

$^{27}\text{Al}(\text{d,p})$ 1971Ca27,1986So01,1956Bu93

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia		NDS 114, 1189 (2013)	1-Apr-2013

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

Others: 1972Ch43, 1972Ma13, 1973Or04, 1974So15, 1975Fr11, 1980Ma32.

1971Ca27: $^{27}\text{Al}(\text{d,p})$, E=12 MeV; reaction products were analysed in a split-pole magnetic spectrograph and detected in an array of eight position-sensitive detectors; the angular distributions were measured between 5° to 90° in steps of 5° ; Deduced level energies, L values, J^π , and spectroscopic factors.

1986So01: $^{27}\text{Al}(\text{d,p})$, E=not given; Measured cross section, deduced level energies.

1956Bu93: $^{27}\text{Al}(\text{d,p})$, E=6- and 7-MeV; studied proton groups using a broad-range magnetic spectrograph.

1971Ca27: $^{27}\text{Al}(\text{d,p})$, E=12 MeV; measured $\sigma(\theta)$. ^{28}Al deduced levels, L, J^π , and spectroscopic factors. The FWHM was about 11 keV.

 ^{28}Al Levels

E(level) [†]	J^π [‡]	L [#]	(2J _f +1)S [@]	Comments
0.0	3 ⁺	0+2	4.3,1.2	(2J _f +1)S: Others: 3.1, 0.42 (1972Ch43); 9.7 (1972Ma13).
30.6382 7	2 ⁺	0+2	2.0,1.1	(2J _f +1)S: Others: 1.7, 0.54 (1972Ch43); 5.4 (1972Ma13).
972.35 3	0 ⁺	2	(0.20)	(2J _f +1)S: Other: 0.30 (1972Ch43).
1013.637 9	3 ⁺	0+2	0.44,7.5	(2J _f +1)S: Others: 0.30, 4.7 (1972Ch43); 0.97, 14 (1972Ma13).
1372.917 20	1 ⁺	2	0.85	
1620.30 4	1 ⁺	0+2	0.16,1.4	(2J _f +1)S: For doublet (1971Ca27); Others: 0.12, 1.9 (1972Ch43); 0.35, 3.2 (1972Ma13).
1622.907 20	2 ⁺	0+2		
2138.910 10	2 ⁺	0+2	0.75,2.7	(2J _f +1)S: Others: 0.66, 1.8 (1972Ch43); 1.7, 4.0 (1972Ma13).
2201.43 3	1 ⁺	2	2.1	(2J _f +1)S: Others: 0.23 (1972Ch43); 3.7 (1972Ma13).
2271.745 19	4 ⁺	2	4.7	(2J _f +1)S: Others: 0.38 (1972Ch43); 9.2 (1972Ma13).
2486.20 6	2 ⁺	0+2	0.08,0.48	(2J _f +1)S: Others: 0.12, 0.48 (1972Ch43); 0.21, 0.58 (1972Ma13).
2581.81 22	5 ⁺	(0)+2	(0.05)	(2J _f +1)S: Others: 1.3 (1971Ca27); 2.3 (1972Ma13).
2656.30 4	4 ⁺	2	4.9	(2J _f +1)S: Others: 3.1 (1972Ch43); 9.7 (1972Ma13).
2987.94 12	(3,1) ⁺	(2)	(0.18)	
3011 3	0 ⁺	2	0.18	(2J _f +1)S: From 1972Ch43.
3105 1	1 ⁺	2	0.50	(2J _f +1)S: Other: 0.42 (1972Ch43).
3296.34 4	(3 ⁺)	0+2	0.13,0.26	(2J _f +1)S: Others: 0.06, 0.60 (1972Ch43).
3347.19 4	2 ⁺	0+2	0.11,0.12	(2J _f +1)S: Others: 0.06, 0.24 (1972Ch43).
3465.294 10	4 ⁻	1+3	1.0,5.6	(2J _f +1)S: Others: 0.78, 5.2 (1972Ch43).
3542.1 6	(1) ⁺	2	(0.07)	(2J _f +1)S: Other: 0.18 (1972Ch43).
3591.457 9	(3 ⁻)	1+3	1.3,4.2	(2J _f +1)S: Others: 0.90, 4.1 (1972Ch43); 4.3 (1972Ma13).
3670.69 7	3 ⁺	0+2	0.04,0.13	(2J _f +1)S: Others: 0.03, 0.42 (1972Ch43).
3709.222 16	(2,3) ⁺	0+2	0.20,0.38	(2J _f +1)S: Others: 0.12, 0.72 (1972Ch43).
3762	0 ⁺			E(level): From 1971Ca27.
3875.773 11	2 ⁻	1+3	0.37,1.4	(2J _f +1)S: Others: 0.30, 0.90 (1972Ch43).
3901.00 4	(1,3) ⁺	2	0.15	
3935.603 18	2 ⁺	0+2	0.06,0.20	(2J _f +1)S: Others: 0.02, 0.48 (1972Ch43).
4033 2	5 ⁻	1+3	9.3	(2J _f +1)S: For 1f _{7/2} transfer (1971Ca27); 0.12, 4.7 (1972Ch43); 16 (1972Ma13).
4115 4	1 ⁺	2	0.17	(2J _f +1)S: Other: 0.18 (1972Ch43).
4244.49 10	2 ⁺	0+2	0.12,0.06	(2J _f +1)S: Others: 0.06, 0.12 (1972Ch43).
4313 3	(1,3,5) ⁺	2	0.62	(2J _f +1)S: Others: 0.72 (1972Ch43); 1.3 (1972Ma13).
4461.97 10	(2,4) ⁺	2	0.36	(2J _f +1)S: Other: 0.42 (1972Ch43).
4691.097 6	3 ⁻	1+3	2.2,0.55	(2J _f +1)S: Others: 1.2, 2.1 (1972Ch43).
4739 2	(0 to 5) ⁺	(0)+2	(0.03),0.56	(2J _f +1)S: Other: 0.72 (1972Ch43).
4764.922 10	2 ⁻	1+(3)	2.1,0.75	(2J _f +1)S: Others: 1.0, 2.8 (1972Ch43).
4848.73 10	1 ⁺	(0)+2	(0.01),0.30	L: 1+3 in 1972Ch43.
4903.577 6	2 ⁻	1+3	1.2,0.30	(2J _f +1)S: Others: 0.72, 1.6 (1972Ch43).

