

$^{150}\text{Sm}(\alpha, n\gamma)$ 1981Re11

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 170, 1 (2020)	16-Aug-2020

$E(\alpha)=17$ and 19 MeV; measured γ singles, $\gamma\gamma$ coincidence, $\gamma(\theta)$, and γ multiplicities.

 ^{153}Gd Levels

E(level)	$J^\pi^\dagger$	E(level)	$J^\pi^\dagger$	E(level)	$J^\pi^\dagger$	E(level)	$J^\pi^\dagger$
0.0 ‡	3/2 $^-$	215.9 a	7/2 $^-$	564.6 a	13/2 $^-$	887.6	(9/2 $^-$)
41.5 ‡	5/2 $^-$	219.4 a	(9/2 $^-$)	575.2 $^\#$	(15/2 $^-$)	898.7 a	15/2 $^-$
93.3 ‡	7/2 $^-$	303.5	5/2 $^+$	610.5 $^@$	15/2 $^+$	972.5 $^@$	(19/2 $^+$)
95.4 $^@$	(9/2) $^+$	333.2 $^\&$	(9/2 $^-$)	674.4		1010.1 a	17/2 $^-$
109.8 a	(5/2) $^-$	361.0 $^@$	(17/2 $^+$)	716.4 $^\&$	(13/2 $^-$)	1034.8	
129.1 a	3/2 $^-$	363.5 $^\#$	(13/2 $^-$)	723.7 $^@$	(21/2 $^+$)	1050.8 $^\#$	(19/2 $^-$)
134.7 $^@$	(13/2) $^+$	395.3	(7/2 $^+$)	769.4	(5/2,7/2) $^-$	1190.6 $^@$	(25/2 $^+$)
171.2 $^\#$	(11/2 $^-$)	514.3 a	11/2 $^-$	804.9 $^\#$	(17/2 $^-$)	1318.1 a	19/2 $^-$
183.3	5/2 $^+$	530.6	3/2 $^-$	812.9	(5/2 $^-$)	1472.0	9/2 $^-$, 11/2 $^-$
212.1	3/2 $^+$	550.9	(3/2 $^-$, 5/2, 7/2 $^-$)	821.4	(5/2 $^+$)		

† From ^{153}Gd Adopted Levels.

‡ Band(A): 3/2[521] band.

$^\#$ Band(B): 11/2[505] band.

$^@$ Band(C): Band based on $i_{13/2}$.

$^\&$ Band(D): Band based on $f_{7/2}$.

a Band(E): Band based on $h_{9/2}$.

 $\gamma(^{153}\text{Gd})$

$E_\gamma^\dagger$	$I_\gamma^\ddagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π
(39.5) I		134.7	(13/2) $^+$	95.4	(9/2) $^+$
93.3 I	10.5 $I2$	93.3	7/2 $^-$	0.0	3/2 $^-$
109.8 I	40.3 $I2$	109.8	(5/2) $^-$	0.0	3/2 $^-$
126.1 I	41 $I4$	219.4	(9/2) $^-$	93.3	7/2 $^-$
129.1 I	1.9 $I3$	129.1	3/2 $^-$	0.0	3/2 $^-$
x 141.9 I	12.0 $I3$				
x 145.5 I	17.1 $I9$				
174.4 $^\#$ I	57 $^\#$ $I3$	215.9	7/2 $^-$	41.5	5/2 $^-$
174.4 $^\#$ I	57 $^\#$ $I3$	303.5	5/2 $^+$	129.1	3/2 $^-$
178.0 I	17 $I5$	219.4	(9/2) $^-$	41.5	5/2 $^-$
183.3 $^\#$ I	16.0 $^\#$ $I4$	183.3	5/2 $^+$	0.0	3/2 $^-$
183.3 $^\#$ I	16.0 $^\#$ $I4$	395.3	(7/2 $^+$)	212.1	3/2 $^+$
192.3 I	72 $I3$	363.5	(13/2) $^-$	171.2	(11/2) $^-$
211.7 $^\#$ I	37 $^\#$ $I3$	212.1	3/2 $^+$	0.0	3/2 $^-$
211.7 $^\#$ I	37 $^\#$ $I3$	575.2	(15/2) $^-$	363.5	(13/2) $^-$
226.3 I	100 $I9$	361.0	(17/2) $^+$	134.7	(13/2) $^+$
229.7 I	9.6 $I8$	804.9	(17/2) $^-$	575.2	(15/2) $^-$
238.8 I	54 $I7$	769.4	(5/2,7/2) $^-$	530.6	3/2 $^-$
239.9 I	30 $I5$	333.2	(9/2) $^-$	93.3	7/2 $^-$
245.9 I	7.6 $I22$	1050.8	(19/2) $^-$	804.9	(17/2) $^-$
247.4 I	19 $I3$	550.9	(3/2 $^-$, 5/2, 7/2 $^-$)	303.5	5/2 $^+$

