^{149}Sm(d,2nγ)   **1986Bo13**

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 185, 2 (2022)	23-Aug-2022

1986Bo13: E=13.5 MeV. Measured Eγ, Iγ, $\gamma\gamma$.

^{149}Eu Levels

E(level)[†]	J$^{\pi}$[‡]	Comments
0.0	5/2$^+$	
149.60 *6*	7/2$^+$	
460.3 *1*	3/2$^+$	J$^{\pi}$: (3/2,5/2)$^+$ in the Adopted Levels.
496.22 *8*	11/2$^-$	
534.28 *6*	7/2$^+$	
666.14 *8*	9/2$^+$	
748.60 *7*	7/2$^-$	
794.80 *9*	9/2$^-$	
798.93 *6*	9/2$^+$	
812.3 *3*	5/2$^+$	
876.0 *2*	5/2$^+$	
910.73 *8*	11/2$^+$	
933.0 *1*	7/2$^+$	J$^{\pi}$: (9/2)$^+$ in the Adopted Levels.
938.7 *1*	7/2$^+$	
994.7 *1*	15/2$^-$	
1013.3 *2*	5/2$^-$	J$^{\pi}$: (5/2,7/2,9/2) in the Adopted Levels.
1097.3 *1*	7/2$^-$,9/2$^-$	J$^{\pi}$: (9/2)$^-$ in the Adopted Levels.
1177.1 *1*	13/2$^-$	
1184.4 *1*	(11/2$^+$)	
1333.4 *1*	13/2$^+$	
1473.4? *10*	(13/2$^+$)	
1503.3 *4*	(11/2$^-$)	
1528.9 *1*	15/2$^+$	
1609.8 *1*	19/2$^-$	
1659.3 *1*	15/2$^+$	
1764.3 *2*	17/2$^-$	
1999.1 *3*	19/2$^+$	
2335.7 *6*	23/2$^-$	
2576.7 *6*	25/2$^-$	

[†] From least-squares fit to Eγ data. Uncertainty on Eγ=0.5 (assumed) for multiplets.

[‡] As given by 1986Bo13, based on $\gamma(\theta)$ data and decay patterns. Assignments from the Adopted Levels are given under comments, if different.

$\gamma(^{149}$Eu)

E$_{\gamma}$	I$_{\gamma}$	E$_i$(level)	J$^{\pi}_i$	E$_f$	J$^{\pi}_f$	Comments
132.2 *3*	1.2[†] *3*	666.14	9/2$^+$	534.28	7/2$^+$	
149.70 *6*	100	149.60	7/2$^+$	0.0	5/2$^+$	
154.2 *2*	1.6[†] *3*	1764.3	17/2$^-$	1609.8	19/2$^-$	
182.7 *1*	2.6 *1*	1177.1	13/2$^-$	994.7	15/2$^-$	Complex line.
241.0 *1*	0.8 *1*	2576.7	25/2$^-$	2335.7	23/2$^-$	
244.55 *6*	2.5 *1*	910.73	11/2$^+$	666.14	9/2$^+$	
264.65 *5*	6.0 *2*	798.93	9/2$^+$	534.28	7/2$^+$	
272.8 *1*	1.1 *1*	938.7	7/2$^+$	666.14	9/2$^+$	

