^{40}Ar(pol d,^{3}He),(d,^{3}He) 1993Ma50,1969Wa03

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

1993Ma50: (pol d,^{3}He) E=52 MeV deuteron beam was produced from the Karlsruhe isochronous cyclotron. Target was Ar gas of natural abundance (99.9% in ^{40}Ar). Reaction products were detected with a Si-detector telescope consisting of a 250 μm thick ΔE-strip detector and a large-area surface-barrier 1500 μm thick E-detector (FWHM=130 keV). Measured σ(E,θ), analyzing powers. Deduced levels, J, π, L-transfer, spectroscopic factors from DWBA analysis. Comparisons with available data.

1969WA03: (d,^{3}He) E=51.7 MeV deuteron beam was produced from the Karlsruhe cyclotron. Target was natural Ar gas. Reaction products were detected with a ΔE-E telescope of CO_2-cooled surface-barrier counters (FWHM=250 keV). Measured σ(E,θ). Deduced levels, J, π, L-transfer, spectroscopic factors from DWBA analysis.

1975Wa17: (d,^{3}He) E=52 MeV deuteron beam was produced from the Karlsruhe cyclotron. Measured σ(E,θ). Deduced spreading width for quasi-hole states; phonon-hole coupling model.

^{39}Cl Levels

E(level)[†]	J$^\pi$[‡]	L[‡]	C^{2}S[#]	Comments
0	3/2$^+$	2	2.17	C^{2}S: 2.00 (1969Wa03).
393 *10*	1/2$^+$	0	1.20	C^{2}S: 1.20 (1969Wa03). E(level): other: 380 *10* (1969Wa03).
1.16×10^3 *16*				E(level): from 1250 *+70−250* weak group from 1969Wa03 only. There is some evidence of this group In spectrum (figure 2) of 1993Ma50.
1733 *19*	5/2$^+$&(5/2,7/2)$^-$	2+3	0.37,0.76	E(level): Multiplet of 1696+1722. J$^\pi$: L=2+3 for 1696+1722 gives 5/2$^-$,7/2$^-$ for one component and 5/2$^+$ for the other. L,C^{2}S: other: L=3, C^{2}S=0.47 (1969Wa03). E(level): other: 1700 *20* (1969Wa03).
2053 *20*	5/2$^+$	2	0.69	C^{2}S: 0.50 (1969Wa03) for a 1960 *80* group.
2233 *20*	1/2$^+$	0	0.26	C^{2}S: 0.26 (1969Wa03) for a 2100 *60* group.
2495 *66*	5/2$^+$	2	0.20	E(level): other: 2450 *30* (1969Wa03). C^{2}S: 0.13 (1969Wa03).
3171 *10*	5/2$^+$,1/2$^+$	2,0	0.12,0.07	L,C^{2}S: other: L=(3), C^{2}S=0.08 (1969Wa03). E(level): other: 3170 *40* (1969Wa03).
3475 *44*	5/2$^+$	2	0.58	C^{2}S: 0.47 (1969Wa03). E(level): other: 3440 *30* (1969Wa03).
4013 *14*	5/2$^+$	2	1.14	C^{2}S: 0.99 (1969Wa03). E(level): other: 4020 *10* (1969Wa03).
4.35×10^3[@] *10*	5/2$^+$[@]	2[@]	0.13[@]	E(level): 4250-4450 (1993Ma50); 4410 *50* (1969Wa03). C^{2}S: 0.17 (1969Wa03).
4.63×10^3[@&] *18*	5/2$^+$[@]	2[@]	0.11[@]	E(level): 4450-4800 (1993Ma50); 4890 *100* (1969Wa03).
5.18×10^3[@] *18*	5/2$^+$[@]	2[@]	0.43[@]	E(level): 5000-5350 (1993Ma50); 5320 *30* (1969Wa03). C^{2}S: 0.43 (1969Wa03).
5.45×10^3[@&] *10*	5/2$^+$[@]	2[@]	0.24[@]	E(level): 5350-5550 (1993Ma50).
5.70×10^3[@] *15*	5/2$^+$[@]	2[@]	0.76[@]	E(level): 5550-5850 (1993Ma50); 5750 *30* (1969Wa03). C^{2}S: 0.73 (1969Wa03).
5.98×10^3[@] *13*	5/2$^+$[@]	2[@]	0.38[@]	E(level): 5850-6100 (1993Ma50); 6020 *50* (1969Wa03). C^{2}S: 0.38 (1969Wa03).
7.6×10^3[@&] *15*	5/2$^+$[@]	2[@]	1.88[@]	E(level): 6100-9000 (1993Ma50); 6900 *100* (1969Wa03).

[†] From 1993Ma50. Data are also available in 1969Wa03 but not adopted due to much poorer resolution (by a factor of 2).

[‡] From 1993Ma50, mainly based on comparisons of measured $\sigma(\theta)$ and analyzing powers with those for states with known spin-parities. Comparisons with DWBA predictions serves as additional check.

[#] Extracted from comparisons of measured $\sigma(\theta)$ with DWBA predictions in 1993Ma50.

Continued on next page (footnotes at end of table)

^{40}Ar(pol d,^{3}He),(d,^{3}He) 1993Ma50,1969Wa03 (continued)

^{39}Cl Levels (continued)

@ For a wide group in 1993Ma50.
& Very weak or not seen in 1969Wa03.