

$^{74}\text{Ge}(\text{d},\text{p}\gamma)$ 1983Is07

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Alexandru Negret, Balraj Singh		NDS 114, 841 (2013)	30-Jun-2013

1983Is07 (also 1982Is07): E=6 MeV; target enrichment 94.5%. Measured E(p), γ , $\gamma(\theta)$, p γ , using a surface barrier Si(Au) detector for protons (FWHM=45 keV for 10 MeV protons) and Ge(Li) detectors for gammas. (d,p γ) angular correlations analyzed.

 ^{75}Ge Levels

E(level)	J $^{\pi}$	T _{1/2}	Comments
0.0	1/2 ⁻		
139.70 3	7/2 ⁺	47.7 s 5	T _{1/2} : from Adopted Levels.
192.18 7	5/2 ⁺	216 ns 5	T _{1/2} : from $\gamma(t)$ (1982Is07). J $^{\pi}$: T _{1/2} (674 level)<10 ns restricts mult(481 γ to 5/2 ⁺) to dipole or Q giving J(192 level)=1/2 ⁺ , 3/2, 5/2 ⁺ . ce data of 52.5 γ and RUL(M2) \leq 1 supporting M1+E2 restrict J $^{\pi}$ to 5/2 ⁺ , 7/2 ⁺ , 9/2 ⁺ , thus giving J $^{\pi}$ (192 level)=5/2 ⁺ .
199.90 11	9/2 ⁺		
253.14 6	3/2 ⁻		
316.85 7	5/2 ⁻		
457.06 7	5/2 ⁻		
574.72 6	3/2 ⁻		
584.41 8	5/2 ⁺		
673.65 8	1/2 ⁺		
762.08 9	(3/2)		
885.49 7	1/2 ⁻		
901.3?			
947.2?			
1062.2 \ddagger 4			
1080.67 $\#$			
1128.0 5			
1136.91 12	3/2 ⁻		
1240.75 16	(5/2) ⁻		
1257.0 3	(7/2 ⁺)		
1335.2?			
1394.40 10	5/2 ⁺		
1405.7?	9/2 ⁺		
1416.25 25	1/2 ⁻ , 3/2 ⁻		
1494.67 $\#$			
1514.44 7	1/2 ⁺		
1537.7 3	5/2 ⁺		
1718.50 7	5/2 ⁺		
1869.42 13	3/2 ⁺		
2003.91 17	3/2 ⁺		
2110.1 6			
2197.1 6			
2215.5 4	(5/2 ⁺)		
2382.81 17	5/2 ⁺		
2527.25 25	3/2 ⁺ , 5/2 ⁺		
2660.65 21	1/2 ⁻ , 3/2 ⁻		
2665.1 4	(\leq 7/2)		
2759.2 7			
2852.8 4	(3/2) ⁻		
3031.6 6	3/2 ⁺ , 5/2 ⁺		
3048.7 9	3/2 ⁺ , 5/2 ⁺		
3067.3 4	1/2 ⁺		
3082.3 4	1/2 ⁺		

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$^{74}\text{Ge}(\text{d,p}\gamma)$ **1983Is07** (continued) ^{75}Ge Levels (continued)

E(level)	J^π [†]
3162.9 5	1/2 ⁻ , 3/2 ⁻
3279.6 5	7/2 ⁻
3290.3 5	(3/2) ⁺

[†] From Adopted Levels.

[‡] The ordering of the 862.3-1134.9 γ cascade is not established. The present ordering is based on the existence of a level at 1062 in (t,p).

The relative order of 888.8 and 1302.7 γ cascade connecting the 2383 and 192.5 levels is not known. This cascade defines a level at 1080.6 or 1494.6.

