

$^{76}\text{Ge}(^7\text{Li},4n\gamma)$  E=35 MeV 2002Sc13

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2002Sc13: Measured  $E_\gamma$ ,  $I_\gamma$ ,  $\gamma\gamma$ ,  $\gamma\gamma(\theta)$ (DCO),  $\gamma(\text{lin pol})$ , lifetimes by Doppler-shift attenuation (DSA) method using an array of six EUROBALL CLUSTERS positioned at different angles.

 $^{79}\text{Br}$  Levels

E(level) <sup>†</sup>	$J^\pi$ <sup>‡</sup>	$T_{1/2}$ <sup>#</sup>	Comments
0 <sup>c</sup>	3/2 <sup>-</sup>		
207.57 <sup>@</sup> 10	9/2 <sup>+</sup>	4.85 s 4	%IT=100 $T_{1/2}$ : from Adopted Levels.
217.07 <sup>b</sup> 9	5/2 <sup>-</sup>		
261.20 <sup>h</sup> 24	3/2 <sup>-</sup>		$J^\pi$ : from Adopted Levels. 2002Sc13 give 5/2 <sup>(-)</sup> .
523.25 <sup>f</sup> 24	5/2 <sup>-</sup>		$J^\pi$ : from Adopted Levels.
761.09 <sup>c</sup> 12	7/2 <sup>-</sup>		
796.68 <sup>@</sup> 13	13/2 <sup>+</sup>		
953.80 <sup>h</sup> 21	(7/2 <sup>-</sup> )		
1068.24 <sup>b</sup> 12	9/2 <sup>-</sup>		
1180.65 <sup>&amp;</sup> 23	11/2 <sup>+</sup>		
1332.47 <sup>f</sup> 21			
1682.51 <sup>a</sup> 24	13/2 <sup>+</sup>		
1713.41 <sup>c</sup> 18	11/2 <sup>-</sup>		
1731.95 <sup>@</sup> 15	17/2 <sup>+</sup>	0.76 ps 21	
1780.67 <sup>h</sup> 17	(11/2 <sup>-</sup> )		
1948.16 <sup>b</sup> 14	13/2 <sup>-</sup>		
1957.08 <sup>&amp;</sup> 16	15/2 <sup>+</sup>	0.21 ps 7	
2279.3 <sup>f</sup> 4			
2392.64 <sup>d</sup> 22	13/2 <sup>-</sup>		
2421.06 <sup>a</sup> 22	17/2 <sup>+</sup>		
2468.61 <sup>c</sup> 19	15/2 <sup>-</sup>		
2477.6 4	13/2 <sup>-</sup>		
2580.10 <sup>d</sup> 16	15/2 <sup>-</sup>		
2725.35 <sup>b</sup> 22	17/2 <sup>-</sup>	0.55 ps 28	
2773.93 <sup>d</sup> 17	17/2 <sup>-</sup>		
2866.18 <sup>@</sup> 17	21/2 <sup>+</sup>	0.28 ps 4	
2902.25 <sup>&amp;</sup> 23	19/2 <sup>+</sup>	0.17 ps 5	
3087.96 <sup>d</sup> 19	(19/2 <sup>-</sup> )	0.76 ps 21	
3169.21 <sup>c</sup> 22	19/2 <sup>-</sup>		
3235.1 <sup>f</sup> 6			
3365.36 <sup>a</sup> 23	21/2 <sup>+</sup>		
3534.81 <sup>d</sup> 25	(21/2 <sup>-</sup> )	0.38 ps 10	
3559.31 <sup>b</sup> 22	21/2 <sup>(-)</sup>	0.42 ps 14	
3670.8 <sup>g</sup> 3	(21/2 <sup>+</sup> )		
3816.8 4			
3908.3 <sup>e</sup> 4			
3935.98 <sup>&amp;</sup> 24	(23/2 <sup>+</sup> )	0.187 ps 35	
4066.6 <sup>c</sup> 3	23/2 <sup>-</sup>		
4116.93 <sup>@</sup> 20	25/2 <sup>+</sup>	0.159 ps 21	

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$^{76}\text{Ge}(^7\text{Li},4n\gamma)$  E=35 MeV 2002Sc13 (continued) $^{79}\text{Br}$  Levels (continued)

E(level) <sup>†</sup>	$J^\pi$ <sup>‡</sup>	$T_{1/2}$ <sup>#</sup>	Comments
4152.6 <sup>d</sup> 3	(23/2) <sup>-</sup>	0.139 ps 28	
4340.8 4			
4529.9 <sup>a</sup> 4	25/2 <sup>+</sup>	0.35 ps 7	$T_{1/2}$ : effective lifetime, not corrected for side feeding.
4580.9 <sup>b</sup> 3	(25/2) <sup>-</sup>	0.26 ps 6	
4720.9 <sup>g</sup> 3	(25/2 <sup>+</sup> )		
4803.1 <sup>d</sup> 4	(25/2) <sup>-</sup>	0.118 ps 21	
4896.0 7			
4965.0 <sup>e</sup> 6			
5131.9 <sup>&amp;</sup> 3	(27/2 <sup>+</sup> )		
5214.0 <sup>c</sup> 4	(27/2) <sup>-</sup>		
5505.5 <sup>@</sup> 4	29/2 <sup>+</sup>	0.049 ps 21	
5578.8 <sup>d</sup> 5	(27/2) <sup>-</sup>		
5823.7 <sup>b</sup> 5	(29/2) <sup>-</sup>	0.097 ps 28	
5863.5 <sup>a</sup> 6	(29/2 <sup>+</sup> )		
6019.3 <sup>g</sup> 4	(29/2 <sup>+</sup> )		
6199.3 <sup>e</sup> 8			
6384.1 <sup>d</sup> 6	(29/2) <sup>-</sup>		
6526.9 <sup>&amp;</sup> 5	(31/2 <sup>+</sup> )	0.17 ps 6	
6536.8 <sup>c</sup> 7	(31/2) <sup>-</sup>		
7066.8 <sup>@</sup> 6	(33/2 <sup>+</sup> )		
7224.0 <sup>b</sup> 7	(33/2) <sup>-</sup>		
7379.7 <sup>a</sup> 8	(33/2 <sup>+</sup> )		
7591.7 <sup>e</sup> 10			
8061.6 <sup>c</sup> 9	(35/2) <sup>-</sup>		
8149.4 <sup>&amp;</sup> 6	(35/2 <sup>+</sup> )		
8777.5 <sup>b</sup> 9	(37/2) <sup>-</sup>		
8811.5 <sup>@</sup> 8	(37/2 <sup>+</sup> )		

<sup>†</sup> From least-squares fit to  $E_\gamma$  data.

<sup>‡</sup> As proposed by 2002Sc13 based on  $\gamma\gamma(\theta)$ (DCO),  $\gamma(\text{lin pol})$  and band assignments. The parentheses, in some cases, have been added by the evaluator when strong arguments for  $J^\pi$  assignments are lacking (see Adopted Levels for details).

<sup>#</sup> From DSA (2002Sc13).

<sup>@</sup> Band(A): Band based on  $9/2^+$ ,  $\alpha=+1/2$ .

<sup>&</sup> Band(a): Band based on  $9/2^+$ ,  $\alpha=-1/2$ .

