^{147}Tb ε decay (1.83 min) 1991MeZX

History

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

Parent: ^{147}Tb: E=50.6 *9*; J^π=(11/2$^-$); $T_{1/2}$=1.83 min *6*; Q(ε)=4614 *8*; %ε+%$β^+$ decay=100.0

^{147}Tb-Q(ε): From 2021Wa16.

Measured: Eγ, Iγ, γγ (1991MeZX), γ, γγ, xγ, γ(t) (1985PiZX); see also 1993Al03, 1974Ne01, 1976ToZO, 1975SpZU, 1973Bo13, 1969Ch32.

1991MeZX and 1985PiZX (same group) are similar, with more precise Iγ′s for data from 1991MeZX, reason for which data is from 1991MeZX when different. Both references have no reported unc′s for Eγ′s and Iγ′s.

^{147}Gd Levels

E(level)†	J^π‡	E(level)†	J^π‡	E(level)†	J^π‡	E(level)†	J^π‡
0.0	7/2$^-$	1642.9 *8*	9/2$^+$	2078.6 *7*	(9/2,11/2)	3194.9 *12*	(9/2,11/2,13/2)
997.2 *8*	13/2$^+$	1701.7 *13*	11/2$^+$	2386.3 *9*	(13/2)$^-$	3204.6 *6*	9/2$^-$,11/2$^-$
1397.3 *6*	9/2$^-$	1797.7 *8*	9/2$^-$	2971.4 *7*	9/2$^-$,11/2$^-$	3322.2 *10*	9/2$^-$,11/2$^-$
1628.3 *10*	7/2$^+$	1944.0 *6*	11/2$^-$	3005.7 *6*	9/2$^-$,11/2$^-$	3872.5 *13*	13/2,11/2

† No uncertainties are available for the E_γ input. The E(level) values are from a least-squares fit to the E_γ data with the assumption that the uncertainties are the same for all the E_γ′s.

‡ Adopted values.

ε,$β^+$ radiations

E(decay)	E(level)	Iβ$^+$ †	Iε†	Log *ft*	I(ε+$β^+$)†	Comments
(792 *8*)	3872.5		0.36	5.2	0.36	εK=0.8279 *2*; εL=0.1331 *2*; εM+=0.03899 *5*
(1342 *8*)	3322.2		0.67	5.4	0.67	εK=0.8342; εL=0.12808 *5*; εM+=0.03727 *2*
(1460 *8*)	3204.6	0.0024	1.4	5.1	1.4	av Eβ=210.6 *36*; εK=0.8339; εL=0.12737 *6*; εM+=0.03703 *2*
(1470 *8*)	3194.9	0.00032	0.17	6.1	0.17	av Eβ=214.9 *36*; εK=0.8338; εL=0.12731 *6*; εM+=0.03701 *2*
(1659 *8*)	3005.7	0.015	2.0	5.1	2.0	av Eβ=298.3 *36*; εK=0.8301 *3*; εL=0.12589 *8*; εM+=0.03656 *3*
(1693 *8*)	2971.4	0.0099	1.1	5.4	1.1	av Eβ=313.4 *36*; εK=0.8289 *4*; εL=0.12557 *8*; εM+=0.03647 *3*
(2278 *8*)	2386.3	0.017	0.20	6.4	0.22	av Eβ=570.6 *36*; εK=0.7731 *13*; εL=0.11560 *21*; εM+=0.03350 *6*
(2586 *8*)	2078.6	0.016	0.094	6.8	0.11	av Eβ=707.2 *36*; εK=0.7150 *18*; εL=0.1064 *3*; εM+=0.03082 *8*
(2721 *8*)	1944.0	0.048	0.21	6.5	0.26	av Eβ=767.3 *37*; εK=0.6844 *19*; εL=0.1017 *3*; εM+=0.02945 *9*
(2867 *8*)	1797.7	3.36	11.4	4.8	14.8	av Eβ=832.8 *37*; εK=0.6487 *21*; εL=0.0963 *3*; εM+=0.02786 *9*
(2963 *8*)	1701.7	0.11	0.33	6.4	0.44	av Eβ=876.0 *37*; εK=0.6243 *21*; εL=0.0925 *4*; εM+=0.02678 *10*
(3022 *8*)	1642.9	0.21	0.56	6.2	0.77	av Eβ=902.5 *37*; εK=0.6091 *21*; εL=0.0902 *4*; εM+=0.02611 *10*
(3036 *8*)	1628.3	0.0070	0.018	7.7	0.025	av Eβ=909.1 *37*; εK=0.6053 *22*; εL=0.0897 *4*; εM+=0.02595 *10*
(3267 *8*)	1397.3	27.3	50.4	4.3	77.7	av Eβ=1013.5 *37*; εK=0.5446 *22*; εL=0.0805 *4*; εM+=0.02329 *10*
(3667 *8*)	997.2	0.010	0.012	8.0	0.022	av Eβ=1195.7 *37*; εK=0.4436 *20*; εL=0.0654 *3*; εM+=0.01891 *9*