 $\gamma(^{75}\text{Ge})$

E_γ	I_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [‡]	δ [‡]	α [#]	Comments
52.5 1	100	192.18	5/2 ⁺	139.70	7/2 ⁺	M1+E2	0.9 5	3.9 24	$\alpha(\text{K})=3.3$ 20; $\alpha(\text{L})=0.6$ 4; $\alpha(\text{M})=0.08$ 6; $\alpha(\text{N})=0.0033$ 20 Mult.: from $\alpha(\text{exp})=4.2$ 10 (1982Is07). Conversion coefficient is deduced from γ data and is expressed as $(I(\text{total})-I_\gamma)/I_\gamma$. The two cascades used for calculation are from the levels 317 to 192 to 140 and 674 to 192 to 140. $\text{RUL} \leq 1$ excludes E1+M2.
60.2 1	100	199.90	9/2 ⁺	139.70	7/2 ⁺	(M1+E2)	-0.11 +8-6	0.38 8	$\alpha(\text{K})=0.33$ 7; $\alpha(\text{L})=0.039$ 11; $\alpha(\text{M})=0.0058$ 16; $\alpha(\text{N})=0.00035$ 7
124.4 2	12 4	316.85	5/2 ⁻	192.18	5/2 ⁺				
139.68 3	100	139.70	7/2 ⁺	0.0	1/2 ⁻	E3			E_γ : value given by authors as taken from 1976Bh04.
177.0 1	100 3	316.85	5/2 ⁻	139.70	7/2 ⁺	D+Q			δ : either +0.03 +11-9 or <-5.
203.9 1	99 6	457.06	5/2 ⁻	253.14	3/2 ⁻	D+Q			δ : either +0.1 2 or $\delta < -2$.
236.1 ^a 1	20 2	1136.91	3/2 ⁻	901.3?					
253.0 1	100	253.14	3/2 ⁻	0.0	1/2 ⁻	D+Q			δ : -2.4 < δ < -0.12.
257.4 5	1.0 4	574.72	3/2 ⁻	316.85	5/2 ⁻				
310.7 1	60 4	885.49	1/2 ⁻	574.72	3/2 ⁻				
316.9 1	55 4	316.85	5/2 ⁻	0.0	1/2 ⁻				
321.4 1	5 1	574.72	3/2 ⁻	253.14	3/2 ⁻				
392.2 2	8 2	584.41	5/2 ⁺	192.18	5/2 ⁺				
444.6 2	100 14	762.08	(3/2)	316.85	5/2 ⁻				
444.8 1	100 4	584.41	5/2 ⁺	139.70	7/2 ⁺	D+Q			δ : either -0.2 1 or -3.1 +9-12.
444.8 ^a 3	100	901.3?		457.06	5/2 ⁻				
457.0 1	100 10	457.06	5/2 ⁻	0.0	1/2 ⁻				
481.4 1	100 8	673.65	1/2 ⁺	192.18	5/2 ⁺				
562.0 3	13 4	1136.91	3/2 ⁻	574.72	3/2 ⁻				
568.5 3	13 2	885.49	1/2 ⁻	316.85	5/2 ⁻				
570.1 1	100 17	762.08	(3/2)	192.18	5/2 ⁺				
574.8 1	100 3	574.72	3/2 ⁻	0.0	1/2 ⁻	D+Q			δ : -2.4 < δ < +0.12.
632.0 3	8 3	1394.40	5/2 ⁺	762.08	(3/2)				
632.3 2	42 4	885.49	1/2 ⁻	253.14	3/2 ⁻				
666.8 4	30 14	1240.75	(5/2) ⁻	574.72	3/2 ⁻				

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$^{74}\text{Ge}(\text{d},\text{p}\gamma)$ 1983Is07 (continued) $\gamma(^{75}\text{Ge})$ (continued)

