

$^{48}\text{Ti}(p,\alpha) E=40.35 \text{ MeV}$  1982Ab03

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	T. W. Burrows	NDS 109, 171 (2008)	30-Oct-2007

Measured  $\sigma(\theta=15^\circ-75^\circ, 10^\circ \text{ intervals})$ ; semi. FWHM=70-80 keV. DWBA.

As noted by 1981Bo37, the number of states excited is much fewer than that observed in single-particle pickup reactions.

1982Ab03 suggest that this behavior might be due to the coherence property of the  $(p,\alpha)$  reaction where cancellation of amplitudes can occur.

 $^{45}\text{Sc Levels}$ 

Configuration: see 1982Ab03 for the configurations of the compound nucleus, the transferred nucleons, and the excited state in  $^{45}\text{Sc}$ . For the shell-model calculations all possible configurations of transferred nucleons were used.

E(level)	$J^\pi$ <sup>†</sup>	$\sigma(\text{exp})/\sigma(\text{theory})$ <sup>‡</sup>	Comments
0.0 <sup>#</sup>	7/2 <sup>-</sup>	1.0,1.0	
12 <sup>#</sup>	3/2 <sup>+</sup>	0.7	
940	1/2 <sup>+</sup>	1.9	
1240	11/2 <sup>-</sup>	1.6,0.3	
1780	5/2 <sup>+</sup>	0.3	configuration: not a pure $d_{5/2}$ hole state.
2090	15/2 <sup>-</sup>	0.4,0.6	
2740	5/2 <sup>-</sup> @	(102),6.2	
2950	5/2 <sup>+</sup>	0.33	
3690 <sup>#</sup>	19/2 <sup>-</sup>	1.1,0.7	
3710 <sup>#</sup>	3/2 <sup>-</sup> @	5.5,2.1	
6680	7/2 <sup>-</sup>	1.4	IAS( $^{45}\text{Ca}$ g.s.).

<sup>†</sup> From DWBA.

<sup>‡</sup> First or only value is a zero-order calculation assuming simple configurations (overall normalization of  $2.46+7$  for the g.s.).  
Second value is a shell-model wave function calculation (overall normalization of  $4.13 \times 10^7$  was used for the g.s.).

<sup>#</sup> Unresolved doublet in spectrum. A linear combination of angular distributions was used to fit the experimental  $\sigma(\theta)$ .

@ 1982Ab03 noted that it would be reasonable to expect that  $\sigma(\text{exp})/\sigma(\text{theory})$  could be brought into line with the other values if  $2p_{3/2}$  and  $1f_{5/2}$  proton components were included in the wave functions.