

$^{14}\text{C}(\text{p,d})$ 1990Ya01

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	J. H. Kelley, C. G. Sheu and J. E. Purcell		NDS 198,1 (2024)	1-Aug-2024

1963Le03: $^{14}\text{C}(\text{p,d})$ E=17.6-20 MeV; measured $\sigma(\theta)$ for $\theta \approx 10^\circ$ to 50° . Deduced reduced width θ^2 .

1966Gl01: $^{14}\text{C}(\text{p,d})$ E=8,12 MeV; measured $\sigma(\text{Ed},\theta)$. ^{13}C deduced levels, L, reduced width. Enriched ^{14}C target.

1971Cu01: $^{14}\text{C}(\text{p,d})$ E=14.5 MeV; measured $\sigma(\text{Ed},\theta)$ for $\theta_{\text{c.m.}} \approx 20^\circ$ to 120° . Deduced S.

1975Ce04: $^{14}\text{C}(\text{p,d})$ E=27 MeV; measured $\sigma(\theta)$ for $\theta \approx 5^\circ$ to 50° . Deduced S. DWBA analysis.

1990Ya01: $^{14}\text{C}(\text{p,d})$ E=35,40.1 MeV; measured $\sigma(\text{Ed},\theta)$ for $\theta = 10^\circ$ to 80° . Deduced S.

2023Be20: $^1\text{H}(^{14}\text{C,d})$ E=12 MeV/nucleon; measured reaction products using the ANL AT-TPC with the HELIOS magnet. Reported preliminary E vs θ plot for low-lying states.

2023Ay06: $^1\text{H}(^{14}\text{C,d})$ E=12 MeV/nucleon; gave general comments on kinematic reconstruction of excitation energies for active-target time projection chamber measurements.

 ^{13}C Levels

E(level) [†]	J ^π [†]	L	C ² S [†]	Comments
0	1/2 ⁻ [‡]	1	1.85	E(level),J ^π : See (1963Le03,1966Gl01,1971Cu01,1975Ce04,1990Ya01). L: From (1963Le03). C ² S: From (1990Ya01); see also spectroscopic factors S=1.4 (1975Ce04). Different analyses are presented in (1971Cu01) who find S=1.27 (LZR (local zero range); cut-off radius R=0 fm), 1.58 (LZR; R=2 fm), 1.41 (NLFR (non-local finite range); R=0 fm). Reduced width $\theta^2=0.063$ (1963Le03), 0.038 (1966Gl01).
3090	1/2 ⁺ ^{&}	0	0.03	E(level),J ^π : See (1963Le03,1975Ce04,1990Ya01). L: From (1963Le03). C ² S: From (1990Ya01); see also spectroscopic factors S=0.02 (1975Ce04). Reduced width $\theta^2=0.017$ 9 (1963Le03).
3680	3/2 ⁻ [#]	1	1.70	E(level),J ^π : See (1963Le03,1971Cu01,1975Ce04,1990Ya01). L: From (1963Le03). C ² S: From (1990Ya01); see also spectroscopic factors S=1.8 (1975Ce04). Different analyses are presented in (1971Cu01) who find S=1.52 (LZR; R=0 fm), 1.81 (LZR; R=2 fm), 1.97 (NLFR; R=0 fm). Reduced width $\theta^2=0.051$ 5 (1963Le03).
3850	5/2 ⁺ [@]	2	0.15	E(level),J ^π : See (1963Le03,1975Ce04,1990Ya01). L: From (1963Le03). C ² S: From (1990Ya01); see also spectroscopic factors S=0.13 (1975Ce04). Reduced width $\theta^2=0.026$ +7-13 (1963Le03).
6860	5/2 ⁺ [@]		0.04	
7560	5/2 ⁻ ^b		0.08	
7690	3/2 ⁺ ^a		0.02	
8200	3/2 ⁺ ^a		0.05	
8860	1/2 ⁻ [‡]		0.02	
9500	9/2 ⁺ ^c		0.1	
9900	3/2 ⁻ [#]		0.04	
11000	1/2 ⁺ ^{&}		0.01	
11080	1/2 ⁻ [‡]		0.10	
11750	3/2 ⁻ [#]		0.13	
13280	3/2 ⁻ [#]		0.15	
15110	3/2 ⁻ [#]		1.18	T=3/2 T: (1990Ya01).

Continued on next page (footnotes at end of table)

 $^{14}\text{C}(\text{p,d})$ [1990Ya01](#) (continued)

 ^{13}C Levels (continued)

[†] From DWBA analysis of spectroscopic factors in ([1990Ya01](#)).

[‡] $0\text{p}_{1/2}$ neutron pickup ([1990Ya01](#)).

[#] $0\text{p}_{3/2}$ neutron pickup ([1990Ya01](#)).

[@] $0\text{d}_{5/2}$ neutron pickup ([1990Ya01](#)).

[&] $1\text{s}_{1/2}$ neutron pickup ([1990Ya01](#)).

^a $0\text{d}_{3/2}$ neutron pickup ([1990Ya01](#)).

^b ($0\text{f}_{5/2}$) neutron pickup ([1990Ya01](#)).

^c ($0\text{g}_{9/2}$) neutron pickup ([1990Ya01](#)).