup>†</sup>	J <sup>π</sup>	E(level) <sup>†</sup>	J <sup>π</sup>	E(level) <sup>†</sup>	J <sup>π</sup>
0.0 <sup>#</sup>	9/2 <sup>+</sup>	3210.1 <sup>a</sup> 5	21/2	4789.9 6	29/2	6481.3 <sup>a</sup> 6	33/2
687.0 <sup>‡</sup> 3	11/2 <sup>+</sup>	3373.0 6		4801.5 5	29/2 <sup>+</sup>	6598.6 6	33/2 <sup>(-)</sup>
861.3 <sup>#</sup> 3	13/2 <sup>+</sup>	3578.2 <sup>#</sup> 5	25/2 <sup>+</sup>	4841.3 <sup>a</sup> 6	27/2	6916.7 <sup>@</sup> 6	35/2 <sup>(-)</sup>
1573.2 <sup>‡</sup> 4	15/2 <sup>+</sup>	3613.9 5	19/2	5133.3 <sup>&amp;</sup> 6	29/2 <sup>(-)</sup>	7392.5 <sup>&amp;</sup> 6	37/2 <sup>(-)</sup>
1756.9 4	15/2 <sup>+</sup>	3795.8 <sup>&amp;</sup> 5	21/2 <sup>(-)</sup>	5159.9 7		7411.4 7	
1769.3 <sup>#</sup> 4	17/2 <sup>+</sup>	3800.8 <sup>a</sup> 5	23/2	5183.3? 6		7809.5? 7	
2017.1 <sup>‡</sup> 4	19/2 <sup>+</sup>	3869.8 <sup>@</sup> 5	23/2 <sup>(-)</sup>	5300.2 <sup>‡</sup> 6	31/2 <sup>+</sup>	8345.4 <sup>@</sup> 7	39/2 <sup>(-)</sup>
2115.2 <sup>a</sup> 4	17/2	4159.1 <sup>‡</sup> 5	27/2 <sup>+</sup>	5677.2 <sup>@</sup> 6	31/2 <sup>(-)</sup>	8546.2 <sup>&amp;</sup> 7	41/2 <sup>(-)</sup>
2621.0 <sup>#</sup> 5	21/2 <sup>+</sup>	4216.6 <sup>&amp;</sup> 5	25/2 <sup>(-)</sup>	5755.5 6	33/2 <sup>+</sup>	9628.6 <sup>@</sup> 8	45/2 <sup>(-)</sup>
2921.6 5	21/2	4314.2 <sup>a</sup> 6	25/2	5976.3 <sup>a</sup> 6	31/2	9634.5 8	45/2 <sup>(-)</sup>
2955.8 <sup>‡</sup> 5	23/2 <sup>+</sup>	4571.9 <sup>#</sup> 6	29/2 <sup>+</sup>	5984.4 6	33/2 <sup>+</sup>	10705.5? 8	(49/2 <sup>-</sup> )
3000.8 10		4585.5 6		6195.7 <sup>&amp;</sup> 6	33/2 <sup>(-)</sup>		
3188.0 6	21/2	4748.4 <sup>@</sup> 5	27/2 <sup>(-)</sup>	6308.2 <sup>‡</sup> 6	35/2 <sup>+</sup>		

<sup>†</sup> From least-squares fit to  $E_\gamma$ 's (by compilers).

<sup>‡</sup> Band(A): 11/2<sup>+</sup> band.

<sup>#</sup> Band(B): 9/2<sup>+</sup> band.

<sup>@</sup> Band(C): 23/2<sup>(-)</sup> band,  $\alpha=-1/2$ .

<sup>&</sup> Band(c): 21/2<sup>(-)</sup> band,  $\alpha+1/2$ .

<sup>a</sup> Band(D): 17/2 band. Possibly  $\pi p_{1/2} \pi g_{9/2}^2$ .

