^{39}K(d,t) 1969Fo12

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 152, 1 (2018)	30-Sep-2017

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

1969Fo12: E=22.8 MeV deuteron beam was produced from the Argonne cyclotron. Targets were natural potassium iodide (93% in ^{39}K) on carbon backings. Reaction products were detected with a ΔE-E counters (FWHM≈100 keV). Measured σ(E(t),θ). Deduced levels, J, π, L-transfers, spectroscopic factors from DWBA analysis.

^{38}K Levels

Spectroscopic factor C^2S is obtained from $d\sigma/d\Omega(exp)=N\times C^2S\times d\sigma/d\Omega(DWBA)$, where N=3.33.

E(level)	L	C^2S[†]	Comments
0	2	1.75	
128 *20*	2	0.26	
456 *10*	0+2	0.10,0.37	C^2S: 0.18 for pure L=0 and zero range.
1704 *10*	2	0.66	C^2S: 0.52 for L+1/2 transfer and zero range.
2405 *10*	0+2	0.05,0.91	
2639 *15*	1	0.09[‡]	E(level),L: L=1 gives $J=1^-,2^-,3^-$; but $J=4^-,2^-$ assignment in Adopted Levels. L=1 here is probably contributed partly by 2613, 3^- level.
3441 *15*	0+2	0.22,0.22	C^2S: 0.38 for pure L=0 and zero range.
3989 *15*	0+2	0.05,0.37	
4660 *20*	3	0.51[‡]	

[†] For 3.05 fm range, unless otherwise stated. 1969Fo12 also give values for zero range and for 6.0 fm which are well within the ≈20% systematic uncertainty from variation in DWBA parameters and target thickness. 1978En02 evaluation lists S values, C^2=1 for T=0 states and 1/3 for T=1 states. Assumed L-1/2 for L=2.

[‡] For zero range, value is nearly the same for range of 6.0 fm.