^{40}Sc ε decay (182.3 ms) 1982Ho09,1973De08

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 140, 1 (2017)	30-Sep-2015

Parent: ^{40}Sc: E=0; $J^{\pi}=4^{-}$; $T_{1/2}$=182.3 ms *7*; Q(ε)=14323.1 *28*; %ε+%β^{+} decay=100.0

^{40}Sc-J^{π},$T_{1/2}$: From Adopted Levels of ^{40}Sc.

^{40}Sc-Q(ε): From 2012Wa38.

1982Ho09: ^{40}Sc ions were produced by the ^{40}Ca(p,n) reaction with E=20 MeV proton beam provided by the University of Jyvaskyla MC-20 cyclotron on a 1mg/cm^{2} target of natural calcium. Charged-particles were detected with Si(Au) surface-barrier detector and γ rays were detected with a γ-ray detector. Measured β^{+} delayed protons, β^{+} delayed α particles, Eγ, pγ-coin, decay curve. Deduced levels, J, π, $T_{1/2}$, $\Gamma_{\alpha}/\Gamma_{p}$.

1973De08: ^{40}Sc ions were produced by the (p,n) reaction on targets of natural calcium with E=27 MeV proton beam provided by the University Colorado cyclotron. γ rays were detected with a Ge(Li) detector. Measured Eγ, Iγ. Deduced levels.

^{40}Sc decays to ^{36}Ar by $\varepsilon\alpha$ (0.017% *5*) and to ^{39}K by εp (0.44% *7*) (1982Ho09).

Others:

γ: 1971BlZH, 1968Ka08, 1966An01, 1965Ri06, 1955Gl22.

β^{+}: 1968Ar03, 1966An01.

$\beta^{+}\gamma$ coin: 1971BlZH.

εp: 1974Se11 (also 1973SeYM), 1969Ve04.

$T_{1/2}$(^{40}Sc): 1974Se11, 1973De08, 1972Mo08, 1969Ve04, 1968Ar03, 1966An01, 1962Sc08, 1955Gl22, 1954Ty33.

Additional information 1.

^{40}Ca Levels

Quoted values of %p and %α in comments are % branchings per 100 parent decays in 1982Ho09.

E(level)‡	J^{π}‡	E(p)(lab)#	Comments
0	0^{+}		
3735.8 *8*	3^{-}		
4490.6 *10*	5^{-}		
5613.1 *10*	4^{-}		
6580 *4*	3^{-}		
7658.3 *10*	4^{-}		
9360 *3*	3^{-}	1006 *3*	%p=0.072 *11*, %α=8.2E−4 *20*. Eα=2089 *6*. $\Gamma_{\alpha}/\Gamma_{p}$=0.0119 *5*. E(level): weighted average of 9360 *3* (from E(p)) and 9362 *6* (from Eα).
9416 *8*	3^{-}	1060 *8*	%p=0.044 *8*.
9427 *6*	$(3,4)^{-}$	1071 *6*	%p=0.055 *10*.
9452 *3*	3^{-}	1095@ *3*	%p=0.110 *17*.
9601 *3*	3^{-}	1241 *3*	%p=0.032 *5*.
9811 *4*	$(3^{-},4^{-},5^{-})$	1445 *4*	%p=0.0088 *15*.
9829 *8*		1463 *8*	%p=0.0026 *7*. E(level): probable doublet.
9920 *3*	$(3^{-},4^{-},5^{-})$	1552 *3*	%p=0.0050 *9*.
9952 *8*	4^{+}		%α=1.6E−4 *10*. Eα=2620 *8*. $\Gamma_{\alpha}/\Gamma_{p}\geq$0.5.
9979 *5*	(3,4,5)	1609 *5*	%p=9E−4 *5*.
10050 *4*	4^{-}	1678 *4*	%p=0.0042 *9*.
10127 *4*	$(3^{-},4^{+})$	1752 *4*	%p=0.0013 *4*, %α=1.9E−4 *10*. E(level): weighted average of 10126 *4* (from E(p)) and 10129 *8* (from Eα). Eα=2780 *8*. $\Gamma_{\alpha}/\Gamma_{p}$=0.14 *5*.
10154 *8*	$(3^{-},4^{+},5^{-})$		%α=3.2E−4 *10*. Eα=2802 *8*. $\Gamma_{\alpha}/\Gamma_{p}\geq$2.
10193 *8*	$(3^{-},4^{+},5^{-})$		%α=2.1E−4 *10*.