<sup>a</sup> Band(B): Band based on  $13/2^+$ ,  $\alpha=+1/2$ .

<sup>b</sup> Band(C): Band based on  $3/2^-$ ,  $\alpha=+1/2$ .

<sup>c</sup> Band(c): Band based on  $3/2^-$ ,  $\alpha=-1/2$ .

<sup>d</sup> Band(D): Magnetic dipole (rotational) band based on  $13/2^-$ .

<sup>e</sup> Band(E): Band structure.

<sup>f</sup> Band(F): Band structure.

<sup>g</sup> Band(G): Band based on  $21/2^{(+)}$ .

<sup>h</sup> Band(H): Band based on  $3/2^-$ .

<sup>76</sup>Ge(<sup>7</sup>Li,4n $\gamma$ ) E=35 MeV 2002Sc13 (continued)

$\gamma(^{79}\text{Br})$

All DCO values correspond to gates on  $\Delta J=2$ , quadrupole transitions, unless otherwise stated. DCO(1)= $\Delta J=1$ , dipole gated, DCO(2)= $\Delta J=2$ , quadrupole gated.

$E_\gamma$ <sup>†</sup>	$I_\gamma$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult.	$\alpha^\ddagger$	Comments
104.3 5	0.5 1	2580.10	15/2 <sup>-</sup>	2477.6	13/2 <sup>-</sup>	D		DCO(1)=0.9 2
187.6 3	3.2 3	2580.10	15/2 <sup>-</sup>	2392.64	13/2 <sup>-</sup>	D		$E_\gamma$ : poor fit. Level-energy difference=102.5.
193.8 1	11 1	2773.93	17/2 <sup>-</sup>	2580.10	15/2 <sup>-</sup>	D		DCO(1)=1.02 9
207.5 1		207.57	9/2 <sup>+</sup>	0	3/2 <sup>-</sup>	E3	0.311	DCO(2)=0.55 3
								$\alpha(\text{K})=0.263$ 4; $\alpha(\text{L})=0.0410$ 6;
								$\alpha(\text{M})=0.00653$ 10
								$\alpha(\text{N})=0.000541$ 8
								$E_\gamma$ ,Mult.: from Adopted Gammas.
217.1 1	36 4	217.07	5/2 <sup>-</sup>	0	3/2 <sup>-</sup>			
234.9 5	0.4 1	1948.16	13/2 <sup>-</sup>	1713.41	11/2 <sup>-</sup>			
238.0 5	1.1 1	761.09	7/2 <sup>-</sup>	523.25	5/2 <sup>-</sup>			
256.9 5	1.0 1	2725.35	17/2 <sup>-</sup>	2468.61	15/2 <sup>-</sup>			
261.1 3	2.9 4	261.20	3/2 <sup>-</sup>	0	3/2 <sup>-</sup>	D		DCO(1)=0.9 2
300.7 5	0.6 1	2580.10	15/2 <sup>-</sup>	2279.3		D		DCO(1)=1.0 2
304.9 5	1.6 2	2773.93	17/2 <sup>-</sup>	2468.61	15/2 <sup>-</sup>	D		DCO(1)=1.0 1
306.6 5	1.9 2	1068.24	9/2 <sup>-</sup>	761.09	7/2 <sup>-</sup>	D		DCO(2)=0.65 8
314.0 1	11 1	3087.96	(19/2) <sup>-</sup>	2773.93	17/2 <sup>-</sup>	D		DCO(2)=0.50 3
348.6 5	0.6 1	3908.3		3559.31	21/2 <sup>(-)</sup>			
362.2 5	0.7 1	3087.96	(19/2) <sup>-</sup>	2725.35	17/2 <sup>-</sup>	D		DCO(2)=0.6 1
380.6 5	0.9 1	1713.41	11/2 <sup>-</sup>	1332.47				
383.2 5	0.9 1	1180.65	11/2 <sup>+</sup>	796.68	13/2 <sup>+</sup>	(M1)	0.00361	$\alpha(\text{K})=0.00320$ 5; $\alpha(\text{L})=0.000342$ 5;
								$\alpha(\text{M})=5.44 \times 10^{-5}$ 8
								$\alpha(\text{N})=5.08 \times 10^{-6}$ 8
								POL=-0.02 1.
389.9 5	1.3 1	3559.31	21/2 <sup>(-)</sup>	3169.21	19/2 <sup>-</sup>	D		DCO(2)=0.5 1
395.0 3	2.1 2	3169.21	19/2 <sup>-</sup>	2773.93	17/2 <sup>-</sup>	D		DCO(2)=0.49 8
442.8 5	0.2 1	3169.21	19/2 <sup>-</sup>	2725.35	17/2 <sup>-</sup>			
444.2 5	1.9 2	2392.64	13/2 <sup>-</sup>	1948.16	13/2 <sup>-</sup>	(D)		DCO(2)=0.8 1
446.7 3	4.6 5	3534.81	(21/2) <sup>-</sup>	3087.96	(19/2) <sup>-</sup>	(M1)	0.00251	DCO influenced by 446.7 $\gamma$ +447.6 $\gamma$ doublet.
								DCO(2)=0.49 7
								$\alpha(\text{K})=0.00223$ 4; $\alpha(\text{L})=0.000237$ 4;
								$\alpha(\text{M})=3.77 \times 10^{-5}$ 6
								$\alpha(\text{N})=3.53 \times 10^{-6}$ 5
								DCO for 446.7 $\gamma$ +447.6 $\gamma$ . POL=-0.03 1.
447.6 5	1.3 1	1780.67	(11/2) <sup>-</sup>	1332.47		(D)		DCO(2)=0.49 7
								DCO for 446.7 $\gamma$ +447.6 $\gamma$ .
462.6 5	0.5 1	3365.36	21/2 <sup>+</sup>	2902.25	19/2 <sup>+</sup>			
464.0 5	1.4 1	2421.06	17/2 <sup>+</sup>	1957.08	15/2 <sup>+</sup>	D		DCO(2)=0.46 6
471.2 3	3.1 3	3559.31	21/2 <sup>(-)</sup>	3087.96	(19/2) <sup>-</sup>	D		DCO(2)=0.46 7
501.7 3	3.2 3	1682.51	13/2 <sup>+</sup>	1180.65	11/2 <sup>+</sup>	(M1)	0.00191	$\alpha(\text{K})=0.001702$ 24; $\alpha(\text{L})=0.000181$ 3;
								$\alpha(\text{M})=2.87 \times 10^{-5}$ 4
								$\alpha(\text{N})=2.69 \times 10^{-6}$ 4
								POL=-0.10 3.
508.1 5	1.3 1	4066.6	23/2 <sup>-</sup>	3559.31	21/2 <sup>(-)</sup>			
512.9 5	0.4 1	6019.3	(29/2) <sup>+</sup>	5505.5	29/2 <sup>+</sup>			
513.6 5	1.6 2	4580.9	(25/2) <sup>-</sup>	4066.6	23/2 <sup>-</sup>			
521.9 5	0.5 1	2468.61	15/2 <sup>-</sup>	1948.16	13/2 <sup>-</sup>	D		DCO(2)=0.5 2
523.3 3	2.7 5	523.25	5/2 <sup>-</sup>	0	3/2 <sup>-</sup>			
530.3 5	1.5 2	2477.6	13/2 <sup>-</sup>	1948.16	13/2 <sup>-</sup>	(D)		DCO(2)=1.0 2
543.9 1	7.7 8	761.09	7/2 <sup>-</sup>	217.07	5/2 <sup>-</sup>	M1	$1.59 \times 10^{-3}$	DCO(2)=0.7 1