 $\gamma(^{101}\text{Ag})$ 

$R(\text{asymmetry})=I_\gamma(143^\circ)/(I_\gamma(79^\circ)+I_\gamma(101^\circ))$ .

$E_\gamma$	$I_\gamma$	$E_f(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Comments
74.4 5	5.7 6	3869.8	23/2 <sup>(-)</sup>	3795.8	21/2 <sup>(-)</sup>	R(asymmetry)=0.80 8.
174.4 4	10.9 11	861.3	13/2 <sup>+</sup>	687.0	11/2 <sup>+</sup>	R(asymmetry)=0.83 4.
182.0 5	4.6 5	3795.8	21/2 <sup>(-)</sup>	3613.9	19/2	
183.9 9	0.8 4	1756.9	15/2 <sup>+</sup>	1573.2	15/2 <sup>+</sup>	
196.1 3	13.3 11	1769.3	17/2 <sup>+</sup>	1573.2	15/2 <sup>+</sup>	R(asymmetry)=0.87 3.
200.6 6	1.6 2	8546.2	41/2 <sup>(-)</sup>	8345.4	39/2 <sup>(-)</sup>	R(asymmetry)=0.46 4.
241.0 5	4.2 5	3613.9	19/2	3373.0		
247.7 3	74 5	2017.1	19/2 <sup>+</sup>	1769.3	17/2 <sup>+</sup>	R(asymmetry)=0.86 2.
300.6 6	1.4 2	2921.6	21/2	2621.0	21/2 <sup>+</sup>	
317.9 3	0.4 1	6916.7	35/2 <sup>(-)</sup>	6598.6	33/2 <sup>(-)</sup>	R(asymmetry)=0.52 15.
334.7 3	18.4 12	2955.8	23/2 <sup>+</sup>	2621.0	21/2 <sup>+</sup>	R(asymmetry)=0.83 3.
341.8 4	0.4 1	5183.3?		4841.3	27/2	
346.7 3	41.8 23	4216.6	25/2 <sup>(-)</sup>	3869.8	23/2 <sup>(-)</sup>	R(asymmetry)=0.84 2.

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$^{50}\text{Cr}(^{58}\text{Ni},\text{p}\alpha\gamma)$  2004So05 (continued) $\gamma(^{101}\text{Ag})$  (continued)

