^{135}Xe β^- decay (9.14 h) 1974MeZV

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, Alexander A. Rodionov And Yuri L. Khazov	NDS 109, 517 (2008)	22-Jan-2008

Parent: ^{135}Xe: E=0.0; $J^\pi=3/2^+$; $T_{1/2}$=9.14 h *2*; Q(β^-)=1165 *4*; %β^- decay=100.0

^{135}Xe-Q(β^-): From 2003Au03, based on Q(β^-)=1167 *5* from $\beta\gamma$ data of 1999Fo01.

1974MeZV (priv comm to 1975He12): measured Eγ, Iγ.

1972Ac02: ce data.

1999Fo01: measured $\beta\gamma$ coin, deduced Q(β^-) value.

Others: 1964Cl01, 1965An05, 1966Ha28, 1966Ja16, 1968Al16, 1968Op02, 1973Sa27, 1974Ca26, 1975Ho18, 1996Yo12.

Pre-1960 references: 1940Do07, 1940Wu05, 1941Cl02, 1943Ri01, 1945Wu05, 1946Bl27, 1949Th04, 1950Ho04, 1950Gl09, 1950Ne07, 1952Be55, 1953Gr07, 1953Br11, 1955Th01.

Additional information 1.

Total decay energy of 1164 keV *28* calculated (by RADLIST code) from level scheme agrees with the expected value of 1165 keV *4*.

^{135}Cs Levels

E(level)	J^π[†]	$T_{1/2}$	Comments
0.0	$7/2^+$		
249.793 *12*	$5/2^+$	0.28 ns *8*	$T_{1/2}$: βce(t) (1953Gr07).
407.989 *13*			
608.186 *14*	$5/2^+$		
981.315 *22*			
1062.420 *14*			

[†] From 'Adopted Levels'.

β^- radiations

E(decay)	E(level)	Iβ^-[†]	Log *ft*	Comments
(103 *4*)	1062.420	0.123 *6*	5.71 *6*	av Eβ=26.9 *11*
(184 *4*)	981.315	0.075 *5*	6.71 *5*	av Eβ=50.0 *12*
(557 *4*)	608.186	3.11 *14*	6.67 *3*	av Eβ=173.3 *15* E(decay): 550 from 1955Th01. I$\beta^-\approx$3%.
(757 *4*)	407.989	0.59 *3*	7.86 *3*	av Eβ=248.1 *16*
910 *10*	249.793	96 *4*	5.94 *2*	av Eβ=310.2 *16* E(decay): from 1952Be55. Iβ^-=97% (1955Th01). Other: Eβ=909, Iβ=96% (1996Yo12).

[†] Absolute intensity per 100 decays.

$\gamma(^{135}Cs)$

Iγ normalization: from Σ(Iγ to g.s.)=100, assuming no β feeding to g.s..

E$_\gamma$[‡]	I$_\gamma$[‡#]	E$_i$(level)	J_i^π	E$_f$	J_f^π	Mult.[†]	δ	α[@]	Comments
158.197 *18*	0.321 *11*	407.989		249.793	$5/2^+$				
200.19 *10*	0.013 *5*	608.186	$5/2^+$	407.989					
249.794 *15*	100	249.793	$5/2^+$	0.0	$7/2^+$	M1(+E2)	<1.0	0.0737 *20*	α(K)=0.0623 *10*; α(L)=0.0091 *11*;

Continued on next page (footnotes at end of table)

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$\gamma(^{135}Cs)$ (continued)

E_γ[‡]	I_γ[‡#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	δ	α[@]	Comments
									α(M)=0.00188 *23*; α(N+..)=0.00045 *5* α(N)=0.00039 *5*; α(O)=5.3×10^{-5} *5*; α(P)=2.34×10^{-6} *9* Mult.,δ: α(K)exp=0.061 *4* (1972Ac02); K/L+M+=5.6 *10* (1953Gr07).
358.39 *3*	0.245 *9*	608.186	5/2$^+$	249.793	5/2$^+$	M1,E2		0.0265 *17*	α(K)=0.0224 *18*; α(L)=0.00325 *15*; α(M)=0.00067 *4*; α(N+..)=0.000160 *7* α(N)=0.000141 *7*; α(O)=1.90×10^{-5} *4*; α(P)=8.3×10^{-7} *11* α(K)exp≤0.042 (1972Ac02).
373.13 *10*	0.017 *3*	981.315		608.186	5/2$^+$				
407.99 *2*	0.398 *13*	407.989		0.0	7/2$^+$				α(K)exp≤0.025.
454.2 *2*	0.0040 *8*	1062.420		608.186	5/2$^+$				
573.32 *9*	0.0053 *8*	981.315		407.989					
608.185 *15*	3.22 *10*	608.186	5/2$^+$	0.0	7/2$^+$	M1(+E2)	<0.5	0.00730 *22*	α(K)=0.00629 *20*; α(L)=0.000803 *19*; α(M)=0.000164 *4*; α(N+..)=3.97×10^{-5} *10* α(N)=3.46×10^{-5} *9*; α(O)=4.84×10^{-6} *13*; α(P)=2.41×10^{-7} *9* α(K)exp=0.0084 *22* (1972Ac02).
654.432 *16*	0.050 *2*	1062.420		407.989					
731.52 *2*	0.061 *3*	981.315		249.793	5/2$^+$				
812.63 *3*	0.078 *2*	1062.420		249.793	5/2$^+$				
1062.41 *2*	0.0045 *9*	1062.420		0.0	7/2$^+$				

[†] From ce data (1972Ac02).
[‡] Uncertainties quoted in 1974MeZV are statistical only. As suggested in the earlier evaluation (1975He12), 15 eV uncertainty to Eγ′s and 3% uncertainty to Iγ′s have been added in the values given here.
[#] For absolute intensity per 100 decays, multiply by 0.90 *3*.
[@] 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.

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Decay Scheme

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