^{39}K(d,n) 1969Fu01

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 140, 1 (2017)	30-Sep-2015

$J^\pi(^{39}\text{K g.s.})=3/2^+$.

1969Fu01: E=6 MeV deuteron beam was produced from the 5.5 MeV Van Van de Graaff of the Hahn-Meitner-Institut Berlin. Target was a 460 *25* μg/cm^2 layer of natural potassium iodide evaporated onto a 0.3 mm tungsten backing. Neutrons were detected in liquid scintillators and neutron energies were determined by measurement of of time-of-flight (flight path=7.35 m). Measured $\sigma(\theta)$, TOF spectra. Deduced levels, J, π, L, spectroscopic factors from DWBA analysis. Comparisons with available data and shell-model calculations.

Others:

1967Ba38: E=2.9-6.2 MeV. Measured $\sigma(\theta)$ for g.s.

2000El08: E=0.7-3.4 MeV. Measured yield from γ-ray data.

All data are from 1969Fu01, unless otherwise noted.

^{40}Ca Levels

E(level)†	J^π‡	L	G_L#	Comments
0	0^+	2	0.84	
3353	0^+	(2)	≤0.09	
3737	3^-	1+3	0.44 *3*	G_L: for L=3; 0.02 for L=1. S=0.02 for L=1, 0.50 *4* for L=3.
3904	2^+	(2)	≤0.12	
4491	5^-	3	0.93 *13*	S=0.68 *10*.
5614	4^-	3	1.06 *11*	S=0.94.
5903	1^-	1(+3)	0.02	G_L: ≤0.05 for L=3. S=0.05 for L=1.
6025	2^-	1+3	0.12 *4*	G_L: for L=3; 0.037 for L=1. S=0.06 for L=1, 0.20 *7* for L=3.
6285	3^-	1(+3)	0.43	G_L: ≤0.3 for L=3. S=0.49 for L=1, ≤0.3 for L=3.
6582	3^-	1(+3)	0.14	G_L: ≤0.2 for L=3. S=0.16 for L=1, ≤0.2 for L=3.
6750	2^-	1+3	0.33 *11*	G_L: for L=3; 0.034 for L=1. S=0.05 for L=1, 0.53 *18* for L=3.
6950	1^-	1(+3)	0.17	G_L: ≤0.2 for L=3. S=0.45 for L=1.
7113	$(3)^-$	1(+3)	0.18	G_L: ≤0.1 for L=3. S=0.21 for L=1, ≤0.1 for L=3. J^π: 1^- and 4^- in Adopted Levels.
7532	$(2)^-$	1(+3)	0.49	G_L: ≤0.1 for L=3. S=0.78 for L=1, ≤0.2 for L=3.
7658		3	1.50 *14*	E(level): doublet: 7655+7676. S=0.69 *7* for 7655, $(4)^-$. $((2J_f+1)/(2J_i+1))$S=3.0 *3*.
7694	$(3)^-$	1	0.05	S=0.82 *8*. $((2J_f+1)/(2J_i+1))$S=0.10.
7972		1	0.04	
8124		1+3	0.12 *4*	E(level): doublet: 8113+8135. G_L: for L=3; 0.025 for L=1. S=0.03 for L=1; 0.12 *4* for L=3.
8186		0		
8271	$(0)^-$	1	0.08	S=0.64. J^π: $(\leq 3)^-$ in Adopted Levels.
8371	$(0)^-$	1	0.08	S=0.64. J^π: $(0,1,2)^-$ in Adopted Levels.

Continued on next page (footnotes at end of table)

^{39}K(d,n) 1969Fu01 (continued)

^{40}Ca Levels (continued)

E(level)†	Jπ‡	L	G_L#	Comments
8424	$(2)^-$	1+3	0.36 *11*	G_L: for L=3; 0.01 for L=1. S=0.58 *18* for L=3. $((2J_f+1)/(2J_i+1))$S=0.02 for L=1; ; 0.72 *22* for L=3.
8551	$(5)^-$	3	0.98 *12*	S=0.71 *9*. $((2J_f+1)/(2J_i+1))$S=1.96 *24*.
8664 *12*		1	0.14	
8757 *12*				
8860 *12*	$(0)^-$			Jπ: $(6,7,8)^-$ in Adopted Levels.
8931 *12*		1	0.11	S=0.88.
8987 *12*				
9137 *12*		1	0.17	
9228 *12*		1	0.16	$((2J_f+1)/(2J_i+1))$S=0.32.
9408 *12*	$(2)^-$	1	0.57	E(level): triplet: 9405+9412+9419. S=0.43. S=0.35 for 9404, $(3)^-$ level with L=1. $((2J_f+1)/(2J_i+1))$S=1.14 for 9404+9408.
9431 *12*	$(1)^-$	1	0.22 *3*	E(level): doublet: 9430+9432. S=0.59. $((2J_f+1)/(2J_i+1))$S=0.44 *6* for 9433+9435.
9455 *12*		1	0.13	$((2J_f+1)/(2J_i+1))$S=0.26.
9533 *12*	$(1)^-$	1	0.22	S=0.59. $((2J_f+1)/(2J_i+1))$S=0.44 for 9539+9540.
9601 *12*	$(2)^-$	1	0.37	E(level): doublet: 9603+9605. S=0.59. Jπ: 1^- and 3^- in Adopted Levels.
9666 *12*		1	0.11	
10040 *12*	$(0)^-$	1	0.05 *1*	S=0.44 *8*. $((2J_f+1)/(2J_i+1))$S=0.11 *2*. E(level): from 1969Fu01. Several levels near this energy in Adopted Levels.

† Rounded-off values from Adopted Levels for levels below 8600.

‡ From Adopted Levels up to 7 MeV; from 1969Fu01 above this energy where many groups are unresolved and it is difficult to find corresponding levels in Adopted Levels.

Transition strength $G_L=((2J_f+1)/(2J_i+1))C^2S=1/N\times(d\sigma/d\Omega)_{exp}/(d\sigma/d\Omega)_{DWBA}$, where J_f=spin of final state, J_i=target spin=3/2, N=1.48 the normalization factor. The spectroscopic factors are given under comments. Uncertainty is less than 10%, when not stated. Absolute normalization uncertainty is 30%.