^{40}Ca(p,n),(pol p,n) 1986Ch19

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

1986Ch19: (pol p,n): E=134 MeV polarized beam (also E=135 MeV unpolarized beam) was produced from the Indiana University Cyclotron Facility (IUCF). Target was a 29.2 mg/cm^2 99.97% enriched ^{40}Ca (19.0 mg/cm^2 for unpolarized beam). Neutrons were detected in large-volume, mean-timed fast-plastic scintillators and neutron energies were determined from neutron time-of-flight (71-m flight path with FWHM=220-415 keV, and 125.2-m flight path for unpolarized beam with FWHM=220-350 keV). Measured $\sigma(\theta)$, analyzing power, polarization transfer coefficients. Deduced levels, J, π, L from comparisons with DWIA calculations. See also 1987Wa31, 1986Wa28, 1986ChZQ.

Other measurements:

2004Wa14, 2002Wa06, 1999Wa08: (pol p,pol n): E=345 MeV. Measured σ and analyzing power.

2002Ha14: (pol p,n) E=197 MeV. Measured polarization transfer coefficients, σ(E,θ).

1996Wa09, 1994Wa24: (pol p,pol n) E=135 MeV. Measured $\sigma(\theta)$, Deduced isovector spin-dipole resonances.

1994Ta24, 1993Ch13: (pol p,pol n) E=494 MeV. Measured polarization transfer coefficients. Deduced isovector spin response.

1994Sa36: (pol p,n) E=50, 80 MeV. Measured polarization transfer coefficients.

Additional information 1.

1987Ra23: (p,n) E=7-9 MeV. Measured thick target γ and neutron yields.

1984NaZX: (p,n) E=119.3 MeV. Measured σ. Deduced strength for for 1^+ states.

1983Ta16: (p,n) E=59.3, 118.3, 159.3 MeV. Measured $\sigma(\theta)$. Deduced Gamow-Teller transition strengths.

1983An06: (p,n) E=133.5 MeV. Measured $\sigma(\theta)$. Deduced levels.

1981Ga26: (p,n) E=200 MeV. Measured $\sigma(\theta)$. Deduced resonances.

1980KnZX: (p,n) E=60, 135 MeV. Measured $\sigma(\theta)$.

1969Ov01, 1966Br17: (p,n) E=2-20 MeV. Measured σ. Deduced Q value.

2001Ka19: (pol p,n): calculations and comparison with data.

^{40}Sc Levels

E(level)[†]	J$^\pi$[‡]	L[&]	Comments
0[@]	4$^-$	3	T=1 E(level): analog of the 4$^-$, T=1 state at E=7.7 MeV in ^{40}Ca (1986Ch19). dominant configuration=($\pi f_{7/2}$,$\nu d_{3/2}^{-1}$) (1986Ch19).
30[@]	(3$^-$)	3	T=1 dominant configuration=($\pi f_{7/2}$,$\nu d_{3/2}^{-1}$) (1986Ch19).
770[@]	(2$^-$)		Strongly populated state.
890[@]	(5$^-$)		
2.3×10^3[#] *1*	(4$^-$)	3	dominant configuration=($\pi f_{7/2}$,$\nu s_{1/2}^{-1}$) (1986Ch19).
2.7×10^3 *1*	1$^+$	0	T=1 E(level): analog of the 1$^+$, T=1 state at E=10.3 MeV in ^{40}Ca (1983Ta16, 1986Ch19).
3.9×10^3[#] *1*	(1$^-$,2$^-$)	(1)	
4.3×10^3[#] *1*	1$^+$	0	
7.5×10^3[#] *25*	(6$^-$)	(5)	T=1 E(level),J$^\pi$,L: for a complex between 5 and 10 MeV. E(level) is taken as the median value of the range. dominant configuration=($\pi f_{7/2}$,$\nu d_{5/2}^{-1}$) (1983An06, 1986Ch19).
12×10^3[#] *6*	(0$^-$,1$^-$,2$^-$)	1	E(level),J$^\pi$,L: for a giant resonance between 6 and 18 MeV. E(level) is taken as the median value of the range.

[†] From 1986Ch19, unless otherwise noted.
[‡] As proposed by 1986Ch19, parentheses are added evaluator.
[#] Complex structure.

Continued on next page (footnotes at end of table)

^{40}Ca(p,n),(pol p,n) 1986Ch19 (continued)

^{40}Sc Levels (continued)

[@] 0+30 and 770+890 form unresolved structures. Energies are rounded values from Adopted Levels.
[&] From 1986Ch19, based on comparisons of measured $\sigma(\theta)$ and analyzing powers with DWIA calculations.