Continued on next page (footnotes at end of table)

$^{150}\text{Sm}(\alpha, n\gamma)$ **1981Re11 (continued)** $\gamma(^{153}\text{Gd})$ (continued)

$E_\gamma^\dagger$	$I_\gamma^\ddagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
249.5 [#] <i>I</i>	32 [#] <i>3</i>	610.5	15/2 ⁺	361.0	(17/2 ⁺)	
249.5 [#] <i>I</i>	32 [#] <i>3</i>	972.5	(19/2 ⁺)	723.7	(21/2 ⁺)	
^x 271.4 <i>I</i>	18.4 <i>23</i>					
^x 275.2 <i>I</i>	13.3 <i>21</i>					
279.1 <i>I</i>	10.1 <i>22</i>	674.4		395.3	(7/2 ⁺)	
282.3 <i>I</i>	13.3 <i>18</i>	812.9	(5/2 ⁻)	530.6	3/2 ⁻	
285.5 <i>I</i>	9.4 <i>19</i>	395.3	(7/2 ⁺)	109.8	(5/2 ⁻)	E_γ : Multiplet.
291.6 <i>I</i>	21.4 <i>20</i>	333.2	(9/2 ⁻)	41.5	5/2 ⁻	
294.9 <i>I</i>		514.3	11/2 ⁻	219.4	(9/2 ⁻)	
298.4 <i>I</i>	11.0 <i>20</i>	514.3	11/2 ⁻	215.9	7/2 ⁻	
303.5 [#] <i>I</i>	10 [#] <i>3</i>	303.5	5/2 ⁺	0.0	3/2 ⁻	
303.5 [#] <i>I</i>	9.5 [#] <i>30</i>	395.3	(7/2 ⁺)	93.3	7/2 ⁻	
^x 320.0 <i>I</i>	8 <i>3</i>					
^x 327.2 <i>I</i>	8.1 <i>24</i>					
334.0 <i>I</i>	<497	898.7	15/2 ⁻	564.6	13/2 ⁻	I_γ : Contains contribution from $^{150}\text{Sm}(\alpha, \alpha')$.
336.7 <i>I</i>	41 <i>4</i>	887.6	(9/2 ⁻)	550.9	(3/2 ⁻ , 5/2, 7/2 ⁻)	
344.4 <i>I</i>	<502	564.6	13/2 ⁻	219.4	(9/2 ⁻)	I_γ : Contains contribution from ^{152}Gd from $^{150}\text{Sm}(\alpha, 2n\gamma)$.
^x 351.7 <i>I</i>	11.1 <i>14</i>					
362.7 [#] <i>I</i>	23.4 [#] <i>21</i>	723.7	(21/2 ⁺)	361.0	(17/2 ⁺)	
362.7 [#] <i>I</i>	23.4 [#] <i>21</i>	972.5	(19/2 ⁺)	610.5	15/2 ⁺	
362.7 [#] <i>I</i>	23.4 [#] <i>21</i>	1034.8		674.4		
^x 367.7 <i>I</i>	5.7 <i>18</i>					
383.1 <i>I</i>	9 <i>4</i>	716.4	(13/2 ⁻)	333.2	(9/2 ⁻)	E_γ : Multiplet.
384.4 <i>I</i>		898.7	15/2 ⁻	514.3	11/2 ⁻	
419.4 <i>I</i>	7 <i>3</i>	1318.1	19/2 ⁻	898.7	15/2 ⁻	
421.8 <i>I</i>	5.0 <i>25</i>	550.9	(3/2 ⁻ , 5/2, 7/2 ⁻)	129.1	3/2 ⁻	
441.4 <i>I</i>	7 <i>4</i>	804.9	(17/2 ⁻)	363.5	(13/2 ⁻)	
445.5 <i>I</i>	7.5 <i>14</i>	1010.1	17/2 ⁻	564.6	13/2 ⁻	
466.9 <i>I</i>	3.3 <i>15</i>	1190.6	(25/2 ⁺)	723.7	(21/2 ⁺)	
475.9 [#] <i>I</i>	19.7 [#] <i>13</i>	610.5	15/2 ⁺	134.7	(13/2 ⁺)	
475.9 [#] <i>I</i>	19.7 [#] <i>13</i>	1050.8	(19/2 ⁻)	575.2	(15/2 ⁻)	
489.1 <i>I</i>	11 <i>4</i>	530.6	3/2 ⁻	41.5	5/2 ⁻	
^x 537.3 <i>I</i>	7.6 <i>12</i>					
^x 540.5 <i>I</i>	5.0 <i>15</i>					
^x 586.2 <i>I</i>	36.4 <i>16</i>					
611.7 <i>I</i>	6.3 <i>25</i>	972.5	(19/2 ⁺)	361.0	(17/2 ⁺)	
^x 627.5 <i>I</i>	1.1 <i>7</i>					
638.1 <i>I</i>	8.0 <i>16</i>	821.4	(5/2 ⁺)	183.3	5/2 ⁺	
650.5 <i>I</i>	12 <i>5</i>	1472.0	9/2 ⁻ , 11/2 ⁻	821.4	(5/2 ⁺)	
^x 693.5 <i>I</i>	35 <i>10</i>					
^x 709.0 <i>I</i>	67 <i>3</i>					
^x 943.5 <i>I</i>	4.6 <i>22</i>					