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^{40}Sc ε decay (182.3 ms) 1982Ho09,1973De08 (continued)

^{40}Ca Levels (continued)

E(level)[‡]	J^{π}[‡]	E(p)(lab)[#]	Comments
			Eα=2837 *8*. $\Gamma_{\alpha}/\Gamma_{p}\geq1$.
10211 *4*	$(3,4)^{-}$	1835[@] *4*	%p=0.0139 *22*.
10332 *4*	$(3)^{-}$	1953 *4*	%p=4.6E−4 *20*.
10366 *8*		1986 *8*	%p=3.0E−4 *20*.
10447 *4*	3^{-}	2065 *4*	%p=0.0028 *5*.
10470[†] *4*	$(3,5)^{-}$	2089 *4*	%p=0.0094 *14*, %α=7.8E−4 *20*. E(level): weighted average of 10471 *4* (from E(p)) and 10465 *7* (from Eα). Eα=3082 *7*. $\Gamma_{\alpha}/\Gamma_{p}\geq1$.
10504 *4*	$(3,4,5)^{-}$	2121 *4*	%p=0.0125 *19*.
10519 *7*	$(3^{-},4^{+},5^{-})$		%α=8.3E−4 *20*. Eα=3132 *7*. $\Gamma_{\alpha}/\Gamma_{p}\geq2$.
10582 *5*	(3,4,5)	2197 *5*	%p=0.0017 *4*.
10598 *7*	3^{-}	2211 *10*	%p=3.5E−4 *20*, %α=6.9E−4 *20*. E(level): weighted average of 10596 *10* (from E(p)) and 10599 *7* (from Eα). Eα=3203 *7*. $\Gamma_{\alpha}/\Gamma_{p}$=2.0 *7*.
10693 *5*	3	2305 *5*	%p=8E−4 *3*.
10725 *5*	$(3,5)^{-}$		%α=0.0059 *12*. Eα=3316 *5*. $\Gamma_{\alpha}/\Gamma_{p}\geq30$.
10754 *8*	(3,4,5)	2365 *8*	%p=9E−4 *3*.
10776 *5*	3^{-}	2386 *5*	%p=0.0128 *20*.
10817[†] *7*	$(3^{-},4^{+},5^{-})$	2423 *9*	%p=8E−4 *3*, %α=4.2E−4 *20*. E(level): weighted average of 10814 *9* (from E(p)) and 10819 *7* (from Eα). Eα=3401 *7*. $\Gamma_{\alpha}/\Gamma_{p}\geq0.5$.
10849 *5*	$(3,4,5)^{-}$	2457 *5*	%p=0.00380 *20*.
10909 *5*	$(3,4,5^{-})$	2516 *5*	%p=3.5E−4 *20*.
10956 *8*	3^{-}	2562 *8*	%p=0.0020 *4*.
10973 *7*	(3,4,5)	2578 *7*	%p=0.0020 *4*.
10987 *12*	$(3^{-},4^{+})$		%α=1.1E−4 *10*. Eα=3552 *12*. $\Gamma_{\alpha}/\Gamma_{p}\geq0.2$.
11037 *7*	(3,4,5)	2641 *7*	%p=6.9E−4 *20*.
11088 *12*	$(3^{-},4^{+})$		%α=1.0E−4 *10*. Eα=3643 *12*. $\Gamma_{\alpha}/\Gamma_{p}\geq0.5$.
11114 *6*		2716 *6*	%p=0.0011 *3*. E(level): probably a doublet.
11142 *6*	$(3,4,5)^{-}$	2743 *6*	%p=0.0023 *4*.
11205 *5*	$(3)^{-}$		%α=0.0038 *8*. Eα=3748 *5*. $\Gamma_{\alpha}/\Gamma_{p}\geq6$.
11217 *5*	3^{-}	2816[@] *5*	%p=0.0068 *11*.
11312[†] *5*	$(3^{-},4^{+},5^{-})$	2912 *5*	%p=5.1E−4 *20*, %α=2.4E−4 *10*. E(level): weighted average of 11315 *5* (from E(p)) and 11306 *7* (from Eα). Eα=3839 *7*. $\Gamma_{\alpha}/\Gamma_{p}\geq1$.
11418 *7*	4^{+}	3012 *7*	%p=2.8E−4 *20*.
11452 *9*		3045 *9*	%p=8.3E−4 *20*. E(level),J^{π}: probable doublet of natural-parity levels.
11472 *7*	$(3^{-},4^{+},5^{-})$		%α=3.6E−4 *10*. Eα=3988 *7*. $\Gamma_{\alpha}/\Gamma_{p}\geq1$.
11549 *6*	$(3,5)^{-}$		%α=6.6E−4 *20*. Eα=4058 *6*. $\Gamma_{\alpha}/\Gamma_{p}\geq6$.
11616 *10*	(3,4,5)	3205 *10*	%p=2.4E−4 *10*.
11663 *7*	$(3^{-},4^{+},5^{-})$		%α=2.3E−4 *10*. Eα=4160 *7*. $\Gamma_{\alpha}/\Gamma_{p}\geq2$.
11724[†] *4*	$(3,5)^{-}$	3308 *10*	%p=7E−4 *3*, %α=9E−5 *10*. E(level): weighted average of 11723 *4* (from E(p)) and 11727 *7* (from Eα). Eα=4218 *7*. $\Gamma_{\alpha}/\Gamma_{p}\geq0.2$.
11791 *10*	4	3376 *10*	%p=2.6E−4 *20*.

