

^{37}S β^- decay (5.05 min) [1986Wa22,1984Ra09](#)

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	John Cameron, Jun Chen and Balraj Singh, Ninel Nica		NDS 113, 365 (2012)	15-Jan-2012

Parent: ^{37}S : $E=0$; $J^\pi=7/2^-$; $T_{1/2}=5.05$ min 2; $Q(\beta^-)=4865.13$ 20; $\% \beta^-$ decay=100.0

^{37}S - $Q(\beta^-)$: From [2011AuZZ](#). Other: 4865.17 20 ([2003Au03](#)).

[1986Wa22](#): Activity of ^{37}S produced by the reaction of $^{36}\text{S}(\text{d,p})$ with a 100 nA of 3 MeV neutron beam. An intrinsic coaxial Ge detector for detecting γ -rays. Measured E_γ , I_γ . Deduced levels, branchings, log ft .

[1984Ra09](#): Activity of ^{37}S produced by the (n,γ) with neutron beam produced from the Los Alamos Omega West Reactor. Target of enriched ^{36}S (81.1%). A 26-cm³ Ge(Li) and a NaI(Tl) detector. Measured E_γ , I_γ . Deduced levels, branchings, log ft .

[1967Wi14](#): Activity of ^{37}S produced by the reaction of $^{37}\text{Cl}(\text{n,p})$ with a 1 mA of 165 keV deuteron beam accelerated from the University of Kentucky neutron generator. Target of enriched NaCl (98.4% ^{37}Cl). A β -ray spectrometer, NaI(Tl) and Ge(Li) detectors. Measured E_β , E_γ , I_γ . Deduced levels, branchings, log ft .

[1970Kl08](#), [1973Kl02](#): Activity of ^{37}S produced by the reaction of $^{37}\text{Cl}(\text{n,p})$ with natural ^{37}Cl targets. Ge(Li) detector. Measured E_γ , I_γ . Deduced levels, log ft .

[1974Hi02](#): Activity of ^{37}S produced by the (n,γ) reaction with the neutron beam from the Texas A & M University "Triga" reactor. Target of $(\text{NH}_4)_2\text{SO}_4$. A 55-cm³ Ge(Li) detector. Measured E_γ , I_γ , $\gamma\gamma$ -coin. Deduced levels, log ft .

[1974Li09](#): Activity of ^{37}S produced by the reaction of $^{37}\text{Cl}(\text{n,p})$ with natural targets of LiCl and CCl_4 . Ge(Li) detectors. Measured E_γ , I_γ . Deduced levels, branchings, log ft .

[Additional information 1.](#)

 ^{37}Cl Levels

$E(\text{level})^\dagger$	$J^\pi^\ddagger$	$E(\text{level})^\dagger$	$J^\pi^\ddagger$	$E(\text{level})^\dagger$	$J^\pi^\ddagger$
0	$3/2^+$	3627.2 10		4016.3 8	
1726.9? 15		3708 4		4176.6 11	
3086.33 19	$5/2^+$	3741.27 10	$5/2^-$	4272.59 10	$7/2^-$
3103.510 20	$7/2^-$	4009.84 7	$9/2^-$	4396.35 20	$5/2$
				4460.4 11	

[†] From a least-square fit to E_γ 's, unless otherwise noted.

[‡] From Adopted Levels.

 β^- radiations

$E(\text{decay})$	$E(\text{level})$	$I\beta^{-\dagger\ddagger}$	Log ft	Comments
(404.7 11)	4460.4	<0.018	>5.7	av $E_\beta=132.31$ 43 Additional information 2.
(468.8 3)	4396.35	0.004 2	6.54 22	av $E_\beta=156.55$ 13 Additional information 3.
(592.54 22)	4272.59	0.056 6	5.76 5	av $E_\beta=204.99$ 11 Additional information 4.
(688.5 11)	4176.6	<0.002	>7.5	av $E_\beta=243.74$ 46 Additional information 5.
(848.8 8)	4016.3	<0.003	>7.6	av $E_\beta=310.35$ 36 Additional information 6.
(855.29 21)	4009.84	0.090 4	6.153 20	av $E_\beta=313.08$ 11 Additional information 7.
(1123.86 22)	3741.27	0.267 11	6.141 18	av $E_\beta=428.93$ 12 Additional information 8.
(1157 4)	3708	<0.005	>7.9	av $E_\beta=443.6$ 18 Additional information 9.
(1237.9 10)	3627.2	<0.005	>8.0	av $E_\beta=479.35$ 46