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<sup>76</sup>Ge(<sup>7</sup>Li,4n $\gamma$ ) E=35 MeV 2002Sc13 (continued)

$\gamma(^{79}\text{Br})$  (continued)

$E_\gamma$ †	$I_\gamma$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult.	$\alpha^\ddagger$	Comments
								$\alpha(\text{K})=0.001414$ 20; $\alpha(\text{L})=0.0001498$ 21; $\alpha(\text{M})=2.38 \times 10^{-5}$ 4 $\alpha(\text{N})=2.23 \times 10^{-6}$ 4 POL=-0.10 1.
565.3 5	1.8 2	2279.3		1713.41	11/2 <sup>-</sup>			
570.6 5	1.1 1	3935.98	(23/2) <sup>+</sup>	3365.36	21/2 <sup>+</sup>			
571.2 3	3.5 4	1332.47		761.09	7/2 <sup>-</sup>			DCO(2)=0.9 2
589.0 1	100 2	796.68	13/2 <sup>+</sup>	207.57	9/2 <sup>+</sup>	E2	0.00182	$\alpha(\text{K})=0.001618$ 23; $\alpha(\text{L})=0.0001750$ 25; $\alpha(\text{M})=2.78 \times 10^{-5}$ 4 $\alpha(\text{N})=2.57 \times 10^{-6}$ 4 POL=+0.08 1.
593.5 3	3.8 4	4152.6	(23/2) <sup>-</sup>	3559.31	21/2 <sup>(-)</sup>			
603.9 5	1.8 2	4720.9	(25/2 <sup>+</sup> )	4116.93	25/2 <sup>+</sup>			
611.6 5	1.8 2	2392.64	13/2 <sup>-</sup>	1780.67	(11/2 <sup>-</sup> )	D		DCO(2)=0.5 1
617.4 3	3.0 3	4152.6	(23/2) <sup>-</sup>	3534.81	(21/2) <sup>-</sup>	M1		DCO(2)=0.5 1 POL=-0.01 1.
631.7 5	1.9 2	2580.10	15/2 <sup>-</sup>	1948.16	13/2 <sup>-</sup>	D		DCO(2)=0.49 8
644.9 3	2.4 2	1713.41	11/2 <sup>-</sup>	1068.24	9/2 <sup>-</sup>	D		DCO(2)=0.57 7 POL=-0.08 2.
649.9 5	1.5 2	4803.1	(25/2) <sup>-</sup>	4152.6	(23/2) <sup>-</sup>	M1		DCO(2)=0.4 1 POL=-0.06 3.
669.6 5	0.9 1	4340.8		3670.8	(21/2 <sup>+</sup> )			
687.7 3	3.6 4	2468.61	15/2 <sup>-</sup>	1780.67	(11/2 <sup>-</sup> )			
692.5 3	2.1 2	953.80	(7/2 <sup>-</sup> )	261.20	3/2 <sup>-</sup>			
700.7 3	5.1 5	3169.21	19/2 <sup>-</sup>	2468.61	15/2 <sup>-</sup>	E2		DCO(2)=0.9 2 POL=+0.07 1.
712.3 5	1.2 1	1780.67	(11/2 <sup>-</sup> )	1068.24	9/2 <sup>-</sup>			
736.7 5	1.4 1	2468.61	15/2 <sup>-</sup>	1731.95	17/2 <sup>+</sup>	(D)		DCO(2)=0.5 1
737.1 5	1.5 2	953.80	(7/2 <sup>-</sup> )	217.07	5/2 <sup>-</sup>			
738.5 3	3.7 4	2421.06	17/2 <sup>+</sup>	1682.51	13/2 <sup>+</sup>	E2		DCO(2)=1.0 1 POL=+0.05 1.
754.9 3	4.8 5	2468.61	15/2 <sup>-</sup>	1713.41	11/2 <sup>-</sup>	E2		DCO(2)=0.9 1 POL=+0.07 2.
759.4 5	1.4 1	1713.41	11/2 <sup>-</sup>	953.80	(7/2 <sup>-</sup> )			
760.3 5	0.8 1	3534.81	(21/2) <sup>-</sup>	2773.93	17/2 <sup>-</sup>			
761.5 3	4.4 4	761.09	7/2 <sup>-</sup>	0	3/2 <sup>-</sup>	(E2)		DCO(2)=0.9 3 POL=+0.01 1.
769.3 5	0.4 1	3670.8	(21/2 <sup>+</sup> )	2902.25	19/2 <sup>+</sup>			
775.4 5	0.7 1	5578.8	(27/2 <sup>-</sup> )	4803.1	(25/2) <sup>-</sup>	D		DCO(1)=1.0 4
776.5 5	0.8 1	1957.08	15/2 <sup>+</sup>	1180.65	11/2 <sup>+</sup>	E2		DCO(2)=1.1 4 POL=+0.03 1.
777.4 3	5.9 6	2725.35	17/2 <sup>-</sup>	1948.16	13/2 <sup>-</sup>	(E2)		DCO(2)=0.87 6 POL=+0.03 1.
785.3 5	1.0 1	4720.9	(25/2 <sup>+</sup> )	3935.98	(23/2) <sup>+</sup>			
785.8 5	1.0 1	3559.31	21/2 <sup>(-)</sup>	2773.93	17/2 <sup>-</sup>			
799.4 3	2.4 2	2580.10	15/2 <sup>-</sup>	1780.67	(11/2 <sup>-</sup> )	Q		DCO(1)=1.5 1
804.7 5	1.8 2	3670.8	(21/2 <sup>+</sup> )	2866.18	21/2 <sup>+</sup>			
805.4 5	0.4 1	6384.1	(29/2 <sup>-</sup> )	5578.8	(27/2 <sup>-</sup> )			
809.2 5	1.0 1	1332.47		523.25	5/2 <sup>-</sup>			DCO(2)=1.0 2 DCO for 809.9 $\gamma$ +809.2 $\gamma$ .
809.9 5	1.6 2	3534.81	(21/2) <sup>-</sup>	2725.35	17/2 <sup>-</sup>	(E2)		DCO(2)=1.0 2 DCO for 809.9 $\gamma$ +809.2 $\gamma$ .
820.5 5	0.5 1	3908.3		3087.96	(19/2) <sup>-</sup>			
825.7 3	2.1 2	2773.93	17/2 <sup>-</sup>	1948.16	13/2 <sup>-</sup>	Q		DCO(2)=1.0 2
827.0 3	2.5 3	1780.67	(11/2 <sup>-</sup> )	953.80	(7/2 <sup>-</sup> )			

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$^{76}\text{Ge}(^7\text{Li},4n\gamma)$  E=35 MeV **2002Sc13** (continued) $\gamma(^{79}\text{Br})$  (continued)

