^{34}Ar ε decay (843.8 ms) 2006Ia05,1974Ha26

History

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

Parent: ^{34}Ar: E=0.0; $J^\pi=0^+$; $T_{1/2}$=843.8 ms *4*; Q(ε)=6061.83 *8*; %ε+%β^+ decay=100.0

^{34}Ar-$T_{1/2}$: From 2006Ia05.

^{34}Ar-Q(ε): From 2011Er02, 2009Er07. Others: 6062.64 *34* (2011AuZZ); 6062.6 *4* (2003Au03).

2006Ia05: ^{1}H(^{35}Cl,2n)^{34}Ar E=875, 1050 MeV, fast tape-transport system, 4π proportional gas counter. Measured $T_{1/2}$.

1974Ha26: ^{32}S(^{3}He,n)^{34}Ar E=12 MeV, fast gas-transport system,Ge(Li) detector. Measured Iγ, Eγ, $T_{1/2}$, absolute I($\varepsilon+\beta^+$).

See also 2009Ha12, which surveyed measured precise Q(g.s.), $T_{1/2}$, and branching ratios for conserved vector current hypothesis and standard model.

Others: 1972Ha58 ($T_{1/2}$), 1971Mo27 (Iγ, Eγ, $T_{1/2}$).

Energy balance: total decay energy of 6062 keV *11* deduced (using RADLIST code) from proposed decay scheme is in agreement with the expected value of 6061.83 keV *8*, indicating that decay scheme is complete.

^{34}Cl Levels

E(level)†	J^π‡	$T_{1/2}$‡	Comments
0.0	0^+	1.5266 s *4*	%ε+%β^+=100 %ε+%β^+: Adopted value. $T_{1/2}$: weighted average of: 1.5268 s *5* (2006Ia05), 1.5277 s *22* (1983Ko22), 1.5252 s *11* (1976Wi08), 1.526 s *2* (1973Ry01); others: 1.534 s *3* (1972Ha82), 1.565 s *7* (1965Eb01), 1.560 s *14* (1961Ja22), 1.58 s *1* (1960Ja12), 1.61 s *1* (1958Mi85), 1.53 s *2* (1954Kl36).
460.8 *10*	1^+	5.2 ps *4*	
665.8 *10*	1^+	9.2 ps *4*	
2579.5 *14*	1^+	33 fs *8*	
3129.2 *10*	1^+	1.9 fs *13*	

† From least-squares fit to Eγ data by evaluators.

‡ Adopted values.

ε,β^+ radiations

E(decay)	E(level)	Iβ^+ ‡	Iε‡	Log *ft*	I($\varepsilon+\beta^+$)†‡	Comments
(2932.6 *10*)	3129.2	1.28 *7*	0.0160 *9*	3.458 *24*	1.30 *7*	av Eβ=829.08 *47*; εK=0.011100 *18*; εL=0.0010604 *1*; εM+=0.00013659 I($\varepsilon+\beta^+$): 1.30 *+12−6* (1974Ha26).
(3482.3 *14*)	2579.5	0.86 *5*	0.0049 *3*	4.12 *3*	0.86 *5*	av Eβ=1086.19 *67*; εK=0.005193 *9*; εL=0.0004960 *9*; εM+=6.389×10^{-5} *11* I($\varepsilon+\beta^+$): 0.86 *+10−4* (1974Ha26).
(5396.0 *10*)	665.8	2.49 *11*	0.00258 *12*	4.780 *20*	2.49 *11*	av Eβ=2006.14 *49*; εK=0.0009351 *7*; εL=8.927×10^{-5} *6*; εM+=1.1497×10^{-5} *8* I($\varepsilon+\beta^+$): 2.49 *+13−10* (1974Ha26).
(5601.0 *10*)	460.8	0.91 *10*		5.31 *5*	0.91 *10*	av Eβ=2105.98 *49*
(6061.83 *8*)	0.0	94.38 *25*	0.0643 *7*	3.4846 *12*	94.44 *25*	av Eβ=2331.25; εK=0.0006143; εL=5.863×10^{-5}; εM+=7.551×10^{-6} I($\varepsilon+\beta^+$): 94.44 *+23−26* (1974Ha26).

† Measured by 1974Ha26 from Iγ and I($\gamma^\pm$).

‡ Absolute intensity per 100 decays.

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γ(^{34}Cl)

E_γ †	I_γ †#	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡
460.8 *10*	36.5 *36*	460.8	1^+	0.0	0^+	M1
665.8 *10*	100	665.8	1^+	0.0	0^+	M1
2579.4 *14*	34.5 *10*	2579.5	1^+	0.0	0^+	M1
3129.0 *10*	52.1 *12*	3129.2	1^+	0.0	0^+	

† From 1974Ha26.
‡ Adopted values.
# For absolute intensity per 100 decays, multiply by 0.0249 *11*.

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Decay Scheme

Intensities: I_γ per 100 parent decays