

$^{70}\text{Ge}(^{35}\text{Cl}, 2n2p\gamma)$ 1992Cr02, 2001Ga49

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

1992Cr02: $^{70}\text{Ge}(^{35}\text{Cl}, 2n2p\gamma)$ E=130 MeV. Measured $E\gamma$, $I\gamma$, $\gamma\gamma$, $\gamma(\theta)$ using five Compton-suppressed HPGe detectors and a multiplicity filter of 19 BGO detectors.

2001Ga49: $^{58}\text{Ni}(^{50}\text{Cr}, \alpha 3p\gamma)$ E=200-205 MeV. Measured $E\gamma$, $\gamma\gamma$ and lifetimes using GASP spectrometer array comprised of 40 Compton-suppressed Ge detectors. Lifetime measurements were made using Doppler Shift Attenuation (DSA), Recoil Distance Doppler Shift (RDDS), and Differential decay curve (DDCM) methods.

 ^{101}Ag Levels

Level scheme is from 1992Cr02,

E(level) [†]	J ^π	T _{1/2} [‡]	E(level) [†]	J ^π	T _{1/2} [‡]
0 ^a	9/2 ⁺		3796.27 ¹⁷		
687.01 ^b 9	11/2 ⁺	1.87 ^{&} ps 21	3801.04 ^e 18	23/2	
861.40 ^a 9	13/2 ⁺	8.1 [@] ps 7	3869.71 ^d 15	23/2 ⁽⁻⁾	7.9 [@] ps 8
1573.36 ^b 12	15/2 ⁺	1.46 [@] ps 35	4159.08 ^b 16	27/2 ⁺	<1.73 [@] ps
1769.43 ^a 12	17/2 ⁺	1.32 [@] ps 14	4216.63 ^c 17	25/2 ⁽⁻⁾	0.76 [@] ps 14
2017.01 ^b 13	19/2 ⁺	6.2 [@] ps 7	4314.51 ^e 24	(25/2)	
2114.60 ^e 18	17/2	138 [@] ps 5	4572.02 ^a 17	(29/2 ⁺)	9.7 [@] ps 7
2621.38 ^a 14	21/2 ⁺	0.42 [@] ps 7	4749.56 ^d 18	27/2 ⁽⁻⁾	0.76 [@] ps 7
2921.49 ¹⁵	21/2 ⁺		5134.61 ^c 19	29/2 ⁽⁻⁾	0.58 [#] ps 6
2956.45 ^b 14	23/2 ⁺	1.25 [@] ps 21	5300.04 ^b 19	(31/2 ⁺)	≤1.18 [#] ps
3188.33 [?] 17			5678.77 ^d 21	31/2 ⁽⁻⁾	0.284 [#] ps 35
3209.54 ^e 18	21/2	0.83 [@] ps 7	6197.23 ^c 22	33/2 ⁽⁻⁾	0.208 [#] ps 28
3373.86 [?] 22			6917.9 ^d 3	35/2 ⁽⁻⁾	0.125 [#] ps 35
3578.26 ^a 16	25/2 ⁺	<1.39 [@] ps	7393.9 ^c 3	37/2 ⁽⁻⁾	≤0.90 [#] ps
3614.96 [?] 20			8547.7 ^c 4	(41/2 ⁻)	

[†] Least-squares fit to $E\gamma$'s.

[‡] From 2001Ga49.

From DSA.

@ From RDDS.

& From DDCM.

^a Band(A): g.s. band, $\alpha=+1/2$.

^b Band(a): g.s. band, $\alpha=-1/2$.

^c Band(B): band based on 23/2⁽⁻⁾, $\alpha=+1/2$.

^d Band(b): band based on 23/2⁽⁻⁾, $\alpha=-1/2$.

^e Band(C): gamma sequence based on 17/2.

$^{70}\text{Ge}(^{35}\text{Cl}, 2n2p\gamma)$ **1992Cr02, 2001Ga49** (continued) $\gamma(^{101}\text{Ag})$ A₂ and A₄ are from 1992Cr02.