$E_\gamma$ †	$I_\gamma$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult.	Comments
834.6 3	2.5 2	3559.31	21/2 <sup>(-)</sup>	2725.35	17/2 <sup>-</sup>	(E2)	DCO(2)=0.9 2
847.5 3	2.3 2	2580.10	15/2 <sup>-</sup>	1731.95	17/2 <sup>+</sup>		
851.3 1	19 2	1068.24	9/2 <sup>-</sup>	217.07	5/2 <sup>-</sup>	(E2)	POL=+0.05 1.
866.7 5	1.6 2	2580.10	15/2 <sup>-</sup>	1713.41	11/2 <sup>-</sup>	Q	DCO(1)=1.5 3
880.0 1	15 2	1948.16	13/2 <sup>-</sup>	1068.24	9/2 <sup>-</sup>	E2	DCO(2)=0.91 4 POL=+0.07 1. DCO(2)=1.0 2
885.8 5	1.8 2	1682.51	13/2 <sup>+</sup>	796.68	13/2 <sup>+</sup>	(D)	DCO(2)=1.0 2
888.7 5	0.7 1	6019.3	(29/2 <sup>+</sup> )	5131.9	(27/2 <sup>+</sup> )		
897.0 3	4.3 4	4066.6	23/2 <sup>-</sup>	3169.21	19/2 <sup>-</sup>	E2	DCO(2)=0.9 1 POL=+0.06 1.
914.4 5	1.1 1	3816.8		2902.25	19/2 <sup>+</sup>		
935.2 1	51 5	1731.95	17/2 <sup>+</sup>	796.68	13/2 <sup>+</sup>	E2	DCO(2)=1.00 2 POL=+0.07 1.
944.3 3	3.6 4	3365.36	21/2 <sup>+</sup>	2421.06	17/2 <sup>+</sup>	(E2)	DCO(2)=0.9 1 DCO and POL=+0.11 1 for 945.4 $\gamma$ +944.3 $\gamma$ .
945.4 5	1.9 2	2902.25	19/2 <sup>+</sup>	1957.08	15/2 <sup>+</sup>	(E2)	DCO(2)=0.9 1 DCO and POL=+0.11 1 for 945.4 $\gamma$ +944.3 $\gamma$ .
947.4 5	1.9 2	2279.3		1332.47			
950.8 5	0.9 1	3816.8		2866.18	21/2 <sup>+</sup>		
952.3 3	4.8 5	1713.41	11/2 <sup>-</sup>	761.09	7/2 <sup>-</sup>	E2	DCO(2)=1.1 2 POL=+0.06 1.
953.9 5	1.0 1	953.80	(7/2 <sup>-</sup> )	0	3/2 <sup>-</sup>		
955.8 5	1.1 1	3235.1		2279.3			
973.2 3	7 1	1180.65	11/2 <sup>+</sup>	207.57	9/2 <sup>+</sup>	(M1)	DCO(2)=0.7 2 POL=+0.04 1.
977.9 5	0.8 1	4066.6	23/2 <sup>-</sup>	3087.96	(19/2 <sup>-</sup> )		
1015.4 5	1.7 2	5131.9	(27/2 <sup>+</sup> )	4116.93	25/2 <sup>+</sup>	D	DCO(2)=0.4 1
1019.3 3	2.8 3	1780.67	(11/2 <sup>-</sup> )	761.09	7/2 <sup>-</sup>	Q	DCO(2)=1.1 2
1021.0 5	0.6 1	6526.9	(31/2 <sup>+</sup> )	5505.5	29/2 <sup>+</sup>		
1021.8 3	2.5 3	4580.9	(25/2 <sup>-</sup> )	3559.31	21/2 <sup>(-)</sup>	E2	DCO(2)=1.0 3 POL=+0.08 1.
1034.1 3	2.1 2	3935.98	(23/2 <sup>+</sup> )	2902.25	19/2 <sup>+</sup>	(E2)	POL=+0.02 1.
1046.2 3	2.7 3	4580.9	(25/2 <sup>-</sup> )	3534.81	(21/2 <sup>-</sup> )	E2	DCO(2)=1.0 2
1050.0 5	0.9 1	4720.9	(25/2 <sup>+</sup> )	3670.8	(21/2 <sup>+</sup> )		
1056.7 5	1.3 1	4965.0		3908.3		(Q)	DCO(1)=1.6 5
1064.9 5	0.7 1	4152.6	(23/2 <sup>-</sup> )	3087.96	(19/2 <sup>-</sup> )	E2	DCO(1)=1.7 4
1069.9 3	3.3 3	3935.98	(23/2 <sup>+</sup> )	2866.18	21/2 <sup>+</sup>	M1+E2	DCO(2)=0.36 4 POL=+0.04 3. DCO(2)=1.0 4
1079.2 5	0.9 1	4896.0		3816.8		Q	
1082.8 5	0.2 1	8149.4	(35/2 <sup>+</sup> )	7066.8	(33/2 <sup>+</sup> )		
1115.5 5	0.3 1	1332.47		217.07	5/2 <sup>-</sup>		
1134.2 1	24 2	2866.18	21/2 <sup>+</sup>	1731.95	17/2 <sup>+</sup>	E2	DCO(2)=1.02 3 POL=+0.07 1.
1134.6 5	1.0 1	3908.3		2773.93	17/2 <sup>-</sup>		
1147.4 3	2.7 3	5214.0	(27/2 <sup>-</sup> )	4066.6	23/2 <sup>-</sup>	Q	DCO(2)=0.8 2
1160.4 1	7.7 8	1957.08	15/2 <sup>+</sup>	796.68	13/2 <sup>+</sup>	D	DCO(2)=0.50 3
1164.4 3	3.4 3	4529.9	25/2 <sup>+</sup>	3365.36	21/2 <sup>+</sup>	E2	DCO(2)=0.9 2 POL=+0.08 3.
1170.9 3	4.9 5	2902.25	19/2 <sup>+</sup>	1731.95	17/2 <sup>+</sup>	M1+E2	DCO(2)=0.42 4 POL=-0.01 1.
1196.3 3	1.5 2	5131.9	(27/2 <sup>+</sup> )	3935.98	(23/2 <sup>+</sup> )		
1234.3 5	0.6 1	6199.3		4965.0			
1242.8 3	2.1 2	5823.7	(29/2 <sup>-</sup> )	4580.9	(25/2 <sup>-</sup> )	E2	DCO(1)=1.5 2
1250.7 1	9.0 9	4116.93	25/2 <sup>+</sup>	2866.18	21/2 <sup>+</sup>	E2	DCO(2)=0.97 5 POL=+0.09 1.
1268.6 5	0.4 1	4803.1	(25/2 <sup>-</sup> )	3534.81	(21/2 <sup>-</sup> )		

Continued on next page (footnotes at end of table)

$^{76}\text{Ge}(^7\text{Li},4n\gamma) E=35 \text{ MeV}$  **2002Sc13** (continued) $\gamma(^{79}\text{Br})$  (continued)