E_γ	I_γ^\dagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ‡	Comments
673.8 2	33 5	673.65	1/2 ⁺	0.0	1/2 ⁻		
679.8 2	31 6	1136.91	3/2 ⁻	457.06	5/2 ⁻		
746.5 ^a 4	100	947.2?		199.90	9/2 ⁺		
752.5 2	4 1	1514.44	1/2 ⁺	762.08	(3/2)		
762.4 6	89 40	762.08	(3/2)	0.0	1/2 ⁻		
783.5 2	100	1240.75	(5/2) ⁻	457.06	5/2 ⁻		
799.9 3	100	1257.0	(7/2 ⁺)	457.06	5/2 ⁻		
810.0 3	15 3	1394.40	5/2 ⁺	584.41	5/2 ⁺		
820.1 2	100 10	1136.91	3/2 ⁻	316.85	5/2 ⁻		
840.7 1	18 1	1514.44	1/2 ⁺	673.65	1/2 ⁺		
841.5 3	92 30	1416.25	1/2 ⁻ , 3/2 ⁻	574.72	3/2 ⁻		
862.3 [@] 3	100	1062.2		199.90	9/2 ⁺		
862.3 [@] 3	100	2197.1		1335.2?			
867.5 5	13 4	2003.91	3/2 ⁺	1136.91	3/2 ⁻		
884.4 4	13 4	1136.91	3/2 ⁻	253.14	3/2 ⁻		
885.6 1	100	885.49	1/2 ⁻	0.0	1/2 ⁻		
888.8 ^{@a} 4	100	1080.6?		192.18	5/2 ⁺		
888.8 ^{@a} 4	18 4	2382.81	5/2 ⁺	1494.6?			
923.8 7	28 11	1240.75	(5/2) ⁻	316.85	5/2 ⁻		
935.4 5	100	1128.0		192.18	5/2 ⁺		
939.7 1	14 1	1514.44	1/2 ⁺	574.72	3/2 ⁻		
955.8 5	5 2	1718.50	5/2 ⁺	762.08	(3/2)		
987.6 3	77 11	1240.75	(5/2) ⁻	253.14	3/2 ⁻		
1134.6 2	3 1	1718.50	5/2 ⁺	584.41	5/2 ⁺		
1134.9 ^{@a} 13		1335.2?		199.90	9/2 ⁺		
1134.9 [@] 5	100	2197.1		1062.2			
1136.9 3	52 9	1136.91	3/2 ⁻	0.0	1/2 ⁻	D+Q	δ : either >+0.3 or <-5.
1143.8 1	3 1	1718.50	5/2 ⁺	574.72	3/2 ⁻		
1162.7 ^a 6	100 40	2110.1		947.2?			
1196.2 2	22 8	1869.42	3/2 ⁺	673.65	1/2 ⁺		
1203.0 5	25 6	1394.40	5/2 ⁺	192.18	5/2 ⁺		
1254.7 1	100 8	1394.40	5/2 ⁺	139.70	7/2 ⁺		
1261.5 3	12 2	1718.50	5/2 ⁺	457.06	5/2 ⁻		
1265.8 ^a 4	100	1405.7?	9/2 ⁺	139.70	7/2 ⁺		
1284.6 2	100 13	1869.42	3/2 ⁺	584.41	5/2 ⁺		
1302.7 ^{@a} 4	100	1494.6?		192.18	5/2 ⁺		
1302.7 ^{@a} 4	18 4	2382.81	5/2 ⁺	1080.6?			
1344.5 8	53 14	1537.7	5/2 ⁺	192.18	5/2 ⁺		
1398.1 3	100 18	1537.7	5/2 ⁺	139.70	7/2 ⁺		
1412.3 2	86 12	1869.42	3/2 ⁺	457.06	5/2 ⁻		
1416.3 4	100 20	1416.25	1/2 ⁻ , 3/2 ⁻	0.0	1/2 ⁻		
1455.4 7	61 23	2215.5	(5/2 ⁺)	762.08	(3/2)		E_γ : poor energy fit. Authors quote E(level)=2215.0, consistent with the placement from this level of the 2075 γ . The 1455 γ leads to E(level)=2217.8 7, suggesting either an incorrect placement, or a mistake in the quoted E_γ .
1458.8 8	55 22	2852.8	(3/2) ⁻	1394.40	5/2 ⁺		
1465.4 2	28 3	1718.50	5/2 ⁺	253.14	3/2 ⁻		
1514.5 1	100 4	1514.44	1/2 ⁺	0.0	1/2 ⁻		
1525.7 3	14 2	1718.50	5/2 ⁺	192.18	5/2 ⁺		
1546.9 3	58 7	2003.91	3/2 ⁺	457.06	5/2 ⁻		
1578.7 1	100 5	1718.50	5/2 ⁺	139.70	7/2 ⁺	D+Q	δ : either -0.0 +2-1 or <-4.
1620.7 2	100 8	2382.81	5/2 ⁺	762.08	(3/2)	D+Q	δ : δ <0.7 if J^π of 762 level is 5/2 ⁺ . But the Adopted J^π =(3/2).

