^{153}Lu IT decay (15 μs) 1993Mc03

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 170, 1 (2020)	16-Aug-2020

Parent: ^{153}Lu: E=2632.9 *5*; J^{π}=(27/2$^-$); $T_{1/2}$=15 μs *3*; %IT decay=100.0
Produced by ^{102}Pd(^{54}Fe,p2n) at 245 MeV followed by mass separation and measured γ with Ge detector array.

^{153}Lu Levels

E(level)[†]	J^{π}[‡]	$T_{1/2}$
0.0	11/2$^-$	
1432.07 *23*	(15/2$^-$)	
1606.14 *23*	(15/2$^+$)	
1822.7 *3*	(19/2$^+$)	
2147.0 *3*	(19/2$^-$)	
2211.6 *4*	(23/2$^+$)	
2481.6 *4*	(21/2$^-$)	
2502.5 *4*	(23/2$^-$)	>0.1 μs
2632.9 *5*	(27/2$^-$)	15 μs *3*

[†] From least-squares fits to γ-ray energies.
[‡] Assignments are from authors and are based mainly on systematics of the N=82 nuclides. See Adopted Levels for configuration assignments.

γ(^{153}Lu)

Iγ normalization, I(γ+ce) normalization: From average of 0.98 from feeding to ground state and 0.82 from decay of isomer with uncertainty covering both values.

E_γ	I_γ[‡]	E_i(level)	J_i^{π}	E_f	J_f^{π}	Mult.	α[†]	$I_{(\gamma+ce)}$[‡]	Comments
(21)		2502.5	(23/2$^-$)	2481.6	(21/2$^-$)	[M1,E2]	2.4×10^3 *24*	50 *3*	ce(L)/(γ+ce)=0.77 *52*; ce(M)/(γ+ce)=0.19 *24* ce(N)/(γ+ce)=0.043 *58*; ce(O)/(γ+ce)=0.0051 *70*; ce(P)/(γ+ce)=7.3×10^{-6} *74* α(L)=1.8×10^3 *18*; α(M)=4.5×10^2 *44* α(N)=1.0×10^2 *10*; α(O)=12 *12*; α(P)=0.0175 *51* E_γ: Unobserved, but required by $\gamma\gamma$ coincidences. $I_{(\gamma+ce)}$: From average of 47, to give intensity balance at 2481 level, and 53, to give balance at 2502 level, with uncertainty covering both values.
130.4 *2*	54 *4*	2632.9	(27/2$^-$)	2502.5	(23/2$^-$)	E2	1.238		α(K)=0.531 *8*; α(L)=0.540 *9*; α(M)=0.1333 *21* α(N)=0.0307 *5*; α(O)=0.00376 *6*; α(P)=2.81×10^{-5} *4* Mult.: From α=1.13 *25* from intensity balance.
174.0 *2*	46 *4*	1606.14	(15/2$^+$)	1432.07	(15/2$^-$)	[E1]	0.0820		α(K)=0.0683 *10*; α(L)=0.01063

Continued on next page (footnotes at end of table)

^{153}Lu IT decay (15 μs) 1993Mc03 (continued)

γ(^{153}Lu) (continued)

E_γ	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α[†]	Comments
								16; α(M)=0.00239 *4* α(N)=0.000556 *8*; α(O)=7.83×10^{-5} *12*; α(P)=3.97×10^{-6} *6*
216.5 *2*	65 *6*	1822.7	(19/2$^+$)	1606.14	(15/2$^+$)	[E2]	0.214	α(K)=0.1330 *19*; α(L)=0.0617 *9*; α(M)=0.01498 *22* α(N)=0.00346 *5*; α(O)=0.000440 *7*; α(P)=7.80×10^{-6} *11*
270.0 *2*	24 *2*	2481.6	(21/2$^-$)	2211.6	(23/2$^+$)	[E1]	0.0267	α(K)=0.0224 *4*; α(L)=0.00337 *5*; α(M)=0.000753 *11* α(N)=0.0001762 *25*; α(O)=2.52×10^{-5} *4*; α(P)=1.373×10^{-6} *20*
291.0 *3*	8 *2*	2502.5	(23/2$^-$)	2211.6	(23/2$^+$)	[E1]	0.0222	α(K)=0.0187 *3*; α(L)=0.00279 *4*; α(M)=0.000623 *9* α(N)=0.0001458 *21*; α(O)=2.09×10^{-5} *3*; α(P)=1.151×10^{-6} *17*
323.9 *3*	10 *2*	2147.0	(19/2$^-$)	1822.7	(19/2$^+$)	[E1]	0.01714	α(K)=0.01440 *21*; α(L)=0.00213 *3*; α(M)=0.000477 *7* α(N)=0.0001117 *16*; α(O)=1.610×10^{-5} *23*; α(P)=8.97×10^{-7} *13*
355.4 *3*	57 *4*	2502.5	(23/2$^-$)	2147.0	(19/2$^-$)	[E2]	0.0466	α(K)=0.0342 *5*; α(L)=0.00950 *14*; α(M)=0.00225 *4* α(N)=0.000524 *8*; α(O)=6.98×10^{-5} *10*; α(P)=2.21×10^{-6} *4*
389.1 *3*	35 *3*	2211.6	(23/2$^+$)	1822.7	(19/2$^+$)	[E2]	0.0361	α(K)=0.0270 *4*; α(L)=0.00697 *10*; α(M)=0.001645 *24* α(N)=0.000383 *6*; α(O)=5.15×10^{-5} *8*; α(P)=1.77×10^{-6} *3*
658.8 *3*	22 *2*	2481.6	(21/2$^-$)	1822.7	(19/2$^+$)	[E1]	0.00352	α(K)=0.00298 *5*; α(L)=0.000422 *6*; α(M)=9.38×10^{-5} *14* α(N)=2.20×10^{-5} *3*; α(O)=3.24×10^{-6} *5*; α(P)=1.94×10^{-7} *3*
715.1 *3*	35 *4*	2147.0	(19/2$^-$)	1432.07	(15/2$^-$)	[E2]	0.00794	α(K)=0.00645 *9*; α(L)=0.001158 *17*; α(M)=0.000265 *4* α(N)=6.21×10^{-5} *9*; α(O)=8.83×10^{-6} *13*; α(P)=4.43×10^{-7} *7*
1432.1 *3*	100 *9*	1432.07	(15/2$^-$)	0.0	11/2$^-$	[E2]	0.00198	α(K)=0.001618 *23*; α(L)=0.000240 *4*; α(M)=5.38×10^{-5} *8* α(N)=1.267×10^{-5} *18*; α(O)=1.86×10^{-6} *3*; α(P)=1.115×10^{-7} *16*; α(IPF)=4.95×10^{-5} *7*
1606.1 *3*	≈2	1606.14	(15/2$^+$)	0.0	11/2$^-$	[M2]	0.00572	α(K)=0.00475 *7*; α(L)=0.000716 *10*; α(M)=0.0001608 *23* α(N)=3.80×10^{-5} *6*; α(O)=5.65×10^{-6} *8*; α(P)=3.55×10^{-7} *5*; α(IPF)=5.53×10^{-5} *8*

