^{141}Gd ε decay (14 s) 1989Gi06

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 187,1 (2023)	12-Oct-2022

Parent: ^{141}Gd: E=0.0; $J^\pi=1/2^+$; $T_{1/2}$=14 s *4*; Q(ε)=6701 *23*; %ε+%$β^+$ decay=100

^{141}Gd-Q(ε): From 2021Wa16.

Measured: γ, γγ, ce, Xγ (1989Gi06,1988TuZY), γ (1986Re11,1988HaZL,1987Pl05), delayed protons (1986Wi15,1989Gi06).

Delayed proton emission probability=0.03% *1* (1989Gi06), E(p)=2200-4900 (1986Wi15,1984Ni03).

Absence of delayed proton-γ coin suggests low J of p-decaying states and, therefore, low J for the parent ε decaying ^{141}Gd (1988GiZV).

All authors measured γ-spectra in the mixture of high spin and low spin ^{141}Gd. In the more complete papers (1989Gi06,1988TuZY) the reported γ spectra are more or less similar but are assigned to ε decaying $11/2^-$ and $1/2^+$ ^{141}Gd isomers in very different ways. These authors also reported sharply different values of $T_{1/2}$ for low spin ^{141}Gd isomer ($T_{1/2}$=1.3 s (1988TuZY) and $T_{1/2}$=14 s (1989Gi06)). Evaluator adopted ^{141}Gd ε decay schemes and all data from 1989Gi06.

^{141}Eu Levels

E(level)†	J^π‡	$T_{1/2}$‡
0.0	$5/2^+$	40.7 s *7*
215.77 *8*	$1/2^+,3/2^+$	
336.23 *8*	$1/2^+,3/2^+$	
509.28 *12*	$1/2^+,3/2^+$	
525.92 *11*	$1/2^+,3/2^+$	
1408.62 *12*	$1/2^+,3/2^+$	

† From least-squares fit to Eγ data.

‡ From Adopted Levels.

ε,$β^+$ radiations

E(decay)	E(level)	I$β^+$ ‡	Iε†‡	Log *ft*	I(ε+$β^+$)‡	Comments
(5292 *23*)	1408.62	6.2 *10*	1.6 *3*	5.31 *15*	7.8 *13*	av Eβ=1950 *11*; εK=0.1676 *22*; εL=0.0242 *3*; εM+=0.00698 *9*
(6175 *23*)	525.92	19 *3*	2.8 *5*	5.20 *15*	22 *4*	av Eβ=2367 *11*; εK=0.1060 *12*; εL=0.01524 *18*; εM+=0.00440 *5*
(6192 *23*)	509.28	5.3 *16*	0.76 *22*	5.76 *18*	6.1 *18*	av Eβ=2375 *11*; εK=0.1051 *12*; εL=0.01512 *18*; εM+=0.00437 *5*
(6365 *23*)	336.23	26 *4*	3.3 *6*	5.14 *15*	29 *5*	av Eβ=2457 *11*; εK=0.0967 *11*; εL=0.01390 *16*; εM+=0.00401 *5*
(6485 *23*)	215.77	32 *8*	3.9 *10*	5.09 *17*	36 *9*	av Eβ=2514 *11*; εK=0.0913 *10*; εL=0.01312 *15*; εM+=0.00379 *5*

† From 1989Gi06, details are not given.

‡ Absolute intensity per 100 decays.

γ(^{141}Eu)

Iγ normalization: from ΣI(γ+ce) to g.s.=100.

Continued on next page (footnotes at end of table)

^{141}Gd ε decay (14 s) 1989Gi06 (continued)

γ(^{141}Eu) (continued)

E_γ	I_γ[#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[‡]	Comments
120.6 *1*	19 *2*	336.23	1/2$^+$,3/2$^+$	215.77	1/2$^+$,3/2$^+$	[M1,E2]	1.16 *8*	%Iγ=9.3 *12* α(K)=0.81 *11*; α(L)=0.27 *15*; α(M)=0.063 *35* α(N)=0.0140 *76*; α(O)=0.00199 *97*; α(P)=7.7×10^{-5} *25*
173.1 *1*	6 *2*	509.28	1/2$^+$,3/2$^+$	336.23	1/2$^+$,3/2$^+$	[M1,E2]	0.371 *22*	%Iγ=2.9 *10* α(K)=0.28 *5*; α(L)=0.068 *21*; α(M)=0.0152 *51* α(N)=0.0034 *11*; α(O)=5.0×10^{-4} *14*; α(P)=2.81×10^{-5} *86*
189.7 *1*	7 *2*	525.92	1/2$^+$,3/2$^+$	336.23	1/2$^+$,3/2$^+$	[M1,E2]	0.281 *24*	%Iγ=3.4 *10* α(K)=0.22 *4*; α(L)=0.048 *12*; α(M)=0.0109 *30* α(N)=0.00245 *65*; α(O)=0.00036 *8*; α(P)=2.18×10^{-5} *67*
215.8 *1*	111 *12*	215.77	1/2$^+$,3/2$^+$	0.0	5/2$^+$	[M1,E2]	0.190 *24*	%Iγ=54.4 *29* α(K)=0.15 *3*; α(L)=0.031 *6*; α(M)=0.0069 *14* α(N)=0.0016 *3*; α(O)=0.00023 *4*; α(P)=1.52×10^{-5} *48*
293.3 *2*	4 *2*	509.28	1/2$^+$,3/2$^+$	215.77	1/2$^+$,3/2$^+$	[M1,E2]	0.078 *16*	%Iγ=2.0 *10* α(K)=0.064 *16*; α(L)=0.01116 *18*; α(M)=0.00246 *8* α(N)=0.000558 *13*; α(O)=8.52×10^{-5} *23*; α(P)=6.6×10^{-6} *22*
336.2 *1*	35 *4*	336.23	1/2$^+$,3/2$^+$	0.0	5/2$^+$	[M1,E2]	0.053 *12*	%Iγ=17.2 *21* α(K)=0.044 *12*; α(L)=0.0073 *4*; α(M)=0.00160 *7* α(N)=0.000364 *17*; α(O)=5.6×10^{-5} *5*; α(P)=4.6×10^{-6} *15*
509.0[@]		509.28	1/2$^+$,3/2$^+$	0.0	5/2$^+$			
525.9 *2*	35 *6*	525.92	1/2$^+$,3/2$^+$	0.0	5/2$^+$			%Iγ=17.2 *27*
1072.6 *2*	2 *1*	1408.62	1/2$^+$,3/2$^+$	336.23	1/2$^+$,3/2$^+$			%Iγ=1.0 *5*
1192.8 *1*	14 *2*	1408.62	1/2$^+$,3/2$^+$	215.77	1/2$^+$,3/2$^+$			%Iγ=6.9 *11*

[†] Adopted values.
[‡] Additional information 2.
[#] For absolute intensity per 100 decays, multiply by 0.49 *4*.
[@] Placement of transition in the level scheme is uncertain.

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Decay Scheme

Intensities: I_γ per 100 parent decays