

⁴⁸Ca(d,³He),(pol d,³He),(t,α) 1987Og01,1985Ba14,1976Do05

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

1966Wi11: ET=7.5 MeV; Si.
 1967Bj04: ET=13 MeV; ms.
 1968Sa09: ET=13 MeV; ms.
 1976Do05: ED=52 MeV. Measured $\sigma(\theta=8^\circ-30^\circ)$; Si telescopes. Resolution \approx 120 keV. DWBA. Also deduced $\Gamma(\downarrow)=\Sigma S(E-\langle E \rangle)^2/\Sigma S$.
 1985Ba14: ED=79.2 MeV. Measured $\sigma(\theta)$, $A(\theta)$ ($\theta=7^\circ-34^\circ$, 3° steps); QDDM spectrograph, position-sensitive gas proportional counter. Vector polarization \approx 0.6. Overall energy resolution=55 keV. DWBA.
 1987Og01: ET=33 MeV. Measured $\sigma(\theta=7.5^\circ$ to 31.25° in 1.5° steps; 32.5° to 125° , 2.5° steps); Si/Si(Li) telescopes. Overall energy resolution=75 keV. DWBA.
 Others: see 1995Bu05.

⁴⁷K Levels

$\Sigma C^2S(1d5/2)=64\%$ of the shell-model limit. The 1d5/2 strength is strongly fractionated. See 1985Ba14 and 1987Og01 for discussion.
 J(α),S(β) The strength of the g.s. and 3.85-MeV state exhaust 90% of shell-model sum rule (1985Ba14).
 J(E),S(F) The combined strength of the 359 and 3930 states exceeds the shell-model sum rule for d3/2 (1987Og01,1985Ba14). If the 3930 state were assumed to have a contribution from two-step reaction processes, $C^2S=0.49$ (1987Og01).

E(level) [†]	J π^{\ddagger}	L [#]	C ² S [@]	Comments
0 6	1/2 ⁺	0	1.55,1.50	E(level): weighted av of 0 10 (1967Bj04), 0 10, (1968Sa09), 0 20 (1976Do05), and 0 20 (1987Og01). J π : from the Adopted Levels.
359 5	3/2 ⁺ &	2	4.16,3.88	T=9/2 E(level): weighted av of 359 7 (1966Wi11), 359 10 (1967Bj04), 359 8 (1968Sa09), 360 20 (1976Do05), and 360 20 (1987Og01).
2.02×10 ³ 2	(7/2 ⁻)&a	(3) ^a	0.08,0.22 ^a	
3.35×10 ³ 3	5/2 ⁺ ,3/2 ⁺ ^b	2	0.05 ^c	
3432 19	(5/2) ⁺	2	0.97,0.78	E(level): weighted av of 3420 20 (1976Do05) and 3460 30 (1987Og01).
3.72×10 ³ 2		e		
3.85×10 ³ ^d 2	1/2 ⁺	0	0.28,0.28	
3.93×10 ³ ^d 2	3/2 ⁺ &	2	0.70,0.74	
4.17×10 ³ 6				
4.36×10 ³ 4				
4.74×10 ³ 4				
4.90×10 ³ 4				
5220 20	5/2 ⁺	2	0.32,0.39	E(level): weighted av of 5200 20 (1976Do05) and 5240 20 (1987Og01).
5465 25	5/2 ⁺ &	2	0.94,1.11	E(level): weighted av of 5440 20 (1976Do05) and 5490 20 (1987Og01).
5.79×10 ³ 2				
6.15×10 ³ 4	5/2 ⁺ ,3/2 ⁺ ^b	2	0.04 ^c	
6.26×10 ³ 4				E(level): 5.26 MeV in table 2 (1987Og01) is a misprint (see fig. 2).
6.42×10 ³ 4				
6462 32	(5/2) ⁺	2	0.22,0.31	E(level): weighted av of 6440 20 (1976Do05) and 6510 30 (1987Og01).
6.87×10 ³ 4	(5/2) ⁺	2	0.14,0.12	
7.15×10 ³ 5				
7.38×10 ³ 4				
7.57×10 ³ 3	(5/2) ⁺	2	0.14,0.13	
7762 33	(5/2) ⁺	2	0.71,0.72	E(level): weighted av of 7740 20 (1976Do05) and 7810 30 (1987Og01).

Continued on next page (footnotes at end of table)

$^{48}\text{Ca}(\text{d},^3\text{He}),(\text{pol d},^3\text{He}),(\text{t},\alpha)$ 1987Og01,1985Ba14,1976Do05 (continued) ^{47}K Levels (continued)

<u>E(level)[†]</u>	<u>J^π[‡]</u>	<u>L[#]</u>	<u>C²S[@]</u>	<u>Comments</u>
8035 38	(5/2) ⁺	2	0.33,0.39	E(level): weighted av of 8020 20 (1976Do05) and 8130 50 (1987Og01).
8530? 20	5/2 ⁺ ,3/2 ⁺ ^b	2	0.14 ^c	E(level),L,C ² S: from 1976Do05. Not reported by the others.

[†] From 1987Og01, except as noted. States at 4.17, 4.36, 4.74, 4.90, 5.79, 6.26, 6.42, 7.15, and 7.38 MeV were not reported previously.

[‡] From comparison to A(θ) for the 3.93- and 5.46-MeV states, except as noted.

[#] From 1985Ba14, except as noted.

[@] First value from 1985Ba14 (normalization=2.95) and second from 1987Og01, except as noted. 2001Kr01 compared and reanalyzed the spectroscopic factors of 1985Ba14; see $^{48}\text{Ca}(e,e'p)$ E=440 MeV for discussion.

[&] From $\sigma(\theta)$ and A(θ).

^a Either 7/2⁻ or 5/2⁺; a pure L=3 transfer does not reproduce $\sigma(\theta)$ (1987Og01). See discussions in 1987Og01 and 1985Ba14.

^b From angular momentum transfer.

^c If J^π=5/2⁺.

^d Unresolved by 1976Do05.

^e Believed to be populated primarily through a two-step reaction (1985Ba14). 1987Og01 could not obtain a fit to $\sigma(\theta)$ either by direct or two-step reaction calculations.