Continued on next page (footnotes at end of table)

^{37}S β^- decay (5.05 min) 1986Wa22,1984Ra09 (continued) β^- radiations (continued)

E(decay)	E(level)	$I\beta^{-\dagger\dagger}$	Log ft	Comments
(1761.62 20)	3103.510	94.0 6	4.384 4	Additional information 10. av $E\beta=717.30$ 12
(1778.8 3)	3086.33	0.040 21	7.77 23	Additional information 11. av $E\beta=725.25$ 15
(4865.13 20)	0	5.6 6	7.54 5	Additional information 12. av $E\beta=2209.11$ $I\beta^-$: from 1967Wi14 .

[†] Deduced by [1986Wa22](#) based on relative γ -intensities from [1986Wa22](#) and [1984Ra09](#) with the value 5.6 6 for the ground state decay branch from [1967Wi14](#).

[‡] Absolute intensity per 100 decays.

 $\gamma(^{37}\text{Cl})$

E_γ [†]	I_γ ^{†@}	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
638	<2	3741.27	5/2 ⁻	3103.510	7/2 ⁻	Additional information 18.
655	<2	3741.27	5/2 ⁻	3086.33	5/2 ⁺	Additional information 19.
906.31 7	0.63 3	4009.84	9/2 ⁻	3103.510	7/2 ⁻	Additional information 21.
929.92	<0.7	4016.3		3086.33	5/2 ⁺	Additional information 23.
1090.28	<1.0	4176.6		3086.33	5/2 ⁺	Additional information 25.
1169.06 9	0.57 [#] 6	4272.59	7/2 ⁻	3103.510	7/2 ⁻	Additional information 26.
1186.25	<1.8	4272.59	7/2 ⁻	3086.33	5/2 ⁺	Additional information 27.
1374	<1.9	4460.4		3086.33	5/2 ⁺	Additional information 30.
1900.19	<9.0	3627.2		1726.9?		Additional information 15.
3086.2 2	0.37 18	3086.33	5/2 ⁺	0	3/2 ⁺	Additional information 13.
3103.37 2	1000	3103.510	7/2 ⁻	0	3/2 ⁺	Additional information 14.
3627	<0.9	3627.2		0	3/2 ⁺	Additional information 16.
3708 [‡] 4	<0.8	3708		0	3/2 ⁺	Additional information 17.
3741.06 10	2.87 15	3741.27	5/2 ⁻	0	3/2 ⁺	Additional information 20.
4009.64 13	0.33 4	4009.84	9/2 ⁻	0	3/2 ⁺	Additional information 22.
4016.04	<1.0	4016.3		0	3/2 ⁺	Additional information 24.
4272.34	<1.0	4272.59	7/2 ⁻	0	3/2 ⁺	Additional information 28.
4396.07 20	0.04 2	4396.35	5/2	0	3/2 ⁺	Additional information 29.

[†] Primarily from [1984Ra09](#) and [1986Wa22](#). Weighted average is taken where available, unless otherwise noted.

[‡] From [1967Wi14](#).

[#] 0.50 7 from [1984Ra09](#) quoted in [1986Wa22](#) is revised value from private communication to M.E.Bunker.

[@] For absolute intensity per 100 decays, multiply by 0.0939 6.

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Decay Scheme

Intensities: I_γ per 100 parent decays

Legend

- $\longrightarrow$ $I_\gamma < 2\% \times I_\gamma^{\max}$
 $\longrightarrow$ $I_\gamma < 10\% \times I_\gamma^{\max}$
 $\longrightarrow$ $I_\gamma > 10\% \times I_\gamma^{\max}$

