

<sup>40</sup>Ca( $\alpha$ ,<sup>3</sup>He) 1981Fo09,1970Yo01

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja, E. A. Mccutchan		NDS 133, 1 (2016)	30-Sep-2015

**1981Fo09:** E( $\alpha$ )=36 MeV from tandem accelerator at Orsay. Reaction products detected with the split-pole magnetic spectrograph and six position-sensitive Si detectors (FWHM= 20 keV). Measured  $\sigma(\theta)$ . Zero-range DWBA (CHUCK2 code) and coupled-channel analysis.

**1972Ha08:** E( $\alpha$ )=104 MeV from Karlsruhe Isochronous Cyclotron. <sup>3</sup>He detected with  $\Delta E$ -E telescopes detectors consisting of Si(Li) (FWHM=400 keV) and NaI(Tl). Measured  $\sigma(\theta)$  for g.s. DWBA analysis.

**1970Yo01:** E( $\alpha$ )=40 MeV from Texas A&M cyclotron. Reaction products detected with a  $\Delta E$ -E surface barrier semiconductor telescope (FWHM=60-80 keV). Measured  $\sigma(\theta)$ . A total of 14 groups studied. Zero and finite-range DWBA analysis (DWUCK code).

**1969Ga11:** E( $\alpha$ )=56 MeV from synchrocyclotron at University of Lyon. Measured  $\sigma(\theta)$ . DWBA analysis.

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Cross section data from **1981Fo09** at 10°(lab)

Level	d $\sigma$ /d $\Omega$ (mb/sr)	Level	d $\sigma$ /d $\Omega$ (mb/sr)
0	15.8	4094	0.025
1943	0.101	4278	0.021
2010	0.158	4332	0.009
2462	0.029	4449	0.101
2575	0.014	4519	0.018
2605	0.023	4728	0.029
2670	0.014	4814	0.016
2883	0.141	4972	0.308
2959	0.034	5194	0.153
3049	0.009	5218	0.042
3201	0.487	5283	0.011
3369	0.086	5411	0.018
3400	0.029	5646	0.048
3525	0.065	5682	0.017
3613	0.035	5740	0.111
3676	0.009	5796	0.025
3740	0.058	5915	0.031
3830	0.018	6067	0.119
3915	0.062	6480	0.022
3944	0.008	6900	0.029
3975	0.020	6980	0.045
4015	0.016	7110	0.033

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<sup>41</sup>Ca Levels

E(level) <sup>†</sup>	L <sup>†</sup>	S <sup>‡</sup>	Comments
0	3	1	(2J+1)S=10.3, 8.0 ( <b>1970Yo01</b> ).
1943 5	1	0.66	(2J+1)S=2.24, 0.26 ( <b>1970Yo01</b> ).
2010 5	2	0.21	
2462 5	1	0.26	(2J+1)S=0.60, 0.09 ( <b>1970Yo01</b> ).
2575 5	3	0.005	
2605 5			
2670 5			
2883 5	4	0.03	(2J+1)S=0.12, 0.09 ( <b>1970Yo01</b> ).
2959 5	(3)	0.008	

Continued on next page (footnotes at end of table)

$^{40}\text{Ca}(\alpha, ^3\text{He})$  **1981Fo09,1970Yo01 (continued)** $^{41}\text{Ca}$  Levels (continued)

<u>E(level)<sup>†</sup></u>	<u>L<sup>†</sup></u>	<u>S<sup>‡</sup></u>	<u>Comments</u>
3049 5			
3201 5	(4)	0.02	L: 3 (1970Yo01). (2J+1)S=0.54, 0.36 (1970Yo01).
3369 5			
3400 5	(0)		L: from 1970Yo01 for a 3379 group. (2J+1)S=0.02 (1970Yo01).
3525 5			
3613 <sup>#</sup> 5	(1)		L: from 1970Yo01 for a 3600 group. (2J+1)S=0.5 (1970Yo01).
3676 5			
3740 5	2	0.07	
3830 5			
3915 5			
3944 5	1	0.82	(2J+1)S=1.96, 0.23 (1970Yo01).
3975 <sup>#</sup> 5			
4015 5			
4094 5			
4278 5			
4332 <sup>#</sup> 5			
4449 5	(4)	0.02	L: (3,4) in 1970Yo01. (2J+1)S=0.17, 0.14 (1970Yo01).
4519 5			
4615 5			
4728 <sup>#</sup> 5			
4814 5			
4878 5	3	0.13	
4972 5	(4)	0.06	(2J+1)S=1.15, 0.87 (1970Yo01).
5040 5			
5194 5	(4)	0.04	(2J+1)S=0.73, 0.59 (1970Yo01).
5218 5			
5283 5			
5411 5			
5646 5	3	0.27	
5682 5	3	0.08	
5740 5	(4)	0.03	L: (3,4) in 1970Yo01 for a 5755 group. (2J+1)S=0.89, 0.69 (1970Yo01).
5796 5	3	0.14	
5915 5			
6067 5	(3)		L: from 1970Yo01 for a 6082 group. (2J+1)S=1.26 (1970Yo01).
6480 10			
6900 10	(3)	0.12	
6980 10	(4)	0.02	
7110 10			

<sup>†</sup> From 1981Fo09.

<sup>‡</sup> Relative spectroscopic factors (1981Fo09). (2J+1)S given by 1970Yo01 for two different sets of parameters are given under comments; the second set is normalized to S=1.0 for g.s. as in 1981Fo09.

<sup>#</sup> Unresolved doublet.