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$^{74}\text{Ge}(\text{d},\text{p}\gamma)$ **1983Is07** (continued) $\gamma(^{75}\text{Ge})$ (continued)

E_γ	I_γ^\dagger	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [‡]
1776.1	10	15 5	2660.65	1/2 ⁻ ,3/2 ⁻	885.49	1/2 ⁻
1799.1	4	14 3	2382.81	5/2 ⁺	584.41	5/2 ⁺
1807.7	3	28 6	2382.81	5/2 ⁺	574.72	3/2 ⁻
1811.6	2	100 11	2003.91	3/2 ⁺	192.18	5/2 ⁺
1853.0	3	100 15	2527.25	3/2 ⁺ ,5/2 ⁺	673.65	1/2 ⁺
1869.4	8	10 4	1869.42	3/2 ⁺	0.0	1/2 ⁻
1898.5	2	100 11	2660.65	1/2 ⁻ ,3/2 ⁻	762.08	(3/2)
1943.0	6	20 7	2527.25	3/2 ⁺ ,5/2 ⁺	584.41	5/2 ⁺
1970.4	6	81 27	2110.1		139.70	7/2 ⁺
2034.4	5	100 22	3162.9	1/2 ⁻ ,3/2 ⁻	1128.0	
2075.1	4	100 30	2215.5	(5/2 ⁺)	139.70	7/2 ⁺
2086.0	6	13 3	2660.65	1/2 ⁻ ,3/2 ⁻	574.72	3/2 ⁻
2267.9	7	81 33	2852.8	(3/2) ⁻	584.41	5/2 ⁺
2269.5	6	100	3031.6	3/2 ⁺ ,5/2 ⁺	762.08	(3/2)
2305.5	4	100 21	3067.3	1/2 ⁺	762.08	(3/2)
2336.5	5	21 7	2527.25	3/2 ⁺ ,5/2 ⁺	192.18	5/2 ⁺
2402.9 ^{&}	10	54 ^{&} 19	3162.9	1/2 ⁻ ,3/2 ⁻	762.08	(3/2)
2402.9 ^{&}	10	27 ^{&} 17	3290.3	(3/2) ⁺	885.49	1/2 ⁻
2411.9	4	100	2665.1	(≤7/2)	253.14	3/2 ⁻
2490.4	30	27 5	3162.9	1/2 ⁻ ,3/2 ⁻	673.65	1/2 ⁺
2506.0	7	100	2759.2		253.14	3/2 ⁻
2507.3	15	100 24	3082.3	1/2 ⁺	574.72	3/2 ⁻
2517.9	8	39 15	3279.6	7/2 ⁻	762.08	(3/2)
2600.1	7	85 33	2852.8	(3/2) ⁻	253.14	3/2 ⁻
2607.3	15	15 11	3067.3	1/2 ⁺	457.06	5/2 ⁻
2660.7	7	56 26	2852.8	(3/2) ⁻	192.18	5/2 ⁺
2703.5	10	31 15	3279.6	7/2 ⁻	574.72	3/2 ⁻
2712.6	7	100 33	2852.8	(3/2) ⁻	139.70	7/2 ⁺
2812.1	14	14 9	3067.3	1/2 ⁺	253.14	3/2 ⁻
2856.5	9	100	3048.7	3/2 ⁺ ,5/2 ⁺	192.18	5/2 ⁺
2890.2	5	52 22	3082.3	1/2 ⁺	192.18	5/2 ⁺
2909.5	6	92 22	3162.9	1/2 ⁻ ,3/2 ⁻	253.14	3/2 ⁻
3026.6	6	100 24	3279.6	7/2 ⁻	253.14	3/2 ⁻
3082.1	6	48 22	3082.3	1/2 ⁺	0.0	1/2 ⁻
3290.3	5	100 26	3290.3	(3/2) ⁺	0.0	1/2 ⁻

[M2]

† Photon branching ratio from each level.

‡ From $\gamma(\theta)$ in 1983Is07, except for 52.5 γ .

Additional information 1.

@ Multiply placed.

& Multiply placed with intensity suitably divided.

^a Placement of transition in the level scheme is uncertain.

