^{34}S(^{3}He,d)

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen, John Cameron and Balraj Singh	NDS 112,2715 (2011)	20-Oct-2011

1969Gr23: E=11.0 MeV ^{3}He beam produced from the MIT-ONR Van de Graaff generator. Target made by evaporating a thin layer of PbS (67.6%^{34}S) onto a formvar backing, ^{34}S thickness 9.3 μg/cm^2. Deuterons recorded in the MIT multiple-gap spectrograph on 50 μm nuclear emulsions at 23 different angles from 7.5° to 172.5°. Measured $\sigma(E_d,\theta)$. Deduced levels, J^π, l, spectroscopic factors from DWBA analysis.

1970Mo01: E=13 MeV ^{3}He beam produced from the Argonne tandem Van de Graaf accelerator. Enriched sulphur target (86% ^{34}S), thickness of about 200 μg/cm^2. Detectors: ΔE-E telescopes of silicon surface- barrier detectors consisting of collimators, a thin detector, and a thick one, FWHM=80 keV. Measured $\sigma(E_d,\theta)$. Deduced levels, J^π, l spectroscopic factors from DWBA analysis.

1994Ve04: E=25 MeV ^{3}He beam produced from the Orsay MP Tandem Van de Graaff accelerator. Natural chlorine target of KCl. Deuterons momentum analyzed with a spectrograph and detected with a 50 cm long telescope of a position-sensitive proportional counter, a proportional ΔE counter and a plastic scintillator. Measured $\sigma(E_d,\theta)$. Deduced J^π, l and spectroscopic factor for the ground state for ^{35}Cl and other nuclei from DWBA analysis.

Target ^{34}S $J^\pi=0^+$.

E: Weighted average from 1969Gr23 and 1970Mo01, unless otherwise noted.

^{35}Cl Levels

Spectroscopic factor C^2S: $N*C^2S=\sigma(\theta)^{exp}/\sigma(\theta)^{DWBA}$, where N is the normalization factor $g=(2J_f+1)/(2J_i+1)$ (1966Ba54). N=4.42 (1969Gr23,1970Mo01), 4.43 (1994Ve04).

E(level)	L‡	C^2S	Comments
0	2		$(d\sigma/d\omega)_{max}$(mb/sr): 3.2 (1969Gr23), 5.2 (1970Mo01). C^2S: 0.72 in 1969Gr23, 1.3 in 1970Mo01 and 1.07 in 1994Ve04; for $J^\pi=3/2^+$.
1220 *10*	0		$(d\sigma/d\omega)_{max}$(mb/sr): 12.0 (1969Gr23), 2.5 (1970Mo01). C^2S: 0.26 in 1969Gr23, 0.28 in 1970Mo01; for $J^\pi=1/2^+$.
1758† *10*			$(d\sigma/d\omega)_{max}$(mb/sr): 0.08 (1969Gr23).
2645† *10*			
2688 *10*	2		$(d\sigma/d\omega)_{max}$(mb/sr): 0.12 (1969Gr23). C^2S: 0.015 for $J^\pi=3/2^+$; 0.01 for $J^\pi=5/2^+$ (1969Gr23).
3002 *10*	2		$(d\sigma/d\omega)_{max}$(mb/sr): 0.32 (1969Gr23), 0.7 (1970Mo01). C^2S: 0.023 in 1969Gr23, 0.04 in 1970Mo01; for $J^\pi=5/2^+$.
3158 *10*	3		$(d\sigma/d\omega)_{max}$(mb/sr): 3.3 (1969Gr23), 5.5 (1970Mo01). C^2S: 0.36 in 1969Gr23, 0.66 in 1970Mo01; for $J^\pi=7/2^-$.
3908† *10*			
3962 *10*	0		$(d\sigma/d\omega)_{max}$(mb/sr): 1.3 (1969Gr23), 0.6 (1970Mo01). C^2S: 0.03 in 1969Gr23, 0.06 in 1970Mo01; for $J^\pi=1/2^+$.
4053 *10*	1		$(d\sigma/d\omega)_{max}$(mb/sr): 6.1 (1969Gr23), 8.0 (1970Mo01). C^2S: 0.095 in 1969Gr23, 0.15 in 1970Mo01; for $J^\pi=3/2^-$.
4167 *10*	1		$(d\sigma/d\omega)_{max}$(mb/sr): 14.0 (1969Gr23), 15 (1970Mo01). C^2S: 0.213 in 1969Gr23, (0.28,0.62) in 1970Mo01; for $J^\pi=3/2^-$.
5010† *15*			
5163† *15*	(2)		C^2S: $(2J+1)C^2S=(0.11)$ (1969Gr23). L: from 1969Gr23.
5409 *12*	1		$(d\sigma/d\omega)_{max}$(mb/sr): 0.75 (1969Gr23), 1.6 (1970Mo01). C^2S: 0.018 in 1969Gr23; for $J^\pi=3/2^-$.
5660† *15*	2	0.118	$(d\sigma/d\omega)_{max}$(mb/sr): 1.1 (1969Gr23). C^2S: for $J^\pi=3/2^+$ (1969Gr23). L: from 1969Gr23.

Continued on next page (footnotes at end of table)

^{34}S(^{3}He,d) (continued)

^{35}Cl Levels (continued)

E(level)	L‡	Comments
5677 *12*	1	$(d\sigma/d\omega)_{max}$(mb/sr): 0.84 (1969Gr23), 4 (1970Mo01). E(level): Multiplet in 1970Mo01. L: from 1969Gr23; (2) in 1970Mo01. C^2S: 0.028 in 1969Gr23; for $J^\pi=3/2^-$.
5760 *12*	(0,1)	$(d\sigma/d\omega)_{max}$(mb/sr): 0.92 (1969Gr23), 1.2 (1970Mo01). L: 1 in 1969Gr23, 0 in 1970Mo01. C^2S: 0.03 in 1969Gr23 for $J^\pi=3/2^-$, 0.21 in 1970Mo01 for $J^\pi=1/2^+$.

† From 1969Gr23.
‡ From the comparison of the DWBA prediction of the angular distribution with the experimental data from 1969Gr23 and 1970Mo01.