$E_\gamma$	$I_\gamma$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Comments
358.2 6	4.2 5	2115.2	17/2	1756.9	15/2 <sup>+</sup>	R(asymmetry)=0.60 8.
372.2 8	0.5 4	3373.0		3000.8		R(asymmetry)=0.63 15.
384.9 3	34.7 19	5133.3	29/2 <sup>(-)</sup>	4748.4	27/2 <sup>(-)</sup>	R(asymmetry)=0.78 2.
402.6 3	0.6 1	6598.6	33/2 <sup>(-)</sup>	6195.7	33/2 <sup>(-)</sup>	
412.9 5	4.2 3	4571.9	29/2 <sup>+</sup>	4159.1	27/2 <sup>+</sup>	R(asymmetry)=0.77 10.
415.9 5	6.3 4	4216.6	25/2 <sup>(-)</sup>	3800.8	23/2	R(asymmetry)=0.78 6.
423.0 9	1.3 4	3795.8	21/2 <sup>(-)</sup>	3373.0		
434.4 5	3.4 3	4748.4	27/2 <sup>(-)</sup>	4314.2	25/2	R(asymmetry)=0.68 5.
435.3 3	0.5 1	6916.7	35/2 <sup>(-)</sup>	6481.3	33/2	R(asymmetry)=0.67 12.
443.8 6	3.8 4	2017.1	19/2 <sup>+</sup>	1573.2	15/2 <sup>+</sup>	R(asymmetry)=1.48 15.
475.8 3	13.4 8	7392.5	37/2 <sup>(-)</sup>	6916.7	35/2 <sup>(-)</sup>	R(asymmetry)=0.56 3.
498.6 <sup>†</sup> 3	0.9 2	5300.2	31/2 <sup>+</sup>	4801.5	29/2 <sup>+</sup>	
505.0 3	3.0 2	6481.3	33/2	5976.3	31/2	R(asymmetry)=0.58 11.
513.5 5	7.9 5	4314.2	25/2	3800.8	23/2	R(asymmetry)=0.80 4.
518.4 3	20.9 12	6195.7	33/2 <sup>(-)</sup>	5677.2	31/2 <sup>(-)</sup>	R(asymmetry)=0.54 2.
527.0 3	0.5 3	4841.3	27/2	4314.2	25/2	R(asymmetry)=0.77 11.
531.7 3	31.4 17	4748.4	27/2 <sup>(-)</sup>	4216.6	25/2 <sup>(-)</sup>	R(asymmetry)=0.77 3.
542.1 3	25.1 16	2115.2	17/2	1573.2	15/2 <sup>+</sup>	R(asymmetry)=0.82 3.
543.8 3	29.3 16	5677.2	31/2 <sup>(-)</sup>	5133.3	29/2 <sup>(-)</sup>	R(asymmetry)=0.61 2.
574.4 3	1.2 2	5159.9		4585.5		
580.9 5	4.6 4	4159.1	27/2 <sup>+</sup>	3578.2	25/2 <sup>+</sup>	R(asymmetry)=0.61 5.
585.7 6	1.7 2	3795.8	21/2 <sup>(-)</sup>	3210.1	21/2	R(asymmetry)=1.54 17.
590.8 3	14.2 9	3800.8	23/2	3210.1	21/2	R(asymmetry)=0.86 4.
604.1 3	23.6 15	2621.0	21/2 <sup>+</sup>	2017.1	19/2 <sup>+</sup>	R(asymmetry)=0.88 3.
622.3 3	20.9 12	3578.2	25/2 <sup>+</sup>	2955.8	23/2 <sup>+</sup>	R(asymmetry)=0.87 4.
630.8 3	0.5 3	4789.9	29/2	4159.1	27/2 <sup>+</sup>	R(asymmetry)=0.57 17.
642.3 3	5.2 3	4801.5	29/2 <sup>+</sup>	4159.1	27/2 <sup>+</sup>	R(asymmetry)=0.68 12.
