Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen[#]	NDS 147, 1 (2018)	30-Nov-2017

Q(β^-)=2300 *SY*; S(n)=6530 *SY*; S(p)=10580 *SY*; Q(α)=−1960 *SY* 2017Wa10

Estimated uncertainties (syst,2017Wa10): ΔQ(β^-)=140, ΔS(n)=100, ΔS(p)=120, ΔQ(α)=100 (2017Wa10).

S(2n)=11640 *100*, S(2p)=19820 *220* (syst,2017Wa10).

1988Gr14, 1990An31: ^{164}Gd produced in ^{252}Cf SF decay. The assignment is based on the observation of Tb K x ray-lines, produced in the daughter nucleus due to internal conversion.

For theoretical nuclear structure calculations, consult NSR database, for about 20 references. These are listed in the ENSDF dataset as document records.

Additional information 1.

^{164}Gd Levels

Cross Reference (XREF) Flags

- A ^{164}Eu β^- decay (4.15 s)
- B ^{164}Gd IT decay (0.580 μs)
- C ^{252}Cf SF decay

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$	XREF	Comments
0.0[#]	0$^+$	45 s *3*	ABC	%β^-=100 $T_{1/2}$: from 1988Gr14 (also 1990An31 from the same group, giving the same half-life).
73.27[#] *5*	(2$^+$)	2.77 ns *14*	ABC	$T_{1/2}$: measured by 2010NaZY using $\beta\gamma$(t) method. Same value is given in 2016Pr01 evaluation.
241.4[#] *4*	(4$^+$)		ABC	
502.7[#] *5*	(6$^+$)		A C	
851.7[#] *6*	(8$^+$)		C	
1035.4 *4*	(3$^+$)		B	J$^\pi$: theoretical calculations predict configuration=$\nu f_{5/2}\otimes\nu 1/2[521]$.
1095.8 *4*	(4$^-$)	0.580 μs *23*	B	%IT=100 J$^\pi$: configuration=$\nu 7/2[633]\otimes\nu 1/2[521]$,$K^\pi=4^-$ from comparison with deformed Hartree-Fock with angular momentum projection model, and projection shell model (2017Yo01,2017Pa25). $T_{1/2}$: from 2017Yo01, based on likelihood fitting of time spectrum between the ^{164}Gd beam implantation and subsequent summed γ-ray spectrum. Other: 0.530 μs *100* (2017Pa25). Weighted average of the two values is 0.577 μs *23*, very close to that in 2017Yo01.
1283.0[#] *7*	(10$^+$)		C	
1793.6[#] *7*	(12$^+$)		C	
2376.4[#] *8*	(14$^+$)		C	

[†] From Eγ data, assuming Δ(Eγ)=0.3 keV when not stated.

[‡] Yrast band assignment for positive-parity states.

[#] Band(A): g.s. band.

Adopted Levels, Gammas (continued)

$\gamma(^{164}Gd)$

E_i(level)	J_i^π	E_γ[†]	I_γ	E_f	J_f^π	Mult.	α[#]	Comments
73.27	(2^+)	73.27 *5*	100	0.0	0^+	(E2)[‡]	8.13 *12*	B(E2)(W.u.)=198 *+11−9* E_γ: from ^{164}Eu β^- decay. I_γ: assumed value. Additional information 2.
241.4	(4^+)	168.4 *4*	100	73.27	(2^+)	(E2)[‡]	0.400 *7*	E_γ: from ^{164}Gd IT decay.
502.7	(6^+)	261.3		241.4	(4^+)			
851.7	(8^+)	349.0		502.7	(6^+)			
1035.4	(3^+)	794[@]		241.4	(4^+)			Very weak γ ray (2017Pa25).
		961.9 *4*	100	73.27	(2^+)	[M1]		
1095.8	(4^-)	60.2	14 *3*	1035.4	(3^+)	[E1]	1.124 *22*	Reduced E1 hindrance factor $f_\nu=2.37\times10^6$ *10*, where $\nu=\Delta K-\lambda$.
		854.7 *5*	100 *11*	241.4	(4^+)	[E1]	0.00154	Reduced E1 hindrance factor $f_\nu=1.28\times10^3$ *3*, where $\nu=\Delta K-\lambda$.
1283.0	(10^+)	431.3		851.7	(8^+)			
1793.6	(12^+)	510.6		1283.0	(10^+)			
2376.4	(14^+)	582.8		1793.6	(12^+)			

[†] From ^{252}Cf SF decay unless otherwise stated.
[‡] As assigned by 2017Yo01 in ^{164}Gd IT decay, based on transition intensity balances and ΔJ^π.
[#] Additional information 3.
[@] Placement of transition in the level scheme is uncertain.

