^{44}Ca(p,p′),(pol p,p′) 1969Ha15,1968Pe10,1968Ba28

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 190,1 (2023)	20-Jun-2023

1969Ha15: (p,p′) E=10.00 MeV proton beam was produced from the Copenhagen tandem accelerator. Target was prepared by vacuum evaporation of enriched calcium carbonate. Protons were momentum-analyzed in a heavy-particle spectrograph (FWHM=6 keV) and recorded in Ilford K2 emulsions. Measured $\sigma(E_p,\theta)$. Deduced levels.

1968Pe10: (p,p′) E=17.5 MeV proton beam was produced from the Princeton fm cyclotron. Target was $^{44}CaCO_3$ (98.6% ^{44}Ca). Protons were detected with silicon detectors,FWHM=25 keV. Measured $\sigma(E_p,\theta)$. Deduced levels, J, π, β_LR from DWBA analysis.

1968Ba28: (p,p′) E=22.9 MeV proton beam was produced from the University of Colorado 132 cm fixed-field alternating-gradient cyclotron. Target was enriched ^{44}Ca (98.6%, 0.42 mg/cm^2). Scattered protons were detected with a 3 mm lithium-drifted silicon detector. Measured $\sigma(E_p,\theta)$. Deduced levels, L, β_L.

For identification of these levels with Adopted Levels see footnote to table 1 of 1969Ha15.

Others:

2005Lo06, 2004Lo15: (p,p),(p,p′) E=2.5-3.53 MeV.

1991Ba26 (also 1990Ba14,1990Ba61): (pol p,p′) E=290 MeV.

1986Mc05: (p,p) E=21-48.4 MeV.

1982Sa37, 1982Sa19, 1981No07, 1979Sa38: (pol p,p) E=65 MeV.

1981Ra02: (p,p) E=800 MeV.

1980Fa07: (p,p′) E=35.2 MeV.

1979Br21: (p,p) E=600 MeV, 1 GeV.

1979Ig01: (pol p,p) E=0.8 GeV.

1979Au05: (p,p) E=30.3 MeV.

1978La09: (p,p′) E=2.5-2.8 MeV.

1977Ch29: (p,p) E=1 GeV.

1977Al13: (p,p) E=1 GeV.

1976Ul01: (p,p′) E=4.40 MeV. Deduced E0 strength.

1976Al19: (p,p′) E=1.044 GeV.

1976Wi12: (p,p),(p,p′) E=1.62-2.18 MeV.

1975Wi09: (p,p),(p,p′) E=1.5-3.0 MeV.

1973Be29: (p,p) E=1.24-1.27 MeV.

1972Lo10: (p,p) E=10.8-16.3 MeV.

1971Ma17: (p,p) E=49.3 MeV.

1968Br27: (p,p) E=1.24-1.82 MeV.

1968Ga11: (p,p) E=1.62-1.69 MeV.

1966Ga14: (p,p) E=2.1-4.1 MeV.

1956Br08: E=7.0 MeV; 11 levels reported up to 3671.

^{44}Ca Levels

E(level)[†]	Jπ[‡]	L[@]	β_L[@]	Comments
0	0$^+$			
1158 *5*	2$^+$	2	0.24	β_2R=1.11 (1968Pe10).
1883 *5*	0$^{+\#}$			E0 branching=0.00088 *14* (1976Ul01) from measurement of pair production (e+, e−) of E0 transition. ρ=0.30 *10* (1976Ul01).
2282 *5*	4$^{+\#}$	4	0.11	
2655 *5*	2$^+$	2	0.058	β_2R=0.26 (1968Pe10).
3045 *5*				
3285 *5*				
3300 *5*				
3307 *5*	3$^-$	3	0.23	β_3R=1.09 (1968Pe10).
3357 *5*				
3586 *5*				

Continued on next page (footnotes at end of table)

^{44}Ca(p,p′),(pol p,p′) 1969Ha15,1968Pe10,1968Ba28 (continued)

^{44}Ca Levels (continued)

E(level)[†]	Jπ[‡]	L[@]	β_L[@]	Comments
3663 *5*				
3678 *5*		(2)	0.065	L: for a group at 3690 (1968Ba28).
3714 *5*				
3777 *5*				
3914 *5*				
3924 *5*	5^-	5	0.12	β_5R=0.35 (1968Pe10).
4012 *5*				
4170 *5*				
4197 *5*				
4361 *5*				
4401 *5*	3^-	3	0.14	L: for a group at 4390 (1968Ba28). β_3R=0.65 (1968Pe10).
4412 *5*				
4482 *5*				
4555 *5*				
4568 *5*	(5^-)			β_5R=0.25 (1968Pe10) for a 4572 group.
4588 *5*		2	0.093	L: for a group at 4600 (1968Ba28).
4655 *5*	2^+			β_2R=0.35 (1968Pe10) for a 4666 group.
4807 *5*				
4889 *5*	3^-			β_3R=0.42 (1968Pe10) for a 4916 group.
5031 *5*	4^+			β_4R=0.18 (1968Pe10) for a 5006 group.
5097 *5*				
5133 *5*				
5215 *5*				
5225 *5*				
5235 *5*	3^-			β_3R=0.32 (1968Pe10) for a 5239 group.
5290 *5*				
5303 *5*				

† From 1969Ha15, unless otherwise stated.
‡ From 1968Pe10, unless otherwise noted.
# From the Adopted Levels.
@ From DWBA analysis in 1968Ba28.