^{48}Ca(p,d),(d,t),(pol d,t) 1977Wi12,1972Ma23

	Type	Author	History Citation	Literature Cutoff Date
	Full Evaluation	T. W. Burrows	NDS 108, 923 (2007)	20-Feb-2007

All information is from 1972Ma23, except as noted. 1972Ma23 and 1977Wi12 both measured $\sigma(\theta)$ with solid-state telescopes and used DWBA analysis. In addition, 1977Wi12 measured the vector analyzing power. Others: 1995Bu05.

1972Ma23: E(p)=40 MeV. Overall resolution≈65-120 keV. θ(C.M.)=10°−60°. Effective-binding prescription.

1977Wi12: ED=13.5 MeV. 20°≤θ(C.M.)≤120°.

^{47}Ca Levels

E(level)	J$^{\pi}$[†]	L[‡]	C^{2}S[#]	Comments
0.0	7/2$^-$	3	6.7 14	J$^{\pi}$: from J-dependence of A(θ) (1971Ma58; E≈20 MeV, Si telescopes; pol≈80%). Confirmed by 1977Wi12. C^{2}S: other: 6.22 (1977Wi12).
2020 20	3/2$^-$	1	0.02 1	J$^{\pi}$: (pol d,t) work of 1977Wi12 confirmed previous assignments. C^{2}S: other: 0.10 (1977Wi12).
2580[@] 5	3/2$^+$[&]	2[&]	3.6 8	C^{2}S: other: 1.18 (1977Wi12).
2600[@] 5	1/2$^+$[&]	0[&]	1.8 4	C^{2}S: other: 1.28 (1977Wi12).
2860 20	1/2$^+$&3/2$^-$	0+1	0.03+0.05	Unresolved group. Probably includes 2849- and 2874-keV states seen in (d,p). However, data are discrepant in various stripping and pickup reactions; see comments in Adopted Levels. J$^{\pi}$,L: from DWBA comparison to $\sigma(\theta)$ and A(θ) (1977Wi12). L(p,d)=(1)+? from forward peaking of $\sigma(\theta)$ (1972Ma23). C^{2}S: from 1977Wi12.
3300 20	7/2$^-$	3	0.03 1	
3430 20	7/2$^-$[&]	3[&]	0.07 2	C^{2}S: other: 0.21 (1977Wi12).
3570 20		a		
3860[b] 20		a		
3950 20		(3)		
4040[b] 20				
4400 20		a		
4600[b] 20		(3)		
4780 20		a		
4980 20	5/2$^+$	2	0.22 5	Probable doublet consisting of the 4960 and 4980 states observed in (^{3}He,α) (evaluator). 4960 state weakly populated.
5300 20	5/2$^+$	2	0.17 4	
5450[b] 20	5/2$^+$	2	0.18 4	
5630 20				
5820[b] 20				
6060 20				
6250 20	5/2$^+$	2	0.21 4	
6460 20				
6620[b] 20				
6870 20	(5/2$^+$)	(2)[a]	(0.11) 2	
7020 20				
7150[b] 20				
7280 20				
7470 20				
7750[b] 20				
12730[c] 30	1/2$^+$	0	0.10 2	T=(9/2)
13090[c] 30	3/2$^+$	2	0.18 4	T=(9/2)
16120[c] 50	5/2$^+$	2	0.06 2	T=(9/2)

Continued on next page (footnotes at end of table)

^{48}Ca(p,d),(d,t),(pol d,t)   1977Wi12,1972Ma23 (continued)

^{47}Ca Levels (continued)

E(level)	$J^{\pi\dagger}$	L‡	C^{2}S$^{\#}$	Comments
18110 *50*	(7/2$^-$)	(3)	(0.035) *7*	J^{π}: 1972Ma23 suggested that this state is possibly the IAS(^{47}K; 5465; 5/2$^+$). However, L=(3) is not consistent with this suggestion.

† Assumed for DWBA analysis, except as noted.

‡ From DWBA analysis.

$^{\#}$ From 1972Ma23. Values from 1969Yn01 (ED=21.4 MeV. FWHM=70-130 keV. θ(C.M.)≈12°−30°) generally agree with these data except for the unresolved doublet where C^{2}S(2580)=1.2 and C^{2}S(2600)=2.5.

$^{@}$ Unresolved doublet. Energy from (d,p).

$^{\&}$ From DWBA comparison to $\sigma(\theta)$ and A(θ) (1977Wi12).

^{a} $\sigma(\theta)$ shows a non-pickup character.

^{b} Possible doublet (evaluator).

^{c} Candidates for IAS, T=9/2. Coulomb energy difference=6.86 MeV. The parents are the 1/2$^+$, g.s., 3/2$^+$, 360-keV state, and 3/2$^+$,5/2$^+$, 3420-keV state of ^{47}K, respectively.