

$^{148}\text{Sm}(\alpha, 5n\gamma)$ 1978KIZP

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	N. Nica and B. Singh		NDS 181, 1 (2022)	9-Mar-2022

E=30,70-82 MeV.

1978KIZP: excit, $\gamma(\theta)$, $\gamma\gamma$ -coin, $T_{1/2}$, ce and x-rays were measured.

Others: 1978Br15: extend decay scheme up to an isomeric state at 7.5 MeV. 1979K104: give extensive configuration descriptions of levels. 1981KIZY: discuss possible two-phonon state at 2572 keV. 1977KIZU: preliminary results.

 ^{147}Gd Levels

Level configurations shown are from 1981KIZY. For an alternate configuration description see ($^3\text{He}, 3n\gamma$) data set.

E(level)	J^π [†]	$T_{1/2}$ [†]	Comments
0.0	7/2 ⁻		Configuration=($\nu f_{7/2}$)
997.2	13/2 ⁺	22 ns	Configuration=((3^-)($\nu f_{7/2}$)) _{13/2+}
2488.2	17/2 ⁺		Configuration=(($\nu f_{7/2}$)($\pi h_{11/2}$)($\pi d_{5/2}$) ⁻¹ ($\pi g_{7/2}$) ⁻¹) _{17/2+}
2572.1	19/2 ⁻	0.37 ns 8	Configuration=((3^-) ₆ ² ($\nu f_{7/2}$)) _{19/2-}
2760.3	21/2 ⁺	4.4 ns	Configuration=(($\nu f_{7/2}$)($\pi h_{11/2}$)($\pi d_{5/2}$) ⁻¹ ($\pi g_{7/2}$) ⁻¹) _{21/2+}
3038.1	23/2 ⁺		Configuration=(($\nu f_{7/2}$)($\pi h_{11/2}$)($\pi d_{5/2}$) ⁻¹ ($\pi g_{7/2}$) ⁻¹) _{23/2+}
3398.9	25/2 ⁺		Configuration=(($\nu 7/2$)($\pi h_{11/2}$)($\pi d_{5/2}$) ⁻¹ ($\pi g_{7/2}$) ⁻¹)
3581.7	27/2 ⁻	27 ns	Configuration=(($\nu f_{7/2}$)($\pi h_{11/2}$) ²) _{27/2-}
3691.7			
4070.1			
4229.8			
4450.7			
4617.7			
4948.5			
4971.7			
5264.8			
5381.9	33/2		
5582.7	35/2 ⁻		
5922.7	37/2 ⁻		
6470.9	39/2 ⁻		

[†] From 1978KIZP.

 $\gamma(^{147}\text{Gd})$

E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [†]	Comments
83.9	2572.1	19/2 ⁻	2488.2	17/2 ⁺		
110.0	3691.7		3581.7	27/2 ⁻		
117.1	5381.9	33/2	5264.8			
159.7	4229.8		4070.1			
182.8	3581.7	27/2 ⁻	3398.9	25/2 ⁺	D	$A_2=0.22$ 12, $A_4=0.06$ 20.
188.1	2760.3	21/2 ⁺	2572.1	19/2 ⁻	D	$A_2=-0.14$ 3, $A_4=+0.01$ 5.
200.8	5582.7	35/2 ⁻	5381.9	33/2		
272.1	2760.3	21/2 ⁺	2488.2	17/2 ⁺	Q	$A_2=+0.22$ 1, $A_4=-0.07$ 1.
277.8	3038.1	23/2 ⁺	2760.3	21/2 ⁺	D+Q	$A_2=-0.07$ 4, $A_4=+0.01$ 4.
330.8	4948.5		4617.7			
340.0	5922.7	37/2 ⁻	5582.7	35/2 ⁻		
360.9	3398.9	25/2 ⁺	3038.1	23/2 ⁺	D+Q	$A_2=+0.05$ 1, $A_4=-0.01$ 1.
378.4	4070.1		3691.7			
410.0 [‡]	5381.9	33/2	4971.7			

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$^{148}\text{Sm}(\alpha, 5n\gamma)$ **1978KIZP (continued)** $\gamma(^{147}\text{Gd})$ (continued)

E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [†]	Comments
543.7	3581.7	27/2 ⁻	3038.1	23/2 ⁺	Q	$A_2=+0.19$ 6, $A_4=-0.06$ 8.
548.2	6470.9	39/2 ⁻	5922.7	37/2 ⁻		
638.5	3398.9	25/2 ⁺	2760.3	21/2 ⁺	Q	$A_2=+0.24$ 6, $A_4=-0.03$ 8.
814.1	5264.8		4450.7			
821.3	3581.7	27/2 ⁻	2760.3	21/2 ⁺	O	$A_2=+0.22$ 18, $A_4=-0.0$ 3.
869.0	4450.7		3581.7	27/2 ⁻		
997.2	997.2	13/2 ⁺	0.0	7/2 ⁻	E3	Mult.: from 1981KIZY . $A_2=+0.33$ 1, $A_4=+0.00$ 2.
1036.0	4617.7		3581.7	27/2 ⁻		
1152.1	5381.9	33/2	4229.8			
1390.0	4971.7		3581.7	27/2 ⁻		
1491.0	2488.2	17/2 ⁺	997.2	13/2 ⁺	O	$A_2=+0.26$ 1, $A_4=-0.07$ 2.
1574.9	2572.1	19/2 ⁻	997.2	13/2 ⁺	E3	Mult.: from 1981KIZY . $A_2=+0.43$ 5, $A_4=-0.08$ 8.
1683	5264.8		3581.7	27/2 ⁻		E_γ : from 1982Br13 .

[†] From angular correlation from **1979KI04** (with coefficients given in comments), unless otherwise stated.

[‡] Placement of transition in the level scheme is uncertain.