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^{40}Sc ε decay (182.3 ms) 1982Ho09,1973De08 (continued)

^{40}Ca Levels (continued)

E(level)[‡]	J^{π}[‡]	E(p)(lab)[#]	Comments
11841 *6*	$(3^-,4^+,5^-)$		%α=2.8E−4 *10*. Eα=4320 *6*. $\Gamma_{\alpha}/\Gamma_{p}\geq0.7$.
12001 *7*	$(3,5)^-$	3584 *10*	%p=1.0E−4 *10*, %α=5.0E−4 *20*. Eα=4462 *7*. $\Gamma_{\alpha}/\Gamma_{p}$=5 *2*.
12034 *10*	$(3,4,5)^-$	3613 *10*	%p=2.4E−4 *10*.
12066 *9*	$(3,5)^-$	3649 *10*	%p=1.2E−4 *10*, %α=1.6E−4 *10*. Eα=4519 *9*. $\Gamma_{\alpha}/\Gamma_{p}$=1.3 *7*.

[†] Assumed here as the same level populated in εp and εα decays, although 1982Ho09 treated these as separate levels populated in the two decays.

[‡] From Adopted Levels, unless otherwise noted. In measurements of β^+ delayed particles, level energies are obtained from E=S(p)(^{40}Ca)+E(p)(c.m.) for delayed proton decays; α-binding energy(^{40}Ca)+Eα(c.m.) for delayed α decays. S(p)(^{40}Ca)=8328.17 *2*, α-binding energy(^{40}Ca)=7039.76 *3* (2012Wa38). All states above and including 9360 decay by protons to ^{39}K and/or α′s to ^{36}Ar g.s.

[#] From 1982Ho09.

[@] Used for calibration (1982Ho09).

ε,β^+ radiations

E(decay)	E(level)	Iβ^+ [‡]	Iε[‡]	Log *ft*	I(ε+β^+)[†‡]	Comments
(2257 *10*)	12066	0.00026 *14*	2.2×10^{-5} *12*	5.7 *3*	0.00028 *15*	av Eβ=524.3 *43*; εK=0.0703 *16*; εL=0.00697 *16*; εM+=0.00117 *3*
(2289 *10*)	12034	0.00022 *9*	1.7×10^{-5} *7*	5.8 *2*	0.00024 *10*	av Eβ=538.6 *47*; εK=0.0653 *16*; εL=0.00647 *16*; εM+=0.00109 *3*
(2322 *8*)	12001	0.00056 *21*	4.1×10^{-5} *15*	5.4 *2*	0.00060 *22*	av Eβ=553.4 *34*; εK=0.0606 *11*; εL=0.00600 *11*; εM+=0.001009 *18*
(2482 *7*)	11841	0.00027 *10*	1.3×10^{-5} *5*	5.9 *2*	0.00028 *10*	av Eβ=625.6 *30*; εK=0.0430 *6*; εL=0.00426 *6*; εM+=0.000716 *10*
(2532 *10*)	11791	0.00025 *19*	1.1×10^{-5} *9*	6.0 *4*	0.00026 *20*	av Eβ=648.3 *48*; εK=0.0389 *8*; εL=0.00386 *8*; εM+=0.000648 *14*
(2599 *5*)	11724	0.0008 *3*	3.×10^{-5} *1*	5.6 *2*	0.00082 *32*	av Eβ=678.8 *23*; εK=0.0342 *4*; εL=0.00339 *4*; εM+=0.000569 *6*
(2660 *8*)	11663	0.00022 *10*	8.×10^{-6} *3*	6.2 *2*	0.00023 *10*	av Eβ=706.6 *35*; εK=0.0305 *5*; εL=0.00303 *5*; εM+=0.000509 *7*
(2707 *10*)	11616	0.00023 *10*	8.×10^{-6} *3*	6.3 *2*	0.00024 *10*	av Eβ=728.2 *48*; εK=0.0281 *6*; εL=0.00278 *6*; εM+=0.000467 *9*
(2774 *7*)	11549	0.00064 *19*	1.8×10^{-5} *6*	5.9 *2*	0.00066 *20*	av Eβ=758.9 *31*; εK=0.0250 *3*; εL=0.00248 *3*; εM+=0.000416 *5*
(2851 *8*)	11472	0.00035 *10*	8.8×10^{-6} *25*	6.3 *1*	0.00036 *10*	av Eβ=794.4 *35*; εK=0.0220 *3*; εL=0.00218 *3*; εM+=0.000366 *5*
(2871 *10*)	11452	0.00081 *20*	2.0×10^{-5} *5*	5.9 *1*	0.00083 *20*	av Eβ=803.6 *44*; εK=0.0213 *4*; εL=0.00211 *4*; εM+=0.000354 *6* I(ε+β^+): probably for a doublet.
(2905 *8*)	11418	0.00027 *20*	6.×10^{-6} *4*	6.4 *4*	0.00028 *20*	av Eβ=819.3 *35*; εK=0.02014 *25*; εL=0.001995 *25*; εM+=0.000335 *4*
(3011 *6*)	11312	0.0008 *3*	2.×10^{-5} *1*	6.1 *2*	0.00075 *22*	av Eβ=868.5 *27*; εK=0.01709 *15*; εL=0.001693 *15*; εM+=0.0002845 *2*
(3106 *6*)	11217	0.0067 *11*	0.00011 *2*	5.2 *1*	0.0068 *11*	av Eβ=912.7 *27*; εK=0.01486 *13*; εL=0.001472 *13*; εM+=0.0002474 *2*
(3118 *6*)	11205	0.0037 *8*	6.2×10^{-5} *13*	5.5 *1*	0.0038 *8*	av Eβ=918.3 *27*; εK=0.01461 *12*; εL=0.001447 *12*; εM+=0.0002432 *2*

