^{142}Tb ε decay 1991Fi03

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	T. D. Johnson, D. Symochko(a), M. Fadil(b), and J. K. Tuli	NDS 112, 1949 (2011)	1-Jun-2010

Parent: ^{142}Tb: E=0.0; $J^\pi=1^+$; $T_{1/2}$=597 ms *17*; Q(ε)=10400 *70*; %ε+%$β^+$ decay=100.0
^{142}Tb-Q(ε): 10.4 MeV *7* (1991Fi03).
1991Fi03: measured γ, γγ, Xγ, $T_{1/2}$. Measured delayed proton emission probability=2.2×10^{-5} *11*.
1988GiZV: same authors as 1991Fi03.
Delayed proton emission probability≈3×10^{-7}%; E(p)=2.5-5.2 MeV, E(p)(av)=3.9 MeV (1988NiZX).
All data are from 1991Fi03, unless stated otherwise.

^{142}Gd Levels

E(level)†	J^π	Comments
0.0	0^+	
515.35 *8*	2^+	
980.12 *8*	$1^+,2^+$	J^π: authors suggest (2^+).
1209.05 *13*	4^+	No transitions feeding the level were observed.
1368.69 *10*	(0^+)	
1445.15 *12*		
1914.65 *11*		
2102.8 *3*		
2279.59 *16*		
2314.4 *10*		
2343.88 *15*	(7^-)	J^π from Adopted Levels.

† From least-squares fit to Eγ. Assumed uncertainty As 1 keV where not known.

ε,$β^+$ radiations

E(decay)	E(level)	I$β^+$ ‡	Iε†‡	Log *ft*	I(ε+$β^+$)‡	Comments
$(8.06\times10^3$ *7*)	2343.88	1.31	0.0834	5.6	1.39	av Eβ=3264 *34*; εK=0.0505 *14*; εL=0.00735 *21*; εM+=0.00212 *6*
$(8.09\times10^3$ *7*)	2314.4	0.47	0.030	6.1	0.50	av Eβ=3278 *34*; εK=0.0500 *14*; εL=0.00727 *20*; εM+=0.00210 *6*
$(8.12\times10^3$ *7*)	2279.59	0.58	0.036	6.0	0.62	av Eβ=3295 *34*; εK=0.0493 *14*; εL=0.00718 *20*; εM+=0.00207 *6*
$(8.30\times10^3$ *7*)	2102.8	0.33	0.019	6.3	0.35	av Eβ=3380 *34*; εK=0.0461 *13*; εL=0.00671 *18*; εM+=0.00194 *6*
$(8.49\times10^3$ *7*)	1914.65	2.81	0.151	5.4	2.96	av Eβ=3471 *34*; εK=0.0430 *12*; εL=0.00626 *17*; εM+=0.00181 *5*
$(8.95\times10^3$ *7*)	1445.15	<0.5	<0.02	>6.3	<0.5	av Eβ=3697 *34*; εK=0.0364 *9*; εL=0.00530 *13*; εM+=0.00153 *4*
$(9.03\times10^3$ *7*)	1368.69	2.53	0.111	5.6	2.64	av Eβ=3734 *34*; εK=0.0355 *9*; εL=0.00516 *13*; εM+=0.00149 *4*
$(9.42\times10^3$ *7*)	980.12	1.8	0.070	5.8	1.9	av Eβ=3923 *34*; εK=0.0311 *8*; εL=0.00452 *11*; εM+=0.00131 *3*
$(9.88\times10^3$ *7*)	515.35	14.4	0.474	5.0	14.9	av Eβ=4148 *34*; εK=0.0268 *6*; εL=0.00389 *9*; εM+=0.00112 *3*
$(1.040\times10^4$ *7*)	0.0	71.5	2.00	4.5	73.5	av Eβ=4399 *35*; εK=0.0229 *5*; εL=0.00333 *7*; εM+=0.000960 *21*

† $ε/β^+$=0.032 *4*/0.968 *4*.
‡ Absolute intensity per 100 decays.

^{142}Tb ε decay 1991Fi03 (continued)

γ(^{142}Gd)

Iγ normalization: I(515.4γ)=24.9% 17.

