^{40}Ca(^{16}O,^{12}C) 1973Er16,1971Fa12,1971MoYZ

History

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

1973Er16: E=48 MeV ^{16}O beam was produced from the Argonne tandem accelerator. An evaporated ^{40}Ca metal target of 17 μg/cm^2 on carbon backing. ^{12}C momentum analyzed in a split-pole magnetic spectrograph and detected with a position sensitive proportional counter, FWHM=75 keV. Measured σ(E(^{12}C),θ). Deduced levels. Report 26 levels.

1971Fa12 (also 1971FaZM): E=48 MeV ^{16}O beam was produced from the Saclay FN tandem Van de Graaff accelerator. Target was 100 μg/cm^2 ^{40}Ca on a 20 μg/cm^2 carbon backing. Reaction products were detected with a double solid-state telescope. Measured energy spectrum. Deduced levels. Report 12 levels.

1970FrZR,1971MoYZ: E=42 and 48 MeV ^{16}O beam was produced from the Argonne tandem accelerator. Target was 100 μg/cm^2 enriched ^{40}Ca on a 30 μg/cm^2 carbon backing. Reaction products were detected with a counter telescope. Measured energy spectrum, $\sigma(\theta)$. Deduced levels. Report 11 levels.

Others:

1973De07: re-analysis of $\sigma(\theta)$ data in 1971MoYZ for g.s., 1080 and 3340 levels. Deduced spectroscopic factors from DWBA analysis.

1982Ta27: E=310 MeV. Measured $\sigma(\theta)$. No level reported.

^{44}Ti Levels

E(level)[†]	Relative intensity[‡]	Comments
0	1	Spectroscopic factor S_α=0.088 (1973De07).
1084 *20*	5	E(level): weighted average of 1070 *30* (1973Er16) and 1090 *20* (1970FrZR). Other: 1080 (1971Fa12). Spectroscopic factor S_α=0.043 (1973De07).
2450 *30*	5	
2540 *30*	2.5	E(level): others: 2510 (1971Fa12) and 2500 *30* (1970FrZR) could be doublet of 2450+2540.
3370 *30*	5	E(level): a 3440 level reported in 1971Fa12 but not seen in 1973Er16 or in (^{6}Li,d) is considered by the evaluators as the same level as the 3370 level seen in 1973Er16 and in (^{6}Li,d), due to poor resolution in 1971Fa12. Other: 3350 *60* (1970FrZR). Spectroscopic factor S_α=0.013 (1973De07).
3780 *30*	1	E(level): others: 3860 *30* (1970FrZR), considered questionable by authors.
3990 *30*	4	E(level): others: 4010 (1971Fa12), 4010 *60* (1970FrZR).
4120 *30*	3	
4870 *30*	1.5	E(level): others: 4800 (1971Fa12), 4820 *50* (1970FrZR).
5250 *30*	3	E(level): others: 5300 (1971Fa12), 5280 *90* (1970FrZR, questionable).
5380 *30*	5.5	
6050 *30*	7	E(level): others: 6100 (1971Fa12), 6010 *120* (1970FrZR).
6270 *30*	1	
6540 *30*	3.5	E(level): others: 6600 (1971Fa12); 6450 *100* reported in 1970FrZR is probably the same level here.
6960 *30*	3.5	E(level): others: 7030 (1971Fa12), 6900 *70* (1970FrZR, questionable).
7140 *30*	1.5	
7360 *30*	2	
7580 *30*	3	E(level): other: 7490 *100* (1970FrZR, questionable) could be a doublet of 7360+7580.
7690 *30*	8.5	
7780 *30*	3	E(level): other: 7750 (1971Fa12).
8050 *30*	6	
8390 *30*	3	
8570 *30*	6	E(level): other: 8550 (1971Fa12).
8950 *30*	2.5	
9030 *30*	5	
9310 *30*	1.5	

[†] From 1973Er16, unless otherwise noted.
[‡] Angle-integrated intensity relative to ground state (1973Er16).