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^{40}Sc ε decay (182.3 ms) 1982Ho09,1973De08 (continued)

ε,β^+ radiations (continued)

E(decay)	E(level)	$I\beta^+$[‡]	$I\varepsilon$[‡]	Log *ft*	$I(\varepsilon+\beta^+)$[†‡]	Comments
(3181 *7*)	11142	0.0023 *4*	3.4×10^{-5} *6*	5.8 *1*	0.0023 *4*	av Eβ=947.7 *31*; εK=0.01337 *13*; εL=0.001325 *13*; εM+=0.0002225 *2*
(3209 *7*)	11114	0.0011 *3*	1.6×10^{-5} *4*	6.1 *1*	0.0011 *3*	av Eβ=960.8 *31*; εK=0.01287 *12*; εL=0.001274 *12*; εM+=0.0002141 *2* I(ε+β^+): probably for a doublet.
(3235 *12*)	11088	0.00010 *10*	1.4×10^{-6} *14*	7.2 *5*	0.00010 *10*	av Eβ=973.0 *58*; εK=0.01242 *21*; εL=0.001230 *21*; εM+=0.000207 *4*
(3286 *8*)	11037	0.00068 *20*	$9.\times10^{-6}$ *3*	6.4 *2*	0.00069 *20*	av Eβ=996.8 *36*; εK=0.01160 *12*; εL=0.001149 *12*; εM+=0.0001930 *2*
(3336 *12*)	10987	0.00011 *10*	1.3×10^{-6} *12*	7.2 *4*	0.00011 *10*	av Eβ=1020.3 *58*; εK=0.01087 *18*; εL=0.001076 *18*; εM+=0.000181 *3*
(3350 *8*)	10973	0.0020 *4*	2.4×10^{-5} *5*	6.0 *1*	0.0020 *4*	av Eβ=1026.9 *36*; εK=0.01067 *11*; εL=0.001057 *11*; εM+=0.0001776 *1*
(3367 *9*)	10956	0.0020 *4*	2.3×10^{-5} *5*	6.0 *1*	0.0020 *4*	av Eβ=1034.9 *40*; εK=0.01044 *12*; εL=0.001034 *12*; εM+=0.0001738 *1*
(3414 *6*)	10909	0.00035 *20*	3.8×10^{-6} *22*	6.8 *3*	0.00035 *20*	av Eβ=1057.0 *27*; εK=0.00984 *7*; εL=0.000975 *7*; εM+=0.0001638 *1*
(3474 *6*)	10849	0.0038 *20*	3.9×10^{-5} *20*	5.8 *2*	0.0038 *20*	av Eβ=1084.5 *27*; εK=0.00913 *7*; εL=0.000905 *7*; εM+=0.0001520 *1*
(3506 *8*)	10817	0.0012 *3*	1.2×10^{-5} *3*	6.3 *1*	0.0012 *3*	av Eβ=1099.6 *36*; εK=0.00879 *8*; εL=0.000870 *8*; εM+=0.0001462 *1*
(3547 *6*)	10776	0.0127 *20*	0.000119 *19*	5.3 *1*	0.0128 *20*	av Eβ=1119.0 *27*; εK=0.00837 *6*; εL=0.000829 *6*; εM+=0.0001392 *1*
(3569 *9*)	10754	0.0009 *3*	$8.\times10^{-6}$ *3*	6.5 *2*	0.0009 *3*	av Eβ=1129.4 *40*; εK=0.00815 *9*; εL=0.000807 *8*; εM+=0.0001357 *1*
(3598 *6*)	10725	0.0058 *12*	5.2×10^{-5} *11*	5.7 *1*	0.0059 *12*	av Eβ=1143.1 *28*; εK=0.00788 *6*; εL=0.000781 *6*; εM+=0.0001311 *9*
