^{129}Cs ε decay (32.06 h) 1976Me16,1967Gr05

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Janos Timar and Zoltan Elekes, Balraj Singh	NDS 121, 143 (2014)	31-May-2014

Parent: ^{129}Cs: E=0.0; J$^{\pi}$=1/2^{+}; T$_{1/2}$=32.06 h *6*; Q(ε)=1197 *5*; %ε+%β^{+} decay=100.0
^{129}Cs-Q(ε): From 2012Wa38.
^{129}Cs-J$^{\pi}$,T$_{1/2}$: From ^{129}Cs Adopted Levels.
1976Me16: source produced in ^{127}I(α,2n), chem, mass sep; measured Eγ, Iγ, γγ-coin.
Others: 1955Ni21, 1960Jh02, 1963Fr13, 1965Sh08, 1966Re10, 1967Wa11, 1971Ob03, 1972Ge20, 1974Ma24, 1976Me16, 1979Be54.

^{129}Xe Levels

The decay scheme is basically that proposed by 1967Gr05, modified by 1976Me16.

E(level)	J$^{\pi}$†	T$_{1/2}$†
0.0	1/2^{+}	stable
39.578 *2*	3/2^{+}	0.97 ns *2*
318.179 *2*	3/2^{+}	67.5 ps *20*
321.711 *5*	5/2^{+}	44.0 ps *19*
411.496 *2*	1/2^{+}	81‡ ps *26*
572.68 *4*	(5/2)$^{+}$	2.0 ps *2*
588.533 *4*	3/2^{+}	≤65‡ ps
624.5 *2*		
904.318 *8*	3/2^{+}	
946.029 *4*	1/2^{+},3/2^{+}	

† From Adopted Levels, unless otherwise noted.
‡ From γγ(t) (1979Be54).

ε,β^{+} radiations

E(decay)	E(level)	Iβ^{+} †	Iε†	Log *ft*	Comments
(251 *5*)	946.029		0.355 *23*	6.80 *4*	εK=0.8224 *9*; εL=0.1387 *7*; εM+=0.03889 *21*
(293 *5*)	904.318		0.066 *4*	7.68 *4*	εK=0.8282 *6*; εL=0.1344 *5*; εM+=0.03749 *15*
(573 *5*)	624.5		8.×10^{-4} *3*	10.23 *17*	εK=0.8435 *2*; εL=0.1228 *1*; εM+=0.03376 *4*
(608 *5*)	588.533		4.9 *3*	6.50 *3*	εK=0.8443 *2*; εL=0.12212 *9*; εM+=0.03355 *3*
(786 *5*)	411.496		55 *3*	5.68 *3*	εK=0.8474; εL=0.11979 *5*; εM+=0.03281 *2*
(879 *5*)	318.179		2.40 *14*	7.14 *3*	εK=0.8485; εL=0.11896 *4*; εM+=0.03254 *2*
(1157 *5*)	39.578		2.9 *13*	7.3 *2*	εK=0.8507; εL=0.11730 *3*; εM+=0.032010 *8*
(1197 *5*)	0.0	0.0029 *5*	34 *4*	6.27 *6*	av Eβ=88.2 *23*; εK=0.8508; εL=0.11712 *3*; εM+=0.031954 *7*

† Absolute intensity per 100 decays.

γ(^{129}Xe)