$^{149}\text{Sm}(d,2n\gamma)$　　**1986Bo13 (continued)**

$\gamma(^{149}\text{Eu})$ (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Comments
278	‡	812.3	$5/2^+$	534.28	$7/2^+$	From $\gamma\gamma$.
289[&]		1473.4?	$(13/2^+)$	1184.4	$(11/2^+)$	
298.58 5	12.2 2	794.80	$9/2^-$	496.22	$11/2^-$	
325.6 5	0.9† 3	1659.3	$15/2^+$	1333.4	$13/2^+$	
346.62 5	67.8 10	496.22	$11/2^-$	149.60	$7/2^+$	
351.7 2	2.2 3	1528.9	$15/2^+$	1177.1	$13/2^-$	
385.7@ 1	3.8@ 2	534.28	$7/2^+$	149.60	$7/2^+$	
385.7@ 1	3.8@ 2	1184.4	$(11/2^+)$	798.93	$9/2^+$	
389.3 2	1.1 1	1999.1	$19/2^+$	1609.8	$19/2^-$	
422.67 7	3.0 1	1333.4	$13/2^+$	910.73	$11/2^+$	
460.3 1	10‡	460.3	$3/2^+$	0.0	$5/2^+$	I_γ: complex line.
495.3		496.22	$11/2^-$	0.0	$5/2^+$	Unresolved from a strong line in ^{17}F.
						Mult=E3 in Adopted Gammas.
498.45 6	34.4 7	994.7	$15/2^-$	496.22	$11/2^-$	
516.57 7	18.9† 5	666.14	$9/2^+$	149.60	$7/2^+$	
534.27@ 6	24.3@ 4	534.28	$7/2^+$	0.0	$5/2^+$	
534.27@ 6	24.3@ 4	1528.9	$15/2^+$	994.7	$15/2^-$	
553.0 2	1.3 2	1013.3	$5/2^-$	460.3	$3/2^+$	
615.05 8	11.4 4	1609.8	$19/2^-$	994.7	$15/2^-$	
650.1@ 1	5.0@ 2	798.93	$9/2^+$	149.60	$7/2^+$	Complex line.
650.1@ 1	5.0@ 2	1184.4	$(11/2^+)$	534.28	$7/2^+$	
663.9 1	11.4†‡ 3	812.3	$5/2^+$	149.60	$7/2^+$	
666.7 1	8.6† 2	666.14	$9/2^+$	0.0	$5/2^+$	
680.88 6	9.0 3	1177.1	$13/2^-$	496.22	$11/2^-$	
708.5 3	1.7 2	1503.3	$(11/2^-)$	794.80	$9/2^-$	
725.9@ 2	2.1@ 2	876.0	$5/2^+$	149.60	$7/2^+$	
725.9@ 2	2.1@# 2	2335.7	$23/2^-$	1609.8	$19/2^-$	
748.60@ 7	12.8@ 3	748.60	$7/2^-$	0.0	$5/2^+$	
748.60@ 7	12.8@† 3	1659.3	$15/2^+$	910.73	$11/2^+$	
761.16 6	12.2 3	910.73	$11/2^+$	149.60	$7/2^+$	
769.9 2	1.4† 3	1764.3	$17/2^-$	994.7	$15/2^-$	
789.1 1	2.2 2	938.7	$7/2^+$	149.60	$7/2^+$	
798.9 1	6.9 2	798.93	$9/2^+$	0.0	$5/2^+$	
811.9 3	1.8† 5	812.3	$5/2^+$	0.0	$5/2^+$	
876.1 2	2.1 2	876.0	$5/2^+$	0.0	$5/2^+$	
933.0 1	4.6 2	933.0	$7/2^+$	0.0	$5/2^+$	
937.8 2	1.3 2	938.7	$7/2^+$	0.0	$5/2^+$	
947.7 1	3.7 2	1097.3	$7/2^-,9/2^-$	149.60	$7/2^+$	