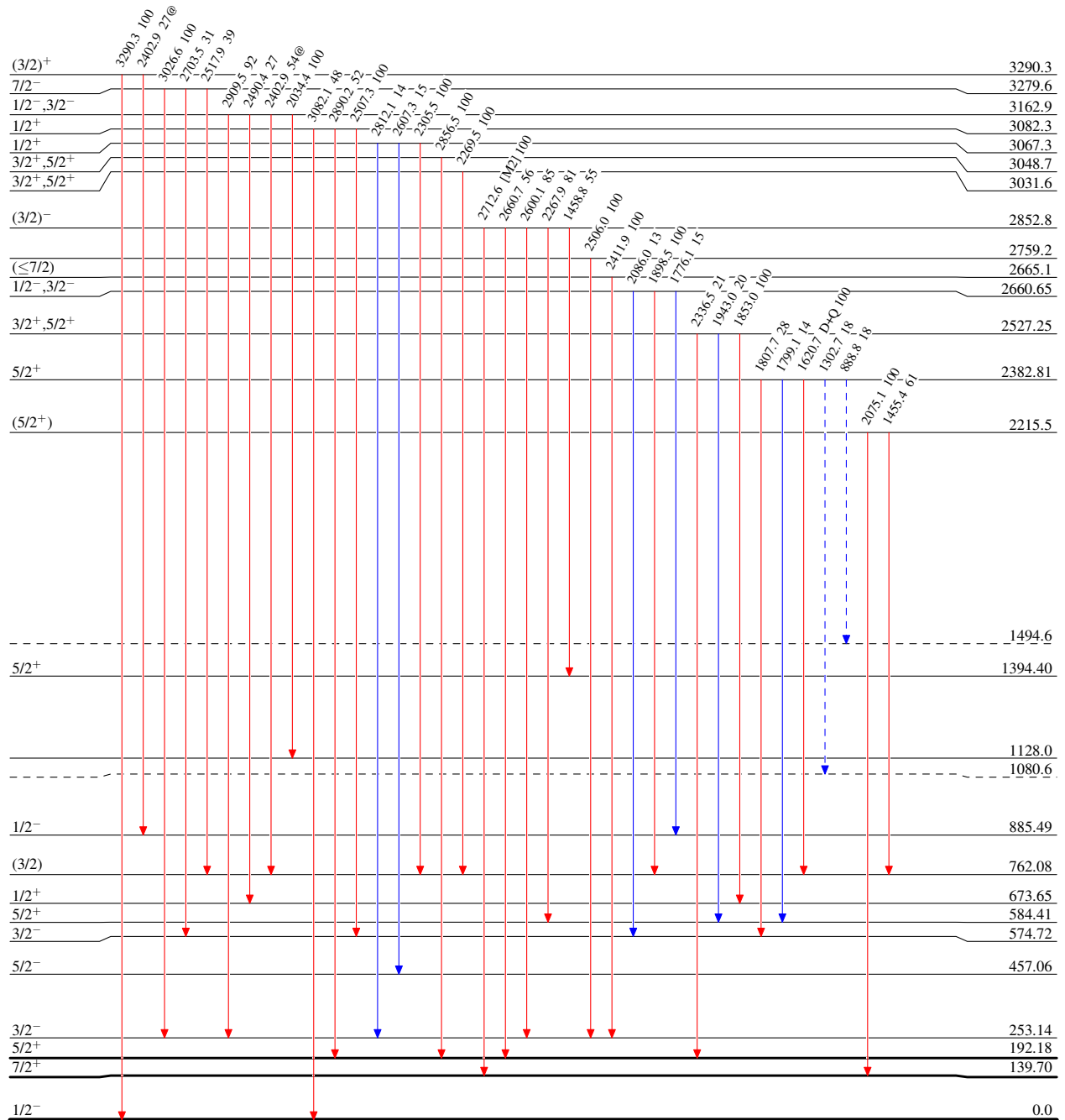
$^{74}\text{Ge}(d,p\gamma)$ 1983Is07

Level Scheme

Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- - - - - γ Decay (Uncertain)