E_γ	I_γ[#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α[†]	Comments
388.8 *1*	0.90 *9*	1368.69	(0$^+$)	980.12	1$^+$,2$^+$			
465.0[@] *1*	11[@] *2*	980.12	1$^+$,2$^+$	515.35	2$^+$	[E2]	0.01693	α(K)=0.01368 *20*; α(L)=0.00254 *4*; α(M)=0.000564 *8*; α(N+..)=0.0001482 *21* α(N)=0.0001284 *18*; α(O)=1.89×10^{-5} *3*; α(P)=9.11×10^{-7} *13*
465.0[@] *1*	2[@] *1*	1445.15		980.12	1$^+$,2$^+$			
515.3 *1*	100 *7*	515.35	2$^+$	0.0	0$^+$	E2	0.01289	α(K)=0.01051 *15*; α(L)=0.00186 *3*; α(M)=0.000412 *6*; α(N+..)=0.0001086 *16* α(N)=9.39×10^{-5} *14*; α(O)=1.392×10^{-5} *20*; α(P)=7.07×10^{-7} *10* I$_\gamma$: Iγ=24.9% 17 (1988GiZV).
693.7 *1*	4.0 *5*	1209.05	4$^+$	515.35	2$^+$	E2	0.00618 *9*	α=0.00618 *9*; α(K)=0.00514 *8*; α(L)=0.000815 *12*; α(M)=0.000179 *3*; α(N+..)=4.74×10^{-5} *7* α(N)=4.09×10^{-5} *6*; α(O)=6.17×10^{-6} *9*; α(P)=3.52×10^{-7} *5*
853.1 *1*	9.7 *8*	1368.69	(0$^+$)	515.35	2$^+$			
898.4 *3*	1.1 *3*	2343.88	(7$^-$)	1445.15				
934[&] *1*		1914.65		980.12	1$^+$,2$^+$			Proposed as tentative in 1991Fi03.
980.1 *1*	1.8 *4*	980.12	1$^+$,2$^+$	0.0	0$^+$	[E2]	0.00287 *4*	α=0.00287 *4*; α(K)=0.00242 *4*; α(L)=0.000352 *5*; α(M)=7.65×10^{-5} *11*; α(N+..)=2.04×10^{-5} *3* α(N)=1.755×10^{-5} *25*; α(O)=2.69×10^{-6} *4*; α(P)=1.677×10^{-7} *24*
1299.6[&] *2*	1.6 *2*	2279.59		980.12	1$^+$,2$^+$			Placed only by energy sums and differences (1991Fi03).
1364.1 *4*	0.8 *2*	2343.88	(7$^-$)	980.12	1$^+$,2$^+$			
1399.2 *1*	9.6 *8*	1914.65		515.35	2$^+$			
1587.4 *3*	1.4 *4*	2102.8		515.35	2$^+$			
1764.1[&] *2*	0.9 *2*	2279.59		515.35	2$^+$			Placed only by energy sums and differences (1991Fi03).
1799[‡] *1*	≈2	2314.4		515.35	2$^+$			
1828.7 *2*	2.7 *3*	2343.88	(7$^-$)	515.35	2$^+$			
1915.0 *2*	2.3 *3*	1914.65		0.0	0$^+$			
2343.6 *3*	1.0 *2*	2343.88	(7$^-$)	0.0	0$^+$			

[†] Additional information 1.
[‡] Observed only in coincidence.
[#] For absolute intensity per 100 decays, multiply by 0.249 *17*.
[@] Multiply placed with intensity suitably divided.
[&] Placement of transition in the level scheme is uncertain.