$E_\gamma^\dagger$	$I_\gamma$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult.	Comments
1298.3	5 0.4	6019.3	(29/2 <sup>+</sup> )	4720.9	(25/2 <sup>+</sup> )		
1322.8	5 1.1	6536.8	(31/2 <sup>-</sup> )	5214.0	(27/2 <sup>-</sup> )	Q	DCO(2)=1.0 3
1325.1	5 1.2	2392.64	13/2 <sup>-</sup>	1068.24	9/2 <sup>-</sup>	E2	DCO(2)=1.1 2 POL=+0.02 2.
1333.6	5 1.4	5863.5	(29/2 <sup>+</sup> )	4529.9	25/2 <sup>+</sup>	(Q)	DCO(2)=0.9 3
1388.2	3 2.6	5505.5	29/2 <sup>+</sup>	4116.93	25/2 <sup>+</sup>	E2	DCO(2)=0.9 1 POL=+0.07 2.
1392.4	5 0.3	7591.7		6199.3			
1395.0	5 0.7	6526.9	(31/2 <sup>+</sup> )	5131.9	(27/2 <sup>+</sup> )	E2	DCO(2)=1.0 2
1400.2	5 0.9	7224.0	(33/2 <sup>-</sup> )	5823.7	(29/2 <sup>-</sup> )		
1410.2	5 0.4	2477.6	13/2 <sup>-</sup>	1068.24	9/2 <sup>-</sup>		
1426.5	5 0.5	5578.8	(27/2 <sup>-</sup> )	4152.6	(23/2 <sup>-</sup> )		
1437.6	5 1.3	3169.21	19/2 <sup>-</sup>	1731.95	17/2 <sup>+</sup>		
1439.3	5 0.6	4340.8		2902.25	19/2 <sup>+</sup>		
1474.2	5 0.6	4340.8		2866.18	21/2 <sup>+</sup>		
1475.3	5 2.0	1682.51	13/2 <sup>+</sup>	207.57	9/2 <sup>+</sup>	(E2)	POL=+0.04 2.
1516.1	5 0.4	7379.7	(33/2 <sup>+</sup> )	5863.5	(29/2 <sup>+</sup> )		
1524.8	5 0.3	8061.6	(35/2 <sup>-</sup> )	6536.8	(31/2 <sup>-</sup> )		
1553.5	5 0.2	8777.5	(37/2 <sup>-</sup> )	7224.0	(33/2 <sup>-</sup> )		
1561.6	5 0.7	7066.8	(33/2 <sup>+</sup> )	5505.5	29/2 <sup>+</sup>	(Q)	DCO(2)=0.8 2
1580.9	5 0.3	6384.1	(29/2 <sup>-</sup> )	4803.1	(25/2 <sup>-</sup> )		
1596.3	5 1.5	2392.64	13/2 <sup>-</sup>	796.68	13/2 <sup>+</sup>	(D)	DCO(2)=1.2 3
1622.2	5 0.3	8149.4	(35/2 <sup>+</sup> )	6526.9	(31/2 <sup>+</sup> )		
1624.4	3 2.8	2421.06	17/2 <sup>+</sup>	796.68	13/2 <sup>+</sup>	E2	DCO(2)=0.9 1 POL=+0.07 2.
1633.4	3 2.8	3365.36	21/2 <sup>+</sup>	1731.95	17/2 <sup>+</sup>	E2	DCO(2)=1.0 1 POL=+0.06 2.
1664.2	5 0.7	4529.9	25/2 <sup>+</sup>	2866.18	21/2 <sup>+</sup>	E2	DCO(2)=1.3 5 POL=+0.17 8.
1744.6	5 0.2	8811.5	(37/2 <sup>+</sup> )	7066.8	(33/2 <sup>+</sup> )		
1783.1	3 3.5	2580.10	15/2 <sup>-</sup>	796.68	13/2 <sup>+</sup>	E1	DCO(2)=0.57 5 POL=+0.04 1.
1854.5	5 0.7	4720.9	(25/2 <sup>+</sup> )	2866.18	21/2 <sup>+</sup>		
1902.1	5 0.3	6019.3	(29/2 <sup>+</sup> )	4116.93	25/2 <sup>+</sup>		
1937.5	5 1.1	3670.8	(21/2 <sup>+</sup> )	1731.95	17/2 <sup>+</sup>	(Q)	DCO(2)=1.1 3

<sup>†</sup> Uncertainties are assigned as follows based on a general comment by **2002Sc13**: 0.1 keV for  $I_\gamma > 7$ , 0.3 keV for  $I_\gamma = 2-7$  and 0.5 keV for  $I_\gamma < 2$ .

<sup>‡</sup> From BrIcc v2.3b (16-Dec-2014) **2008Ki07**, "Frozen Orbitals" appr.

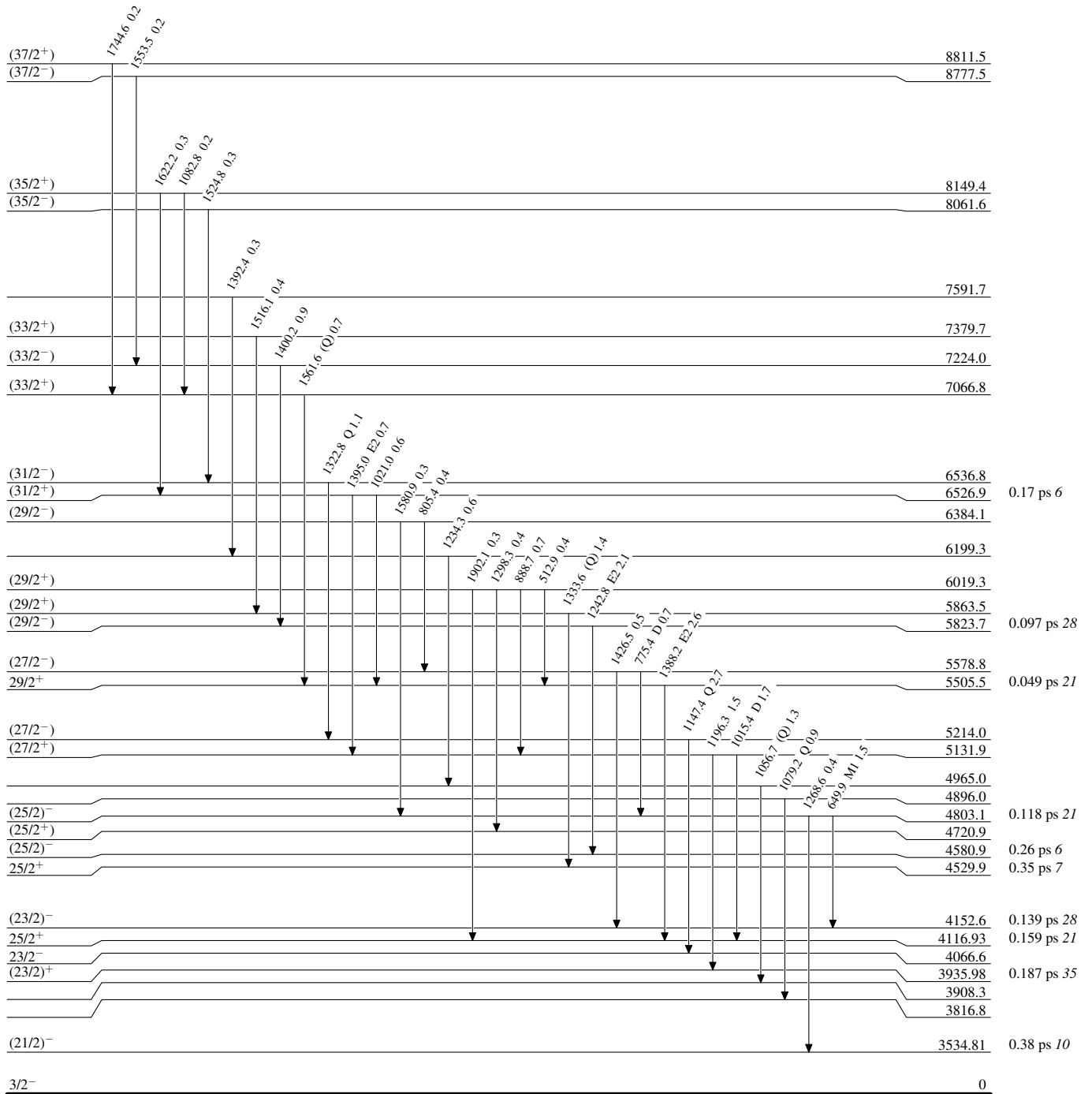
<sup>76</sup>Ge(<sup>7</sup>Li,4n $\gamma$ ) E=35 MeV 2002Sc13

