^{40}Ar(p,d)   1977To17,1968Jo04

	Type	Author	History Citation	Literature Cutoff Date
	Full Evaluation	Jun Chen	NDS 149, 1 (2018)	1-Jan-2018

1977To17: E=35 MeV proton beam was produced from the Michigan State University cyclotron. Target was a planar gas cell of natural argon (99.50% in ^{40}Ar). Reaction products were momentum-analyzed with an Engel split-pole magnetic spectrograph (FWHM=28 keV) and detected with high-resolution position-sensitive proportional counter. Measured $\sigma(E_d,\theta)$, θ=6°−55° (lab). Deduced levels, J, π, L-transfers, spectroscopic factors from DWBA analysis. Comparisons with available data.

1968Jo04: E=27.5 MeV proton beam was produced from the University of Colorado Nuclear Physics Laboratory 1.3-m FFAG cyclotron. Target was natural argon gas. Reaction products were detected with a semi-conductor telescope of a transmission surface-barrier detector and a lithium-drifted stopping counter. Measured $\sigma(E_d,\theta)$, σ=15°−85° (c.m.). Deduced levels, L-transfers, spectroscopic factors from DWBA analysis. Comparisons with available data.

1965Wh02 (also thesis by C.A. Whitton, Princeton University (1966)): four levels at 0, 1274, 1516 and 2358. Data from work quoted by 1968Jo04.

^{39}Ar Levels

Spectroscopic factor C^{2}S is obtained from (dσ/dΩ)(exp)=N×C^{2}S×(dσ/dΩ)(DWBA), with N=2.29 in 1977To17 and N=2.48 in 1968Jo04.

E(level)[†]	L[‡]	C^{2}S[#]	Comments
0	3	2.4	C^{2}S: 0.54 (1968Jo04), 1.4 (1965Wh02).
1274 *8*	1	0.20	E(level): 1260 *20* (1968Jo04).
			C^{2}S: 0.089 (1968Jo04), 0.125 (1965Wh02).
1516 *8*	2	3.2	E(level): 1520 *20* (1968Jo04).
			C^{2}S: for L-1/2. Others: 2.20 (1968Jo04), 2.5 (1965Wh02).
2095 *8*	3	0.017,0.026	
2358 *8*	0	1.1	E(level): 2380 *20* (1968Jo04).
			C^{2}S: 1.26 (1968Jo04), 1.2 (1965Wh02).
2435 *8*			
2499 *8*			
2636 *8*	1	0.016	E(level): 2630 *20* (1968Jo04).
			C^{2}S: 0.019 (1968Jo04).
2756 *8*			
2829 *8*	0	0.024	
2950 *8*			
3061 *8*	3	0.11	C^{2}S: 0.088 (1968Jo04) for 3030 group.
3277 *8*	0	0.19	
3350 *8*	2	0.29,0.23	C^{2}S: 0.70 (1968Jo04) for 3300 group; for L-1/2.
3379 *8*	2	0.15	C^{2}S: for L-1/2.
3627 *8*	1[@]	0.015[@]	E(level): 3580 *20* (1968Jo04) is assumed to correspond to 3627 of 1977To17.
3842 *8*			
3892 *8*	2	0.27,0.33	C^{2}S: 0.24,0.32 (1968Jo04) for 3860 group.
4177 *8*			
4257 *8*	3[@]	0.099[@]	E(level): 4220 *20* (1968Jo04).
4476 *8*	2[@]	0.24,0.32[@]	E(level): 4470 *20* (1968Jo04).
4506 *8*			
4815 *8*			
4914 *8*	2[@]	0.19,0.24[@]	E(level): 4900 *20* (1968Jo04).
5006 *8*			
5169 *8*	3[@]	0.12[@]	E(level): 5130 *20* (1968Jo04).
5203 *8*			
5321 *8*			

<u>^{40}Ar(p,d)</u>   **1977To17,1968Jo04** (continued)

<u>^{39}Ar Levels (continued)</u>

E(level)[†]	L[‡]	C^{2}S[#]
5385 *8*		
5417 *8*	0	0.052
5527 *8*		
5605 *8*		

[†] From 1977To17. Values are also available from 1968Jo04 but less precise with ΔE=20 keV.

[‡] From 1977To17, unless otherwise noted.

[#] From 1977To17. Quoted values are for L+1/2 transfer; when two values are given, these are for L+1/2 and L-1/2, respectively, unless otherwise noted. Values from 1968Jo04 and 1965Wh02 (as quoted by 1968Jo04) are given under comments.

[@] From 1968Jo04.