^{48}Ti(pol p,α) E=79.2 MeV 1981Bo37

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Full Evaluation	T. W. Burrows	NDS 109, 171 (2008)	30-Oct-2007

Measured $\sigma(\theta)$ and analyzing power; QDDM mag spect, local plane detector (wire helix, scin). FWHM=80-100 keV. Typical polarization=0.75.

^{45}Sc Levels

E(F),J(γ) obtained by peak-fitting. Since the analyzing powers were of opposite sign, a very dramatic effect was observed with spin reversal. This effect confirmed the presence of the doublet and aided In locating the peak centroids. J^π(4.61 MeV)=13/2$^-$ appeared to Be the most likely, but J^π=15/2$^+$ could not Be ruled out. J^π(4.69 MeV)=13/2$^+$,15/2$^-$ produced an adequate representation of the data.

E(level)	J^π	S[†]	Comments
0.0	7/2$^-$[‡][@]	0.40	
12?	3/2$^+$[‡][#]		
940 *30*	1/2$^+$[#]		
1240 *30*	11/2$^-$[@]	0.07	
2110 *30*	15/2$^-$[@]	≤0.03	not strongly excited In contrast to ^{43}Sc. This May reflect significant fragmentation of the Configuration=((ν f$_{7/2}$)$^{+2}$(π f$_{7/2}$)) pickup strength to 15/2$^-$ states In ^{45}Sc.
2960 *30*	(9/2$^+$,11/2$^-$)	(0.10)[&]	J^π: DWBA with J^π=9/2$^+$ represented the data well, but recognition of possible forward-angle contributions from low-spin states also suggested J^π=11/2$^-$ As a possible assignment.
3690 *30*	19/2$^-$[@]	1.0	
4610 *30*	(13/2$^-$,15/2$^+$)	(0.24)	S: if J^π=13/2$^-$.
4690 *30*	(13/2$^+$,15/2$^-$)	(0.16)	S: if J^π=15/2$^-$.
4950 *30*	(17/2$^+$)	(0.19)	J^π: nearly flat $\sigma(\theta)$ to 35°. J^π=17/2$^+$ reproduced $\sigma(\theta)$ and gave the correct qualitative representation of the analyzing power. J^π=19/2$^-$ was thought to Be unlikely due to the strong excitation of the 3.69-MeV state, but could not Be ruled out on the basis of model-independent arguments. S: 0.19 if J^π=19/2$^-$.
5200 *30*	(11/2$^-$,13/2$^+$)	(0.24)[&]	
5420 *30*	23/2$^-$[#]		J^π: J^π=21/2,23/2$^-$ from ^{28}Si(^{19}F,2pγ), ^{30}Si(^{18}O,p2nγ),... (1975Bi09). In back-angle spectra this was the second strongest line. Two-step reaction calculation with a 2$^+$ inelastic excitation and a J^π=19/2$^-$ three-nucleon transfer showed preference for J^π=23/2$^-$.

[†] Relative cluster spectroscopic factors.
[‡] Discrepancy between calculated and experimental analyzing powers May reflect the presence of the 12-keV state.
[#] From the Adopted Levels.
[@] Assumed In calculation of cluster spectroscopic factor.
[&] If J^π=11/2$^-$.