E_γ †	I_γ †	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. †	$\delta^\dagger$	Comments
73.5 1 174.4 1	5 1 9.7 3	3869.71 861.40	23/2 ⁽⁻⁾ 13/2 ⁺	3796.27 687.01	11/2 ⁺	M1(+E2)	+0.03 +3-4	B(M1)(W.u.)=(0.045 5); B(E2)(W.u.)=(1.2 +25-2) A ₂ =-0.21 2, A ₄ =+0.01 3.
181.3 1 196.0 1	3.8 7 10.6 5	3796.27 1769.43	17/2 ⁺	3614.96? 1573.36	15/2 ⁺	M1+E2	+0.07 3	B(M1)(W.u.)=0.28 4; B(E2)(W.u.)=3.E+1 3 A ₂ =-0.15 2, A ₄ =-0.08 3.
241.1 1 247.6 1	1.7 5 58 2	3614.96? 2017.01	19/2 ⁺	3373.86? 1769.43	17/2 ⁺	M1(+E2)	0.00 2	B(M1)(W.u.)=(0.22 3) A ₂ =-0.17 1, A ₄ =-0.01 2.
335.1 1	15 1	2956.45	23/2 ⁺	2621.38	21/2 ⁺	M1(+E2)	+0.02 5	B(M1)(W.u.)=(0.15 3); B(E2)(W.u.)=(0.5 +24-5) A ₂ =-0.20 4, A ₄ =-0.12 6.
346.9 1	21.1 6	4216.63	25/2 ⁽⁻⁾	3869.71	23/2 ⁽⁻⁾	M1(+E2)	-0.02 2	B(M1)(W.u.)=(0.60 12); B(E2)(W.u.)=(2 +4-2) A ₂ =-0.24 1, A ₄ =-0.03 2.
384.9 1	17.0 4	5134.61	29/2 ⁽⁻⁾	4749.56	27/2 ⁽⁻⁾	M1+E2	-0.05 2	B(M1)(W.u.)=0.50 6; B(E2)(W.u.)=8 7 A ₂ =-0.26 2, A ₄ =+0.03 2.
412.9 1 415.6 1	2.8 4 3.5 4	4572.02 4216.63	(29/2 ⁺) 25/2 ⁽⁻⁾	4159.08 3801.04	27/2 ⁺ 23/2	M1+E2 M1(+E2)	+0.03 9	B(M1)(W.u.)=(0.057 13); B(E2)(W.u.)=(0.3 +17-3) A ₂ =-0.18 7, A ₄ =-0.1 1.
434.9 3	2 1	4749.56	27/2 ⁽⁻⁾	4314.51	(25/2)	M1(+E2)	-0.07 7	B(M1)(W.u.)=(0.026 14); B(E2)(W.u.)=(0.6 +13-6) A ₂ =-0.3 1, A ₄ =0.0 1.
