^{28}Si(^{3}He,nγ),^{28}Si(^{3}He,n) 1973Ku15,1972Ca22,1982Al22

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 111, 2331 (2010)	30-Jun-2010

Other: 1970Bi08,1982Yo02.

1973Ku15: ^{28}Si(^{3}He,n) E=7.0-10.0 MeV; Target: natural Si or 99.6% enriched ^{28}Si; Ge(Li) detector, NE213 scintillation counter and NaI(Tl) detector; Measured: n-γ-γ coin, Eγ, γ-ray branching, γ-ray angular correlation, lifetime using the Doppler shift attenuation technique.

1972Ca22: ^{28}Si(^{3}He,n) E=6.5-10 MeV; NE^{213},GeLi) and NaI(Tl) detectors; Measured: Eγ, branching ratio, deduced meanlives using Doppler shift attenuation technique.

1982Al22: ^{3}He(^{28}Si,n) E=60 MeV; NE213 and Ge(Li) detectors, p-γ coin; deduced meanlives for the 1st and 2nd excited states using Doppler shift attenuation technique.

1970Bi08: ^{28}Si(^{3}He,nγ) E=4-8 MeV.

1982Yo02: ^{3}He(^{28}Si,n)^{30}S(P) E=9.5 MeV; NE213 and 2 Si surface barrier detectors; N-P coincidence, deduced ^{30}S level energy and possible J$^{\pi}$ values of 15 levels in the 5.1 to 7.5 MeV range from ^{30}S proton feeding the ^{29}P g.s. or first excited state.

^{30}S Levels

E(level)[†]	J$^{\pi}$[†]	T$_{1/2}$	Comments
0	0^{+}		
2210.6 *5*	2^{+}	158 fs *12*	B(E2)↑=0.035 *3* T$_{1/2}$: Weighted average of 70 fs *35* (1973Ku15), 121 fs *35* (1970Bi08), 215 fs *52* (1972Ca22) and 176 fs *15* (1982Al22).
3402.6 *5*	2^{+}	109 fs *12*	T$_{1/2}$: Weighted average of 80 fs *28* (1973Ku15), 111 fs *31* (1972Ca22) and 117 fs *15* (1982Al22).
3667.5 *10*	(0^{+})	>1 ps	T$_{1/2}$: >1 ps (both in 1973Ku15 and 1972Ca22).
3676 *3*	(1^{+})	97 fs *55*	T$_{1/2}$: From 1973Ku15.
5136 *2*	(4^{+})	38 fs *14*	E(level),T$_{1/2}$: Comparable level energy reported by 1982Yo02. Half life from 1973Ku15.
5288[‡]	3^{-}[‡]		J$^{\pi}$: L=3 (1982Yo02).
5425[‡@]	(1,2)[‡]		
5912[‡@]	(3,4)[‡]		
6117[‡@]	1^{-}[‡]		J$^{\pi}$: L=1, analyzed and accepted value by 1982Yo02.
6233[#@]			
6393[‡@]	0^{+}[‡]		J$^{\pi}$: From a flat n-p correlation pattern assigned by 1982Yo02.
6584[‡@]	(2,3)[‡]		
6810[#@]			
6838[#@]			
6919[‡@]	(3,4)[‡]		
7133[‡]	(1,2)[‡]		
7294[#]			
7338[‡]	(1,2)[‡]		
7475[#]			

[†] From 1973Ku15, except otherwise noted. J$^{\pi}$ based on model calculation and γ-ray correlation studies.

[‡] From 1982Yo02. J$^{\pi}$ from neutron proton angular correlation measurement assigned by 1982Yo02.

[#] From 1982Yo02.

[@] No level uncertainty given by 1982Yo02 and without comparable level energy from other experiments the level not adopted.

^{28}Si(^{3}He,nγ),^{28}Si(^{3}He,n) 1973Ku15,1972Ca22,1982Al22 (continued)

γ(^{30}S)

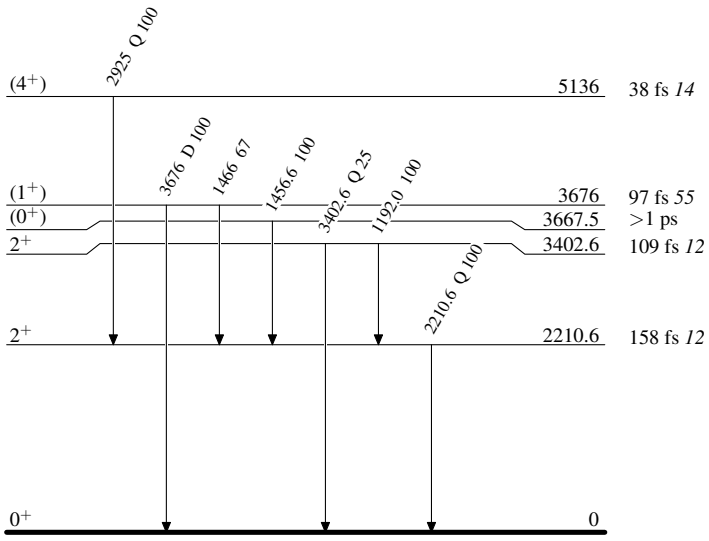
E_i(level)	J_i^π	E_γ[†]	I_γ[#]	E_f	J_f^π	Mult.[@]	Comments
2210.6	2+	2210.6[‡] *5*	100	0	0+	Q	E_γ: 2209.9(11) keV (1972Ca22). A_2=+0.42 *4*, A_4=−0.56 *5* (1973Ku15).
3402.6	2+	1192.0 *5*	100 *4*	2210.6	2+		
		3402.6 *13*	25 *4*	0	0+	Q	A_2=+0.37 *10*, A_4=+0.20 *13* (1973Ku15).
3667.5	(0+)	1456.6[‡] *11*	100	2210.6	2+		
3676	(1+)	1466[‡] *3*	67 *17*	2210.6	2+		
		3676[‡] *3*	100 *17*	0	0+	D	A_2=−0.31 *11*, A_4=−0.12 *15* (1973Ku15).
5136	(4+)	2925 *2*	100	2210.6	2+	Q	A_2=+0.52 *13*, A_4=−0.02 *17* (1973Ku15).

[†] From 1973Ku15, except otherwise noted.
[‡] Deduced from the level energy difference by the evaluator.
[#] From 1973Ku15.
[@] From γ-ray angular correlations and assigned by the evaluator.

^{28}Si(^{3}He,nγ),^{28}Si(^{3}He,n) 1973Ku15,1972Ca22,1982Al22

Level Scheme

Intensities: Relative photon branching from each level



$^{30}_{16}S_{14}$