$^{75}_{32}\text{Ge}_{43}$

216 ns 5
47.7 s 5

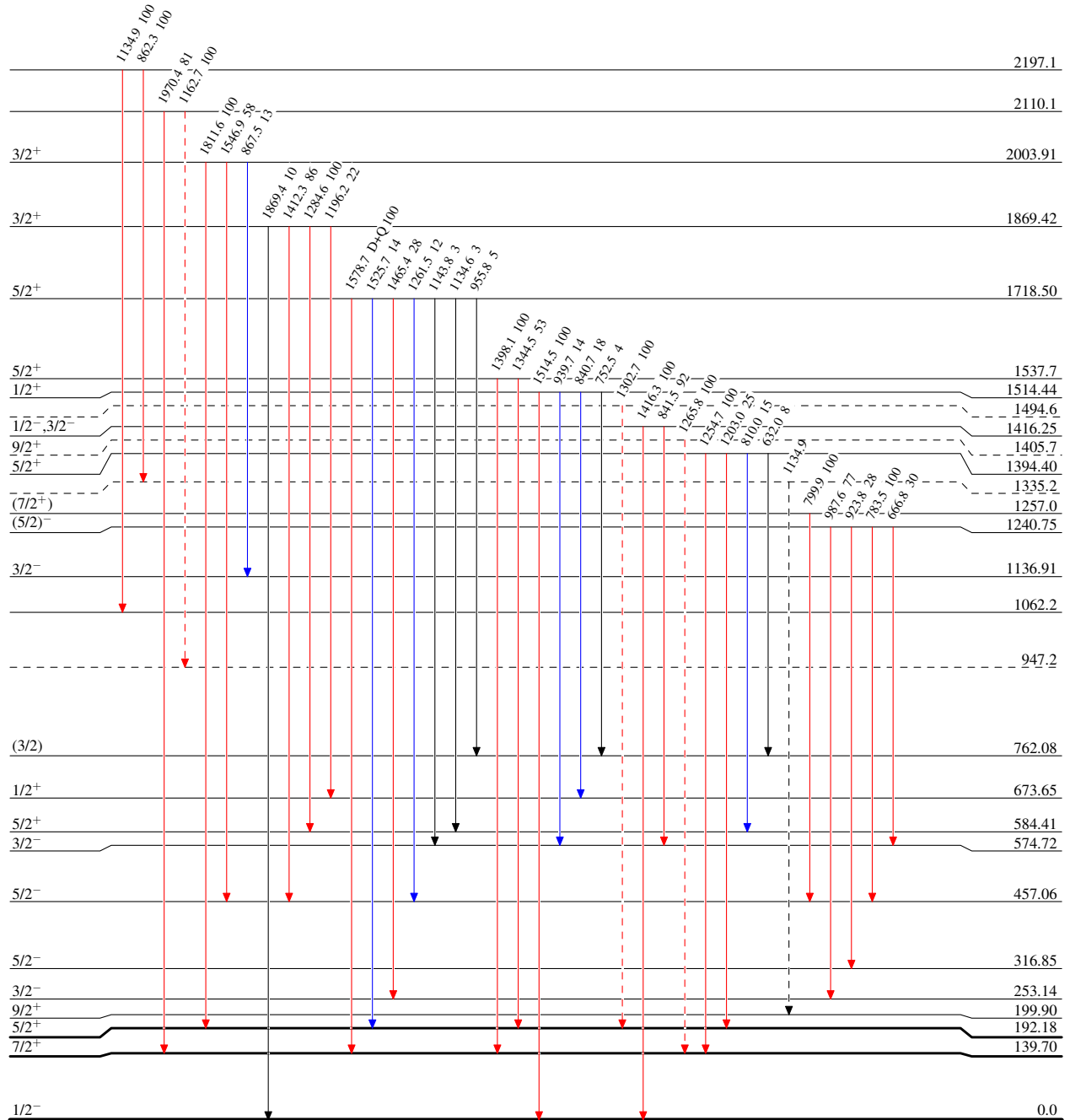
⁷⁴Ge(d,p)^γ 1983Is07

Level Scheme (continued)

Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

Legend

- I_γ < 2% × I_γ^{max}
- I_γ < 10% × I_γ^{max}
- I_γ > 10% × I_γ^{max}
- - - - - → γ Decay (Uncertain)



216 ns 5
47.7 s 5

⁷⁵Ge₃₂

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Level Scheme (continued)

Intensities: Relative I_γ
@ Multiply placed: intensity suitably divided

Legend

- $I_\gamma < 2\% \times I_\gamma^{\text{max}}$
- $I_\gamma < 10\% \times I_\gamma^{\text{max}}$
- $I_\gamma > 10\% \times I_\gamma^{\text{max}}$
- - - - - γ Decay (Uncertain)