443.7 2 475.9 2	5 1 3.9 4	2017.01 7393.9	19/2 ⁺ 37/2 ⁽⁻⁾	1573.36 6917.9	15/2 ⁺ 35/2 ⁽⁻⁾	E2 M1(+E2)	-0.07 7	B(E2)(W.u.)=15 4 B(M1)(W.u.)>0.15 A ₂ =-0.28 3, A ₄ =+0.10 4.
513.4 2 518.3 1	7 1 9.4 6	4314.51 6197.23	(25/2) 33/2 ⁽⁻⁾	3801.04 5678.77	23/2 31/2 ⁽⁻⁾	M1(+E2) M1(+E2)	+0.12 17 -0.05 7	A ₂ =+0.03 4, A ₄ =-0.04 6. B(M1)(W.u.)=(0.63 10); B(E2)(W.u.)=(5 +15-5) A ₂ =-0.24 2, A ₄ =+0.15 3.
532.8 1	20.5 7	4749.56	27/2 ⁽⁻⁾	4216.63	25/2 ⁽⁻⁾	M1(+E2)	0.00 2	B(M1)(W.u.)=(0.144 16) A ₂ =-0.21 2, A ₄ =-0.03 3.
541.5 2 544.0 1	16 3 13.1 5	2114.60 5678.77	17/2 31/2 ⁽⁻⁾	1573.36 5134.61	15/2 ⁺ 29/2 ⁽⁻⁾	D M1(+E2)	0.00 2	A ₂ =-0.1 1. B(M1)(W.u.)=(0.44 6) A ₂ =-0.22 2, A ₄ =+0.01 3.
580.7 1 587.0 2 591.5 1 604.3 1	3 1 2.5 5 11 2 23 1	4159.08 3796.27 3801.04 2621.38	27/2 ⁺ 23/2 21/2 ⁺	3578.26 3209.54 3209.54 2017.01	25/2 ⁺ 21/2 21/2 19/2 ⁺	M1+E2 M1(+E2)	+0.17 17	A ₂ =0.0 1, A ₄ =-0.1 1. B(M1)(W.u.)=(0.17 4); B(E2)(W.u.)=(12 +25-12) A ₂ =+0.02 3, A ₄ =+0.01 4.
621.8 1	12 1	3578.26	25/2 ⁺	2956.45	23/2 ⁺	M1+E2	+0.09 7	B(M1)(W.u.)>0.043 A ₂ =-0.09 7, A ₄ =-0.01 4.
681.3 1 687.0 1	3.0 5 15 1	3869.71 687.01	23/2 ⁽⁻⁾ 11/2 ⁺	3188.33? 0	9/2 ⁺	M1(+E2)	+0.4 +11-6	B(M1)(W.u.)=(0.031 24); B(E2)(W.u.)=(1.E+1 +5-1) A ₂ =+0.23 3, A ₄ =-0.15 5.
712.0 1	31 1	1573.36	15/2 ⁺	861.40	13/2 ⁺	M1+E2	+0.19 5	B(M1)(W.u.)=0.034 9; B(E2)(W.u.)=2.2 13 A ₂ =+0.08 3, A ₄ =+0.04 4.

