^{37}Cl(^{3}He,d) 1970Mo10

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

$J^{\pi}(^{37}Cl\ g.s.)=3/2^{+}$.

1970Mo10: E=12 MeV ^{3}He beam was produced from the MP Tandem Van de Graff at the University of Rochester's Nuclear Structure Research Laboratory. Target was 30 μg/cm^2 $BaCl_2$ (99.3% enriched in ^{37}Cl) on a 165 μg/cm^2 gold leaf backing. Reaction products were momentum-analyzed with an Engel split-pole magnetic spectrograph (FWHM=15 keV) and detected with nuclear emulsions. Measured $\sigma(E_d,\theta)$. Deduced levels, J, π, L-transfers, spectroscopic factors from DWBA analysis. Comparisons with available data.

1994Ve04: E=25 MeV: measured $\sigma(E_d,\theta)$; deduced spectroscopic factors for 0, 2170 levels.

1971EnZU: KVI annual lab report and priv comm to Endt in 1971 cited as En71e in 1990En08. E=18 MeV, enriched target, magnetic spectrograph, FWHM=10 keV. Five prominent groups shown in the spectrum figure at 10.63, 11.30, 11.35. 11.39 and 11.93 MeV. These are matched with isobaric analog states in ^{38}Cl as stated with the levels below. The details of this study e.g. precise energies of the groups, angular distributions, etc. are not available.

^{38}Ar Levels

E(level)[†]	J^{π}	L	G[#]	Comments
0		2	0.466	
2175 *10*		0	2.573	Or L=0+2; G=0.016, 2.47.
3381 *10*		(2)	0.010	
3815 *10*		1+3	0.018,0.239	
3941 *10*		0+2	0.007,0.124	
4484 *10*		3	0.070	
4566 *10*		0	0.031	Or L=0+2; G=0.031, 0.002.
4588 *10*		3	0.685	
4878 *10*		1+3	0.014,0.409	
5087 *10*		1+3	0.007,0.314	
5160 *10*		0	0.013	Or L=0+2; G=0.012, 0.012.
5512 *10*		1+3	0.002,0.108	
5551 *10*		0	0.29	Or L=0+2; G=0.026, 0.043.
5597 *10*		1+3	0.002,0.103	L: inconsistent with $J^{\pi}=2^{+}$ in Adopted Levels.
5657 *10*		3	0.981	
5732 *10*		1	0.035	Or L=1+3; G=0.033, 0.043.
5822 *10*		1+3	0.025,0.087	Or L=(1), G=0.028.
5855 *10*		3	0.190	
6207 *10*		3	0.452	
6331 *10*		1+3	0.027,0.089	
6346 *10*		1+3	0.004,0.013	
6486 *10*		1	0.294	Or L=1+3; G=0.275, 0.319.
6566 *10*		1	0.068	Or L=1+3; G=0.064, 0.079.
6593 *10*		3	0.733	
6611 *10*		(2)	0.041	
6666 *10*		3	0.270	
6765 *10*		1	0.008	
6815 *10*		1	0.024	Or L=1+3; G=0.023, 0.030.
6896 *10*		1+3	0.003,0.067	
10626[‡] *10*				J^{π}: possible IAS of ^{38}Cl g.s., $J^{\pi}=2^{-}$.
11300[‡] *10*				E(level): this peak is wider by ≈ 4 keV in the spectrum figure of 1971EnZU, thus most likely it is a doublet. J^{π}: both components are possible IAS of 671, 5^{-} state in ^{38}Cl.
11350[‡] *10*	(3^{-})[@]			
11390[‡] *10*	(3^{-})[@]			
11930[‡] *10*	(4^{-})			J^{π}: possible IAS of 1309, 4^{-} state in ^{38}Cl.

Continued on next page (footnotes at end of table)

^{37}Cl(^{3}He,d) 1970Mo10 (continued)

^{38}Ar Levels (continued)

† From 1970Mo10, unless otherwise noted.
‡ From text and spectrum figure of 1971EnZU, with uncertainty assumed as 10 keV.
# Spectroscopic factor G=[(2J_f+1)/(2J_i+1)]C^2S where J_i=3/2 and J_f the spin of final level in ^{38}Ar, is defined by dσ/dΩ(exp)=G×dσ/dΩ(DWBA) in 1970Mo10.
@ 11350 and 11390 are possible components of IAS of 755,3$^-$ state in ^{38}Cl (1971EnZU).