E_γ[†]	I_γ[&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[#]	α[a]	Comments
39.578 *4*	97 *3*	39.578	3/2$^+$	0.0	1/2$^+$	M1+E2	−0.027 *5*	12.03	α(K)=10.27 *15*; α(L)=1.408 *23*; α(M)=0.286 *5* α(N)=0.0591 *10*; α(O)=0.00732 *11* E_γ: from 1985Ba73. δ: from L subshell ratios (1965Ge04), sign from γγ(θ) and K/L (371.9γ) (1974Ma24).
89.79 *8*	0.08 *2*	411.496	1/2$^+$	321.711	5/2$^+$	[E2]		2.65	α(K)=1.675 *24*; α(L)=0.776 *12*; α(M)=0.1664 *25* α(N)=0.0329 *5*; α(O)=0.00330 *5*
93.329 *3*	21.3 *6*	411.496	1/2$^+$	318.179	3/2$^+$	[M1,E2]		1.7[@] *7*	α(K)=1.2 *4*; α(L)=0.4 *3*; α(M)=0.08 *6* α(N)=0.016 *12*; α(O)=0.0017 *11*
177.036 *10*	8.8 *1*	588.533	3/2$^+$	411.496	1/2$^+$	M1+E2	+0.44 *13*	0.179 *7*	α(K)=0.151 *5*; α(L)=0.0227 *21*; α(M)=0.0047 *5* α(N)=0.00095 *9*; α(O)=0.000114 *9*
266.820 *7*	8.9 *1*	588.533	3/2$^+$	321.711	5/2$^+$	(M1+E2)		0.058[@] *3*	α(K)=0.0488 *13*; α(L)=0.0076 *15*; α(M)=0.0016 *3* α(N)=0.00032 *6*; α(O)=3.8×10^{-5} *6*
270.352 *5*	6.95 *8*	588.533	3/2$^+$	318.179	3/2$^+$	(M1+E2)		0.056[@] *3*	α(K)=0.0470 *12*; α(L)=0.0073 *14*; α(M)=0.0015 *3* α(N)=0.00030 *6*; α(O)=3.6×10^{-5} *5*
278.614 *4*	43.2 *9*	318.179	3/2$^+$	39.578	3/2$^+$	M1+E2	+0.8 *+10−5*	0.0509 *16*	α(K)=0.0429 *7*; α(L)=0.0063 *9*; α(M)=0.00130 *18* α(N)=0.00027 *4*; α(O)=3.2×10^{-5} *3* δ: from 1981He04. Others: 0.3<(1974Ma24), +0.03 *+2−3* (1979Ir01).
282.131 *6*	7.9 *1*	321.711	5/2$^+$	39.578	3/2$^+$	M1+(E2)	−0.7 *+4−7*	0.0489 *13*	α(K)=0.0414 *7*; α(L)=0.0060 *7*; α(M)=0.00122 *15* α(N)=0.00025 *3*; α(O)=3.03×10^{-5} *25* δ: from 1981He04. Other: +0.83 *+8−7* (1979Ir01).
302.6 *2*	≤0.01	624.5		321.711	5/2$^+$				
318.180 *2*	80 *1*	318.179	3/2$^+$	0.0	1/2$^+$	M1+E2	−1.1 *+13−22*	0.0348 *6*	α(K)=0.0293 *9*; α(L)=0.0044 *5*; α(M)=0.00090 *11* α(N)=0.000183 *20*; α(O)=2.19×10^{-5} *15* δ: from 1981He04. Others: 0.4 *+6−4* (1974Ma24), −2.11 *+7−11* (1979Ir01).
321.700 *25*	2.3 *2*	321.711	5/2$^+$	0.0	1/2$^+$	E2		0.0335	α(K)=0.0277 *4*; α(L)=0.00461 *7*; α(M)=0.000952 *14* α(N)=0.000193 *3*; α(O)=2.24×10^{-5} *4*
321.700[b] *25*	0.3 *2*	946.029	1/2$^+$,3/2$^+$	624.5					
357.52 *6*	0.19 *3*	946.029	1/2$^+$,3/2$^+$	588.533	3/2$^+$				
371.918 *2*	1000 *3*	411.496	1/2$^+$	39.578	3/2$^+$	M1+E2	+0.97 *9*	0.0224	α(K)=0.0190 *3*; α(L)=0.00269 *4*; α(M)=0.000549 *9* α(N)=0.0001129 *17*; α(O)=1.368×10^{-5} *20*
373.36 *15*	0.4 *4*	946.029	1/2$^+$,3/2$^+$	572.68	(5/2)$^+$				
411.490 *2*	729 *3*	411.496	1/2$^+$	0.0	1/2$^+$	[M1]		0.0181	α(K)=0.01563 *22*; α(L)=0.00199 *3*; α(M)=0.000402 *6* α(N)=8.34×10^{-5} *12*; α(O)=1.046×10^{-5} *15*
492.78 *4*	0.37 *3*	904.318	3/2$^+$	411.496	1/2$^+$				
533.10 *4*	0.31 *2*	572.68	(5/2)$^+$	39.578	3/2$^+$				
534.546 *15*	0.69 *3*	946.029	1/2$^+$,3/2$^+$	411.496	1/2$^+$				

$^{129}_{54}Xe_{75}$-2

γ(^{129}Xe) (continued)

E_γ[†]	I_γ[&]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[‡]	α[a]	Comments
548.945 *8*	111 *1*	588.533	3/2$^+$	39.578	3/2$^+$	(M1+E2)	0.0079[@] *10*	α=0.0079 *10*; α(K)=0.0068 *9*; α(L)=0.00090 *7*; α(M)=0.000183 *13* α(N)=3.8×10^{-5} *3*; α(O)=4.6×10^{-6} *5*
572.73 *11*	0.05 *12*	572.68	(5/2)$^+$	0.0	1/2$^+$	[E2]	0.00620 *9*	α=0.00620 *9*; α(K)=0.00528 *8*; α(L)=0.000741 *11*; α(M)=0.0001512 *22* α(N)=3.10×10^{-5} *5*; α(O)=3.75×10^{-6} *6*
582.60 *11*	0.03 *2*	904.318	3/2$^+$	321.711	5/2$^+$			
585.0[b] *2*	0.015 *9*	624.5		39.578	3/2$^+$			
586.11 *4*	0.42 *4*	904.318	3/2$^+$	318.179	3/2$^+$			
588.549 *8*	19.7 *4*	588.533	3/2$^+$	0.0	1/2$^+$	(M1+E2)	0.0066[@] *9*	α=0.0066 *9*; α(K)=0.0057 *8*; α(L)=0.00075 *7*; α(M)=0.000152 *13* α(N)=3.1×10^{-5} *3*; α(O)=3.9×10^{-6} *4*
624.312 *9*	0.92 *2*	946.029	1/2$^+$,3/2$^+$	321.711	5/2$^+$			
627.88 *9*	0.056 *12*	946.029	1/2$^+$,3/2$^+$	318.179	3/2$^+$			
864.740 *8*	1.05 *3*	904.318	3/2$^+$	39.578	3/2$^+$			
904.31 *6*	0.27 *2*	904.318	3/2$^+$	0.0	1/2$^+$			
906.425 *6*	7.19 *5*	946.029	1/2$^+$,3/2$^+$	39.578	3/2$^+$			
946.046 *6*	2.27 *2*	946.029	1/2$^+$,3/2$^+$	0.0	1/2$^+$			

† From 1976Me16, unless otherwise noted.

‡ From K/L (1974Ma24).

\# From $\gamma\gamma(\theta)$ and K/L (1974Ma24), unless otherwise noted.

@ M1+E2 and δ=1.0 *10* was assumed by the evaluators.

& For absolute intensity per 100 decays, multiply by 0.0306 *17*.

a 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.

b Placement of transition in the level scheme is uncertain.

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