^{29}Si(^{3}He,n),(^{3}He,nγ) 1975Da02,1982Al28

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 184,29 (2022)	24-Jun-2022

J^{π}(^{29}Si target)=1/2^{+}.

1975Da02: (^{3}He,n) and (^{3}He,nγ) E(^{3}He)=6.5 MeV beam from the University of Alberta Van de Graaff accelerator. Enriched SiO_2 targets (>95% ^{29}Si). Ne213 liquid scintillators used for neutron detection and tof measurements with γ-ray rejection by pulse shape discrimination. By positioning the detectors at nine different angles (0°−100°) angular distributions were measured. No DWBA analysis, direct reaction mechanism at the energy used is questionable. Germanium detectors for $\gamma\gamma$ coin measurements.

1982Al28: (^{3}He,n) E(^{3}He)=15 MeV beam from the University of Rochester Nuclear Structure Research Laboratory pulsed beam facility. Four liquid scintillators used for neutron detection, measured time of flight and angular distributions. DWBA analysis. Data for g.s., 1250, 2230 and 3300 levels.

Other: 1972Bb01 (E=14 MeV).

All data are from 1975Da02, unless otherwise stated.

^{31}S Levels

E(level)[†]	L	Comments
0.0	0[#&]	ε=1.33.
1248.9 *2*	2[@&]	ε=2.45.
2235.7 *4*	2[a]	ε=13.6.
3079.2 *11*	0[#]	
3285.6 *5*	2[a]	ε=0.79.
		E(level),J$^{\pi}$: 3300 in 1982Al28 corresponds to 3286 and/or 3351 levels. Angular distribution pattern in 1982Al28 is consistent with L=2, 5/2^{+}.
3351.2 *6*	(2)[@]	
3437		
4080 *25*	2[@]	
4204		
4452		
4525		
4580		
4718		
4866		
4969		
5022		
5151 *25*	0[#]	
5515		
5685		
5781		
5894		
5985		
6155		
6277 *25*	2[@]	
6361 *25*	2[@]	
6543		
6712		
6796 *25*		
6921 *25*		
7006 *25*	0[#]	
7112 *25*		
7445 *25*		
7522		
7660		

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^{29}Si(^{3}He,n),(^{3}He,nγ) 1975Da02,1982Al28 (continued)

^{31}S Levels (continued)

E(level)[†]	E(level)[†]	E(level)[†]	E(level)[†]
7768?[‡] *25*	7888?[‡] *25*	8082?[‡] *25*	8362 *25*
7850 *25*	7985 *25*	8183 *25*	8453 *25*

[†] Energies listed with ΔE=25 keV are from 1975Da02 and those without uncertainties were taken by 1975Da02 from Endt′s 1973 evaluation, although, these levels were observed by 1975Da02 in their neutron spectra. For E<3400, E is from Eγ.
[‡] Not observed at enough angles to kinematically assure they are associated with ^{31}S.
[#] L=0 from strong forward peaking of the angular distribution in 1975Da02.
[@] Angular distribution shape indicative of an L=2 transition in 1975Da02.
[&] L=0 for g.s. and L=2 for 1249 level also supported by $\sigma(\theta)$ measurements and DWBA analyses in 1982Al28.
[a] From 1982Al28.

$\gamma(^{31}S)$

E_γ[†]	E_i(level)	E_f
1248.9 *2*	1248.9	0.0
2036.6 *4*	3285.6	1248.9
2102.2 *5*	3351.2	1248.9
2235.6 *4*	2235.7	0.0
3079.0 *11*	3079.2	0.0

[†] From 1975Da02.

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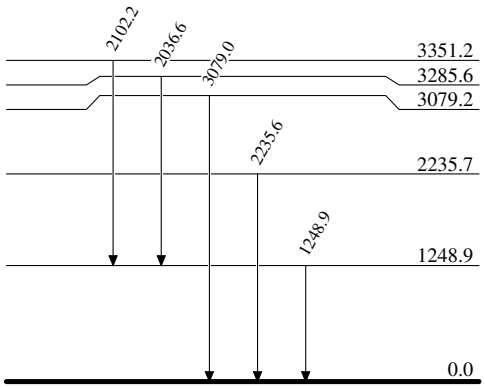
Level Scheme



$^{31}_{16}S_{15}$