

⁴⁴Ca(d,t) 1976Do05,1969Yn01

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

Target ⁴⁴Ca J^π=0⁺.

1976Do05: E=52 MeV deuteron beam was produced from the Karlsruhe isochronous cyclotron. Target of a 840 μg/cm² self-supporting isotopically enriched ⁴⁴Ca (98.55%). Tritons were detected by ΔE-E counter telescopes consisting of surface-barrier detectors, FWHM=90 keV. Measured σ(E_t,θ). Deduced levels, J, π, L, spectroscopic factors from DWBA analysis.

1969Yn01: E=21.4, 22.6 MeV deuteron beam was produced from the Argonne cyclotron. Target of isotopically enriched CaCO₃ onto a Formvar backing. Tritons were detected by ΔE-E counter telescopes consisting of surface-barrier detectors, FWHM=70-130 keV. Measured σ(E_t,θ). Deduced levels, J, π, L, spectroscopic factors from DWBA analysis. Data for 12 levels up to 3330.

Others:

1975BrYQ: E=52 MeV. Measured σ.

1982KuZU: E=5.8-10 MeV. σ(θ), DWBA analysis. Deduced 1f7/2 neutron-orbital rms radius.

⁴³Ca Levels

Spectroscopic factor: N*C²S=σ(θ)^{exp}/σ(θ)^{DWBA}, where N is the normalization factor. N=3.33 (**1976Do05**).

E(level) [†]	L [†]	C ² S [‡]	Comments
0	3	3.20	C ² S: 4.0 (1969Yn01).
370 20	3	0.15	C ² S: <0.12 (1969Yn01). C ² S: for 1f5/2.
590 20	1	0.07	C ² S: 0.18 (1969Yn01).
990 20	2	2.10 [#]	C ² S: 2.2 (1969Yn01).
1390 20	2	0.11 [#]	C ² S: 0.06 (1969Yn01).
1670 20			
1960 20	0	0.75	C ² S: 0.9 (1969Yn01).
2050 20	1	0.11	C ² S: 0.2 (1969Yn01).
2260 20	2	0.15	C ² S: 0.2 for 2300 40 (1969Yn01).
2610 20			
2680 20	2	0.14	C ² S: 0.22 for 2740 40 (1969Yn01).
2850 20	2	0.23	C ² S: 0.3 for 2900 40 (1969Yn01).
3070 20	2	0.56	L,C ² S: L=0, S=0.3 for 3150 40 (1969Yn01).
3270 20	(2)	0.25	C ² S: 0.4 for 3330 40 (1969Yn01).
3610 20			
3960 20	2	0.21	
4210 20	2	0.2	
4270 20	2	0.15	
4730 20	2	0.19	
5220 20			
5360 20			
5730 20	2	0.18	
6020 20	(2)	0.2	
6170 20	(2)	0.24	
7590 20			
7980 20	2	1.0 [#]	1978En02 quote S=6.0 (C ² =1/6 for T=5/2).
8590 20	0	0.25	1978En02 quote S=1.5 (C ² =1/6 for T=5/2).
8770 20	3	0.35	1978En02 quote S=2.1 (C ² =1/6 for T=5/2).
8990 20	1	0.14	1978En02 quote S=0.84 (C ² =1/6 for T=5/2).
9140 30	2	0.2	C ² S: 0.3 for 1d3/2. 1978En02 quote S=1.8 for d3/2 (C ² =1/6 for T=5/2).
10470 30	0	0.12	1978En02 quote S=0.72 (C ² =1/6 for T=5/2).

Continued on next page (footnotes at end of table)

 $^{44}\text{Ca}(\text{d,t})$ [1976Do05,1969Yn01](#) (continued) ^{43}Ca Levels (continued)

<u>E(level)[†]</u>	<u>L[†]</u>	<u>C²S[‡]</u>
10710 30	2	0.2
11370 30		
12250 30	2	0.2
13200 30	(2)	0.2
14190 30		

[†] From [1976Do05](#).

[‡] From [1976Do05](#). Orbitals used for DWBA calculations are: 2s_{1/2} for L=0, 2p_{3/2} for L=1, 1d_{5/2} for L=2 and 1f_{7/2} for L=3, unless otherwise stated. [1978En02](#) give S-factors (C²=1 for T=3/2, 1/6 for T=5/2).

[#] For 1d_{3/2}.