Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 152, 1 (2018)	30-Sep-2017

Q(β^-)=2937 *7*; S(n)=8036 *7*; S(p)=15150 *40*; Q(α)=−9329 *16* 2017Wa10
S(2n)=12340 *7*, S(2p)=29000 *70* (2017Wa10).
First identification of ^{38}S nuclide is by 1958Ne10, according to the 2012Th10 compilation of isotope discovery.
Other reactions:
1994De17: ^{40}Ar(e,e′2p) E=14.5 GeV; measured secondary protons.
1999Ai02: strong absorption radius deduced from measured cross section.
2005Ol04: ^{208}Pb(^{38}S,Xγ): γ rays at 1292 and 1513 reported using CLARA Ge detector array and PRISMA magnetic spectrometer. (Preliminary results).
Structure calculations: 2015St17, 2015Wu07, 2014Eb02, 2013Xu01, 2012Ut02, 2011Ka03, 2011Si09, 2004In01, 2002Ro03, 1986Wo02. Consult NSR database for 16 other theory references.
Comparison of experimental and theoretical g factors: 2007Be42.
Additional information 1.

^{38}S Levels

Cross Reference (XREF) Flags

A	^{38}P β^- decay (0.64 s)	F	^{36}S(t,pγ)	K	^{160}Gd(^{36}S,^{38}Sγ)
B	^{39}P β^-n decay (0.28 s)	G	^{36}S(^{14}C,^{12}C)	L	^{208}Pb(^{36}S,^{38}Sγ)
C	^{1}H(^{38}S,^{38}S′)	H	^{36}S(^{18}O,^{16}O),(^{18}O,^{16}Oγ)	M	Coulomb excitation
D	^{12}C(^{48}Ca,Xγ)	I	^{40}Ar(^{11}B,^{13}N)		
E	^{36}S(t,p)	J	^{40}Ar(^{13}C,^{15}O)		

E(level)†	J$^\pi$	T$_{1/2}$	XREF	Comments
0	0$^+$	170.3 min *7*	ABCDEFGHIJKLM	%β^-=100 T$_{1/2}$: weighted average of 172 min *1* (1958Ne10), 169.6 min *7* (1971En01), and 170.0 min *8* (1972Vi11).
1292.02 *20*	2$^+$	3.3 ps *+5−4*	A CDEFGHIJKLM	μ=+0.26 *10* (2006St21,2006Da08) B(E2)↑=0.0235 *30* (1996Sc31) J$^\pi$: L(t,p)=2 from 0$^+$. T$_{1/2}$: from B(E2)↑=0.0235 *30* in Coulomb excitation (1996Sc31). Other: >0.31 ps from DSAM in (t,pγ). μ: from g=+0.13 *5* (2006St21,2006Da08: high-velocity transient-field technique in Coulomb excitation). Compilation: 2014StZZ.
2805.1 *20*	(2$^+$)	0.08 ps *+9−5*	D F KL	J$^\pi$: 1513γ to 2$^+$; 0 and 4 less likely from RUL; shell-model predicts 2$^+$ (1994Fo04) in ^{160}Gd(^{36}S,^{38}Sγ). T$_{1/2}$: from DSAM in (t,pγ).
2825.3 *11*	4$^+$	>0.14 ps	DEFGH KL	J$^\pi$: L(t,p)=4 from 0$^+$. T$_{1/2}$: from DSAM in (t,pγ).
3375 *17*	(2$^+$)		E I	J$^\pi$: L(t,p)=2,(1) from 0$^+$ with L=2 preferred. J$^\pi$=1$^-$ not completely excluded.
3516.3 *7*	(1,2$^+$)		A	J$^\pi$: 3526.0γ to 0$^+$; 3$^-$ is less likely but not completely ruled out.
3658 *6*	(6$^+$)		DE KL	XREF: E(3690)K(3674)L(3674). J$^\pi$: L(t,p)=5,6; γ to 4$^+$; shell-model predicts 6$^+$ (1994Fo04) in ^{160}Gd(^{36}S,^{38}Sγ).
3725.3 *15*			GH	
4336 *20*	(4$^+$)		E	J$^\pi$: L(t,p)=4,(3) with L=4 preferred. J$^\pi$=3$^-$ not completely excluded.
4461 *22*	(3$^-$,4$^+$)		E GH	E(level): weighted average of 4430 *20* from (^{14}C,^{12}C) and 4478 *22* from (t,p). J$^\pi$: L(t,p)=3,4.
4990.2 *11*	(2$^+$)		A E	XREF: E(4955).

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Adopted Levels, Gammas (continued)

^{38}S Levels (continued)

E(level)†	J^π	XREF	Comments
			J^π: L(t,p)=2,(1,3) with L=2 preferred. $J^\pi=1^-,3^-$ not completely excluded.
5064 *27*	(3^-)	E	J^π: L(t,p)=3,(2) with L=3 preferred. $J^\pi=2^+$ not completely excluded.
5278 *28*	(2^+)	E	J^π: L(t,p)=2,(1,3) with L=2 preferred. $J^\pi=1^-,3^-$ not completely excluded.
6005.6 *11*	(3^-)	A E GH	J^π: L(t,p)=3,(4) with L=3 preferred. $J^\pi=4^+$ not completely excluded.
6605 *60*		E	

† From a least-squares fit to γ-ray energies where available and the rest from (t,p), unless otherwise noted.

$\gamma(^{38}S)$

E_i(level)	J_i^π	E_γ†	I_γ	E_f	J_f^π	Mult.	Comments
1292.02	2^+	1292.0 *2*	100	0	0^+	E2	B(E2)(W.u.)=6.3 *9* E_γ: weighted average of 1292.3 *4* from ^{38}P β^- decay (0.64 s) and 1291.9 *2* from (t,pγ). Others: 1296.2 *4* from (^{18}O,^{16}Oγ), 1292 *4* from (^{48}Ca,Xγ), 1286 *19* from Coulomb excitation.
2805.1	(2^+)	1513 *2*	100	1292.02	2^+		E_γ: from (t,pγ). Other: 1515 *6* from (^{48}Ca,Xγ).
2825.3	4^+	1533.2 *10*	100	1292.02	2^+		E_γ: from (t,pγ). Other: 1538.2 *5* from (^{18}O,^{16}Oγ), 1534 *5* from (^{48}Ca,Xγ).
3516.3	$(1,2^+)$	2224.3 *8*	100 *18*	1292.02	2^+		E_γ,I_γ: from ^{38}P β^- decay.
		3516.0 *10*	56 *18*	0	0^+		E_γ,I_γ: from ^{38}P β^- decay.
3658	(6^+)	833 *5*	100	2825.3	4^+		E_γ: from (^{48}Ca,Xγ). Other: 849 from (^{36}S,^{38}Sγ).
3725.3		900 *1*	100	2825.3	4^+		E_γ: from (^{18}O,^{16}Oγ) with value adjusted by 3 keV lower than the original value=903 *1* since all values in that dataset are systematically lower than values in other studies.
4990.2	(2^+)	3698.0 *10*	100	1292.02	2^+		E_γ: from ^{38}P β^- decay.
6005.6	(3^-)	4713.3 *10*	100	1292.02	2^+		

† Values from (^{18}O,^{16}Oγ) seem systematically higher as compared to those in β^- decay, (t,pγ) and ^{160}Gd(^{36}S,^{38}Sγ): 4 keV for 1296γ, 5 keV for 1538γ.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level