^{3}He(^{32}S,nγ),^{32}S(^{3}He,nγ)   **1974Gr19,1974Be18,1985Al18**

	History		
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Ninel Nica, Balraj Singh	NDS 113, 1563 (2012)	28-May-2012

1985Al18: ^{3}He(^{32}S,nγ) E(^{32}S)=80 MeV, measured nγ coin, lifetimes by DSAM.
1974Be18: ^{32}S(^{3}He,nγ) E=8 MeV, measured Eγ, nγ coin, n$\gamma(\theta)$, lifetimes by DSAM.
1974Gr19: ^{32}S(^{3}He,nγ) E=8-12 MeV, measured n$\gamma(\theta)$, n$\gamma\gamma$ coin, lifetimes by DSAM.
1972Ca22: ^{32}S(^{3}He,nγ) E=7.5, 8.5, 10 MeV. Measured Eγ, Iγ, lifetimes by DSAM.

^{34}Ar Levels

E(level)	J$^\pi$	T$_{1/2}$[†]	Comments
0.0	0$^+$		
2091.1 *3*	2$^+$	319 fs *42*	Additional information 1.
			T$_{1/2}$: others: 229 fs *55* (1974Be18), 139 fs *42* (1974Gr19), 104 fs *35* (1972Ca22).
3287.7 *5*	2$^+$	194 fs *35*	Additional information 2.
			T$_{1/2}$: others: 149 fs *49* (1974Be18), 90 fs *42* (1974Gr19), 83 fs *45* (1972Ca22).
3873 *3*	0$^+$	>187 fs	Additional information 3.
			T$_{1/2}$: other: >416 fs (1974Gr19).
4127.8 *10*		<208 fs	J$^\pi$: N(840γ)(θ) gives J=1-4, J=2 is preferred by 1974Gr19 based on mirror argument.
			Additional information 4.
			T$_{1/2}$: 90 fs $+118-90$ from centroid-shift method (1985Al18). Others: <243 fs (1974Be18), >277 fs (1974Gr19).
4513.2 *8*	3$^-$	201 fs *38*	J$^\pi$: 3$^-$ is supported by $\gamma(\theta)$ data of 1974Be18, but 1$^-$ is not ruled out. 2$^+$ is five times less likely from these data.
			T$_{1/2}$: weighted average of 270 fs *125* (1974Be18), 180 fs *55* (1974Gr19), 208 fs *55* (1972Ca22).
4631 *4*			
4865 *4*			
4967 *4*			
5255? *4*			
5542 *4*			

[†] From Doppler-broadened γ-ray line shapes and centroid-shift method (1985Al18), unless otherwise stated. Weighted average of the two results is given by the authors. The uncertainties include those in feeding lifetimes and feeding intensities. Values from other measurements are given under comments. The results from 1974Be18, 1974Gr19 and 1972Ca22 have generally not been used by evaluators due to very different values in these studies which make averaging procedures difficult to use.

γ(^{34}Ar)

E$_i$(level)	J$^\pi_i$	E$_\gamma$[†]	I$_\gamma$[†]	E$_f$	J$^\pi_f$	Mult.	δ	Comments
2091.1	2$^+$	2091.1 *3*		0.0	0$^+$			A$_2$=+0.48 *9* (1974Be18)
								Additional information 5.
3287.7	2$^+$	1196.6 *4*	92 *5*	2091.1	2$^+$	M1+E2	+0.12 *5*	A$_2$=+0.56 *10* (1974Be18)
								δ: from n$\gamma(\theta)$ (1974Gr19).
								Additional information 6.
		3286 *4*	8 *5*	0.0	0$^+$			Additional information 7.
3873	0$^+$	585[@]	<30	3287.7	2$^+$			
		1782 *3*	>70	2091.1	2$^+$			I$_\gamma$: 100 (1974Gr19).
4127.8		840.1 *9*	90[‡] *5*	3287.7	2$^+$			δ: +0.52 *15* from n$\gamma(\theta)$ if J(4128 level)=2.
								Additional information 8.
		2037	10[‡] *5*	2091.1	2$^+$			I$_\gamma$: <50 (1974BE18).
		4128[‡@]	<10[‡]	0.0	0$^+$			
4513.2	3$^-$	1225.5 *6*	90[‡] *10*	3287.7	2$^+$			A$_2$=−0.38 *24* (1974Be18)

Continued on next page (footnotes at end of table)

^{3}**He(^{32}S,nγ),^{32}S(^{3}He,nγ)**   **1974Gr19,1974Be18,1985Al18 (continued)**

$\gamma(^{34}$Ar) (continued)

E$_i$(level)	E$_\gamma$†	I$_\gamma$†	E$_f$	J$^\pi_f$	Comments
					I$_\gamma$: >90 (1974BE18).
					Additional information 9.
4513.2	2422‡	10‡ 3	2091.1	2$^+$	Additional information 10.
4631	2540‡	>50‡	2091.1	2$^+$	
4865	2774‡	>50‡	2091.1	2$^+$	
4967	841‡@	<20‡	4127.8		
	2876‡	>50‡	2091.1	2$^+$	
5255?	3164‡	>50‡	2091.1	2$^+$	
5542	911‡	35‡# 10	4631		
	1029‡	65‡# 10	4513.2	3$^-$	

† From 1974Be18.
‡ From 1974Gr19.
# Intensity value is tentative.
@ Placement of transition in the level scheme is uncertain.

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Level Scheme

Intensities: % photon branching from each level

- - - - - ► γ Decay (Uncertain)

1029 65	
911 35	
3164 >50	5542
	5255
2876 >50	
841 <20	4967
2774 >50	4865
2540 >50	
2422 10	4631
1225.5 90	4513.2 201 fs *38*

3$^-$

4128 <10	
2037 10	4127.8 <208 fs
840.1 90	
1782 >70	3873 >187 fs
585 <30	
1196.6 M1+E2 92	

0$^+$

2$^+$ 3287.7   194 fs *35*

3286 8

2$^+$ 2091.1   319 fs *42*

2091.1

0$^+$ 0.0

$^{34}_{18}Ar_{16}$