^{144}Gd ε decay 1991Tu01

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	A. A. Sonzogni	NDS 93, 599 (2001)	1-Dec-2000

Parent: ^{144}Gd: E=0.0; $J^\pi=0^+$; $T_{1/2}$=4.47 min *6*; Q(ε)=3740 *SY*; %ε+%$β^+$ decay=100.0
1991Tu01: ^{144}Sm(^{3}He,3n), E=32-50 MeV, measured γ, ce, excit, Xγ, He gas jet separation system.
Other measurement: 1973VaYZ.

^{144}Eu Levels

E(level)‡	J^π†	$T_{1/2}$	Comments
0.0	1^+	10.2 s *1*	$T_{1/2}$: from Adopted Levels.
333.30 *7*	$(2)^+$		
347.10 *8*	$(3)^+$		
580.4? *3*	$(4)^+$		
604.40 *21*	$(1)^+$		
621.50 *8*	$(1)^+$		
629.50 *8*	$(2)^-$		
784.00 *12*	$(1)^+$		
907.90 *11*			
974.80 *10*			
1074.20 *20*			
1145.60 *14*			
1201.40 *10*			
1293.51 *10*			
1304.01 *11*			
1402.21 *22*			
1559.91 *15*			
1804.71 *22*			
1930.2 *3*			
2362.12 *19*	1^+		
2432.61 *9*	1^+		
2692.72 *17*	(1^+)		
2709.6 *4*	(1^+)		
2804.62 *15*	1^+		
2827.92 *24*	(1^+)		

† As given by authors, from log ft values and γ multipolarities.
‡ From least-squares fit to Eγ.

ε,$β^+$ radiations

E(decay)	E(level)	Log *ft*	I(ε+$β^+$)†
(912 *SY*)	2827.92	5.4	0.68
(935 *SY*)	2804.62	4.9	2.5
(1030 *SY*)	2709.6	5.6	0.63
(1047 *SY*)	2692.72	5.4	0.93
(1307 *SY*)	2432.61	4.6	9.2
(1377 *SY*)	2362.12	5.9	1.1
(1809 *SY*)	1930.2	6.5	0.28
(1935 *SY*)	1804.71	6.8	0.17
(2180 *SY*)	1559.91	6.7	0.28
(2337 *SY*)	1402.21	8.3	≈0.03
(2435 *SY*)	1304.01	7.4	0.07
(2446 *SY*)	1293.51	<6.7	>0.41

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^{144}Gd ε decay 1991Tu01 (continued)

ε,β+ radiations (continued)

E(decay)	E(level)	Log *ft*	I(ε+β+)†	Comments
(2538 *SY*)	1201.40	6.9	0.42	
(2594 *SY*)	1145.60	<7.2	>0.11	
(2665 *SY*)	1074.20	9.3	≈0.02	
(2765 *SY*)	974.80	8.1	≈0.04	
(2832 *SY*)	907.90	>7.0	<0.36	
(2956 *SY*)	784.00	7.3	≈0.19	
(3110 *SY*)	629.50	6.9	0.54	
(3118 *SY*)	621.50	>6.8	<0.6	
(3135 *SY*)	604.40	7.4	0.15	
(3159 *SY*)	580.4?	7.8	≈0.19	Log *ft*: a ΔJ=4 transition should have a larger log *ft* value.
(3406 *SY*)	333.30	>6.3	<1.6	
(3740 *SY*)	0.0	4.9	80 *14*	I(ε+β+): from Iγ(1660 ^{144}Sm)/Iγ(333 ^{144}Eu)=154 *5*.

† Absolute intensity per 100 decays.

γ(^{144}Eu)

