^{135}Ce IT decay (20 s) 1970Dr04,1971Va22

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}Ce: E=445.8 *3*; J^π=(11/2$^-$); $T_{1/2}$=20 s *1*; %IT decay=100.0
Other: 1963Br30.
Total decay energy calculated (by RADLIST code) from level scheme agrees with the expected value of 446 keV.

^{135}Ce Levels

E(level)	J^π†	$T_{1/2}$	Comments
0.0	1/2$^{(+)}$		
82.5 *2*	3/2$^{(+)}$		
295.5 *3*	(5/2$^+$)		
445.8 *3*	(11/2$^-$)	20 s *1*	$T_{1/2}$: average of 20 s *1* (1963Br30), 20 s *2* (1970Dr04), 20 s *2* (1971Va22).

† From Adopted Levels.

γ(^{135}Ce)

Iγ normalization: Ti(150.3γ)=100.

E_γ†	I_γ‡#	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	α@	Comments
82.4 *2*	98 *14*	82.5	3/2$^{(+)}$	0.0	1/2$^{(+)}$	M1+E2	<0.4	2.20 *15*	α(K)=1.78 *4*; α(L)=0.33 *10*; α(M)=0.071 *21*; α(N+..)=0.018 *5* α(N)=0.016 *5*; α(O)=0.0024 *6*; α(P)=0.000134 *3* Mult.,δ: α(exp)=3.1 *6* from intensity balance gives M1+E2, δ=1.0 *5*; but RUL(E2)=300 requires δ<0.4. Iγ: with δ(E2/M1)<0.4, there is problem with intensity balance at 82.5 level, net balance=−18 *11* in absolute units. For intensity to be balanced the photon intensity of 82.4γ should be 124 *8* in relative units as compared to the reported intensity of 98 *14*.
150.3 *2*	100	445.8	(11/2$^-$)	295.5	(5/2$^+$)	E3		3.66	α(K)=1.494 *22*; α(L)=1.68 *3*; α(M)=0.388 *7*; α(N+..)=0.0948 *15* α(N)=0.0832 *14*; α(O)=0.01156 *19*; α(P)=8.29×10^{-5} *13* Mult.: from K:L:M=100:133:33 and K/L=0.83 *10* (1970Dr04).
212.9 *2*	347 *15*	295.5	(5/2$^+$)	82.5	3/2$^{(+)}$	M1		0.1439	α(K)=0.1230 *18*; α(L)=0.01657 *24*; α(M)=0.00346 *5*; α(N+..)=0.000903 *13* α(N)=0.000769 *11*; α(O)=0.0001246 *18*; α(P)=9.47×10^{-6} *14* Mult.: from adopted gammas. K:L:M=26:4:1 (1970Dr04) gives δ(E2/M1)<1.3.
295.8 *5*	85 *10*	295.5	(5/2$^+$)	0.0	1/2$^{(+)}$	E2		0.0509	α(K)=0.0408 *6*; α(L)=0.00795 *13*; α(M)=0.00171 *3*; α(N+..)=0.000432 *7* α(N)=0.000373 *6*; α(O)=5.66×10^{-5} *9*;

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^{135}Ce IT decay (20 s) 1970Dr04,1971Va22 (continued)

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

E_γ [†]	E_i(level)	Comments
		α(P)=2.69×10^{-6} *4* Mult.: K/(L+M+)=3.8 *6* and α(K)exp=0.043 (1970Dr04) give δ(E2/M1)>1.2, but ΔJ forbids dipole.

† Weighted average of 1970Dr04 and 1971Va22.
‡ Unweighted average of 1970Dr04 and 1971Va22.
# For absolute intensity per 100 decays, multiply by 0.217 *5*.
@ 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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