681.5 5	3.8 3	3869.8	23/2 <sup>(-)</sup>	3188.0	21/2	R(asymmetry)=0.52 11.
684.4 3	3.7 3	5984.4	33/2 <sup>+</sup>	5300.2	31/2 <sup>+</sup>	R(asymmetry)=0.80 12.
686.9 4	9.2 6	687.0	11/2 <sup>+</sup>	0.0	9/2 <sup>+</sup>	R(asymmetry)=0.69 7.
711.9 3	35.6 18	1573.2	15/2 <sup>+</sup>	861.3	13/2 <sup>+</sup>	R(asymmetry)=1.03 3.
721.1 3	11.7 6	6916.7	35/2 <sup>(-)</sup>	6195.7	33/2 <sup>(-)</sup>	R(asymmetry)=0.77 4.
728.3 4	9.6 6	5300.2	31/2 <sup>+</sup>	4571.9	29/2 <sup>+</sup>	R(asymmetry)=0.72 3.
792.7 4	0.4 1	5976.3	31/2	5183.3?		
843.0 3	4.2 2	5976.3	31/2	5133.3	29/2 <sup>(-)</sup>	R(asymmetry)=0.76 12.
851.7 5	5.9 4	2621.0	21/2 <sup>+</sup>	1769.3	17/2 <sup>+</sup>	R(asymmetry)=1.47 12.
861.4 3	100 5	861.3	13/2 <sup>+</sup>	0.0	9/2 <sup>+</sup>	R(asymmetry)=1.49 7.
878.6 4	8.4 5	4748.4	27/2 <sup>(-)</sup>	3869.8	23/2 <sup>(-)</sup>	R(asymmetry)=1.55 17.
886.4 5	5.0 5	1573.2	15/2 <sup>+</sup>	687.0	11/2 <sup>+</sup>	
895.9 5	3.3 4	1756.9	15/2 <sup>+</sup>	861.3	13/2 <sup>+</sup>	R(asymmetry)=0.82 14.
904.5 4	12.8 8	2921.6	21/2	2017.1	19/2 <sup>+</sup>	R(asymmetry)=0.85 12.
907.9 3	75 5	1769.3	17/2 <sup>+</sup>	861.3	13/2 <sup>+</sup>	R(asymmetry)=1.40 4.
913.5 4	8.8 5	3869.8	23/2 <sup>(-)</sup>	2955.8	23/2 <sup>+</sup>	R(asymmetry)=1.53 15.
916.9 5	7.9 4	5133.3	29/2 <sup>(-)</sup>	4216.6	25/2 <sup>(-)</sup>	R(asymmetry)=1.59 21.
929.0 5	2.9 3	5677.2	31/2 <sup>(-)</sup>	4748.4	27/2 <sup>(-)</sup>	R(asymmetry)=1.47 21.
938.5 3	35.1 18	2955.8	23/2 <sup>+</sup>	2017.1	19/2 <sup>+</sup>	R(asymmetry)=1.49 5.
948.3 4	12.7 8	3869.8	23/2 <sup>(-)</sup>	2921.6	21/2	R(asymmetry)=0.70 11.
952.9 6	2.0 2	8345.4	39/2 <sup>(-)</sup>	7392.5	37/2 <sup>(-)</sup>	
954.0 3	1.1 2	5755.5	33/2 <sup>+</sup>	4801.5	29/2 <sup>+</sup>	R(asymmetry)=1.68 22.
957.2 5	7.5 5	3578.2	25/2 <sup>+</sup>	2621.0	21/2 <sup>+</sup>	R(asymmetry)=1.51 18.
993.8 4	14.6 9	4571.9	29/2 <sup>+</sup>	3578.2	25/2 <sup>+</sup>	R(asymmetry)=1.51 10.
1007.3 3	1.8 2	4585.5		3578.2	25/2 <sup>+</sup>	
1008.0 3	2.3 2	6308.2	35/2 <sup>+</sup>	5300.2	31/2 <sup>+</sup>	R(asymmetry)=1.48 21.