Level Scheme

Intensities: Relative I $\gamma$

Legend

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



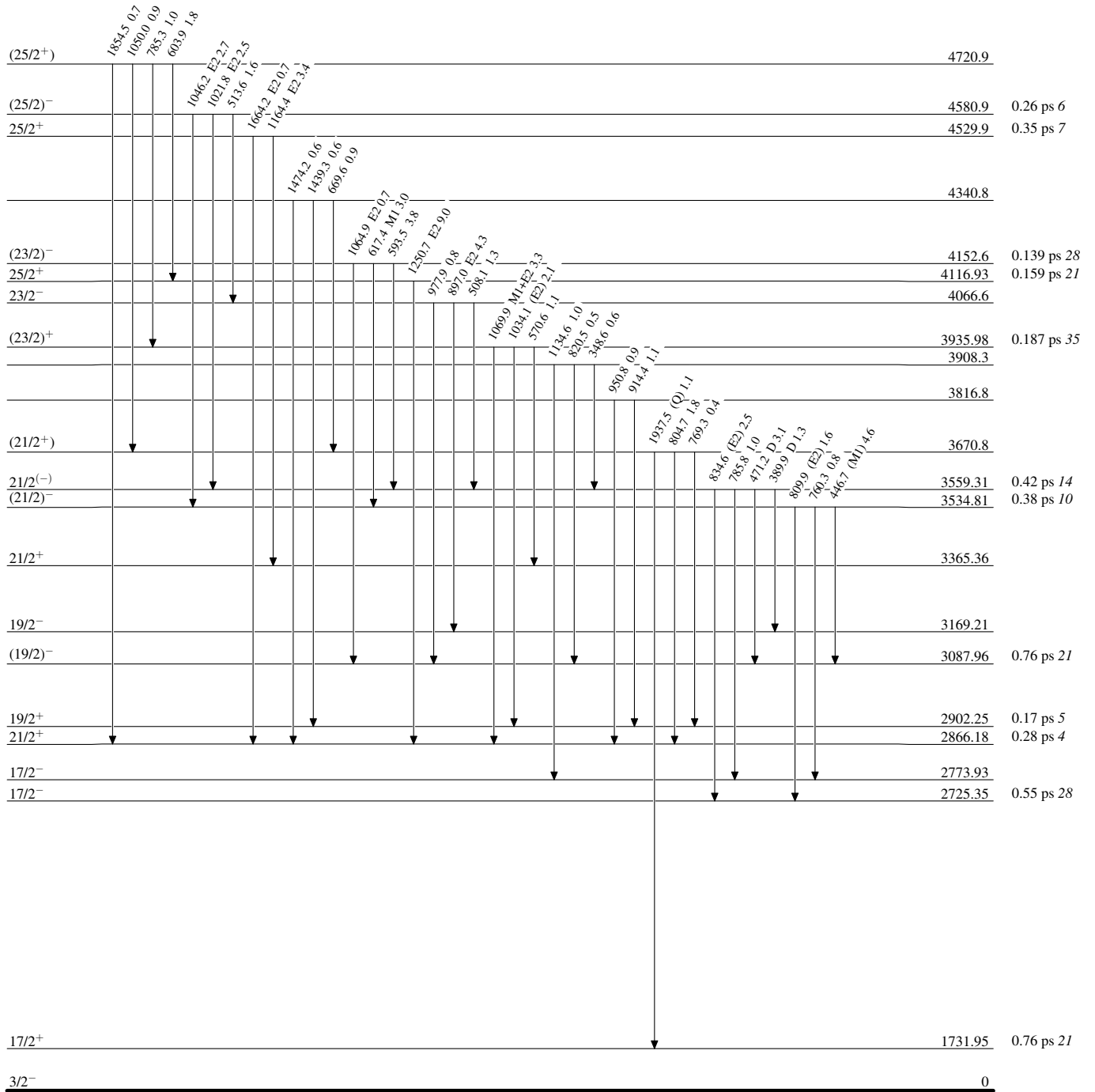
<sup>76</sup>Ge(<sup>7</sup>Li,4n $\gamma$ ) E=35 MeV 2002Sc13

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>





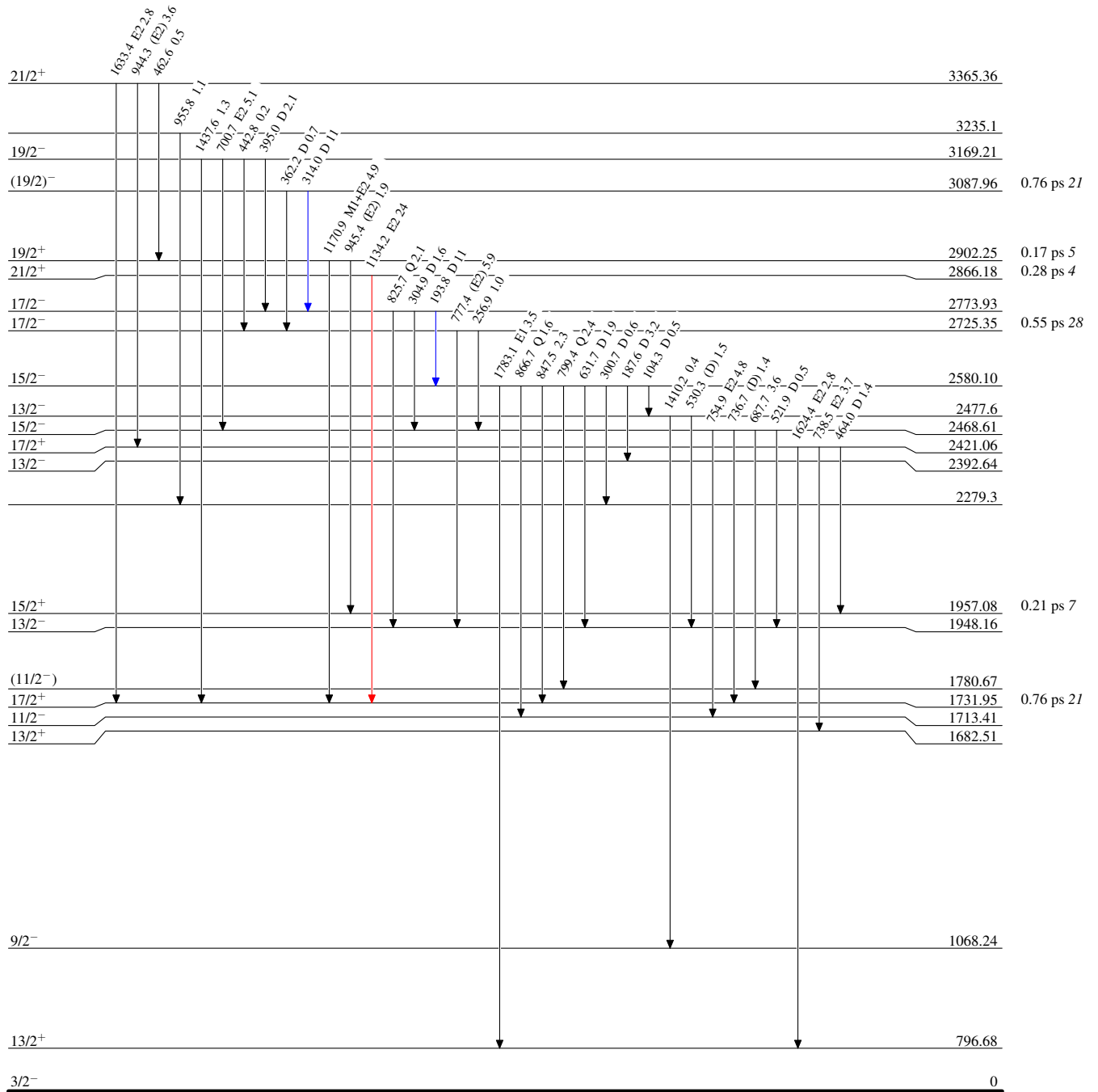
<sup>76</sup>Ge(<sup>7</sup>Li,4n $\gamma$ ) E=35 MeV 2002Sc13

