^{42}Ca(p,d) 1972Ma23,1968Sm05

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja, E. A. Mccutchan	NDS 133, 1 (2016)	30-Sep-2015

1972Ma23: E(p)=40 MeV from Grenoble cyclotron. Deuterons detected with ΔE-E silicon counter telescope with FWHM= 120 keV. Measured $\sigma(\theta)$ from 10 °−60 °. Extracted spectroscopic factors and angular momentum transfer from DWBA analysis code DWUCK.

1968Sm05: E(p)=26.5 MeV from University of Colorado cyclotron. Scattered particles detected with ΔE-E telescope of surface barrier detectors. Measured $\sigma(\theta)$ from 21 °−76 °. Extracted spectroscopic factors and angular momentum transfer from DWBA analysis code JULIE.

Cross section data from 1968Sm05

Level	dσ/dΩ (mb/sr) (max)	Level	dσ/dΩ (mb/sr) (max)
0	2.82	4105	0.364
2017	2.30	4829	0.081
2471	0.049	5490	0.058
2680	0.860	5840	0.626
2980	0.153	5900	0.106
3408	0.088	6040	0.097
3520	0.202	6680	0.064
3740	0.180	6820	0.139
3859	0.158	7130	0.123
3950	0.058	7410	0.104

^{41}Ca Levels

E(level)†	L†	C²S†	Comments
0	3	1.47@	E(level): Analog to the g.s. in ^{41}K (1972Ma23). C²S: 1.6 (1968Sm05).
1943‡	1	0.04&	
2010‡	2	3.0a	C²S: 2.7 (1968Sm05).
2460‡	(1)	0.004&	
2670‡	0	0.70b	C²S: 0.34 (1968Sm05).
2884‡			
2960‡	3	0.10	C²S: 0.17 (1968Sm05).
3080# *20*			
3220 *20*			
3410 *20*	0	0.10b	C²S: 0.049 (1968Sm05).
3510 *20*	2	0.34d	C²S: 0.22 (1968Sm05).
3750 *20*	2	0.31d	C²S: 0.21 (1968Sm05).
3850 *20*	0	0.19b	C²S: 0.11 (1968Sm05).
4120 *20*	2	0.48d	C²S: 0.49 (1968Sm05).
4830 *20*	2	0.16d	C²S: 0.11 (1968Sm05).
5140 *20*			
5330 *20*			
5500 *20*	2	0.16d	
5852‡	2	0.97a	C²S: 1.7 (1968Sm05).
6000 *20*	0	0.14b	
6120 *20*			

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^{42}Ca(p,d) 1972Ma23,1968Sm05 (continued)

^{41}Ca Levels (continued)

E(level)[†]	L[†]	C^2S[†]	Comments
6530 *20*			
6852[‡]	0	0.35[b]	E(level): Analog to the 980 state in ^{41}K (1972Ma23). C^2S: 0.85 (1968Sm05).
7170 *20*	3	0.09[c]	E(level): Analog to the 1290 state in ^{41}K (1972Ma23). C^2S: 0.20 (1968Sm05).
7440[#] *20*	0+2	≈0.05,0.16	C^2S: C^2S≈0.05 for J^π=1/2$^+$ and C^2S≈0.16 for J^π=(5/2$^+$).
7780 *20*	0	0.04[b]	
7990[#] *20*	0+2	≈0.02,0.04	C^2S: C^2S≈0.02 for J^π=1/2$^+$ and C^2S≈0.04 for J^π=(5/2$^+$).
8180 *20*			E(level): Analog to the 2310 state in ^{41}K (1972Ma23).
8300 *20*	2	0.07[d]	E(level): Analog to the 2450 state in ^{41}K (1972Ma23).
8560 *20*	0	0.13[b]	E(level): Analog to the 2670 state in ^{41}K (1972Ma23).
8650 *20*	(2)	0.18[d]	
9110 *20*	(2)	0.12[d]	
9370 *20*	2	0.31[d]	
10950 *20*	2	0.14[d]	

[†] From 1972Ma23. L-values assigned to 13 groups by 1968Sm05 are in agreement with those from 1972Ma23.
[‡] Rounded off values from Adopted Levels.
[#] Doublet.
[@] C^2S corresponding to J^π= 7/2$^-$.
[&] C^2S corresponding to J^π= 3/2$^-$.
[a] C^2S corresponding to J^π= 3/2$^+$.
[b] C^2S corresponding to J^π= 1/2$^+$.
[c] C^2S corresponding to J^π= (7/2)$^-$.
[d] C^2S corresponding to J^π= (5/2)$^+$.