† Branching ratio disagrees with that in the Adopted Gammas.
‡ Also contributed by a competing reaction $^{149}\text{Sm}(d,d'\gamma)$.
# Also contributed by a competing reaction $^{149}\text{Sm}(d,t\gamma)^{148}\text{Sm}$.
@ Multiply placed with undivided intensity.
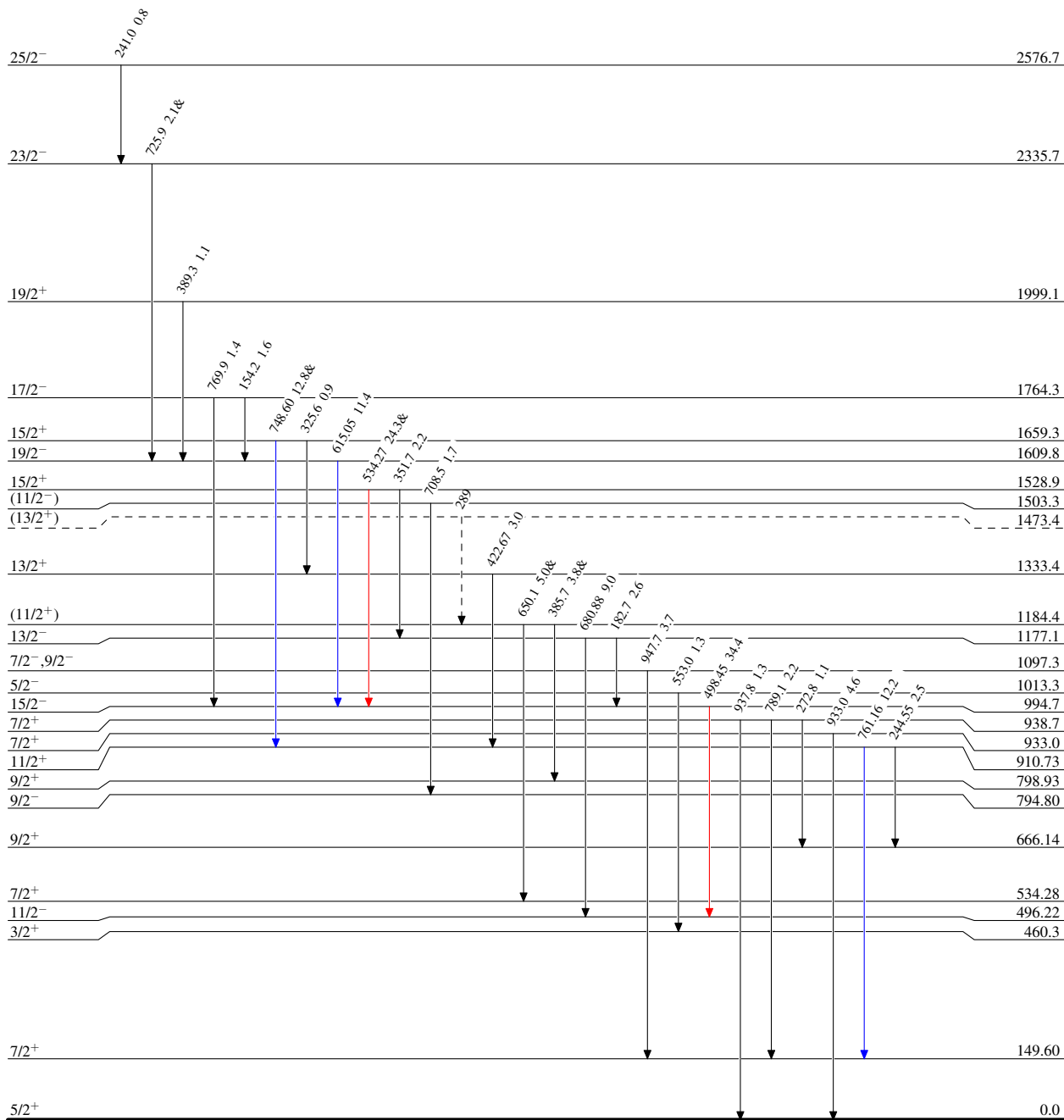& Placement of transition in the level scheme is uncertain.

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Level Scheme

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

Legend

→ (black)	$I_\gamma < 2\% \times I_\gamma^{max}$
→ (blue)	$I_\gamma < 10\% \times I_\gamma^{max}$
→ (red)	$I_\gamma > 10\% \times I_\gamma^{max}$
⇢ (dashed)	γ Decay (Uncertain)

Level energies (right side) and spins/parities (left side):

J^π	Energy
25/2$^-$	2576.7
23/2$^-$	2335.7
19/2$^+$	1999.1
17/2$^-$	1764.3
15/2$^+$	1659.3
19/2$^-$	1609.8
15/2$^+$	1528.9
(11/2$^-$)	1503.3
(13/2$^+$)	1473.4
13/2$^+$	1333.4
(11/2$^+$)	1184.4
13/2$^-$	1177.1
7/2$^-$,9/2$^-$	1097.3
5/2$^-$	1013.3
15/2$^-$	994.7
7/2$^+$	938.7
7/2$^+$	933.0
11/2$^+$	910.73
9/2$^+$	798.93
9/2$^-$	794.80
9/2$^+$	666.14
7/2$^+$	534.28
11/2$^-$	496.22
3/2$^+$	460.3
7/2$^+$	149.60
5/2$^+$	0.0

Gamma transitions (energy, intensity):

241.0 0.8; 725.9 2.1&; 389.3 1.1; 769.9 1.4; 154.2 1.6; 748.60 12.8&; 325.6 0.9; 615.05 11.4; 534.27 24.3&; 351.7 2.2; 708.5 1.7; 289; 422.67 3.0; 650.1 5.0&; 385.7 3.8&; 680.88 9.0; 182.7 2.6; 947.7 3.7; 553.0 1.3; 498.45 34.4; 937.8 1.3; 789.1 2.2; 272.8 1.1; 933.0 4.6; 761.16 12.2; 244.55 2.5

$^{149}_{63}$Eu$_{86}$

^{149}Sm(d,2nγ)   1986Bo13

Level Scheme (continued)

Intensities: Relative I$_\gamma$
& Multiply placed: undivided intensity given

Legend

I$_\gamma$ < 2%×I$_\gamma^{max}$
I$_\gamma$ < 10%×I$_\gamma^{max}$
I$_\gamma$ > 10%×I$_\gamma^{max}$

$^{149}_{63}$Eu$_{86}$