^{43}Sc ε decay (3.891 h)   1975Yo03

| | History | | |
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen[#]	NDS 126, 1 (2015)	31-Mar-2015

Parent: ^{43}Sc: E=0; J$^{\pi}$=7/2^{-}; T$_{1/2}$=3.891 h *12*; Q(ε)=2220.7 *19*; %ε+%β^{+} decay=100.0

^{43}Sc-J$^{\pi}$,T$_{1/2}$: From Adopted Levels of ^{43}Sc.

^{43}Sc-Q(ε): From 2012Wa38.

1975Yo03: Activity of ^{43}Sc was produced via the ^{40}Ca(α,p) reaction using a 12 MeV α beam from the University of Pennsylvania tandem accelerator. γ-rays were detected using a 65 cm^3 Ge(Li) detector. Measured Eγ,Iγ. Deduced levels, branchings.

Others:

γ: 1968Ch12, 1964Ba46, 1954Li42, 1954Nu22, 1953Nu08, 1952Ha44.

β^{+}: 1964Ba46, 1954Li42, 1952Ha44, 1945Hi04, 1945Hi05.

$\beta\gamma$: 1954Li42.

T$_{1/2}$ and isotopic assignment: 1969Ra16, 1963Du11, 1945Hi05, 1945Hi04. Others: 1954An25, 1953Du22, 1952Ha44, 1940Wa01, 1937Wa07, 1935Fr04.

Additional information 1.

All data are from 1975Yo03, unless otherwise noted.

^{43}Ca Levels

E(level)[†]	J$^{\pi}$[‡]
0	7/2^{-}
372.9 *3*	5/2^{-}
593.2 *5*	3/2^{-}
1931.0 *4*	5/2^{-}

[†] From least-squares fit to Eγ data.

[‡] From Adopted Levels.

ε,β^{+} radiations

E(decay)	E(level)	Iβ^{+}[†]	Iε[†]	Log ft	I($\varepsilon+\beta^{+}$)[†]	Comments
(289.7 *20*)	1931.0		0.0253 *10*	5.68 *2*	0.0253 *10*	εK=0.8941; εL=0.09061 *2*; εM+=0.015261 *3*
(1847.8 *19*)	372.9	17.2 *5*	5.33 *17*	4.98 *2*	22.5 *7*	av Eβ=344.46 *83*; εK=0.2124 *13*; εL=0.02107 *13*; εM+=0.003541 *21*
(2220.7 *19*)	0	70.9 *6*	6.64 *9*	5.04 *1*	77.5 *7*	av Eβ=508.10 *85*; εK=0.0767 *4*; εL=0.00761 *4*; εM+=0.001279 *6*
						I($\varepsilon+\beta^{+}$): from I($\gamma^{\pm}$)=783 *24* relative to I(373γ)=100 (1975Yo03).

[†] Absolute intensity per 100 decays.

γ(^{43}Ca)

Iγ normalization: I(γ+ce)(γs to g.s.)=22.5 *7*. Total $\varepsilon+\beta^{+}$ feeding to g.s.=77.5 *7* deduced by 1975Yo03 from I($\gamma^{\pm}$)=783 *24* relative to I(373γ)=100. Other %$\varepsilon+\beta^{+}$= 78 (quoted by 1975Yo03 from 1963Du11).

$^{43}\text{Sc} \ \varepsilon$ decay (3.891 h)   1975Yo03 (continued)

$\gamma(^{43}\text{Ca})$ (continued)

E_γ	I_γ[#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	δ[†]	Comments
(220.4)	0.0040[‡] *14*	593.2	3/2⁻	372.9	5/2⁻	M1+E2	−0.09 *4*	
372.9 *3*	100	372.9	5/2⁻	0	7/2⁻	M1+E2	−0.161 *14*	
593.3 *7*	0.0095 *32*	593.2	3/2⁻	0	7/2⁻	E2		$\delta(\text{M3/E2}) \approx 0$.
1337.9 *7*	0.0080 *10*	1931.0	5/2⁻	593.2	3/2⁻			
1558.3 *6*	0.0375 *22*	1931.0	5/2⁻	372.9	5/2⁻	M1+E2	+0.28 *14*	
1930.7 *6*	0.0672 *34*	1931.0	5/2⁻	0	7/2⁻	M1+E2	−0.8 *3*	

[†] From Adopted Gammas.
[‡] Normalized from Adopted branching.
[#] For absolute intensity per 100 decays, multiply by 0.225 *7*.

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Decay Scheme

Intensities: I_γ per 100 parent decays