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$^{50}\text{Cr}(^{58}\text{Ni},3\text{p}\alpha\gamma)$  **2004So05** (continued) $\gamma(^{101}\text{Ag})$  (continued)

$E_\gamma$	$I_\gamma$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Comments
1062.2 5	3.8 3	6195.7	33/2 <sup>(-)</sup>	5133.3	29/2 <sup>(-)</sup>	R(asymmetry)=1.44 25.
1069.6 4	1.0 2	1756.9	15/2 <sup>+</sup>	687.0	11/2 <sup>+</sup>	
1071.0 <sup>†</sup> 3	0.9 2	10705.5?	(49/2 <sup>-</sup> )	9634.5	45/2 <sup>(-)</sup>	R(asymmetry)=1.6 3.
1082.4 3	0.9 2	9628.6	45/2 <sup>(-)</sup>	8546.2	41/2 <sup>(-)</sup>	R(asymmetry)=1.7 3.
1088.3 3	1.2 2	9634.5	45/2 <sup>(-)</sup>	8546.2	41/2 <sup>(-)</sup>	R(asymmetry)=1.43 18.
1094.9 4	18.0 12	3210.1	21/2	2115.2	17/2	R(asymmetry)=1.53 10.
1135.4 6	0.3 1	5976.3	31/2	4841.3	27/2	R(asymmetry)=1.44 21.
1141.2 3	4.2 4	5300.2	31/2 <sup>+</sup>	4159.1	27/2 <sup>+</sup>	
1153.8 4	8.4 5	8546.2	41/2 <sup>(-)</sup>	7392.5	37/2 <sup>(-)</sup>	R(asymmetry)=1.50 12.
1170.7 5	3.8 4	3188.0	21/2	2017.1	19/2 <sup>+</sup>	R(asymmetry)=0.71 12.
1182.8 3	1.2 2	5984.4	33/2 <sup>+</sup>	4801.5	29/2 <sup>+</sup>	
1196.9 5	6.3 4	7392.5	37/2 <sup>(-)</sup>	6195.7	33/2 <sup>(-)</sup>	R(asymmetry)=1.54 15.
1203.4 4	17.6 11	4159.1	27/2 <sup>+</sup>	2955.8	23/2 <sup>+</sup>	R(asymmetry)=1.43 20.
1223.2 3	2.4 2	4801.5	29/2 <sup>+</sup>	3578.2	25/2 <sup>+</sup>	R(asymmetry)=1.6 3.
1239.4 5	5.9 4	6916.7	35/2 <sup>(-)</sup>	5677.2	31/2 <sup>(-)</sup>	
1249.3 6	2.0 2	3869.8	23/2 <sup>(-)</sup>	2621.0	21/2 <sup>+</sup>	
1328.1 <sup>†</sup> 3	0.9 1	7809.5?		6481.3	33/2	
1427.0 3	1.2 2	7411.4		5984.4	33/2 <sup>+</sup>	
1428.7 3	0.7 2	8345.4	39/2 <sup>(-)</sup>	6916.7	35/2 <sup>(-)</sup>	
1465.4 3	1.1 1	6598.6	33/2 <sup>(-)</sup>	5133.3	29/2 <sup>(-)</sup>	R(asymmetry)=1.45 16.
1603.9 6	1.1 2	3373.0		1769.3	17/2 <sup>+</sup>	
1779.4 7	0.7 1	3795.8	21/2 <sup>(-)</sup>	2017.1	19/2 <sup>+</sup>	
1844.6 6	1.3 2	3613.9	19/2	1769.3	17/2 <sup>+</sup>	R(asymmetry)=0.78 15.