† Absolute intensity per 100 decays.

^{147}Tb ε decay (1.83 min) 1991MeZX (continued)

γ(^{147}Gd)

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

E_γ	I_γ[#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[‡]	Comments
442.6	≈0.6	2386.3	(13/2)$^-$	1944.0	11/2$^-$			%Iγ≈0.06
704.5	4.4	1701.7	11/2$^+$	997.2	13/2$^+$	M1	0.01071 *15*	%Iγ=0.44 α(N)=6.23×10^{-5} *9*; α(O)=9.70×10^{-6} *14*; α(P)=6.63×10^{-7} *9* α(K)=0.00912 *13*; α(L)=0.001251 *18*; α(M)=0.000270 *4*
927.3	2.6	3005.7	9/2$^-$,11/2$^-$	2078.6	(9/2,11/2)			%Iγ=0.26
947.1	1.4	1944.0	11/2$^-$	997.2	13/2$^+$			%Iγ=0.14
997.2	11.2	997.2	13/2$^+$	0.0	7/2$^-$	E3	0.00596 *8*	%Iγ=1.1 α(K)=0.00488 *7*; α(L)=0.000838 *12*; α(M)=0.0001856 *26* α(N)=4.25×10^{-5} *6*; α(O)=6.40×10^{-6} *9*; α(P)=3.56×10^{-7} *5*
1027.3	2.4	2971.4	9/2$^-$,11/2$^-$	1944.0	11/2$^-$			%Iγ=0.24
1116.3	1.7	3194.9	(9/2,11/2,13/2)	2078.6	(9/2,11/2)			%Iγ=0.17
1125.7	≈0.8	3204.6	9/2$^-$,11/2$^-$	2078.6	(9/2,11/2)			%Iγ≈0.08
1260.7	≈3.1	3204.6	9/2$^-$,11/2$^-$	1944.0	11/2$^-$			%Iγ≈0.31
1362.5	1.5	3005.7	9/2$^-$,11/2$^-$	1642.9	9/2$^+$			%Iγ=0.15
1388.8	≈1.6	2386.3	(13/2)$^-$	997.2	13/2$^+$	E1	7.56×10^{-4} *11*	%Iγ≈0.16 α(N)=3.44×10^{-6} *5*; α(O)=5.34×10^{-7} *7*; α(P)=3.65×10^{-8} *5*; α(IPF)=0.0001264 *18* α(K)=0.000541 *8*; α(L)=6.98×10^{-5} *10*; α(M)=1.496×10^{-5} *21*
1397.3	791	1397.3	9/2$^-$	0.0	7/2$^-$	M1	2.12×10^{-3} *3*	%Iγ=79.0 α(K)=0.001773 *25*; α(L)=0.0002379 *33*; α(M)=5.13×10^{-5} *7* α(N)=1.181×10^{-5} *17*; α(O)=1.843×10^{-6} *26*; α(P)=1.274×10^{-7} *18*; α(IPF)=4.78×10^{-5} *7*
1407.5	1.3	3204.6	9/2$^-$,11/2$^-$	1797.7	9/2$^-$			%Iγ=0.13
1574.2	3.2	2971.4	9/2$^-$,11/2$^-$	1397.3	9/2$^-$			%Iγ=0.32
1608.7	≈9	3005.7	9/2$^-$,11/2$^-$	1397.3	9/2$^-$			%Iγ≈0.9
1628.3	<0.5	1628.3	7/2$^+$	0.0	7/2$^-$	E1	7.81×10^{-4} *11*	%Iγ<0.05 α(K)=0.000414 *6*; α(L)=5.31×10^{-5} *7*; α(M)=1.138×10^{-5} *16* α(N)=2.61×10^{-6} *4*; α(O)=4.07×10^{-7} *6*; α(P)=2.79×10^{-8} *4*; α(IPF)=0.000300 *4*
1642.7	9.2	1642.9	9/2$^+$	0.0	7/2$^-$	E1	7.85×10^{-4} *11*	%Iγ=0.92 α(K)=0.000408 *6*;