Continued on next page (footnotes at end of table)

$^{70}\text{Ge}(^{35}\text{Cl}, 2n2p\gamma)$ **1992Cr02, 2001Ga49** (continued) $\gamma(^{101}\text{Ag})$ (continued)

$E_\gamma^\dagger$	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [†]	$\delta^\dagger$	Comments
720.5 2	4.2 5	6917.9	35/2 ⁽⁻⁾	6197.23	33/2 ⁽⁻⁾	M1(+E2)	-0.03 9	B(M1)(W.u.)=(0.32 11); B(E2)(W.u.)=(1 +4-1)
728.0 1	7.1 6	5300.04	(31/2 ⁺)	4572.02	(29/2 ⁺)	M1(+E2)	+0.02 5	A ₂ =-0.26 3, A ₄ =-0.05 4. B(M1)(W.u.)>0.035
852.0 1	8 1	2621.38	21/2 ⁺	1769.43	17/2 ⁺	E2		A ₂ =-0.17 6, A ₄ =-0.01 9. B(E2)(W.u.)=28 6
861.4 1	100	861.40	13/2 ⁺	0	9/2 ⁺	E2		B(E2)(W.u.)=4.8 5
880.2 4	4.7 6	4749.56	27/2 ⁽⁻⁾	3869.71	23/2 ⁽⁻⁾	E2		B(E2)(W.u.)=8.7 15
886.1 4	6 1	1573.36	15/2 ⁺	687.01	11/2 ⁺	E2		B(E2)(W.u.)=4.1 13
904.6 1	9 2	2921.49	21/2 ⁺	2017.01	19/2 ⁺	M1+E2		A ₂ =+0.5 2, A ₄ =0.0 3. A ₂ =+0.1 2.
908.0 1	72 2	1769.43	17/2 ⁺	861.40	13/2 ⁺	E2		B(E2)(W.u.)=21.7 25 A ₂ =+0.34 2, A ₄ =-0.11 2.
913.3 1	7 2	3869.71	23/2 ⁽⁻⁾	2956.45	23/2 ⁺	D		A ₂ =+0.48 7, A ₄ =+0.2 1.
918.1 1	5.4 3	5134.61	29/2 ⁽⁻⁾	4216.63	25/2 ⁽⁻⁾	E2		B(E2)(W.u.)=12.9 16 A ₂ =+0.4 1, A ₄ =0.0 1.
929.5 4	1.4 4	5678.77	31/2 ⁽⁻⁾	4749.56	27/2 ⁽⁻⁾	E2		B(E2)(W.u.)=10 4
939.5 1	33 3	2956.45	23/2 ⁺	2017.01	19/2 ⁺	E2		B(E2)(W.u.)=15 3 A ₂ =+0.5 2, A ₄ =0.0 2.
948.2 1	8 1	3869.71	23/2 ⁽⁻⁾	2921.49	21/2 ⁺	D		A ₂ =-0.4 1.
956.6 2	5.9 4	3578.26	25/2 ⁺	2621.38	21/2 ⁺	E2		B(E2)(W.u.)>6.0
993.8 1	13 2	4572.02	(29/2 ⁺)	3578.26	25/2 ⁺	E2		B(E2)(W.u.)=1.8 4
1063.2 2	2.0 3	6197.23	33/2 ⁽⁻⁾	5134.61	29/2 ⁽⁻⁾	E2		B(E2)(W.u.)=13 3 A ₂ =+0.4 1.
1095.0 1	14 2	3209.54	21/2	2114.60	17/2	E2		B(E2)(W.u.)=15.5 13 A ₂ =+0.34 4, A ₄ =+0.1 1.
1141.0 2	2.8 7	5300.04	(31/2 ⁺)	4159.08	27/2 ⁺	E2		B(E2)(W.u.)>2.5
1151.5 2	2.8 5	2921.49	21/2 ⁺	1769.43	17/2 ⁺	E2		
1153.8 2	3.4 7	8547.7	(41/2 ⁻)	7393.9	37/2 ⁽⁻⁾			
1171.0 2	2.3 4	3188.33?		2017.01	19/2 ⁺			
1196.9 3	2.1 4	7393.9	37/2 ⁽⁻⁾	6197.23	33/2 ⁽⁻⁾	E2		B(E2)(W.u.)>3.2 A ₂ =+0.3 1, A ₄ =-0.1 1.
1202.7 1	13.5 7	4159.08	27/2 ⁺	2956.45	23/2 ⁺	E2		B(E2)(W.u.)>3.8 A ₂ =+0.35 5, A ₄ =-0.2 1.
1239.2 4	1.9 2	6917.9	35/2 ⁽⁻⁾	5678.77	31/2 ⁽⁻⁾	E2		B(E2)(W.u.)=17 6 A ₂ =+0.3 1, A ₄ =0.0 1.
1604 1	0.2 2	3373.86?		1769.43	17/2 ⁺			
1845 1	0.3 3	3614.96?		1769.43	17/2 ⁺			

[†] From **1992Cr02**.