[†] Uncertainties are from authors' general statement.[‡] For $E(\alpha)=19$ MeV.[#] Multiply placed with undivided intensity.^x γ ray not placed in level scheme.

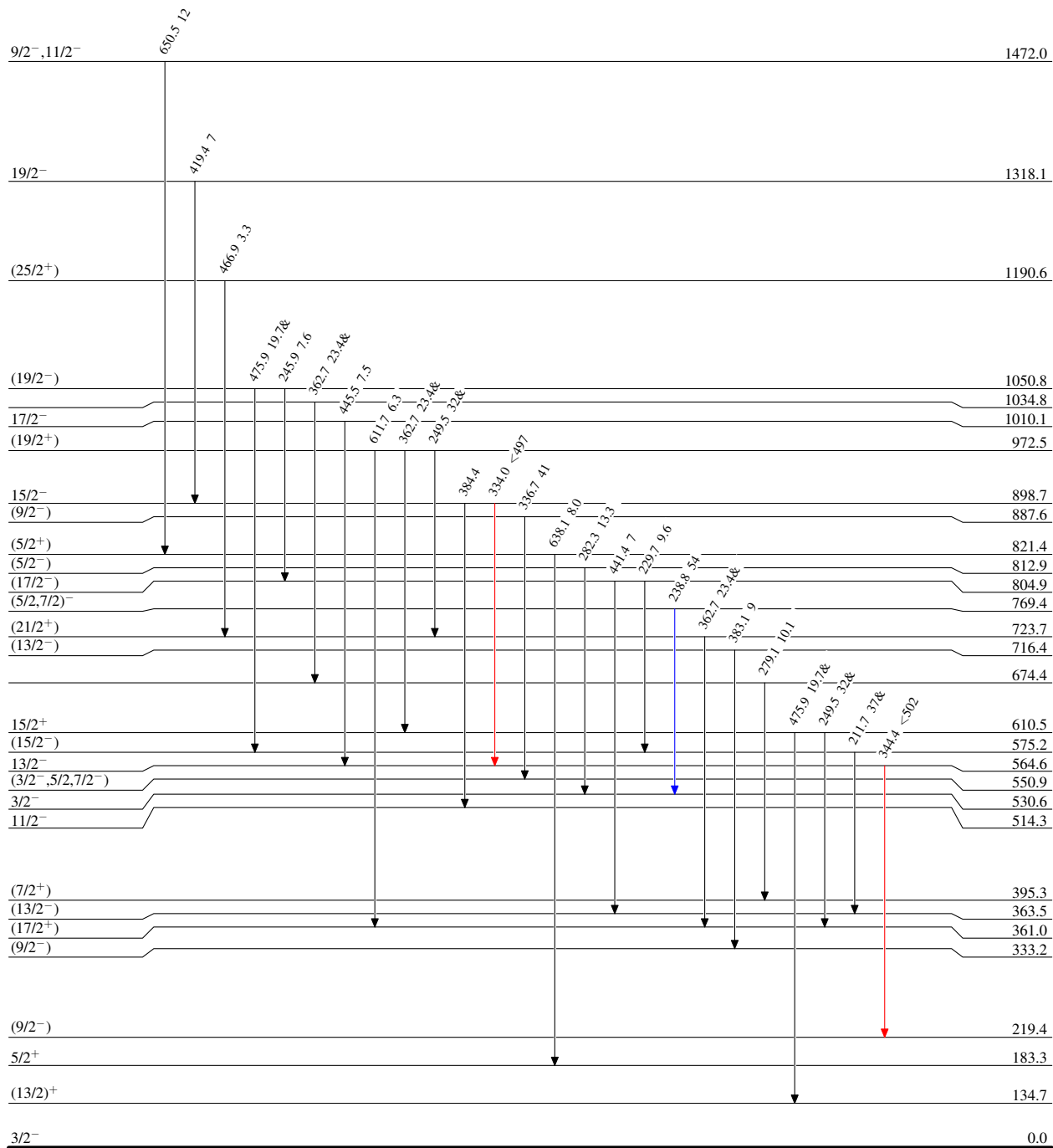
$^{150}\text{Sm}(\alpha, n\gamma)$ 1981Re11

