

$^{44}\text{Ca}({}^3\text{He},\alpha),(\text{pol } {}^3\text{He},\alpha)$  1967LyZY,1985Ha08

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen <sup>#</sup>		NDS 126, 1 (2015)	31-Mar-2015

Target  $^{44}\text{Ca}$   $J^\pi=0^+$ .

**1967LyZY** (also **1968Ly01,1968Ly02**): E=18 MeV  ${}^3\text{He}$  beam was produced from the Heidelberg Emperor-Tandem accelerator.  $\alpha$  particles were analyzed with a broad-range magnetic spectrograph (FWHM $\approx$ 50 keV) and detected with a  $\Delta E$ -E counter telescope. Measured  $\sigma(E_\alpha,\theta)$ . Deduced levels, J,  $\pi$ , L, spectroscopic factors from DWBA analysis.

**1985Ha08**: E=33.1 MeV polarized  ${}^3\text{He}$  beam was produced from the University of Birmingham Radial Ridge Cyclotron. Target of pure self-supporting  $^{44}\text{Ca}$ .  $\alpha$  particles were detected by telescopes of  $\Delta E$ -E detectors. Measured  $\sigma(E_\alpha,\theta)$  and  $Ay(\theta)$  for g.s. and 990 level. Deduced levels, J,  $\pi$ , spectroscopic factors from DWBA analysis.

Others:

**1970Pe07**: E=10 MeV. Measured  $\sigma(\theta)$ . Reported six levels with energy (cross section in mb) at 0 (1.60), 370 (0.16), 590 (0.18), 990 (0.65), 1390 (0.07) and 1960 (0.64).

**1971Ra35**: E=13.0 MeV. Measured  $\sigma(\theta)$  for g.s. and 990 level. DWBA analysis.

**1981Gr05**: E=50.4 MeV. Measured  $\sigma(\theta)$  for g.s. and 990 level. DWBA analysis.

 $^{43}\text{Ca}$  Levels

E(level) <sup>†</sup>	J $^\pi$	L <sup>‡</sup>	S <sup>†</sup>	Comments
0	7/2 <sup>-‡</sup>	3	4.1	S: others: 3.0 2 or 2.4 1 ( <b>1985Ha08</b> ), 4.2 ( <b>1981Gr05</b> ), 3.4 ( <b>1971Ra35</b> ), 3.5 ( <b>1968Ly01</b> ).
370		3	0.32	
590		1	0.16	
990	3/2 <sup>+‡</sup>	2	3.3	S: others: 1.9 3 or 1.3 2 ( <b>1985Ha08</b> ), 3.9 ( <b>1981Gr05</b> ), 2.1 ( <b>1971Ra35</b> ), 1.9 ( <b>1968Ly01</b> ).
1390				E(level): from <b>1970Pe07</b> .
1960		0	1.6	
2050		1	0.36	
7990		2	9.9	S: for T=5/2.

<sup>†</sup> From **1978En02** (original data from **1967LyZY**). **1978En02** state that many L=1 and L=3 transitions to, mostly unresolved, states reported by **1967LyZY** in the 2.1-7.9 MeV region are not observed in other studies.

<sup>‡</sup> From  $Ay(\theta)$  in (pol  ${}^3\text{He},\alpha$ ) (**1985Ha08**).