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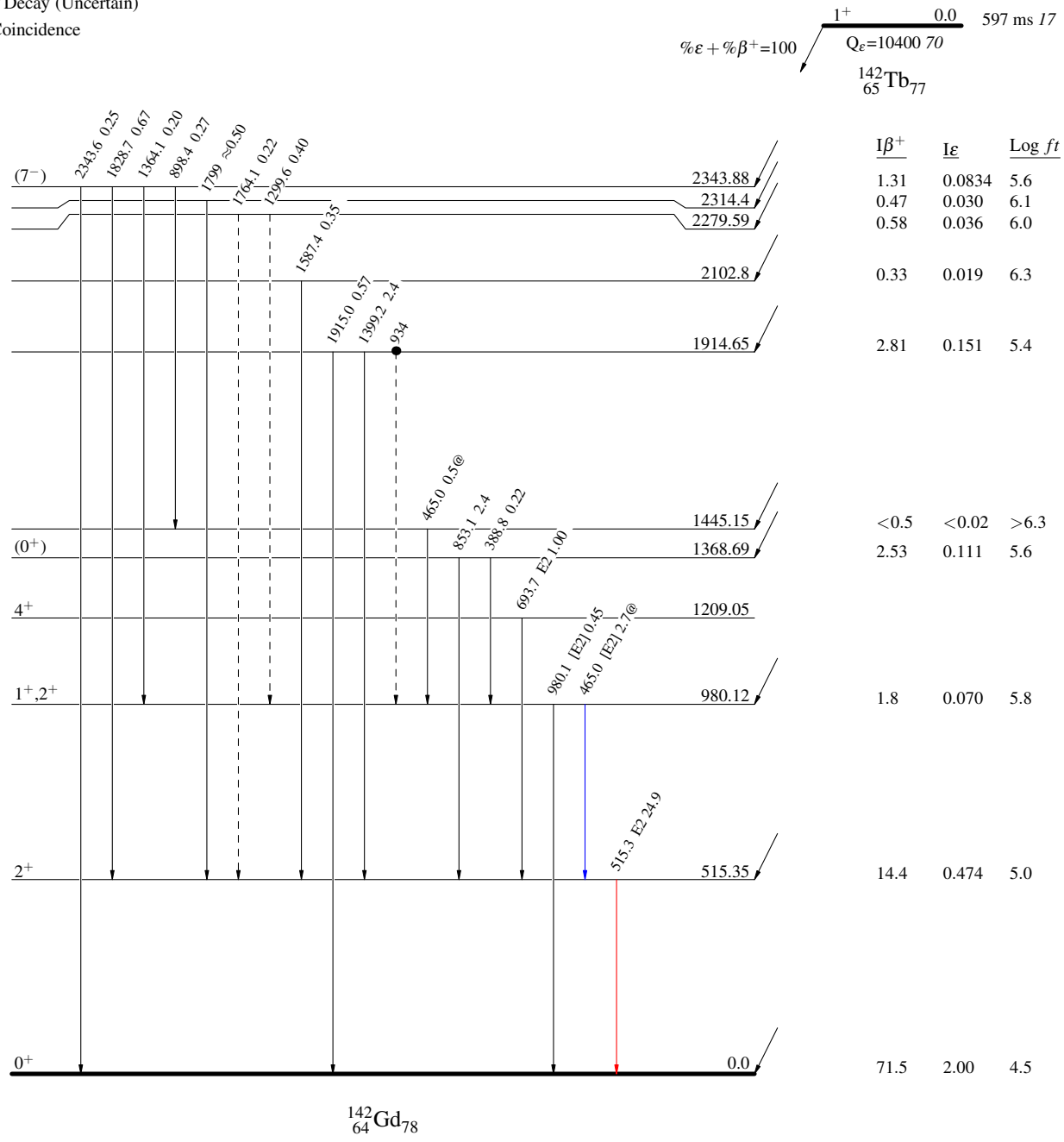
Decay Scheme

Intensities: I_γ per 100 parent decays
@ Multiply placed: intensity suitably divided

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



	Iβ+	Iε	Log *ft*
2343.88	1.31	0.0834	5.6
2314.4	0.47	0.030	6.1
2279.59	0.58	0.036	6.0
2102.8	0.33	0.019	6.3
1914.65	2.81	0.151	5.4
1445.15	<0.5	<0.02	>6.3
1368.69	2.53	0.111	5.6
1209.05			
980.12	1.8	0.070	5.8
515.35	14.4	0.474	5.0
0.0	71.5	2.00	4.5