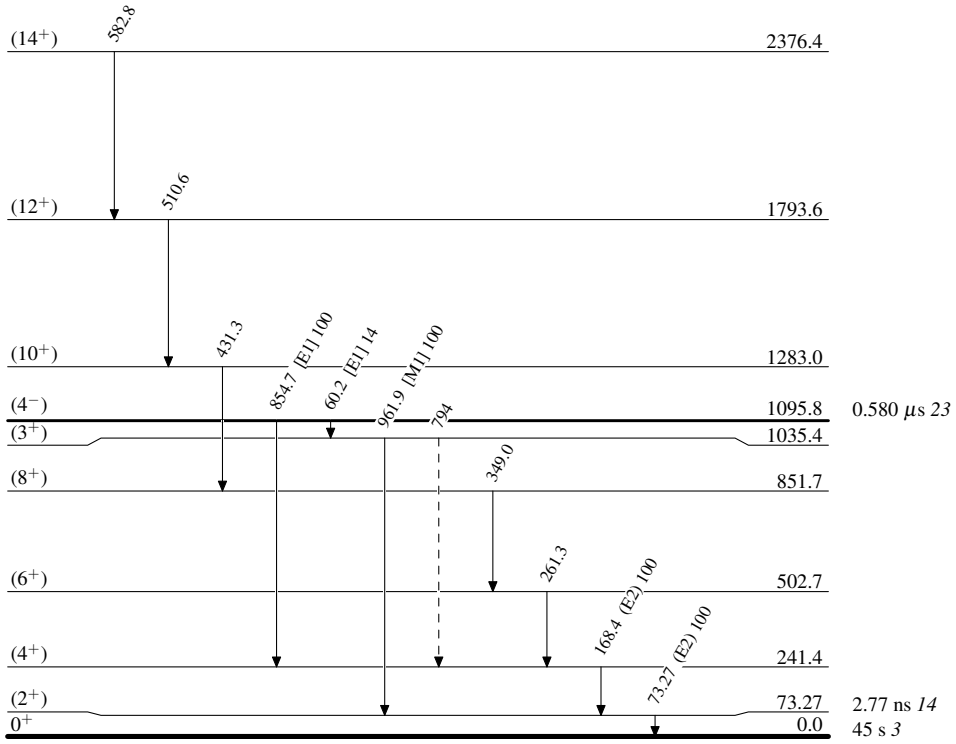
Adopted Levels, Gammas

Legend

Level Scheme

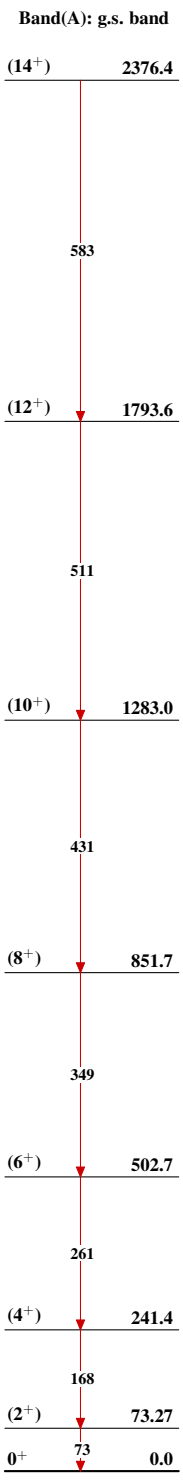
Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{164}_{64}Gd_{100}$

Adopted Levels, Gammas



$^{164}_{64}Gd_{100}$