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>



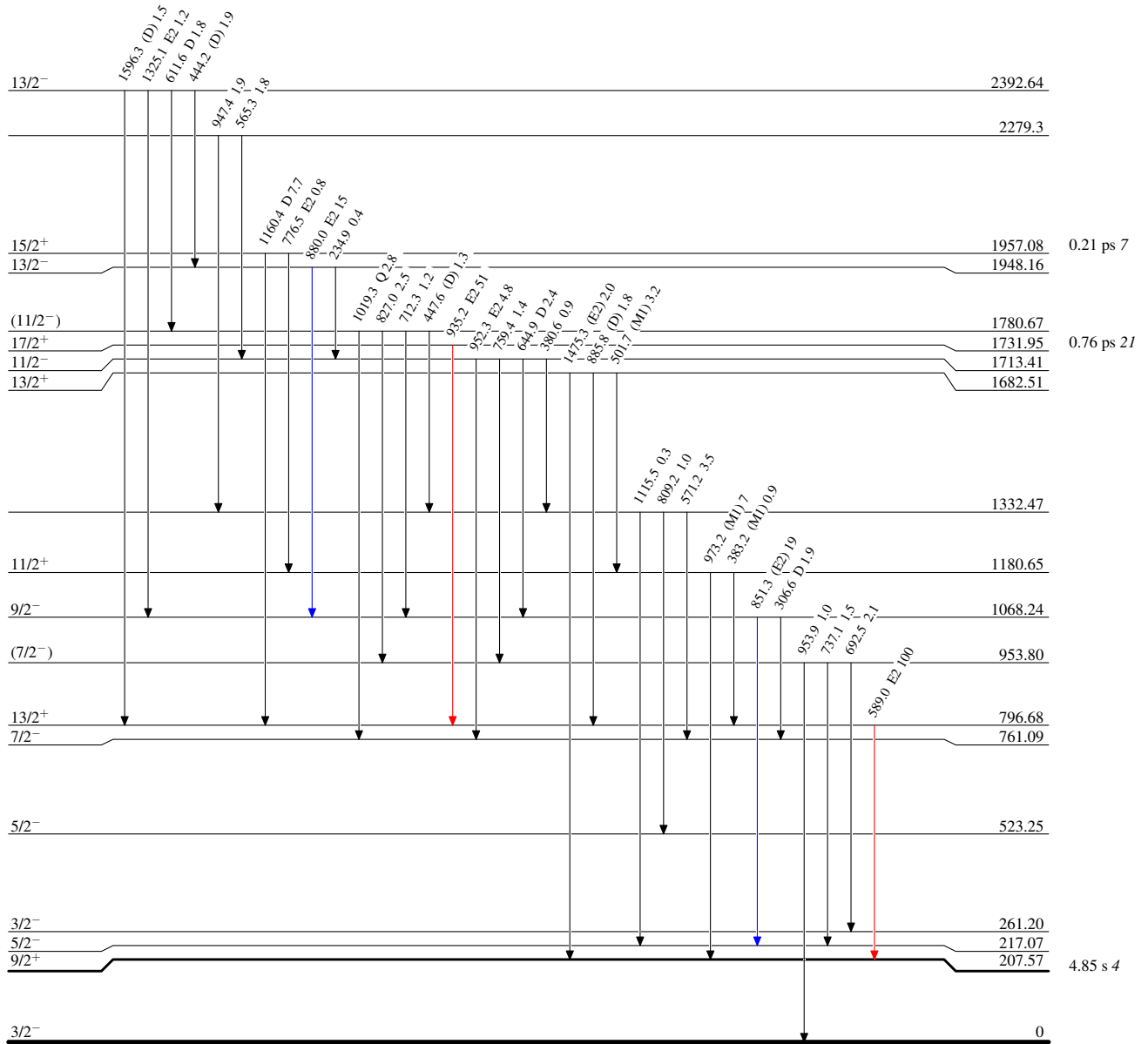
<sup>76</sup>Ge(<sup>7</sup>Li,4n $\gamma$ ) E=35 MeV 2002Sc13

Level Scheme (continued)

Intensities: Relative I $\gamma$

Legend

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



<sup>79</sup>Br<sub>44</sub>

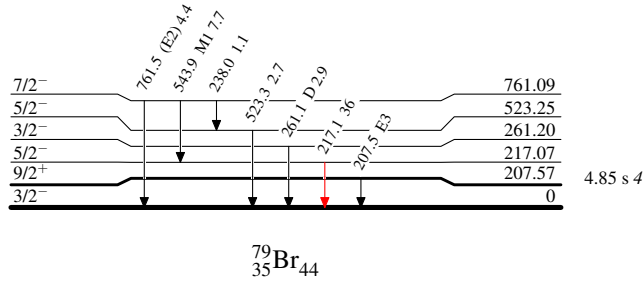
$^{76}\text{Ge}(^7\text{Li},4n\gamma) E=35 \text{ MeV}$  2002Sc13

Level Scheme (continued)