Continued on next page (footnotes at end of table)

$^{27}\text{Al}(\text{d,p})$ 1971Ca27,1986So01,1956Bu93 (continued) ^{28}Al Levels (continued)

E(level) [†]	J ^π [‡]	L [#]	(2J _f +1)S [@]	Comments
4928 3		(0+2)	(0.01,0.11)	
4999 8	2 ⁺	0+2	0.56	(2J _f +1)S: Others: 0.01, 0.66 (1972Ch43).
5015.51 3	3 ⁺	0+2	0.04,0.06	(2J _f +1)S: Others: 0.02, 0.12 (1972Ch43).
5134.849 8	3 ⁻	1+3		(2J _f +1)S: Others: 0.78, 1.6 (1972Ch43).
5165 3	6 ⁻ , (4 ⁻ , 5 ⁻)	3	8.5	(2J _f +1)S: From 1975Fr11.
5762.3 8				
5809.0 6				
5904.3 6				
5925.1 18				
5956.8 4				
5981.2 6				
6004.8 4				
6063.8 5				
6070.9 5				
6160.3 6				
6238.2 7				
6329.1 4				
6453.6 5				
6462.2 8				
6480.5 5				
6493.3 8				
6512.5 5				
6564.1 5				
6568.6 4				
6571.6 6				
6591 10				E(level): From 1956Bu93.
6671.1 9				
6720.3 5				
6772.8 9				
6787.7 6				
6809.2 9				
6826.0 5				
6835 10				
6856 10				
6896 10				
6934 10				
6970 10				
7025 10				
7090 10				
7121 10				
7149 10				
7180 10				
7247 10				
7274 10				
7345 10				
7408 10				
7444 10				
7460 10				
7505 10				
7596 10				
7655 10				
7669 10				
7700 10				

[†] Level energies are quoted up to 5165-keV from Adopted Levels, Between 5165- to 6826-keV from 1986So01, and above

$^{27}\text{Al(d,p)}$ [1971Ca27](#), [1986So01](#), [1956Bu93](#) (continued)

$^{28}\text{Al Levels (continued)}$

6826-keV from [1956Bu93](#), except otherwise noted. For energy calibration in [1986So01](#), observed levels with better precision from (n, γ) work have been used.

‡ From Adopted Levels.

From [1971Ca27](#), [1972Ch43](#), and [1972Ma13](#).

@ From [1971Ca27](#), except otherwise noted. Other data are quoted in comments. The relative uncertainty for spectroscopic factor is 10 to 15% ([1971Ca27](#)).