

^{139}Gd ε decay (5.8 s) 1999Xi04

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	P. K. Joshi, B. Singh, S. Singh, A. K. Jain		NDS 138, 1 (2016)	15-Oct-2016

Parent: ^{139}Gd : $E=0.0$; $J^\pi=(9/2^-)$; $T_{1/2}=5.8$ s 9; $Q(\varepsilon)=7770$ SY; $\% \varepsilon + \% \beta^+$ decay=100.0

^{139}Gd - $J^\pi, T_{1/2}$: From ^{139}Gd Adopted Levels.

^{139}Gd - $Q(\varepsilon)$: 7770 200 (syst, 2012Wa38).

Measured $\gamma\gamma(t)$, (x ray) $\gamma(t)$; He-jet; Ge(HP) detectors.

 ^{139}Eu Levels

E(level)	$J^\pi^\dagger$	$T_{1/2}^\dagger$
0.0	$(11/2^-)$	17.9 s 6
115.94 19	$(13/2^-)$	
206.4 3		
280.7 4		
319.3 4		
322.2 3	$(15/2^-)$	
406.4 4		
426.0 3	$(13/2^-)$	
587.8 4		

† From the Adopted Levels.

 $\gamma(^{139}\text{Eu})$

E_γ	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. ‡	$\alpha^\ddagger$	Comments
74.3 3	280.7		206.4				
90.5 2	206.4		115.94	$(13/2^-)$			
104.1 3	426.0	$(13/2^-)$	322.2	$(15/2^-)$	(M1+E2)	1.87 23	$\alpha(\text{K})=1.22$ 17; $\alpha(\text{L})=0.5$ 3; $\alpha(\text{M})=0.12$ 8 $\alpha(\text{N})=0.026$ 16; $\alpha(\text{O})=0.0036$ 21; $\alpha(\text{P})=0.00012$ 4 $\alpha(\text{K})=0.90$ 13; $\alpha(\text{L})=0.32$ 18; $\alpha(\text{M})=0.07$ 5 $\alpha(\text{N})=0.017$ 10; $\alpha(\text{O})=0.0023$ 12; $\alpha(\text{P})=9.E-5$ 3
115.8 2	115.94	$(13/2^-)$	0.0	$(11/2^-)$	M1+E2	1.32 11	
200.0 3	406.4		206.4				
203.4 3	319.3		115.94	$(13/2^-)$			
309.7 3	426.0	$(13/2^-)$	115.94	$(13/2^-)$	(M1+E2)	0.067 14	$\alpha(\text{K})=0.055$ 14; $\alpha(\text{L})=0.00941$ 23; $\alpha(\text{M})=0.00207$ 3 $\alpha(\text{N})=0.000470$ 8; $\alpha(\text{O})=7.2 \times 10^{-5}$ 4; $\alpha(\text{P})=5.7 \times 10^{-6}$ 19 $\alpha(\text{K})=0.0364$ 6; $\alpha(\text{L})=0.00800$ 12; $\alpha(\text{M})=0.00179$ 3 $\alpha(\text{N})=0.000404$ 6; $\alpha(\text{O})=5.95 \times 10^{-5}$ 9; $\alpha(\text{P})=3.42 \times 10^{-6}$ 5
322.5 3	322.2	$(15/2^-)$	0.0	$(11/2^-)$	(E2)	0.0466	
471.9 3	587.8		115.94	$(13/2^-)$			

† From the Adopted Gammas.

‡ Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ -ray energies, assigned multiplicities, and mixing ratios, unless otherwise specified.

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Decay Scheme