(3630 *6*)	10693	0.0008 *3*	$7.\times10^{-6}$ *3*	6.6 *27*	0.0008 *3*	av Eβ=1158.3 *28*; εK=0.00760 *5*; εL=0.000752 *5*; εM+=0.0001264 *9*
(3725 *8*)	10598	0.0010 *3*	7.6×10^{-6} *23*	6.5 *1*	0.0010 *3*	av Eβ=1203.3 *36*; εK=0.00683 *6*; εL=0.000676 *6*; εM+=0.0001136 *1*
(3741 *6*)	10582	0.0017 *4*	1.3×10^{-5} *3*	6.3 *1*	0.0017 *4*	av Eβ=1210.9 *28*; εK=0.00671 *5*; εL=0.000664 *5*; εM+=0.0001116 *7*
(3804 *8*)	10519	0.00082 *20*	5.8×10^{-6} *14*	6.7 *1*	0.00083 *20*	av Eβ=1240.8 *36*; εK=0.00627 *5*; εL=0.000620 *5*; εM+=0.0001042 *9*
(3819 *5*)	10504	0.0124 *19*	8.6×10^{-5} *13*	5.5 *1*	0.0125 *19*	av Eβ=1248.0 *24*; εK=0.00617 *4*; εL=0.000610 *4*; εM+=0.0001026 *6*
(3853 *5*)	10470	0.0101 *14*	6.8×10^{-5} *9*	5.6 *1*	0.0102 *14*	av Eβ=1264.1 *24*; εK=0.00595 *3*; εL=0.000589 *3*; εM+=9.89×10^{-5} *6*
(3876 *5*)	10447	0.0028 *5*	1.8×10^{-5} *3*	6.2 *1*	0.0028 *5*	av Eβ=1275.1 *24*; εK=0.00581 *3*; εL=0.000575 *3*; εM+=9.66×10^{-5} *5*
(3957 *9*)	10366	0.00030 *20*	1.8×10^{-6} *12*	7.2 *3*	0.00030 *20*	av Eβ=1313.7 *41*; εK=0.00534 *5*; εL=0.000529 *5*; εM+=8.88×10^{-5} *8*
(3991 *5*)	10332	0.00046 *20*	2.6×10^{-6} *12*	7.1 *2*	0.00046 *20*	av Eβ=1329.9 *24*; εK=0.00516 *3*; εL=0.000511 *3*; εM+=8.58×10^{-5} *5*
(4112 *5*)	10211	0.0138 *22*	7.1×10^{-5} *11*	5.7 *1*	0.0139 *22*	av Eβ=1387.7 *24*; εK=0.004581 *22*; εL=0.0004536 *2*; εM+=7.62×10^{-5} *4*
(4130 *9*)	10193	0.00021 *10*	1.1×10^{-6} *5*	7.5 *2*	0.00021 *10*	av Eβ=1396.3 *41*; εK=0.00450 *4*; εL=0.000446 *4*; εM+=7.49×10^{-5} *7*
(4169 *9*)	10154	0.00032 *10*	1.5×10^{-6} *5*	7.3 *2*	0.00032 *10*	av Eβ=1415.0 *41*; εK=0.00434 *4*; εL=0.000430 *4*; εM+=7.22×10^{-5} *6*
(4196 *5*)	10127	0.0015 *4*	7.1×10^{-6} *19*	6.7 *1*	0.0015 *4*	av Eβ=1427.9 *24*; εK=0.004230 *20*; εL=0.0004187 *2*; εM+=7.03×10^{-5} *4*
(4273 *5*)	10050	0.0042 *9*	1.8×10^{-5} *4*	6.3 *1*	0.0042 *9*	av Eβ=1464.8 *24*; εK=0.003938 *18*; εL=0.0003899 *1*; εM+=6.55×10^{-5} *3*