Intensities: Relative  $I_\gamma$

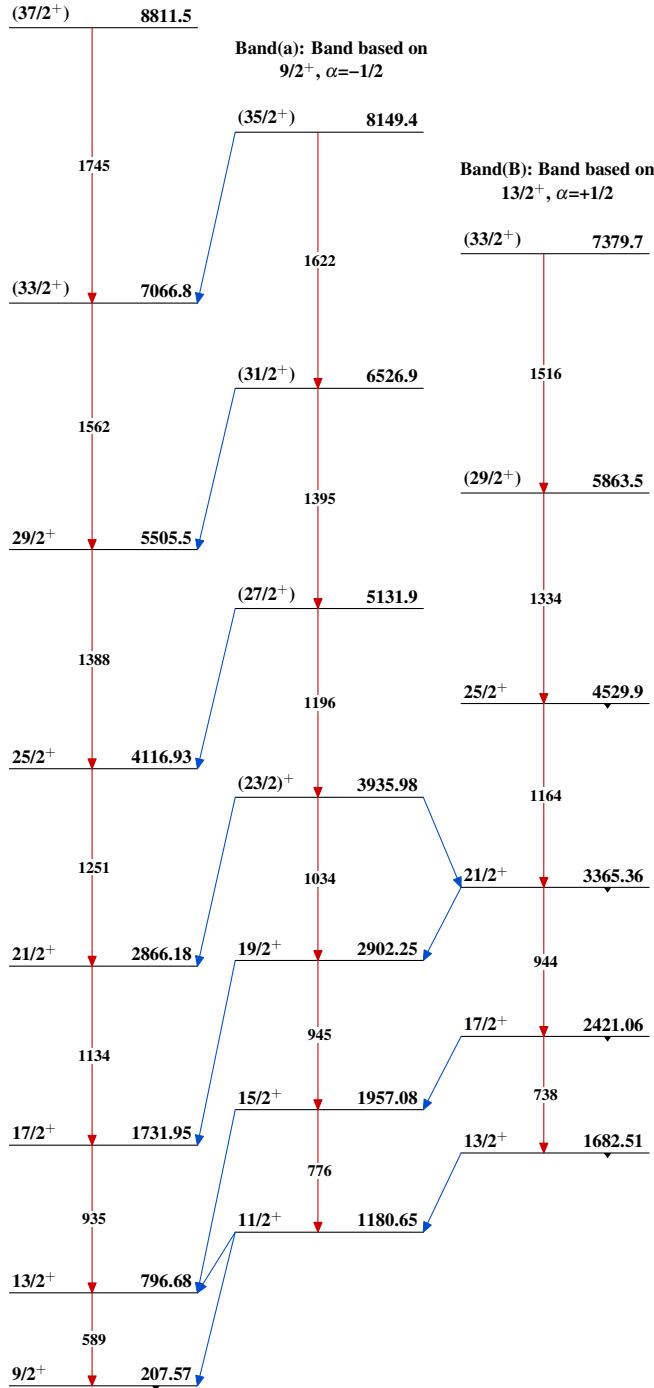
Legend

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

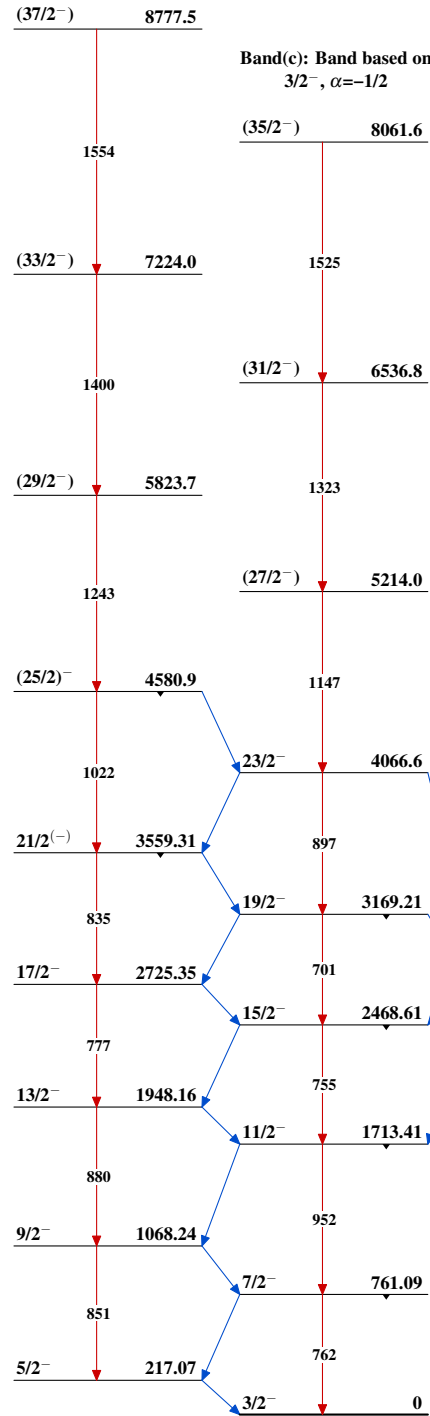


<sup>76</sup>Ge(<sup>7</sup>Li,4n $\gamma$ ) E=35 MeV 2002Sc13

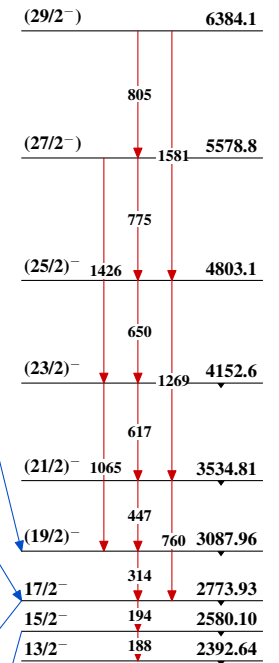
Band(A): Band based on  
9/2<sup>+</sup>,  $\alpha=+1/2$



Band(C): Band based on  
3/2<sup>-</sup>,  $\alpha=+1/2$

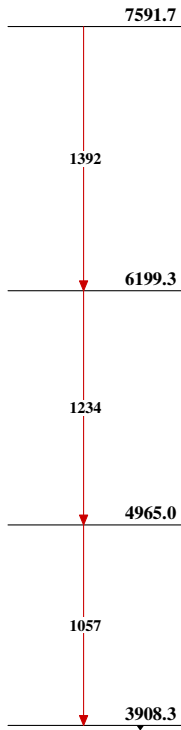


Band(D): Magnetic dipole  
(rotational) band based on 13/2<sup>-</sup>

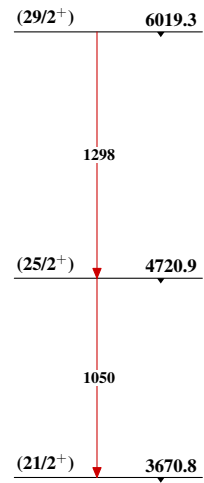


$^{76}\text{Ge}(^7\text{Li},4n\gamma)$  E=35 MeV 2002Sc13 (continued)

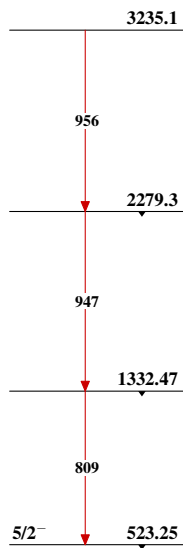
Band(E): Band structure



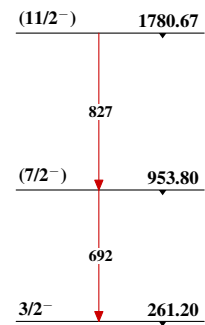
Band(G): Band based on  $21/2^{(+)}$



Band(F): Band structure



Band(H): Band based on  $3/2^{-}$



$^{79}_{35}\text{Br}_{44}$