^{32}S(d,^{3}He),(pol d,^{3}He) 1999Ve09,1974Ma34,1977Tr02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 184, 29 (2022)	24-Jun-2022

1999Ve09: (d,^{3}He) E=27 MeV deuterons from Orsay MP Tandem Van de Graaff. Natural indium sulfide target In_2S_3. Enge split pole magnetic spectrograph FWHM=30 keV used with a position and angle sensitive drift gas counter. Measured ^{3}He-spectrum, angular distributions (13 angles). Shell model calculations.

1977Tr02: (d,^{3}He) E=28 MeV deuterons from Triangle Universities Cyclo-Van de Graaff accelerator. Surface barrier ΔE-E detector telescopes at three different angles for angular distribution measurements $\theta_{c.m.}$=15°−60°. FWHM=100 keV. DWBA analysis.

1974Ma34 (also 1969Ka22): (d,^{3}He) E=51.7 MeV deuterons from Karlsruhe cyclotron. CO_2 cooled surface barrier ΔE-E detectors in a scattering chamber for ^{3}He(θ), θ_{lab}=10°−55°. H_2S gas target. FWHM=120 keV in 1974Ma34 and 300-400 keV in 1969Ka22. DWBA analysis with modified nuclear radii. 1974Ma34 is a re-measurement with improved energy resolution and supersedes 1969Ka22.

1991Bh02: (pol d,^{3}He) E=16 MeV vector and tensor polarized deuteron beam. Natural targets of Sb_2S_3. Reaction products detected by ΔE-E solid state telescopes. Measured $\sigma(\theta)$ and tensor analyzing powers for g.s. and 2233 level. DWBA analysis. See also 1990Lu10.

Others:

1975DaYO: (pol d,^{3}He). Measured $\sigma(\theta)$, Ay(θ) unpublished thesis.

1972Dz01: (d,^{3}He) E=17.7, 20.8, 23 MeV. Measured $\sigma(\theta)$.

1968Be13: (d,^{3}He) E=23 MeV. Measured $\sigma(\theta)$.

1964Bu07: (d,^{3}He) E=12.8 MeV. Measured $\sigma(\theta)$.

1962Cu07: (d,^{3}He) E=15 MeV. Measured $\sigma(\theta)$.

^{31}P Levels

E(level)[†]	Jπ	L[‡]	S[#]	Comments
0	1/2$^+$	0	1.86[@]	Jπ: Ay(θ) and L-transfer (1991Bh02). S: others: 1.70 (1977Tr02), 2.20 (1969Ka22).
1267 *5*		2	1.71[a]	S: others: 1.38 (1977Tr02), 1.96 (1974Ma34), 1.46 (1969Ka22).
2233 *5*	5/2$^+$	2	3.99[&]	Jπ: Ay(θ) and L-transfer (1991Bh02). S: others: 3.70 (1977Tr02), 3.68 (1974Ma34), 2.84 (1969Ka22).
3134 *5*		0	0.22[@]	S: other: 0.22 (1974Ma34).
3295 *5*		2	1.45[&]	S: others: 0.92 (1977Tr02), 1.34 (1974Ma34), 1.00 (1969Ka22).
3419 *5*				
3507 *5*				
4191 *5*		2	1.41[&]	S: others: 1.12 (1977Tr02), 1.30 (1974Ma34), 1.00 (1969Ka22).
4264 *5*				
4432 *5*		(3)	0.08	E(level): other: 4400 (1974Ma34). S: from 1974Ma34.
4587 *5*				
4635 *5*				
4785 *5*		2	0.43[&]	S: others: 0.40 (1974Ma34), 0.38 (1969Ka22).
5014 *5*				
5114 *5*				
5255 *5*		0	0.20[@]	S: other: 0.40 (1969Ka22).
5343 *5*				
5528 *5*				
5561 *5*				
5673 *5*				
5774 *5*				
5892 *5*		2	0.33[&]	E(level): other: 5910 (1974Ma34). S: other: 0.30 (1974Ma34).

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^{32}S(d,^{3}He),(pol d,^{3}He) 1999Ve09,1974Ma34,1977Tr02 (continued)

^{31}P Levels (continued)

E(level)[†]	L[‡]	S[#]	Comments
5988 *5*	(2)	0.30[&]	E(level): other: 6010 (1974Ma34). S: from 1974Ma34. L: other: 1 from 1969Ka22 for a level at E=5990 is inconsistent.
6076 *5*			
6334 *5*	0	0.22[@]	E(level): other: 6360 (1974Ma34).
6397 *5*			
6460 *5*	0	0.64	L: from 1969Ka22 for a level at E=6410 *60*, which could correspond to 6397+6460 in 1999Ve09. S: from 1969Ka22.
6498 *5*			
6606 *5*			
6838 *5*			
6909 *5*			
6934 *5*			E(level): other: 6900 *200* (1969Ka22).
7077 *5*			
7158 *5*	2	1.72[&]	E(level): other: 7200 (1974Ma34). S: other: 1.58 (1974Ma34).
7212 *5*	1		L: from 1969Ka22 for a level at E=7220.
7316 *5*			
7344 *5*			
7851 *5*			
7898 *5*			
7945 *5*			
8033 *5*	(1)	1.64	L: from 1974Ma34 for a level at E=7980, which could correspond to 7945+8033 in 1999Ve09. L=(1) also from 1969Ka22 for a level at E=8000 *70*.
9.03×10^{3} *10*			E(level): from 1969Ka22 only.
9680	(2)	0.36	E(level),L,S: from 1974Ma34. Other: E=9700 *150* from 1969Ka22.
9970	(2)	0.30	E(level),L,S: from 1974Ma34. Other: E=9900 *100* with L=(1) from 1969Ka22.

[†] From 1999Ve09, unless stated otherwise. Values from 1974Ma34 are in a good agreement where available, except for some levels as noted.

[‡] From DWBA analysis of measured $\sigma(\theta)$ in 1974Ma34, unless otherwise noted.

[#] From 1999Ve09, re-analysis of data in 1974Ma34 with modified geometrical parameters for DWBA calculations, unless otherwise noted. Original values from 1974Ma34 are given under comments if different. Note that 1977Tr02 and 1974Ma34 report values of C^2S where $C^2=1/2$, which have been converted to S by evaluators, as quoted under comments.

[@] From 1999Ve09 assuming $2s_{1/2}$ orbital.

[&] From 1999Ve09 assuming $1d_{5/2}$ orbital.

[a] From 1999Ve09 assuming $1d_{3/2}$ orbital.