$^{12}C(^{14}N,d)$ 1973Kl14,1975Vo02,1984Ar20

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia, Anagha Chakraborty	NDS 186, 2 (2022)	31-Mar-2022

Other: 1974Ol06.

1973Kl14: ^{14}N beam (5^+), E=52 MeV; self-supported ^{12}C target; the deuterons were recorded by means of of a multi-gap magnetic spectrograph and nuclear track emulsions; angular distributions for levels between 6.00 to 20.21 MeV were measured in the range ≈7° to ≈115° (c.m.) in spteps of θ(Lab)=7.5°. Deduced levels, FWHM ≈60 keV. Hauser-Feshbach calculations.

1975Vo02: ^{14}N beam, E=20-40 MeV, measured σ(E) at 15° in the laboratory system; E=35 MeV, measured $\sigma(\theta)$ between 10° to 170° in the c.m. system; deduced levels. Hauser-Feshbach calculations. FWHM ≈120 keV.

1984Ar20: ^{14}N beam, E=31 and 33 MeV; self-supported carbon films (thickness ≈50 μg/cm^2); deuterons were recorded at θ=0° (±2°) using ΔE-E telescope consisting of two solid-state detectors; measured d-α correlation of ^{24}Mg decay from the 13.45×10^3 state decay. FWHM ≈150 keV.

1974Ol06: ^{14}N beam, E=20 and 25 MeV; natural carbon foil (thickness 40 μg/cm^2); deuterons were recorded at two angles using two ΔE-E silicon surface barrier detector telescopes; measured σ for populated levels in ^{24}Mg.

^{24}Mg Levels

E(level)[†]	J$^\pi$[a]	Comments
0[&]	0$^+$[&]	σ=1.07 mb (E=20 MeV) and σ=1.01 mb (E=25 MeV) (1974Ol06).
1.37×10^3[&]	2$^+$[&]	σ=0.33 mb (E=20 MeV) and σ=0.15 mb (E=25 MeV) (1974Ol06).
4.175×10^3[&]		E(level): Doublet − listed as 4.12 + 4.23 MeV with 4$^+$ and 2$^+$, respectively, in Fig. 8 (1975Vo02). σ=2.04 mb (E=20 MeV) and σ=1.94 mb (E=25 MeV) (1974Ol06).
5.25×10^3[&]	3$^+$[&]	E(level): Others: 5.23 MeV in Fig. 9 (1975Vo02), 5.236 MeV (1974Ol06). σ=0.93 mb (E=20 MeV) and σ=0.86 mb (E=25 MeV) (1974Ol06).
6000[‡] *15*	4$^+$	E(level): Also reported in 1975Vo02 as 6.0 MeV 4$^+$. 6.010 MeV in 1974Ol06. σ=0.76 mb (E=20 MeV) and σ=0.97 mb (E=25 MeV) (1974Ol06).
6.44×10^3[&]	0$^+$[&]	E(level): Other: 6.432 MeV (1974Ol06). σ=0.26 mb (E=20 MeV) and σ=0.19 mb (E=25 MeV) (1974Ol06).
7.35×10^3[&]	2$^+$[&]	
7.58×10^3		E(level): Doublet − listed as 7.55 + 7.61 MeV with 1$^-$ and 3$^-$, respectively, in Fig. 9 (1975Vo02).
7.8×10^3[&]	[&]	E(level): Also in 1975Vo02 as a doublet as 7.75 + 7.81 MeV with 1$^+$ and 5$^+$, respectively, in Fig. 9 (1975Vo02).
8.12×10^3[&]	6$^+$[&]	E(level): Also in 1975Vo02.
8.40×10^3[&]		E(level): Doublet − listed as 8.36 + 8.44 MeV with 3$^-$ and 4$^+$, respectively, in Fig. 8 (1975Vo02).
9160[‡] *15*	5$^-$	
9450[‡] *15*	5$^-$,6$^+$	
9940[‡] *15*	5$^-$	
10250[‡] *15*	4$^+$,5$^-$	
10490[‡] *15*	4$^+$	
11150[‡] *15*	6$^+$,7$^-$	
11540 *15*		
11810 *15*		
12340[‡@] *15*	7$^+$	
13130[‡#] *15*	8$^+$	J$^\pi$: From Fig. 1. Fit for 7$^-$,8$^+$ in Fig. 2.
13390[‡] *15*	7$^-$	
13.45×10^3	6$^+$	E(level),J$^\pi$: From 1984Ar20.
14120[‡@] *15*	8$^+$	E(level): Other: 14140 in Fig. 1.
15150[‡@] *15*	9$^+$	
15570 *15*		
15750[‡] *15*	7$^-$,8$^+$	

Continued on next page (footnotes at end of table)

$^{12}C(^{14}N,d)$ 1973Kl14,1975Vo02,1984Ar20 (continued)

^{24}Mg Levels (continued)

E(level)†	Jπa	E(level)†	Jπa	E(level)†	E(level)†	Jπa
16560‡ *15*	10^+	17520 *15*		19400 *15*	20210‡ *15*	10^+
16880 *15*		18740 *15*		19890 *15*	20260 *15*	
17190 *15*		19110‡ *15*	10^+	19990 *15*		

† From 1973Kl14, as listed in Fig. 1 and Fig. 2. Uncertainty for all levels is mentioned to be 15 keV in the text. Energy is listed in 100th of MeV. Evaluators list in keV for reporting the 15 keV uncertainty.

‡ In Fig. 2. angular distribution of the measured differential cross section and calculated values of Hauser-Feshbach for spin values are presented (1973Kl14).

K=0.

@ K=2.

& From 1975Vo02 in Fig. 8.

a Used for Hauser-feshbach calculations to fit the measured differential cross section data. In a few cases – excited energies are comparable with levels in adopted dataset, but not the spin-parity.