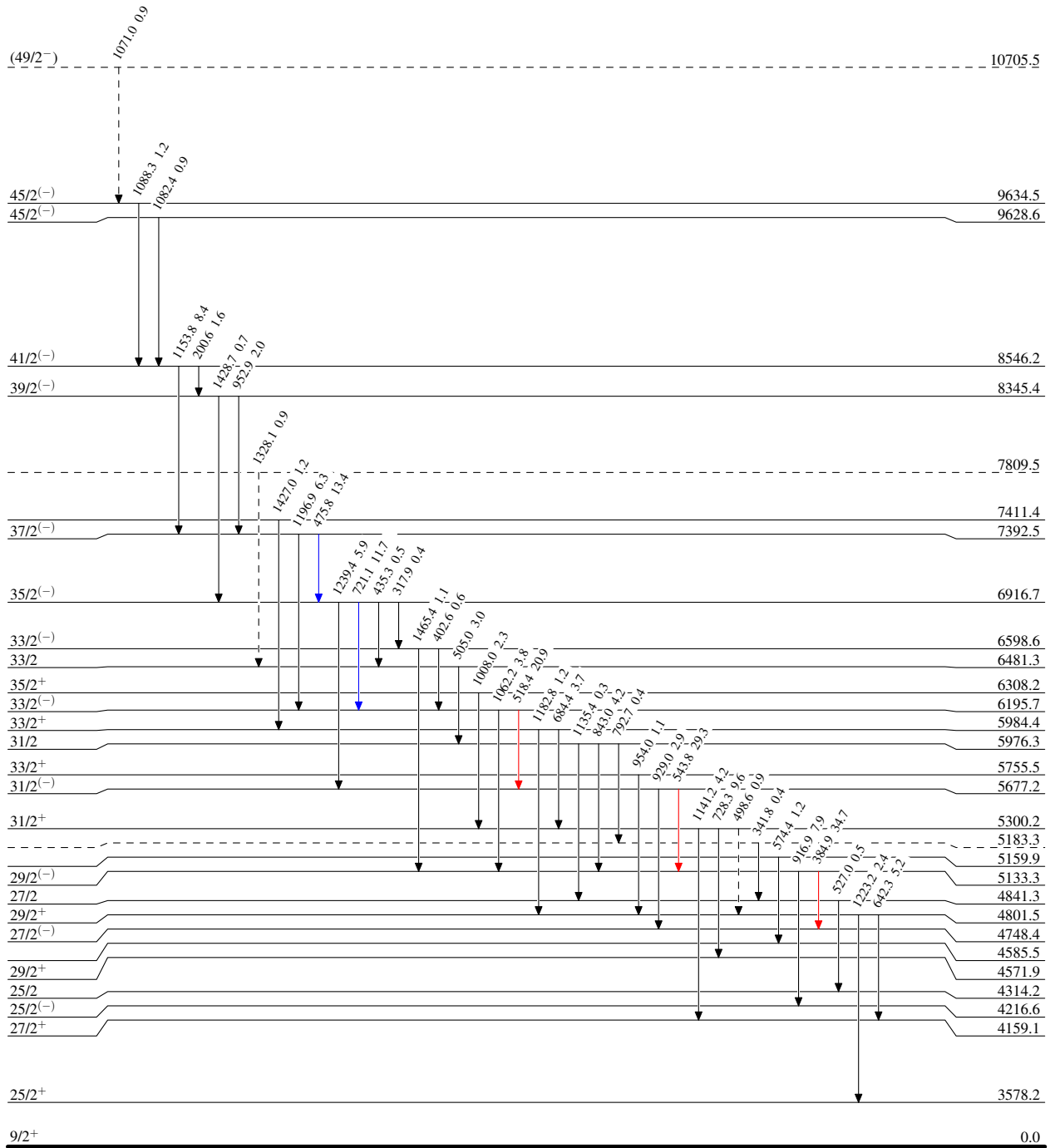
<sup>†</sup> Placement of transition in the level scheme is uncertain.

<sup>50</sup>Cr(<sup>58</sup>Ni,3pα)<sub>2004So05</sub>

Legend

**Level Scheme**  
Intensities: Relative I<sub>γ</sub>

- ▶ I<sub>γ</sub> < 2% × I<sub>γ</sub><sup>max</sup>
- ▶ I<sub>γ</sub> < 10% × I<sub>γ</sub><sup>max</sup>
- ▶ I<sub>γ</sub> > 10% × I<sub>γ</sub><sup>max</sup>
- - - -▶ γ Decay (Uncertain)



