^{39}S β^- decay (11.5 s) 1980Hi01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 149, 1 (2018)	1-Jan-2018

Parent: ^{39}S: E=0; $J^\pi=(7/2)^-$; $T_{1/2}$=11.5 s *5*; Q(β^-)=6640 *50*; %β^- decay=100.0
^{39}S-J^π,$T_{1/2}$: From Adopted Levels of ^{39}S.
^{39}S-Q(β^-): From 2017Wa10.
1980Hi01: Source of ^{39}S was produced via ^{40}Ar(n,2p) with the fast neutron flux generated when the 800-MeV proton beam from the LAMPF (Clinton P. Anderson Meson Physics Facility) accelerator is stopped by the main beam stop and natural Ar gas target. γ rays were detected with Ge(Li) detectors (FWHM=2 keV). Measured Eγ, Iγ, $\gamma\gamma$-coin, γ(t). Deduced levels, parent $T_{1/2}$, β-decay branching ratios, log *ft*. Comparisons with available data and shell-model calculations.
Others: production of ^{39}S.
1999Ai02: ^{9}Be(^{55}Mn,X).
1997Fo01: ^{208}Pb(^{37}Cl,X).
1971Ar32: ^{232}Th(^{40}Ar,X).
Theoretical calculations: 1989Wa28.

^{39}Cl Levels

E(level)[†]	J^π[‡]
0	$3/2^+$
396.51 *19*	$1/2^+$
1300.43 *14*	$(5/2^+)$
1696.78 *15*	$5/2^-$
1785.3 *3*	$(7/2^-)$
2571.10 *23*	$(9/2)^-$

† From a least-squares fit to γ-ray energies.
‡ From Adopted Levels.

β^- radiations

E(decay)	E(level)	Iβ^-[†‡]	Log *ft*	Comments
(4.07×10^3 *5*)	2571.10	12.8 *16*	5.40 *7*	av Eβ=1820 *25*
(4.85×10^3 *5*)	1785.3	10.6 *15*	5.83 *7*	av Eβ=2203 *25*
(4.94×10^3 *5*)	1696.78	68 *7*	5.06 *6*	av Eβ=2247 *25*
(5.34×10^3 *5*)	1300.43	8 *6*	6.1 *4*	av Eβ=2441 *25*

† Deduced from γ-ray intensity balance at each level.
‡ Absolute intensity per 100 decays.

γ(^{39}Cl)

Iγ normalization: From Σ(Iγ to g.s.)=100, assuming no β-feeding to g.s. and 397 level.

Eγ	Iγ[†#]	E$_i$(level)	J_i^π	E$_f$	J_f^π	Comments
396.50[@] *20*	8.0[@‡] *25*	396.51	$1/2^+$	0	$3/2^+$	%Iγ=3.5 *11*
396.50[@] *20*	83[@] *7*	1696.78	$5/2^-$	1300.43	$(5/2^+)$	%Iγ=37 *3*
484.85 *24*	24 *3*	1785.3	$(7/2^-)$	1300.43	$(5/2^+)$	%Iγ=10.6 *14*

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^{39}S β^- decay (11.5 s) 1980Hi01 (continued)

$\gamma(^{39}Cl)$ (continued)

E_γ	I_γ [†#]	E_i(level)	J_i^π	E_f	J_f^π	Comments
874.31 *18*	29 *3*	2571.10	$(9/2)^-$	1696.78	$5/2^-$	%Iγ=12.8 *14*
903.8 *6*	8.0[‡] *25*	1300.43	$(5/2^+)$	396.51	$1/2^+$	%Iγ=3.5 *11*
1300.52 *16*	118 *11*	1300.43	$(5/2^+)$	0	$3/2^+$	%Iγ=52 *3*
1696.62 *17*	100 *8*	1696.78	$5/2^-$	0	$3/2^+$	%Iγ=44 *3*

† Quoted values are relative intensities normalized to Iγ(1696.62γ)=100 (Iγ values in 1980Hi01 divided by 10).
‡ Assuming no β-feeding to 397 level.
# For absolute intensity per 100 decays, multiply by 0.44 *3*.
@ Multiply placed with intensity suitably divided.

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Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
@ Multiply placed: intensity suitably divided