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^{40}Sc ε decay (182.3 ms) 1982Ho09,1973De08 (continued)

ϵ,β^{+} radiations (continued)

E(decay)	E(level)	Iβ^{+} ‡	Iε‡	Log *ft*	I(ε+β^{+})†‡	Comments
(4344 *6*)	9979	0.0009 *5*	$4.\times10^{-6}$ *2*	7.0 *3*	0.0009 *5*	av Eβ=1498.9 *28*; εK=0.003693 *19*; εL=0.0003656 *1*; εM+=6.14×10^{-5} *4*
(4371 *9*)	9952	0.00016 *10*	$6.\times10^{-7}$ *4*	7.8 *3*	0.00016 *10*	av Eβ=1511.9 *41*; εK=0.00361 *3*; εL=0.000357 *3*; εM+=6.00×10^{-5} *5*
(4403 *4*)	9920	0.0050 *9*	2.0×10^{-5} *4*	6.3 *1*	0.0050 *9*	av Eβ=1527.2 *20*; εK=0.003504 *13*; εL=0.0003469 *1*; εM+=5.828×10^{-5} *22*
(4494 *9*)	9829	0.0026 *7*	9.4×10^{-6} *25*	6.6 *1*	0.0026 *7*	av Eβ=1571.1 *41*; εK=0.003238 *24*; εL=0.0003205 *2*; εM+=5.39×10^{-5} *4* I(ε+β^{+}): probably for a doublet.
(4512 *5*)	9811	0.0088 *15*	3.1×10^{-5} *5*	6.1 *1*	0.0088 *15*	av Eβ=1579.7 *24*; εK=0.003189 *14*; εL=0.0003157 *1*; εM+=5.303×10^{-5} *23*
(4722 *4*)	9601	0.032 *5*	9.6×10^{-5} *15*	5.7 *1*	0.032 *5*	av Eβ=1680.9 *20*; εK=0.002680 *9*; εL=0.0002653 *9*; εM+=4.457×10^{-5} *15*
(4871 *4*)	9452	0.110 *17*	0.00029 *5*	5.2 *1*	0.110 *17*	av Eβ=1752.9 *20*; εK=0.002384 *8*; εL=0.0002359 *8*; εM+=3.964×10^{-5} *13*
(4896 *7*)	9427	0.055 *10*	0.00014 *3*	5.5 *1*	0.055 *10*	av Eβ=1765.0 *32*; εK=0.002338 *12*; εL=0.0002314 *1*; εM+=3.888×10^{-5} *20*
(4907 *9*)	9416	0.044 *8*	0.00011 *2*	5.6 *1*	0.044 *8*	av Eβ=1770.3 *41*; εK=0.002319 *15*; εL=0.0002295 *1*; εM+=3.86×10^{-5} *3*
(4963 *4*)	9360	0.073 *11*	0.00018 *3*	5.4 *1*	0.073 *11*	av Eβ=1797.5 *20*; εK=0.002222 *7*; εL=0.0002199 *7*; εM+=3.695×10^{-5} *12*
6.75×10^{3} *15*	7658.3	49 *4*	0.042 *3*	3.31 *4*	49 *4*	av Eβ=2627.3 *15*; εK=0.0007664 *1*; εL=7.582×10^{-5} *12*; εM+=1.2738×10^{-5} *2* E(decay): E(β^{+})=5730 *150* (1968Ar03). Iβ^{+}: 50 *1* (1968Ar03).
(7743 *5*)	6580	2.1 *10*	0.0011 *5*	5.0 *2*	2.1 *10*	av Eβ=3157.5 *24*; εK=0.0004565 *1*; εL=4.515×10^{-5} *10*; εM+=7.585×10^{-6} *17*
8.55×10^{3} *20*	5613.1	12 *3*	0.0041 *10*	4.6 *1*	12 *3*	av Eβ=3634.8 *15*; εK=0.0003065 *4*; εL=3.031×10^{-5} *4*; εM+=5.093×10^{-6} *6* E(decay): E(β^{+})=7530 *200* (1968Ar03). Iβ^{+}: 15% *1* (1968Ar03).
9.78×10^{3} *10*	4490.6	17 *5*	0.0039 *11*	4.7 *1*	17 *5*	av Eβ=4190.4 *15*; εK=0.00020461; εL=2.0237×10^{-5} *2*; εM+=3.400×10^{-6} *4* E(decay): E(β^{+})=8760 *100* (1968Ar03). Iβ^{+}: 15% *1* (1968Ar03).
1.060×10^{4} *4*	3735.8	19 *5*	0.0034 *9*	4.8 *1*	19 *5*	av Eβ=4564.7 *15*; εK=0.0001603 *2*; εL=1.586×10^{-5} *2*; εM+=2.664×10^{-6} *3* E(decay): E(β^{+})=9580 *40* (1968Ar03). Iβ^{+}: 20% *1* (1968Ar03).

