^{152}Eu IT decay (96 min) 1965Ta03,1975Pr05

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. J. Martin	NDS 114, 1497 (2013)	31-Aug-2013

Parent: ^{152}Eu: E=147.81 *11*; $J^\pi=8^-$; $T_{1/2}$=96 min *1*; %IT decay=100.0

^{152}Eu Levels

Measured: γ, ce (1965Ta03,1975Pr05,1963Ki18); (ce)(ce), γ(ce) (1965Ta03).
The decay scheme is that proposed by 1965Ta03, except for the 77γ which was seen only by 1975Pr05 and a 12.6γ known from (n,γ).

E(level)	J^π †	$T_{1/2}$	Comments
0.0	3^-		
77.23	3^-	38 ns *4*	$T_{1/2}$: From Adopted Levels.
89.849	4^+	384 ns *10*	$T_{1/2}$: From Adopted Levels. 1965Ta03 report 400 ns *100*.
108.06	5^+	≤20 ns	$T_{1/2}$: no delay observed in (ce)(ce) (1965Ta03).
147.81 *11*	8^-	96 min *1*	$T_{1/2}$: From 1975Pr05. Others: 95 min *10* (1965Ta03), 96 min *5* (1963Ki18).

† From Adopted Levels.

γ(^{152}Eu)

Iγ normalization: From I(γ+ce)(89γ)+weighted average of I(γ+ce)(77γ) and I(γ+ce)(12.6γ)=100.
I(γ+ce)(39.75γ):I(γ+ce)(18.21γ):I(γ+ce)(89.857γ)=100:80 *30*:130 *30* (1965Ta03), deduced from relative ce intensities.

E_γ[†]	I_γ[†a]	E_i(level)	J^π_i	E_f	J^π_f	Mult.	δ[&]	α[@]	$I_{(\gamma+ce)}$[a]	Comments
(12.598 *15*)	0.41 *5*	89.849	4^+	77.23	3^-	[E1]		14.70		α(L)=11.51 *17*; α(M)=2.58 *4* α(N)=0.546 *8*; α(O)=0.0628 *9*; α(P)=0.00236 *4* E_γ: from adopted gammas. Not seen in 96-min ^{152}Eu IT decay. I_γ: from Iγ/Iγ(89.847γ)=0.0041 *5* in Adopted Gammas.
18.21 *4*	1.8 *3*	108.06	5^+	89.849	4^+	M1+E2	0.042 *+8−9*	51 *4*		α(L)=40 *3*; α(M)=8.8 *7* α(N)=1.99 *15*; α(O)=0.306 *19*; α(P)=0.0256 *4* Mult.,δ: From L1:L2:L3=100:15 *5*:15 *5*, M/L1=0.50 *15* (1965Ta03).
39.75[‡] *10*		147.81	8^-	108.06	5^+	E3		7.49×10^3 *16*	143.5 *10*	ce(L)/(γ+ce)=0.753 *11*; ce(M)/(γ+ce)=0.197 *6* ce(N)/(γ+ce)=0.0441 *13*; ce(O)/(γ+ce)=0.00564 *17*; ce(P)/(γ+ce)=4.00×10^{-6} *12* α(L)=5.64×10^3 *12*; α(M)=1.48×10^3 *3* α(N)=331 *7*; α(O)=42.2 *9*; α(P)=0.0300 *7* $I_{(\gamma+ce)}$: From 100/normalization factor. Mult.: L1:L2:L3=2 *2*:100:100 *30*, L/M=2.7 *+7−2* (1965Ta03). The subshell ratios are consistent with mult=E2 or E3. L/M(theory)=4.26 (E2), 3.82 (E3) slightly favors mult=E3. B(E2)(W.u.)=2×10^{-10} would be unusually small, whereas B(E3)(W.u.)=0.00013 is reasonable. Mult=E3 is thus ADOPTED.
77.23 *4*	0.98 *7*	77.23	3^-	0.0	3^-	M1+E2	0.10 *3*	3.91 *6*		α(K)=3.27 *5*; α(L)=0.498 *20*; α(M)=0.108 *5* α(N)=0.0247 *11*; α(O)=0.00388 *14*; α(P)=0.000362 *6* Mult.,δ: from adopted gammas.
89.849[#] *6*	100	89.849	4^+	0.0	3^-	E1		0.379 *6*		α(K)=0.318 *5*; α(L)=0.0480 *7*; α(M)=0.01035 *15* α(N)=0.00232 *4*; α(O)=0.000347 *5*; α(P)=2.61×10^{-5} *4* E_γ: The evaluator has increased the authors′ original value of E=89.847 by 17 parts per million to correct for the change in the value of the 411 ^{198}Au standard line. Mult.: from α(K)exp=0.30 *5* (1965Ta03) based on (L x ray)(K x ray)/(L x ray)(γ). Others: α(K)exp≤0.31 (1963Ki18), 0.28 *3* (1975Pr05) based on K x ray/γ. K/L=7.2 *10* (1965Ta03).

$^{152}_{63}$Eu$_{89}$-2

γ(^{152}Eu) (continued)

† From 1975Pr05, except where noted otherwise.
‡ From 1965Ta03 (ce data).
# From 1970Re08.
@ Additional information 1.
& If no value given it was assumed δ=1.00 for E2/M1, δ=1.00 for E3/M2 and δ=0.10 for the other multipolarities.
[a] For absolute intensity per 100 decays, multiply by 0.697 *5*.

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