Continued on next page (footnotes at end of table)

^{147}Tb ε decay (1.83 min) 1991MeZX (continued)

γ(^{147}Gd) (continued)

E_γ	I_γ[#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[‡]	Comments
								α(L)=5.23×10^{-5} *7*; α(M)=1.121×10^{-5} *16* α(N)=2.57×10^{-6} *4*; α(O)=4.01×10^{-7} *6*; α(P)=2.75×10^{-8} *4*; α(IPF)=0.000311 *4*
1798.2	149	1797.7	9/2$^-$	0.0	7/2$^-$	M1+E2	0.00123 *16*	%Iγ=14.9 α(K)=0.00087 *13*; α(L)=0.000116 *16*; α(M)=2.5×10^{-5} *4* α(N)=5.8×10^{-6} *8*; α(O)=9.0×10^{-7} *13*; α(P)=6.1×10^{-8} *10*; α(IPF)=0.000208 *14*
1807.1	2.4	3204.6	9/2$^-$,11/2$^-$	1397.3	9/2$^-$			%Iγ=0.24
1944.1	7.3	1944.0	11/2$^-$	0.0	7/2$^-$	E2	1.02×10^{-3} *1*	%Iγ=0.73 α(K)=0.000645 *9*; α(L)=8.58×10^{-5} *12*; α(M)=1.847×10^{-5} *26* α(N)=4.25×10^{-6} *6*; α(O)=6.60×10^{-7} *9*; α(P)=4.47×10^{-8} *6*; α(IPF)=0.000261 *4*
2078.4	6.2	2078.6	(9/2,11/2)	0.0	7/2$^-$			%Iγ=0.62
2875.2	3.6	3872.5	13/2,11/2	997.2	13/2$^+$			%Iγ=0.36
2971.4	5.8	2971.4	9/2$^-$,11/2$^-$	0.0	7/2$^-$			%Iγ=0.58
3005.4	6.5	3005.7	9/2$^-$,11/2$^-$	0.0	7/2$^-$			%Iγ=0.65
3204.6	6.7	3204.6	9/2$^-$,11/2$^-$	0.0	7/2$^-$			%Iγ=0.67
3322.2	6.7	3322.2	9/2$^-$,11/2$^-$	0.0	7/2$^-$			%Iγ=0.67

[†] Adopted values.
[‡] Additional information 1.
[#] For absolute intensity per 100 decays, multiply by 0.0999.