E_γ	I_γ@	E_i(level)	J_i^π	E_f	J_f^π	Mult.†	α&	Comments
13.8[a]	<0.1	347.10	(3)+	333.30	(2)+			presence of transition deduced from I(γ+ce) balance at 247 level.
203.6 *5*	<1	784.00	(1)+	580.4?	(4)+			
233.3 *4*	1.3 *3*	580.4?	(4)+	347.10	(3)+	M1	0.176	α(K)=0.149 *5*; α(L)=0.0209 *7*; α(M)=0.00451 *14*; α(N+..)=0.00127 *4*
247.1‡ *5*		580.4?	(4)+	333.30	(2)+	(E2)	0.108	α(K)=0.0805 *25*; α(L)=0.0214 *7*; α(M)=0.00483 *15*; α(N+..)=0.00131 *4*
257.3 *3*	1.0 *5*	604.40	(1)+	347.10	(3)+			
271.1# *5*	2.7 *8*	604.40	(1)+	333.30	(2)+	M1+(E2)		
274.4 *2*	8.3 *4*	621.50	(1)+	347.10	(3)+			
282.4 *2*	1.4 *3*	629.50	(2)−	347.10	(3)+			
288.2 *2*	2.1 *4*	621.50	(1)+	333.30	(2)+			
333.3 *1*	100	333.30	(2)+	0.0	1+	M1	0.0677	α(K)=0.0575 *18*; α(L)=0.00801 *24*; α(M)=0.00172 *6*; α(N+..)=0.00048 *2* α(K)(exp)=0.058 *6*, α(L)(exp)=0.008 *2*.
347.1 *1*	27.9 *6*	347.10	(3)+	0.0	1+	E2	0.0376	α(K)=0.0296 *9*; α(L)=0.00623 *19*; α(M)=0.00138 *5*; α(N+..)=0.00038 *1* α(K)(exp)=0.036 *8*.
353.3‡ *3*		974.80		621.50	(1)+			
361.6 *5*	<1	1145.60		784.00	(1)+			
385.6‡ *4*		1293.51		907.90				
450.7 *1*	3.1 *4*	784.00	(1)+	333.30	(2)+	M1+E2		
541.2# *3*	1.6 *4*	1145.60		604.40	(1)+			
560.8 *1*	3.1 *4*	907.90		347.10	(3)+			
579.9 *3*	3.6 *4*	1201.40		621.50	(1)+			
603.3 *2*	2.8 *4*	1804.71		1201.40				
621.5 *1*	16.2 *5*	621.50	(1)+	0.0	1+	E2+(M1)		α(K)(exp)=0.007 *3*.
629.5 *1*	32.4 *8*	629.50	(2)−	0.0	1+	E1	0.00274	α=0.00274; α(K)=0.00233 *7*; α(L)=0.00031 *1* α(K)(exp)=0.0030 *15*.
641.5 *1*	13.0 *7*	974.80		333.30	(2)+			
664.0 *1*	6.0 *4*	1293.51		629.50	(2)−			
740.9 *2*	1.8 *6*	1074.20		333.30	(2)+			
812.3 *2*	2.9 *4*	1145.60		333.30	(2)+			

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^{144}Gd ε decay 1991Tu01 (continued)

γ(^{144}Eu) (continued)

E_γ	I_γ[@]	E_i(level)	J_i^π	E_f	J_f^π	E_γ	I_γ[@]	E_i(level)	J_i^π	E_f	J_f^π
868.1 *1*	17.0 *6*	1201.40		333.30	$(2)^+$	1524.7 *2*	3.4 *10*	2432.61	1^+	907.90	
872.7 *2*	3.1 *6*	2432.61	1^+	1559.91		1559.9 *2*	5.6 *11*	1559.91		0.0	1^+
907.9[#] *4*	6.4 *8*	907.90		0.0	1^+	1583.1 *4*	2.8 *6*	1930.2		347.10	$(3)^+$
956.9 *1*	7.5 *5*	1304.01		347.10	$(3)^+$	1717.9 *6*	2.0 *7*	2692.72	(1^+)	974.80	
960.2[‡]		1293.51		333.30	$(2)^+$	1803.1 *2*	11.8 *12*	2432.61	1^+	629.50	$(2)^-$
974.8 *2*	5.5 *5*	974.80		0.0	1^+	1829.8 *4*	5.8 *10*	2804.62	1^+	974.80	
1030.4[#] *6*	0.8 *5*	2432.61	1^+	1402.21		2015.0 *3*	2.7 *9*	2362.12	1^+	347.10	$(3)^+$
1055.1 *3*	4.1 *8*	1402.21		347.10	$(3)^+$	2028.8 *4*	1.3 *6*	2362.12	1^+	333.30	$(2)^+$
1128.6 *2*	6.3 *5*	2432.61	1^+	1304.01		2071.2 *2*	3.6 *6*	2692.72	(1^+)	621.50	$(1)^+$
1139.1 *3*	4.1 *5*	2432.61	1^+	1293.51		2088.1 *5*	3.4 *9*	2709.6	(1^+)	621.50	$(1)^+$
1145.6 *4*	2.6 *6*	1145.60		0.0	1^+	2183.1 *3*	5.5 *7*	2804.62	1^+	621.50	$(1)^+$
1201.4 *2*	3.4 *7*	1201.40		0.0	1^+	2198.4 *3*	4.7 *8*	2827.92	(1^+)	629.50	$(2)^-$
1226.6 *5*	2.2 *13*	1559.91		333.30	$(2)^+$	2362.1 *3*	14.2 *9*	2362.12	1^+	0.0	1^+
1231.2 *2*	14.0 *12*	2432.61	1^+	1201.40		2432.6 *2*	94.8 *14*	2432.61	1^+	0.0	1^+
1287.0 *2*	5.1 *8*	2432.61	1^+	1145.60		2457.5 *5*	2.4 *7*	2804.62	1^+	347.10	$(3)^+$
1293.5 *2*	7.7 *7*	1293.51		0.0	1^+	2471.3 *3*	21.0 *8*	2804.62	1^+	333.30	$(2)^+$
1300.7 *4*	2.0 *7*	1930.2		629.50	$(2)^-$	2494.6 *4*	4.0 *8*	2827.92	(1^+)	333.30	$(2)^+$
1358.4 *5*	1.6 *7*	2432.61	1^+	1074.20		2692.7 *3*	10.2 *9*	2692.72	(1^+)	0.0	1^+
1402.4 *3*	3.1 *6*	2804.62	1^+	1402.21		2709.6 *6*	7.2 *11*	2709.6	(1^+)	0.0	1^+
1457.8 *4*	10.0 *14*	2432.61	1^+	974.80		2804.6 *9*	1.6 *8*	2804.62	1^+	0.0	1^+
1511.1 *3*	2.9 *8*	2804.62	1^+	1293.51		2827.9 *8*	2.9 *6*	2827.92	(1^+)	0.0	1^+