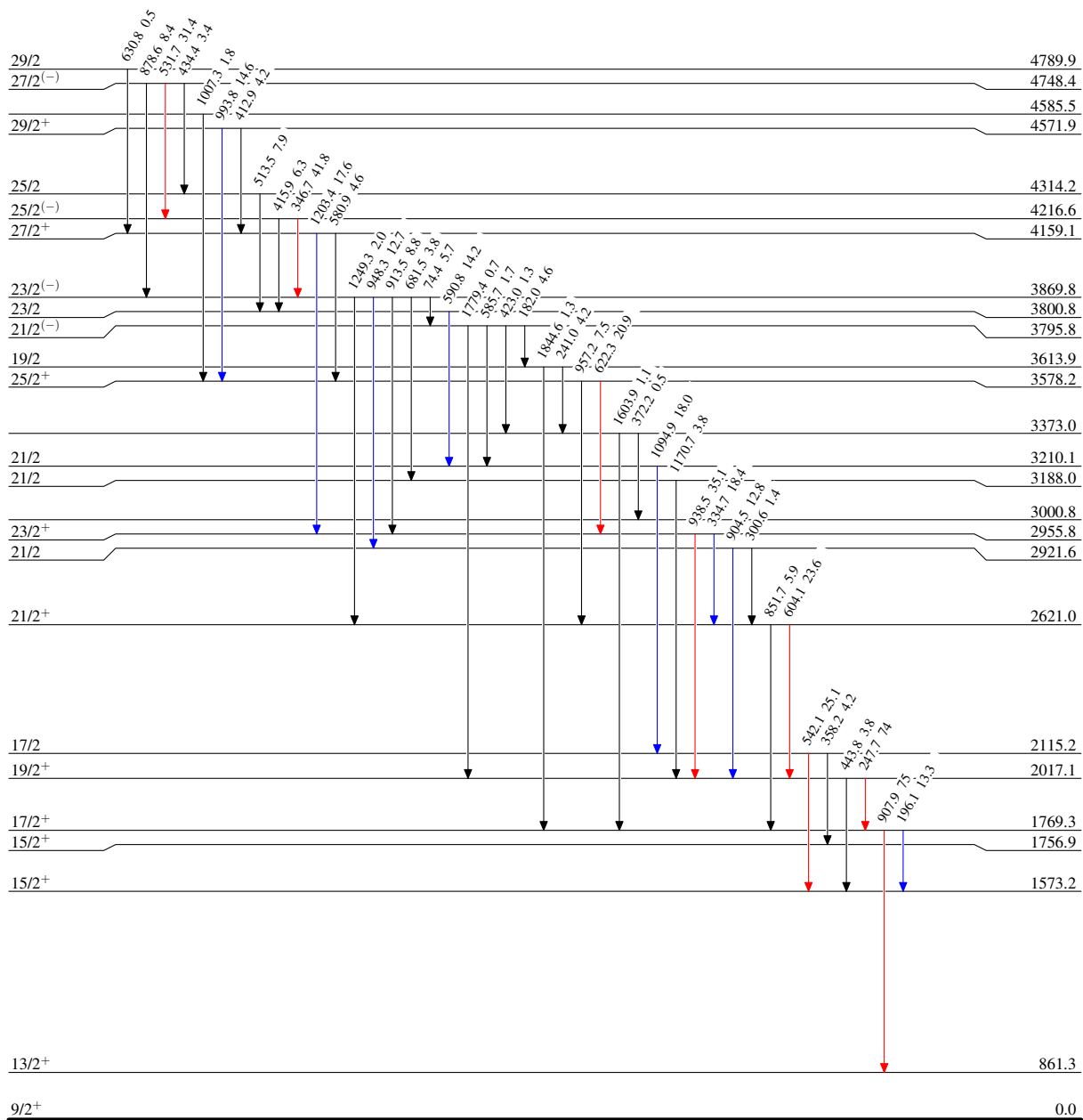
$^{50}\text{Cr}(^{58}\text{Ni}, 3p\alpha\gamma)$  2004So05

Level Scheme (continued)

Intensities: Relative  $I_\gamma$

Legend

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



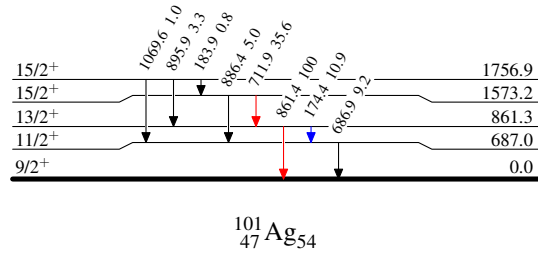
$^{50}\text{Cr}(^{58}\text{Ni},3\text{p}\alpha\gamma)$  2004So05