† From γ-ray intensity imbalance at each level or total branching of proton and alpha decays measured for each level in 1982Ho09.

‡ Absolute intensity per 100 decays.

γ(^{40}Ca)

Iγ normalization: %εα=0.017 *5*, %εp=0.44 *7* (1982Ho09).

Continued on next page (footnotes at end of table)

^{40}Sc ε decay (182.3 ms) 1982Ho09,1973De08 (continued)

γ(^{40}Ca) (continued)

E_γ[†]	I_γ[†#]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[‡]	δ[‡]
755.6 *8*	41 *4*	4490.6	5$^-$	3735.8	3$^-$		
1126 *3*	12 *2*	5613.1	4$^-$	4490.6	5$^-$	M1+E2	−0.7 *2*
1877.8 *7*	25.0 *15*	5613.1	4$^-$	3735.8	3$^-$	M1+E2	−0.27 *5*
2045.8 *7*	25.5 *15*	7658.3	4$^-$	5613.1	4$^-$		
2844 *3*	2.1 *10*	6580	3$^-$	3735.8	3$^-$	M1+E2	+3.1 *19*
3167.9 *7*	12 *2*	7658.3	4$^-$	4490.6	5$^-$		
3735.6 *8*	100	3735.8	3$^-$	0	0$^+$	E3	
3920.0 *10*	13 *2*	7658.3	4$^-$	3735.8	3$^-$		

[†] From 1973De08.

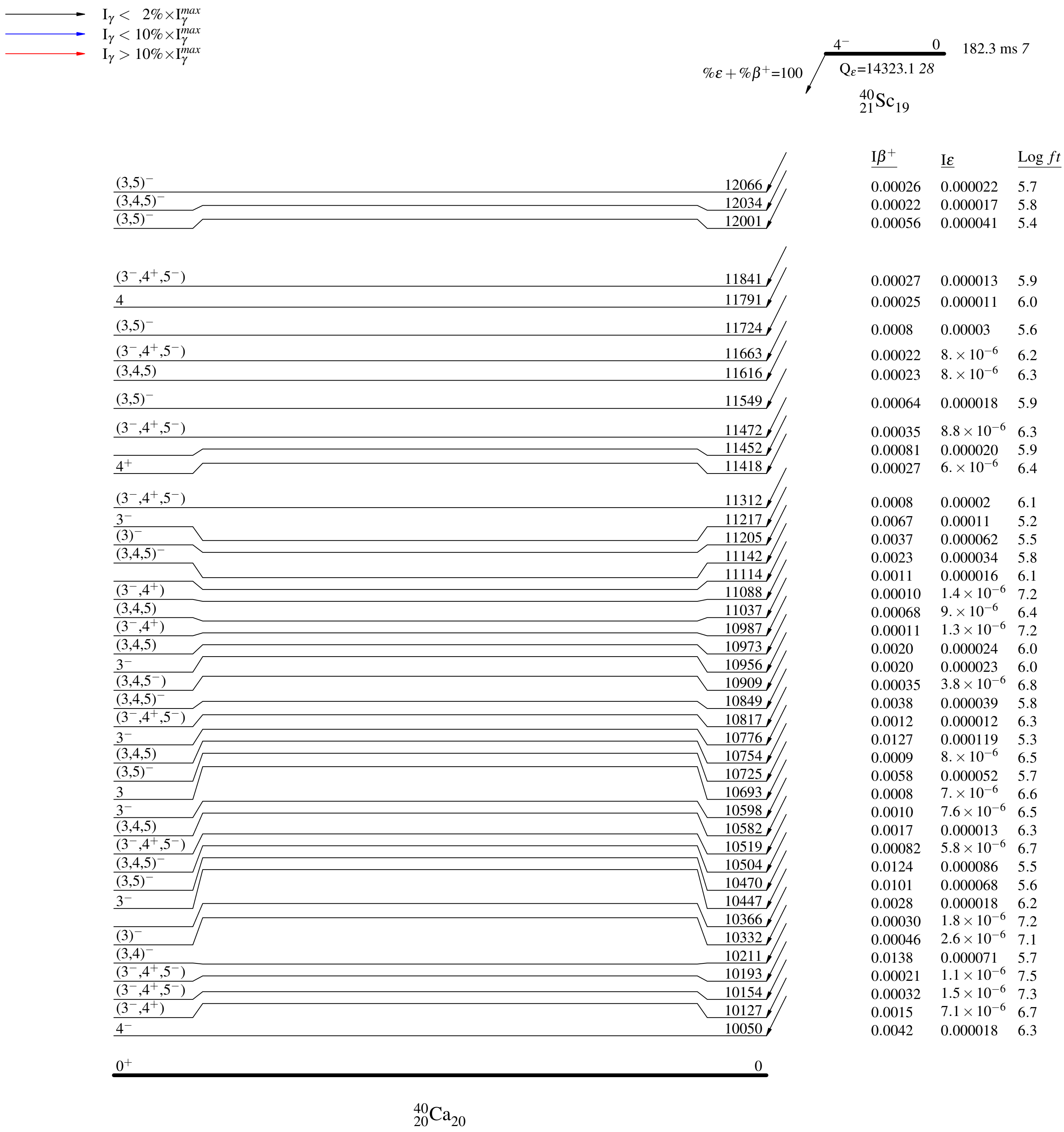
[‡] From Adopted Gammas.