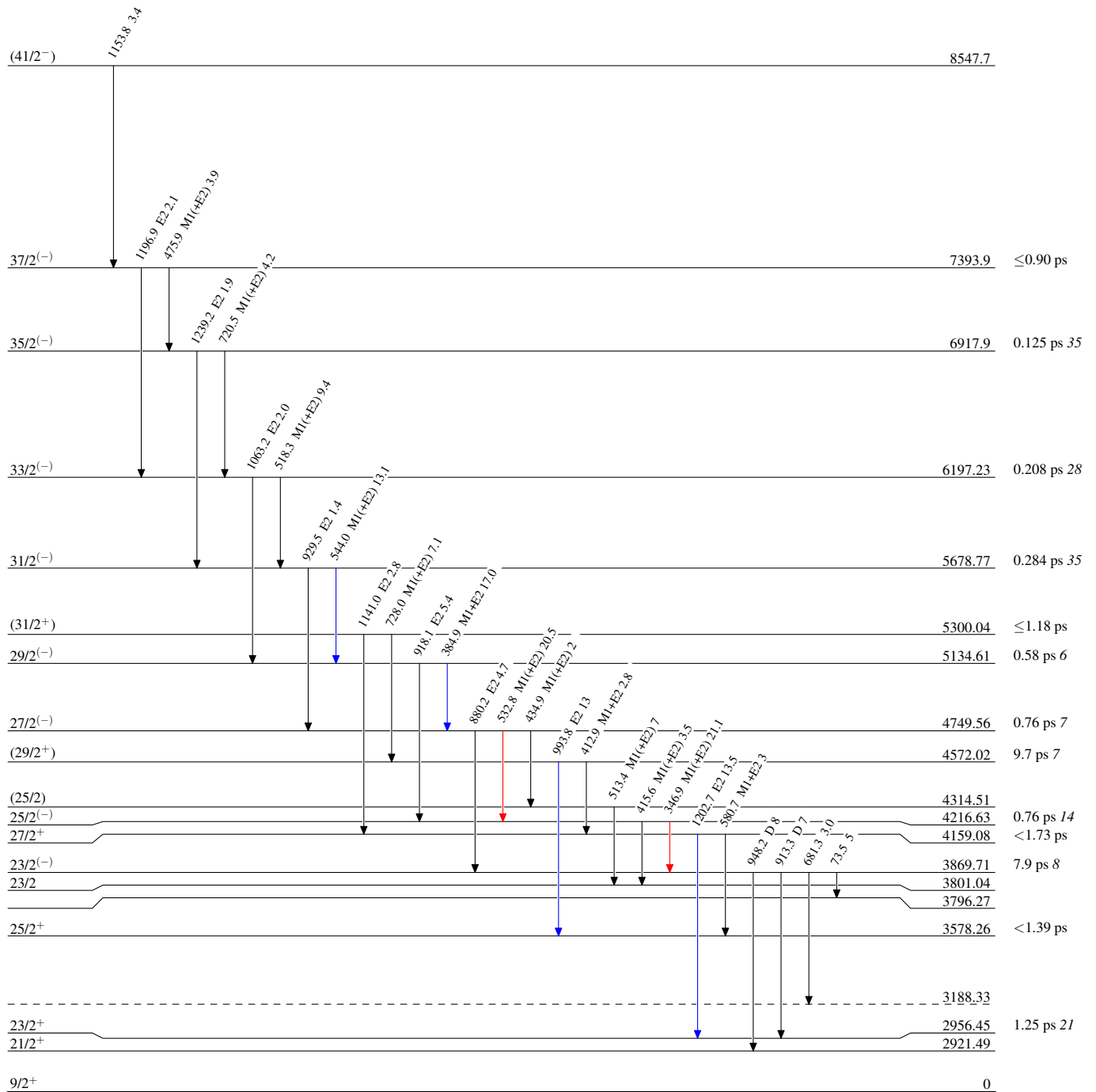
$^{70}\text{Ge}(^{35}\text{Cl}, 2n2p\gamma)$ 1992Cr02,2001Ga49