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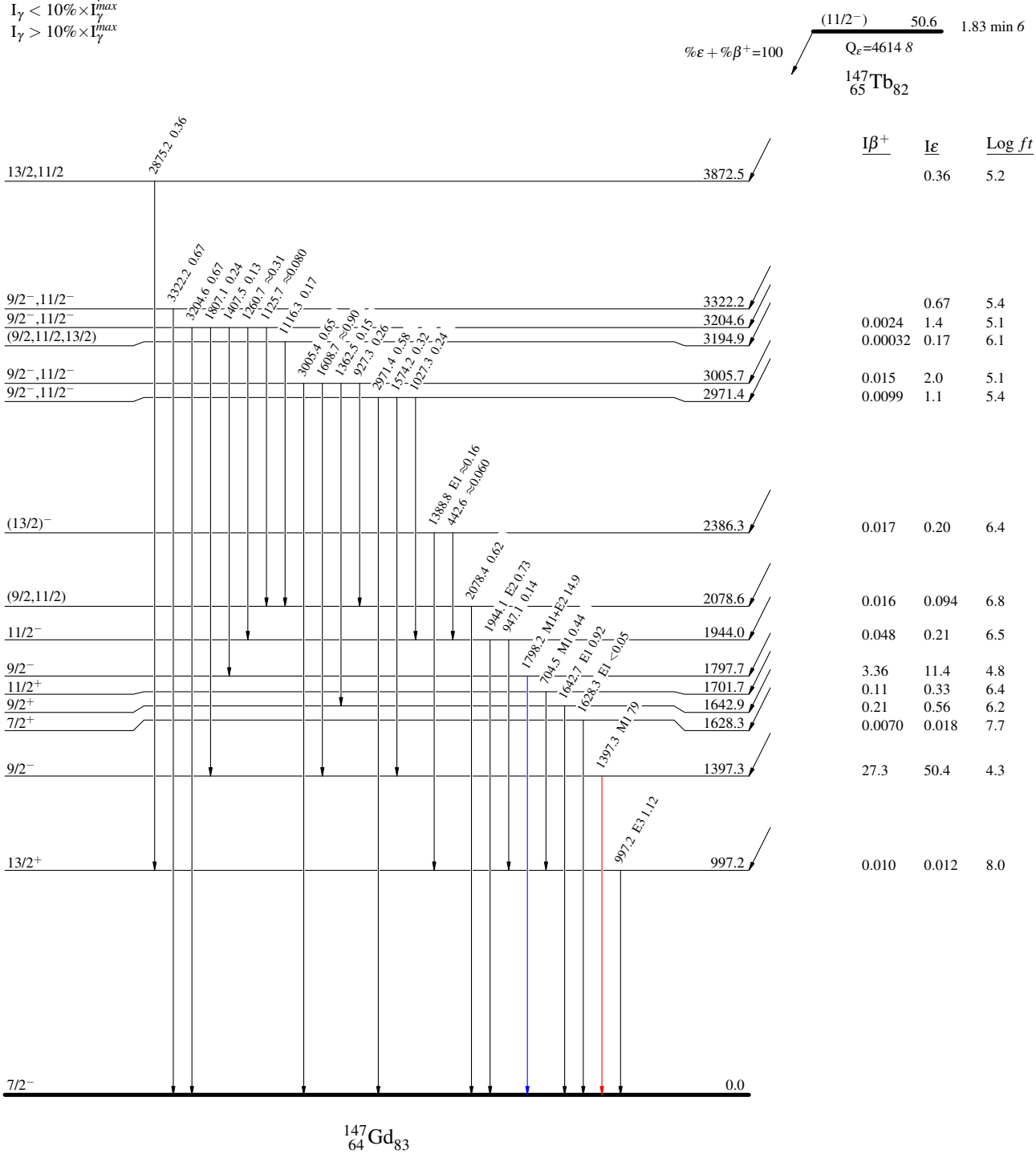
Decay Scheme

Intensities: I_γ per 100 parent decays

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



$^{147}_{64}Gd_{83}$