^{34}Cl ε decay (31.99 min) 1983Kr06,1980Wi13,1975Va02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Ninel Nica, Balraj Singh	NDS 113, 1563 (2012)	28-May-2012

Parent: ^{34}Cl: E=146.36 *3*; $J^\pi=3^+$; $T_{1/2}$=31.99 min *3*; Q(ε)=5491.634 *43*; %ε+%$β^+$ decay=55.4 *6*

^{34}Cl-E: Based on Eγ In ^{34}Cl IT decay (31.99 min); other: 146.52 *26* (2012Er02).

^{34}Cl-Q(ε): From 2011AuZZ. Other: 5492.01 *15* (2003Au03).

1983Kr06: ^{34}Cl^m produced by the reaction ^{35}Cl(p,pn) E=25 MeV. Used an iron-free magnetic double lens spectrometer with intermediate image focusing and measured end-point energies, β-decay branching ratios, and $T_{1/2}$.

1980Wi13: ^{34}Cl^m produced by the reaction ^{31}P(α,n) E=10, 11 MeV. Used Ge(Li) and measured relative and absolute γ-ray intensities (the latter by comparison to 511γ produced by positron annihilation), β-decay branching ratios, and $T_{1/2}$.

1975Va02: ^{34}Cl^m produced by the reaction ^{24}Mg(^{12}C,pn) E=35 MeV. Used Ge(Li)-NaI(Tl) Compton-suppressed spectrometer and measured Eγ, Iγ, $T_{1/2}$.

Others:

γ, γγ: 1971Av10, 1973Go33.

$β^+$ spectrum measurement, deduced Eβ, Iβ: 1971Wa04, 1956Gr07, 1951Ru24.

γγ(θ): 1956Ha44.

γγ(lin pol): 1958Sh62.

Energy balance: total decay energy of 3125 keV *24* deduced (using RADLIST code) from proposed decay scheme is in agreement with the expected value of 3123 keV *34*, indicating that decay scheme is complete.

^{34}S Levels

E(level)†	J^π†	$T_{1/2}$
0.0	0^+	stable
2127.564 *13*	2^+	
3304.212 *13*	2^+	
4114.813 *23*	2^+	
4688.98 *5*	4^+	
4876.839 *24*	3^+	

† From Adopted Levels.

ε,$β^+$ radiations

E(decay)	E(level)	Iβ+ †	Iε†	Log *ft*	I(ε+β+)†	Comments
(761.15 *6*)	4876.839		0.038 *6*	5.18 *7*	0.038 *6*	εK=0.9040; εL=0.08550; εM+=0.01045 I(ε+β+): 0.038 *6* (1980Wi13); 0.032 *3* (1975Va02).
(949.01 *7*)	4688.98		0.033 *3*	5.44 *4*	0.033 *3*	εK=0.9041; εL=0.08541; εM+=0.01044 I(ε+β+): 0.034 *3* (1980Wi13); 0.030 *6* (1975Va02).
(1523.18 *6*)	4114.813	0.264 *6*	0.193 *5*	5.081 *13*	0.457 *11*	av Eβ=203.218 *24*; εK=0.38281 *9*; εL=0.036098 *8*; εM+=0.004411 *1* I(ε+β+): 0.458 *10* (1980Wi13); 0.392 *15* (1975Va02).
(2333.78 *6*)	3304.212	25.6 *5*	0.824 *18*	4.823 *11*	26.4 *5*	av Eβ=554.32; εK=0.028237 *4*; εL=0.0026599 *4*; εM+=0.0003250 I(ε+β+): 27.8 *8* (1983Kr06); 26.4 *3* (1980Wi13); 24.3 *7* (1975Va02).
(3510.43 *6*)	2127.564	28.4 *7*	0.129 *3*	5.982 *13*	28.5 *7*	av Eβ=1098.57; εK=0.004099; εL=0.0003859; εM+=4.715×10^{-5} I(ε+β+): 27.7 *6* (1983Kr06); 28.5 *5* (1980Wi13); 28.4 *7* (1975Va02).

† Absolute intensity per 100 decays.

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γ(^{34}S)

E_γ †	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.†	δ†	Comments
1176.650 *20*	32.9 *3*	3304.212	2^+	2127.564	2^+	M1+E2	−0.16 *2*	I_γ: 32.9 *3* (1980Wi13); 32.2 *10* (1975Va02).
1572.57 *5*	0.037 *12*	4876.839	3^+	3304.212	2^+	M1+E2	−0.09 *4*	
1987.19 *3*	0.431 *15*	4114.813	2^+	2127.564	2^+	M1+E2	−0.40 *5*	
2127.499 *20*	100.0 *11*	2127.564	2^+	0.0	0^+	E2		I_γ: 100.0 *11* (1980Wi13); 100 (1975Va02).
2561.36 *5*	0.078 *7*	4688.98	4^+	2127.564	2^+	E2		
2749.24 *5*	0.052 *7*	4876.839	3^+	2127.564	2^+	M1+E2	−0.11 *3*	
3304.031 *20*	28.7 *3*	3304.212	2^+	0.0	0^+	E2		I_γ: 28.7 *3* (1980Wi13); 25.5 *8* (1975Va02).
4114.52 *4*	0.637 *14*	4114.813	2^+	0.0	0^+	E2		I_γ: 0.637 *14* (1980Wi13); 0.52 *3* (1975Va02).

† From Adopted Gammas.
‡ For absolute intensity per 100 decays, multiply by 0.428 *6*.

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Decay Scheme

Intensities: I_γ per 100 parent decays