† From ce measurements.
‡ weak transition, seen only in coincidence spectra.
# Iγ corrected for contribution from known contaminant.
@ For absolute intensity per 100 decays, multiply by 0.05935.
& Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
a Placement of transition in the level scheme is uncertain.

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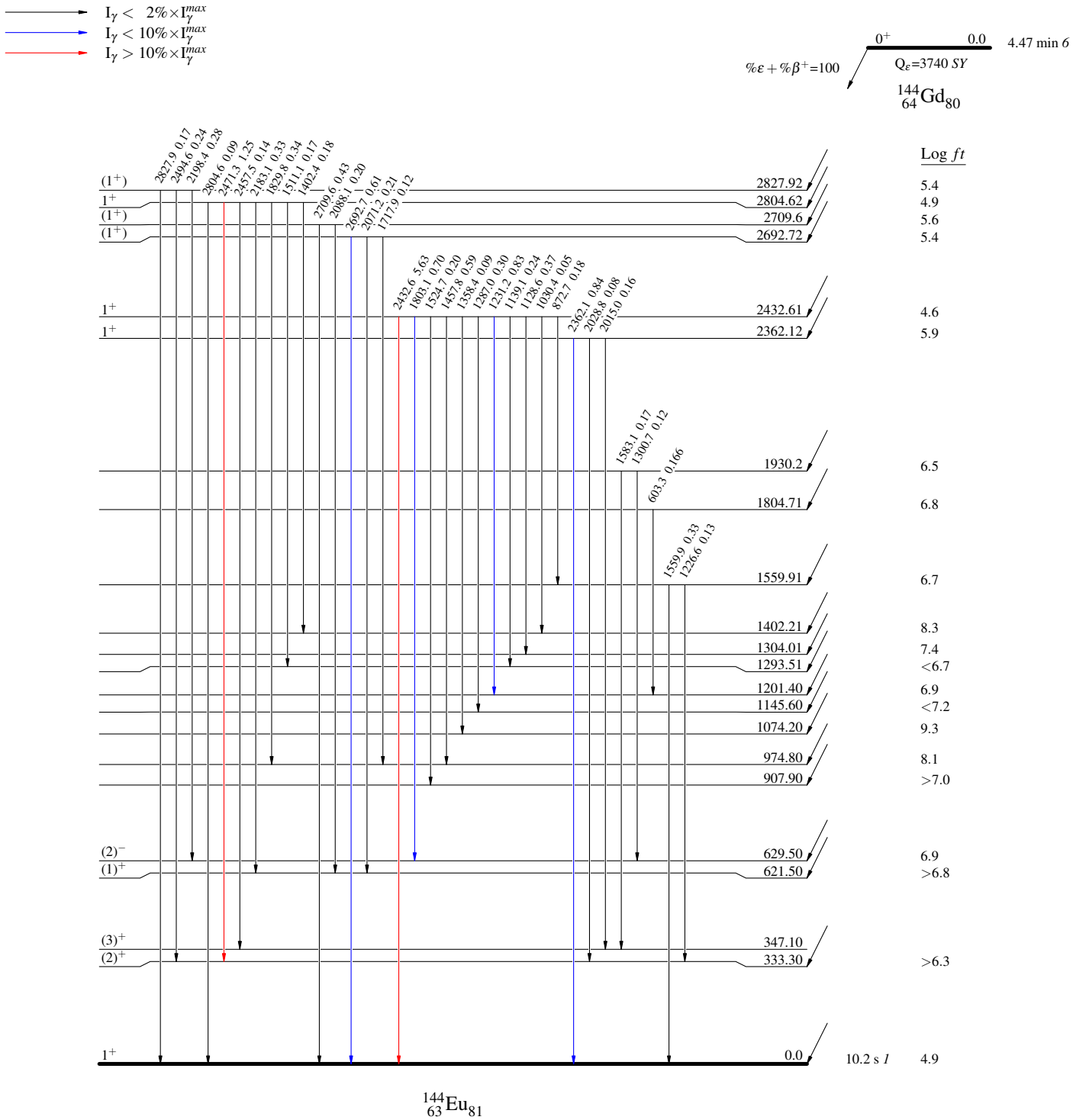
Decay Scheme

Intensities: I_γ per 100 parent decays



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Decay Scheme (continued)

Intensities: I_γ per 100 parent decays