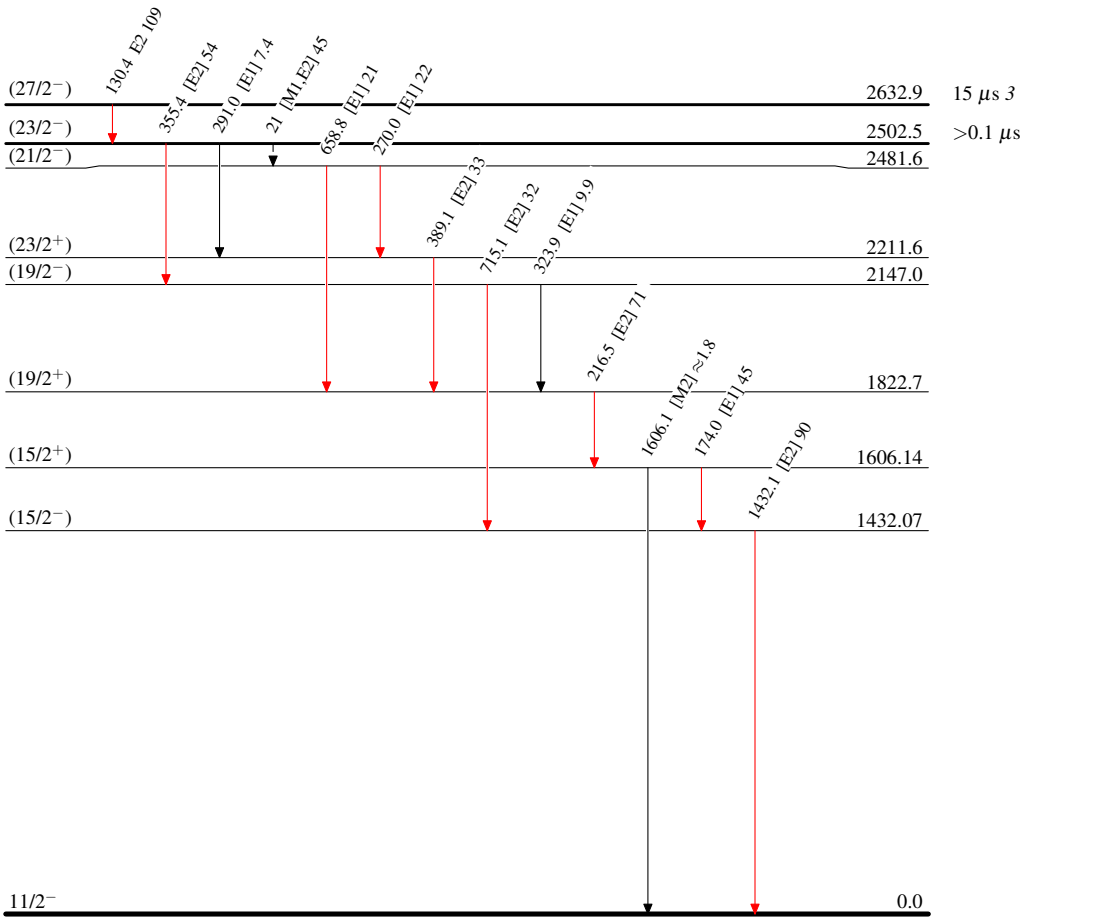
[†] Additional information 1.
[‡] For absolute intensity per 100 decays, multiply by 0.90 *8*.

^{153}Lu IT decay (15 μs) 1993Mc03

Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

%IT=100.0



$^{153}_{71}Lu_{82}$