Level Scheme

Intensities: Relative I_γ

Legend

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



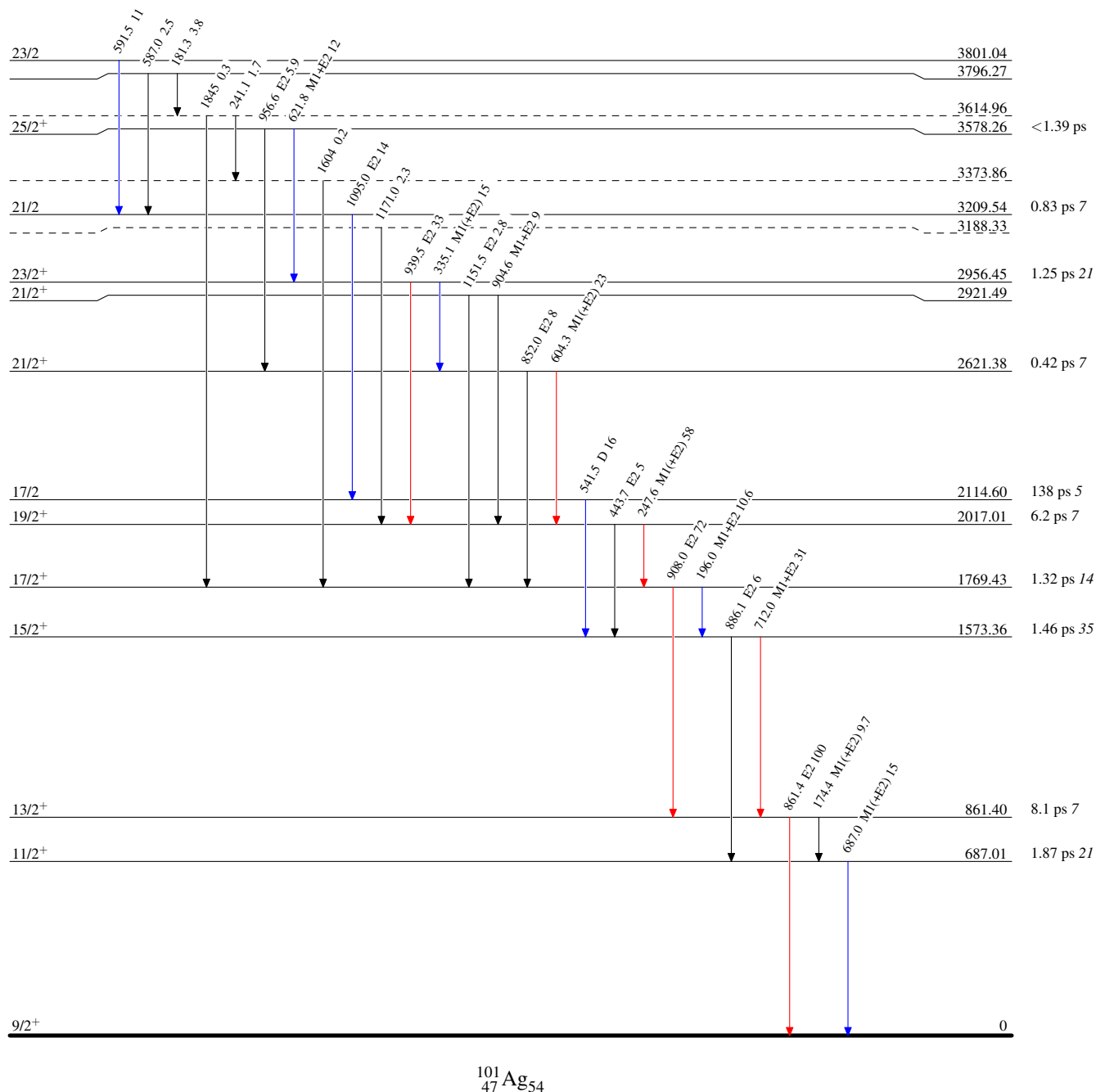
$^{70}\text{Ge}(^{35}\text{Cl}, 2n2p\gamma)$ 1992Cr02,2001Ga49

Level Scheme (continued)

Intensities: Relative I_γ

Legend

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



$^{70}\text{Ge}(^{35}\text{Cl}, 2n2p\gamma)$ 1992Cr02,2001Ga49