[#] For absolute intensity per 100 decays, multiply by 0.9954 *10*.

^{40}Sc ε decay (182.3 ms) 1982Ho09,1973De08

Decay Scheme

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



		$I\beta^+$	$I\varepsilon$	Log *ft*
$(3,5)^-$	12066	0.00026	0.000022	5.7
$(3,4,5)^-$	12034	0.00022	0.000017	5.8
$(3,5)^-$	12001	0.00056	0.000041	5.4
$(3^-,4^+,5^-)$	11841	0.00027	0.000013	5.9
4	11791	0.00025	0.000011	6.0
$(3,5)^-$	11724	0.0008	0.00003	5.6
$(3^-,4^+,5^-)$	11663	0.00022	$8.\times10^{-6}$	6.2
(3,4,5)	11616	0.00023	$8.\times10^{-6}$	6.3
$(3,5)^-$	11549	0.00064	0.000018	5.9
$(3^-,4^+,5^-)$	11472	0.00035	8.8×10^{-6}	6.3
	11452	0.00081	0.000020	5.9
4^+	11418	0.00027	$6.\times10^{-6}$	6.4
$(3^-,4^+,5^-)$	11312	0.0008	0.00002	6.1
3^-	11217	0.0067	0.00011	5.2
$(3)^-$	11205	0.0037	0.000062	5.5
$(3,4,5)^-$	11142	0.0023	0.000034	5.8
	11114	0.0011	0.000016	6.1
$(3^-,4^+)$	11088	0.00010	1.4×10^{-6}	7.2
(3,4,5)	11037	0.00068	$9.\times10^{-6}$	6.4
$(3^-,4^+)$	10987	0.00011	1.3×10^{-6}	7.2
(3,4,5)	10973	0.0020	0.000024	6.0
3^-	10956	0.0020	0.000023	6.0
$(3,4,5^-)$	10909	0.00035	3.8×10^{-6}	6.8
$(3,4,5)^-$	10849	0.0038	0.000039	5.8
$(3^-,4^+,5^-)$	10817	0.0012	0.000012	6.3
3^-	10776	0.0127	0.000119	5.3
(3,4,5)	10754	0.0009	$8.\times10^{-6}$	6.5
$(3,5)^-$	10725	0.0058	0.000052	5.7
3	10693	0.0008	$7.\times10^{-6}$	6.6
3^-	10598	0.0010	7.6×10^{-6}	6.5
(3,4,5)	10582	0.0017	0.000013	6.3
$(3^-,4^+,5^-)$	10519	0.00082	5.8×10^{-6}	6.7
$(3,4,5)^-$	10504	0.0124	0.000086	5.5
$(3,5)^-$	10470	0.0101	0.000068	5.6
3^-	10447	0.0028	0.000018	6.2
	10366	0.00030	1.8×10^{-6}	7.2
$(3)^-$	10332	0.00046	2.6×10^{-6}	7.1
$(3,4)^-$	10211	0.0138	0.000071	5.7
$(3^-,4^+,5^-)$	10193	0.00021	1.1×10^{-6}	7.5
$(3^-,4^+,5^-)$	10154	0.00032	1.5×10^{-6}	7.3
$(3^-,4^+)$	10127	0.0015	7.1×10^{-6}	6.7
4^-	10050	0.0042	0.000018	6.3

^{40}Sc ε decay (182.3 ms) 1982Ho09,1973De08

Decay Scheme (continued)

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