^{127}Xe ε decay (36.4 d) 1967Ge10,1968Sc14,1977Ge10

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	A. Hashizume	NDS 112,1647 (2011)	1-Oct-2009

Parent: ^{127}Xe: E=0.0; J$^{\pi}$=1/2^{+}; $T_{1/2}$=36.4 d *1*; Q(ε)=662.3 *20*; %ε decay=100

1967Ge10: ^{126}Xe(n,γ) mass separation, magnetic spectrometer ce, semi γ, $\gamma\gamma$(t), $\gamma\gamma(\theta)$.

1974Co05: ^{127}I(p,n), semi γ, absolute photon intensity measurement.

1977Ge10: ^{126}Xe(n,γ), semi γ, absolute photon intensity measurement.

Others: $\gamma\gamma(\theta)$: 1964Jh02, 1966Le09, 1970Le16.

The level scheme is that proposed by 1967Ge10 and 1968Sc14.

^{127}I Levels

E(level)†	J$^{\pi}$‡	$T_{1/2}$‡	Comments
0.0	5/2^{+}	stable	
57.609 *11*	7/2^{+}	1.86 ns *11*	$T_{1/2}$: from (ce(K) 145γ)(K x ray)(t) (1965Ge04). Others: 1.5 ns *3* (1964Jh02), 2.0 ns *2* (1962Th12).
202.860 *8*	3/2^{+}	0.39 ns *1*	(εK)(ω(K))=0.750 *16* (1964Br26). $T_{1/2}$: unweighted av of 0.38 ns *1* (1966Ge13) and 0.40 ns *1* (1968Ko01) from $\gamma\gamma$(t).
374.992 *9*	1/2^{+}	≤0.135 ns	$T_{1/2}$: from Xγ(t), ceγ(t) (1968Ko01). (εK)(ω(K))=0.705 *4* (1964Br26).
618.4 *3*	3/2^{+}		

† From a least-squares fit to E(γ′s).

‡ From Adopted Levels.

ε radiations

E(decay)	E(level)	Iε†	Log *ft*	Comments
(43.9 *23*)	618.4	0.0143 *9*	7.41 *10*	εK=0.31 *7*; εL=0.52 *5*; εM+=0.170 *18*
(287.3 *23*)	374.992	47.6 *14*	6.210 *15*	εK=0.8303 *3*; εL=0.13317 *19*; εM+=0.03654 *6*
(459.4 *23*)	202.860	53.0 *14*	6.607 *13*	εK=0.8418; εL=0.12441 *7*; εM+=0.03377 *2*

† Absolute intensity per 100 decays.

$\gamma(^{127}I)$

Iγ normalization: No direct ε decay to g.s. is assumed. The uncertainty of I(202.86γ) is assumed 2%. Total transition intensity is obtained by using conversion coefficients calculated by BrIcc (evaluator). (I(202.86γ)/100 ε decays)=70.6 *22* from absolute measurement; (I(202.86γ)/100 ε decays)=68.3 *4* from relative photon intensity measurement combined with theoretical HSIcc conversion coefficients and from decay scheme (1977Ge10).

I(K x ray)/I(0.2029γ)=1.17 *7* (1958Fo48).

E_γ[†]	I_γ[‡a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]	δ[&]	α[#]	$I_{(\gamma+ce)}$[a]	Comments
57.61 *2*	1.79 *10*	57.609	7/2$^+$	0.0	5/2$^+$	M1+E2	−0.083 *5*	3.72	8.5 *5*	K/L=6.8 (1967Ge10); L/M=4.7 *6* (1967Ge10); M/N+O=5.4 *+41−19* (1967Ge10) ce(K)/(γ+ce)=0.669 *6*; ce(L)/(γ+ce)=0.0951 *18*; ce(M)/(γ+ce)=0.0193 *4*; ce(N+)/(γ+ce)=0.00432 *9* ce(N)/(γ+ce)=0.00388 *8*; ce(O)/(γ+ce)=0.000443 *9* ce(K)/(I_γ+I_{ce})=0.669 *6*; ce(L)/(I_γ+I_{ce})=0.0951 *18*; ce(M)/(I_γ+I_{ce})=0.0193 *4*; ce(N+)/(I_γ+I_{ce})=0.00432 *9*. From L1:L2:L3=1.0:0.118 *4*:0.068 *4* (1967Ge10). $I_{(\gamma+ce)}$: from I(γ+ce)(145γ).
145.252 *10*	6.28 *19*	202.860	3/2$^+$	57.609	7/2$^+$	E2		0.471		K/L=3.6 *3*; L/M=4.9 *9*; M/N+O=4.3 *+19−12* (1967Ge10) α(K)=0.357 *5*; α(L)=0.0906 *13*; α(M)=0.0189 *3*; α(N+..)=0.00405 *6* α(N)=0.00369 *6*; α(O)=0.000362 *5* L1:L2:L3=1.0:0.76 *10*:0.87 *11* (1967Ge10). Mult.: from L1:L2:L3.
172.132 *10*	37.4 *11*	374.992	1/2$^+$	202.860	3/2$^+$	M1+E2	−0.085 *6*	0.1649 *24*		K/L=7.6 *5*; L/M=4.8 *6* (1967Ge10) α(K)=0.1419 *20*; α(L)=0.0185 *3*; α(M)=0.00373 *6*; α(N+..)=0.000843 *12* α(N)=0.000754 *11*; α(O)=8.82×10^{-5} *13* L1:L2:L3=1.0:0.066 *3*:0.016 *4*, M/N+O+=4.0 *+9−7* (1967Ge10).
202.860 *10*	100	202.860	3/2$^+$	0.0	5/2$^+$	M1+E2	+0.52 *5*	0.1143 *22*		K/L=6.5 *1*; L/M=5.5 *5*; M/N+O=2.3 *4* (1967Ge10) α(K)=0.0965 *17*; α(L)=0.0142 *5*; α(M)=0.00289 *10*; α(N+..)=0.000645 *20* α(N)=0.000580 *18*; α(O)=6.50×10^{-5} *17* L1:L2:L3=1.0:0.160 *15*:0.121 *13* (1967Ge10).
374.991 *12*	25.2 *8*	374.992	1/2$^+$	0.0	5/2$^+$	E2		0.0199		K/L=5.4 *5* (1967Ge10) α(K)=0.01671 *24*; α(L)=0.00257 *4*; α(M)=0.000524 *8*; α(N+..)=0.0001158 *17* α(N)=0.0001044 *15*; α(O)=1.144×10^{-5} *16* L1:L2:L3=1.0:0.26 *5*:0.17 *5* (1967Ge10).
618.4 *3*	0.0208 *12*	618.4	3/2$^+$	0.0	5/2$^+$					E_γ: from ^{127}Te β^- decay (1970Ap02).

$\gamma(^{127}$I) (continued)

† 1977Ge10.
‡ Iγ's are relative to I(202.86γ)=100 (1977Ge10).
# Theoretical conversion coefficients are calculated using BrIcc code for the multipolarity indicated.
@ From L1:L2:L3.
& From Adopted Levels, gammas.
[a] For absolute intensity per 100 decays, multiply by 0.687 *12*.

$^{127}_{53}$I$_{74}$-3

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