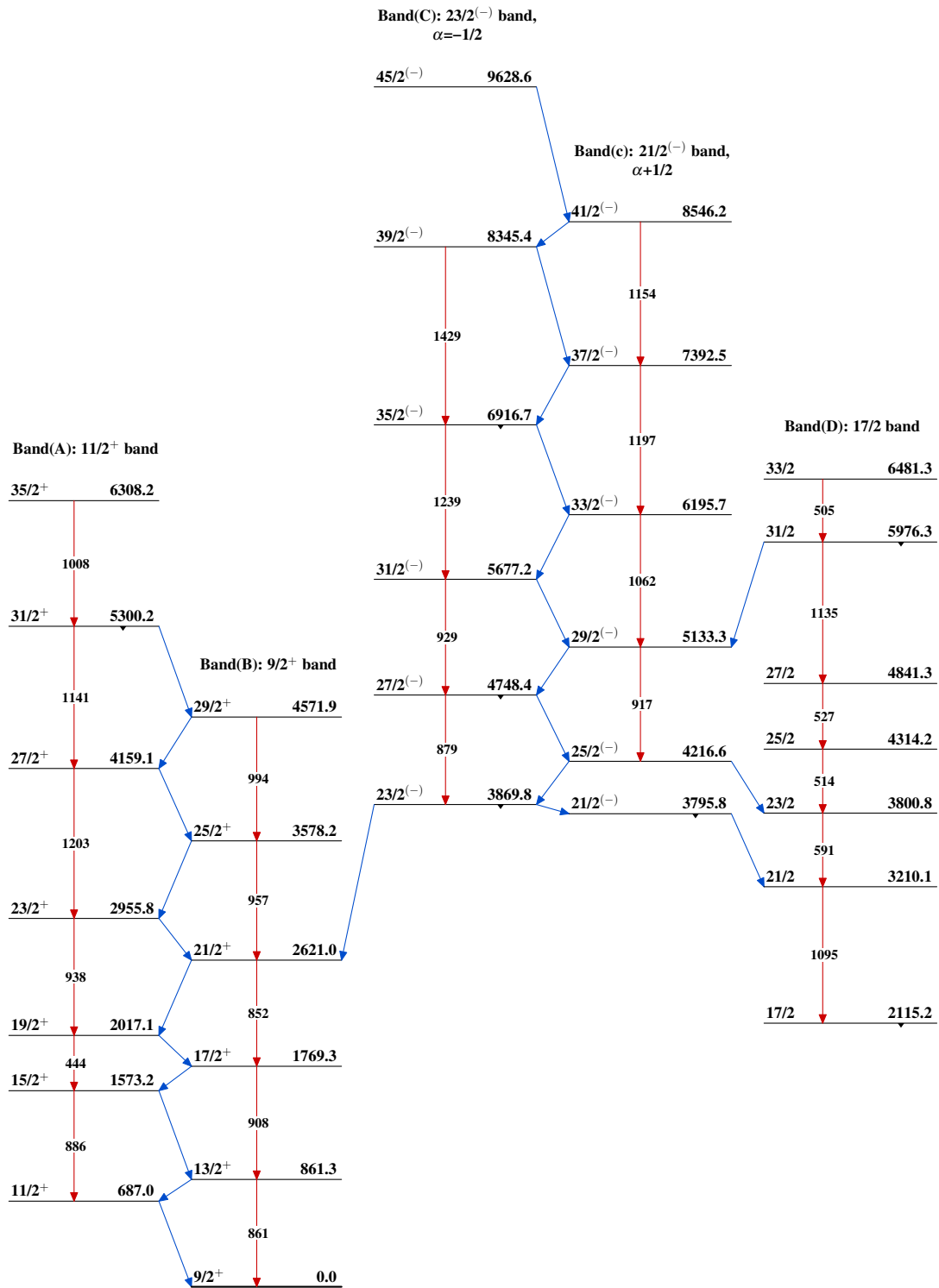
## Level Scheme (continued)

Intensities: Relative  $I_\gamma$ 

## Legend

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



$^{50}\text{Cr}(^{58}\text{Ni}, 3p\alpha\gamma)$  2004So05 $^{101}_{47}\text{Ag}_{54}$