^{27}Al(d,^{6}Li) 1981Ve13

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia[#], A. Chakraborty[##]	NDS 171,1 (2021)	1-Jun-2020

$J^{\pi}(^{27}Al)=5/2^{+}$.

Self-supporting metallic ^{27}Al target (thickness ~80 μg/cm^2) bombarded by 55 MeV deuteron; Outgoing ^{6}Li ions were detected and analyzed with a QMG/2 magnetic spectrograph; Measured differential cross section $\sigma(E(^{6}Li),\theta)$ from 10° to 37° (Lab). Deduced excited level energies, spectroscopic factor. DWBA analysis. FWHM ~40 MeV.

^{23}Na Levels

Maximum differential cross section $(d\sigma/d\Omega')_{max}$ in unit of μb/sr listed in comments section.

E(level)[†]	J^{π}[a]	L[b]	S[b]	Comments
0.0	$3/2^{+}$	2	0.59 *7*	S: 0.42 *11* (FR) for L=2; 0.39 *8* (ZR)) and 0.90 *18* (FR) for L=4. 2.8 μb/sr.
440[‡]	$5/2^{+}$	0	1.00 *13*	S: 1.00 *14* (FR) for L=0; 1.43 *12* (ZR)); 1.80 *27* (FR) for L=2; 0.55 *18* (ZR) 0.26 *29* (FR) for L=4. 12 μb/sr.
2079 *7*	$7/2^{+}$	2	0.33 *6*	S: 0.25 *6* (ZR) and 0.52 *10* (FR) for L=4; 0.86 *28* for L=6. 1.5 μb/sr.
2388 *15*	$1/2^{+}$	2	0.12	S: 0.10 (FR) for L=2. 0.4 μb/sr.
2640[@] *20*	$1/2^{-}$	3	0.58	S: 0.94 (FR) for L=3. 1.4 μb/sr.
2706[‡]	$9/2^{+}$	2	0.76 *7*	S: 1.02 *9* (ZR) and 1.97 *14* (FR) for L=4; 1.09 *37* (FR) for L=6. 4.5 μb/sr.
2970 *20*	$3/2^{+}$			E(level): 2.97 MeV *20* in 1981Ve13. 0.2 μb/sr.
3680 *7*	$3/2^{-}$	1	0.17 *15*	S: 0.18 *21* (FR) for L=1; 0.76 *20* (ZR) and 1.14 *31* (FR) for L=3. 2.0 μb/sr.
3863 *7*	$5/2^{-}$	1	0.35 *24*	S: 0.74 *21* (FR) for L=1; 0.49 *23* (ZR) and 0.31 *34* (FR) for L=3; 0.1 *6* (ZR) for L=5. 2.2 μb/sr.
3922 *7*	$5/2^{+}$	0	0.01 *8*	S: 0.02 *5* (FR) for L=0; 0.33 *10* (ZR) and 0.36 *14* (FR) for L=2; 0.21 *15* (ZR) and 0.08 *21* (FR) for L=4. 1.8 μb/sr.
4439 *15*	$1/2^{+}$	2	0.17	S: 0.14 (FR) for L=2. 0.5 μb/sr.
4779 *7*	$7/2^{+}$	2	0.15 *4*	S: 0.16 *7* (FR) for L=2; 0.17 *5* (ZR) and 0.13 *12* (FR) for L=4. 1.1 μb/sr.
5378 *7*	$5/2^{+}$	2	0.28 *5*	S: 0.26 *6* (FR) for L=2; 0.11 *5* (ZR) and 0.04 *11* (FR) for L=4. 1.3 μb/sr.
5532 *10*	$11/2^{+}$	4	0.00 *4*	S: 0.09 *5* (FR) for L=4; 0.96 *27* (ZR) and 1.09 *28* (FR) for L=6; 2.8 *14* (ZR) for L=8. 0.8 μb/sr.
5748[&] *7*				2.8 μb/sr.
5910[@] *20*				0.4 μb/sr.
5950[@] *20*				0.8 μb/sr.
6038 *7*				1.3 μb/sr.
6111 *7*	$(11/2)^{+}$	4	0.35 *6*	S: 0.63 (FR) for L=4; 0.63 *20* (ZR) for L=6. 1.4 μb/sr.
6233 *7*	$(13/2^{+})$	4	0.10 *6*	S: 0.31 *8* (FR) for L=4; 2.20 *34* (ZR) and 1.69 *31* (FR) for L=6; 2.8 *27* (ZR) for L=8. 1.6 μb/sr.
6349 *7*	$9/2^{-}$	3	0.08 *15*	S: 0.63 *19* (FR) for L=3; 1.87 *53* (ZR) and 2.46 *97* (FR) for L=5; 11.7 *35* (ZR) and 1.3 *80* (FR) for L=7. 1.9 μb/sr.

Continued on next page (footnotes at end of table)

^{27}Al(d,^{6}Li) 1981Ve13 (continued)

^{23}Na Levels (continued)

E(level)[†]	L[b]	S[b]	Comments
6577 *15*			0.5 μb/sr.
6602 *10*			1.0 μb/sr.
6830[#] *20*			1.0 μb/sr.
7070[#] *20*			0.4 μb/sr.
7120[#] *20*			1.3 μb/sr.
7176[&] *7*	3	3.65	S: 3.71 (FR) for L=3. 6.3 μb/sr.
7250[#] *20*			0.6 μb/sr.
7387 *10*			1.6 μb/sr.
7850[#] *20*			2.7 μb/sr.
7970[#] *20*			0.6 μb/sr.
8060[#] *20*			0.6 μb/sr.
8335 *10*			1.3 μb/sr.
8480 *20*			0.5 μb/sr.
8540[@] *20*			0.4 μb/sr.
8628 *10*			0.8 μb/sr.
8705 *10*			0.5 μb/sr.
8794 *10*			1.0 μb/sr.
8941 *10*			0.2 μb/sr.
9058[&] *15*			1.9 μb/sr.
9201 *15*			1.3 μb/sr.
9280[@] *20*			0.6 μb/sr.
9382[&] *10*			0.9 μb/sr.

[†] From 1981Ve13.
[‡] Used for calibration.
[#] Listed in 100th of an MeV, appears to be a typo considering the doublet indicated by a curly bracket with the overlapping literature data in Table 6. Assuming in 1000th − evaluators list level energy in keV. The assumption reduces the uncertainty by a digit.
[@] Listed in 100th of an MeV. Based on the absence of a curly bracket, which authors used to indicate a doublet compared with the literature data, the evaluators considers in 1000th of an MeV and list in keV. The assumption reduces the uncertainty of the level energy by a digit.
[&] Doublet (1981Ve13).
[a] From Adopted Levels.
[b] Relative spectroscopic factor from contributions of different L-transfer with zero-range (ZR) and finite-range (FR) DWBA calculations.