^{40}Ca(^{3}He,^{3}He′) 1967Gi05,1978Ta05,1976Mo07

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 140, 1 (2017)	30-Sep-2015

Includes (^{3}He,^{3}He).

1967Gi05: E=37.7 MeV. Measured $\sigma(\theta)$, θ(cm)=20°−95° FWHM=100 keV. Deduced levels, J, π, L, deformation parameters from DWBA analysis.

1978Ya05: E=120 MeV. Measured σ at θ=1.2° in coincidence α decay, angular correlation of α decay. Deduced isoscalar multipole resonances.

1976Mo07: E=70 MeV. Measured (^{3}He)(p)(θ), (^{3}He)(α)(θ) for giant resonance.

Others:

1973Mo10: E=71 MeV. Measured $\sigma(\theta)$.

1974Mo13: E=29 MeV. Measured $\sigma(\theta)$, θ(cm)=20°−100°. DWBA analysis of the first 0^+ excited state.

1980Le25: E=108.5 MeV. Measured $\sigma(\theta)$, deduced giant-monopole resonance. DWBA analysis.

1982Ta05: E=170 MeV. Measured GQR at E=20 MeV.

1984Ta11: E=197 MeV. Measured $\sigma(\theta)$.

(^{3}He,^{3}He): optical-model parameters from $\sigma(\theta)$ data:

1986Ab08 (E=10,12,14,16,18 MeV), 1984ChZT (E=132 MeV), 1982Ve13 (E=25 MeV), 1981Gr05 (E=50.4 MeV), 1980Tr02 (E=41 MeV), 1978Ch04 (E=27.7,51.4,73.2,83.5 MeV), 1975Br26 (E=24.5-28 MeV), 1973Wi07 (E=217 MeV), 1973Ro18 (E=8,11 MeV), 1973Mo13 and 1972Mo04 (E=29 MeV), FRNC-TH-443 (1973) (E=7,8,11 MeV), 1971Ur01 (E=21 MeV), 1971Ra35 (E=13 MeV), 1969Zu02 (E=15 MeV), 1965Cl04 (E=8-10.25 MeV).

^{40}Ca Levels

E(level)†	Γ&	L‡	B_L†	Comments
0				
3310 *50*		0		E(level): 3350 from 1974Mo13. L: from 1974Mo13.
3730 *25*		3	0.23	
4480 *25*		5	0.079	
5250 *50*				
5650 *50*				
5940?				E(level): from 1967Gi05 only.
6280 *25*		3	0.078	
6590 *50*		3	0.062	
6940 *25*		2+3		
7950 *25*				
8470 *50*				
14200#	0.20 MeV *15*	0[a]		1976Mo07 observed α decay to ^{36}Ar (g.s.,1970 and 4300 (multiplet)) and p decay to ^{39}K (g.s.,2520 and higher levels) for a resoance at E=13.5-15.6 MeV.
16700#	0.90 MeV *20*	(3)[a]		
18200@	2.2 MeV *2*	2(+0)[a]		1976Mo07 observed α decay to ^{36}Ar (g.s.,1970 and 4300 multiplet) and p decay to ^{39}K (g.s.,2520 and higher levels) for a resoance at E=15.6-22.5 MeV. L: 2 from 1978Ta05, a weak L=0 component is also suggested in 1980Le25 from DWBA analysis.

† 1967Gi05, unless otherwise noted.
‡ From DWBA fits to measured differential cross sections in 1967Gi05, unless otherwise noted.
# From 1978Ta05, α decay to ^{36}Ar g.s.
@ From 1978Ta05, α decay to ^{36}Ar states near 4000.
& From fits to resonance peaks (1978Ya05).
[a] From 1978Ya05 based on measured angular correlation of α decay.