Level Scheme

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

Legend

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

 $^{153}_{64}\text{Gd}_{89}$

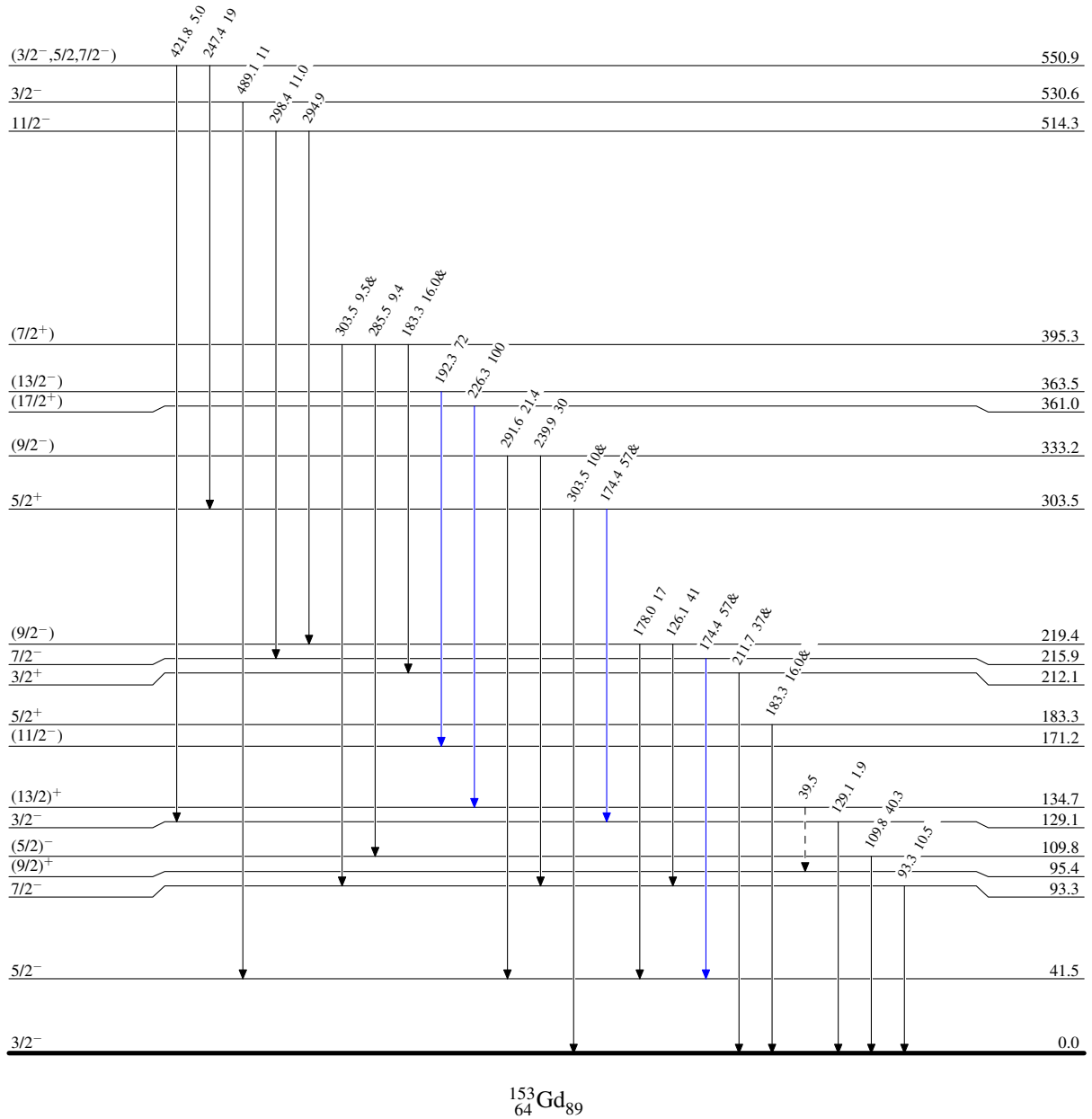
$^{150}\text{Sm}(\alpha, n\gamma)$ 1981Re11

Level Scheme (continued)

Intensities: Relative I_γ
& Multiplied: undivided intensity given

Legend

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



$^{150}\text{Sm}(\alpha, n\gamma)$ 1981Re11