^{42}Ca(p,α) 1973Fa13,1980Ro01,1968Lo03

Type	Author	History Citation	Literature Cutoff Date
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1973Fa13,1980Ro01: E=40.2 MeV proton beam was produced from the University of Manitoba sector focused cyclotron. Target was an 825 μg/cm^2 calcium metal foil (94.4% enriched in ^{42}Ca). Alpha particles were detected with two surface-barrier detectors. Measured σ(E$_\alpha$,θ). Deduced levels, J, π, L-transfers, spectroscopic factor from DWBA analysis. Comparisons with shell-model calculations. 1980Ro01 re-analyze the data in 1973Fa13.

1968Lo03: E=10.6-11.1 MeV proton beams were produced from the Oxford University tandem generator. Target was a layer of about 120 μg/cm^2 Ca metal (86% in ^{42}Ca) on a carbon backing of about 15 μg/cm^2. Alpha particles were detected with a surface-barrier silicon counter and γ rays were detected with two NaI(Tl) crystals. Measured Eα, Eγ, Iγ, $\gamma(\theta)$, $\alpha\gamma$-coin. Deduced levels, J, π, γ-ray branching ratios and mixing ratios. Data reported in 1968Lo03 are mostly for γ-ray study of ^{42}Ca(p,$\alpha\gamma$) and ^{39}K(p,p$'\gamma$).

^{39}K Levels

E(level)[†]	L[@]	C^{2}S[&]	Comments
0	2	3.63	
2530	0	1.97	
2820	3	1.23	
3020			E(level): not reported in 1973Fa13.
3600	5		
3880[#]			
3940[#]	5		
4100			E(level): triplet of 4082+4095+4126 in Adopted Levels (1968Lo03).
4470[#]			
4510[#]	5		
5280[‡]	2	6.42	
5620[‡]			
6520[‡]			

[†] From partial α spectrum at E(p)=10.64 MeV shown in figure 1 of 1968Lo03, unless otherwise noted. The α spectrum in 1968Lo03 has better resolution and statistics than that in 1973Fa13.

[‡] From 1973Fa13, not reported in 1968Lo03.

[#] E(level)=3888+3940 and E(level)=4470+4510 are unresolved structures in 1968Lo03.

[@] From 1980Ro01 based on re-analysis of $\sigma(\theta)$ data in 1973Fa13 using DWBA fits. Note that 1973Fa13 report L values only for 0, 2530, 2810 and 5280 levels from their DWBA analysis.

[&] From 1973Fa13, unless otherwise noted.