

Table 14.17 from (1986AJ01): Resonances in  $^{12}\text{C} + \text{d}$  <sup>a</sup>

$E_d$ (MeV $\pm$ keV)	$\Gamma_{\text{c.m.}}$ (keV)	Particles out	$^{14}\text{N}^*$ (MeV)	$J^\pi; T$
0.92	95	n, p <sub>0</sub> , p <sub>1</sub>	11.06	1 <sup>+</sup> ; 0
1.13		p <sub>0</sub> , p <sub>1</sub>	11.24	$T = 1$
1.19	190	n, p <sub>0</sub> , p <sub>1</sub> , d	11.29	2 <sup>-</sup> ; 0
1.23		p <sub>0</sub>	11.33	(3 <sup>+</sup> )
1.30	30	n, p <sub>0</sub> , p <sub>1</sub> , d	11.39	1 <sup>+</sup> ; 0
1.39		p <sub>0</sub>	11.46	(2 <sup>-</sup> )
1.4495 $\pm$ 1.5	7.0 $\pm$ 0.5	p <sub>0</sub> , p <sub>1</sub> , d	11.5135	2 <sup>+</sup> , 3 <sup>+</sup>
1.55		p <sub>0</sub>	11.60	(2 <sup>-</sup> )
1.640 $\pm$ 20	150 $\pm$ 20	n, p <sub>1</sub> , d <sub>0</sub>	11.68	1 <sup>-</sup> , 2 <sup>-</sup>
1.715 $\pm$ 6	40 $\pm$ 9	p <sub>2</sub>	11.741	1 <sup>-</sup> , 2 <sup>-</sup>
1.738 $\pm$ 6 <sup>b</sup>	78 $\pm$ 6	p <sub>1</sub>	11.761	3 <sup>-</sup> , 4 <sup>-</sup> , (2 <sup>-</sup> )
1.792 $\pm$ 7	119 $\pm$ 9	n, p <sub>0</sub> , p <sub>1</sub> , p <sub>2</sub> , d <sub>0</sub>	11.807	2 <sup>-</sup> , (1 <sup>+</sup> )
1.870 $\pm$ 6	101 $\pm$ 9	p <sub>0</sub> , p <sub>1</sub> , p <sub>2</sub>	11.874	2 <sup>-</sup> , (1 <sup>-</sup> )
2.250 $\pm$ 19	300 $\pm$ 30	n, p <sub>0</sub> $\rightarrow$ p <sub>3</sub> , d <sub>0</sub>	12.20	1 <sup>-</sup> , 2 <sup>-</sup>
2.494 $\pm$ 3 <sup>c</sup>	37 $\pm$ 4	n, p <sub>0</sub> $\rightarrow$ p <sub>3</sub> , d <sub>0</sub>	12.408	3 <sup>+</sup> , (3 <sup>-</sup> , 4 <sup>-</sup> )
2.506 $\pm$ 3	41 $\pm$ 4	p <sub>1</sub>	12.418	3 <sup>-</sup> , 4 <sup>-</sup> , (2 <sup>+</sup> , 3 <sup>+</sup> )
2.610 $\pm$ 20	30 $\pm$ 20	n, p <sub>1</sub> , p <sub>2</sub> , p <sub>3</sub>	12.507	
2.712 $\pm$ 3	48 $\pm$ 2	(n), p <sub>0</sub> $\rightarrow$ p <sub>3</sub> , d <sub>0</sub>	12.594	3 <sup>+</sup>
(2.817 $\pm$ 7)	27 $\pm$ 6	n, p <sub>1</sub> , p <sub>2</sub> , p <sub>3</sub> , d <sub>0</sub>	(12.684)	
2.844 $\pm$ 9	43 $\pm$ 15	p <sub>2</sub> , p <sub>3</sub>	12.708	
2.940 $\pm$ 10	30 $\pm$ 10	p <sub>2</sub> , p <sub>3</sub> , d	12.790	
2.967 $\pm$ 5	37 $\pm$ 6	p <sub>1</sub>	12.813	
2.982 $\pm$ 6	11 $\pm$ 3	n, p <sub>3</sub> , d	12.826	
3.018 $\pm$ 6	78 $\pm$ 10	n, p <sub>0</sub> , p <sub>1</sub>	12.857	
3.049 $\pm$ 8	134 $\pm$ 11	p <sub>1</sub>	12.883	
3.100 $\pm$ 10	20 $\pm$ 14	p <sub>1</sub> , p <sub>2</sub> , p <sub>3</sub> , d	12.927	(3 <sup>-</sup> , 4 <sup>-</sup> )
3.39 $\pm$ 12	47 $\pm$ 15	n, p <sub>2</sub> , p <sub>3</sub> , d	13.17	(0 <sup>-</sup> , 1 <sup>-</sup> )
3.97 $\pm$ 30	< 200	p <sub>0</sub> , p <sub>2</sub> , p <sub>3</sub> , (d)	13.67	(2 <sup>+</sup> , 3 <sup>+</sup> )
4.02 <sup>+20</sup> <sub>-10</sub>	$\approx$ 235	n, (p), d	13.71	(1 <sup>+</sup> )
4.40		p <sub>0</sub> $\rightarrow$ p <sub>3</sub> , d	14.04	
4.55		n, p <sub>2</sub> , d	14.17	

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$E_d$ (MeV $\pm$ keV)	$\Gamma_{\text{c.m.}}$ (keV)	Particles out	$^{14}\text{N}^*$ (MeV)	$J^\pi; T$
4.80		$p_0, p_2, \text{d}$	14.38	
5.17		$\text{d}$	14.70	
5.34	$\approx 100$	$p_0 \rightarrow p_3, \text{d}, \alpha$	14.84	
5.65		$\text{d}$	15.11	
5.83		$p_1, p_3, \text{d}$	15.26	
6.07		$p_1, p_2, \alpha$	15.47	
6.3		$p_0, p_3, \text{d}, \alpha$	15.7	
7.2		$\alpha$	16.4	
7.448 <sup>d</sup>	240	$\alpha_2$	16.65 <sup>d</sup>	$4^+$
7.760 <sup>e</sup>	828	$\alpha_2$	16.92	$2^+$
7.784	293	$\alpha_2$	16.94	$4^+$
7.887	246	$\alpha_2$	17.03	$3^-$
8.034	307	$\alpha_2$	17.15	$1^-$
8.217	275	$\alpha_2$	17.31	$4^+$
8.327	244	$\alpha_2$	17.40	$4^+$
8.851	473	$\alpha_2$	17.85	$4^+$
8.852	437	$\alpha_2$	17.85	$3^-$
8.942 <sup>e</sup>	336	$\alpha_2$	17.93	$2^+$
9.051	567	$\alpha_2$	18.02	$3^-$
9.186	481	$\alpha_2$	18.14	$4^+$
9.433	558	$\alpha_2$	18.35	$1^-$
9.530 <sup>e</sup>	313	$\alpha_2$	18.43	$4^+$
9.610	62	$\alpha_2$	18.50	$5^-$
9.637 <sup>e</sup>	410	$\alpha_2$	18.53	$2^+$
9.647 <sup>e</sup>	312	$\alpha_2$	18.53	$3^-$
9.768	673	$\alpha_2$	18.64	$3^-$
9.939	314	$\alpha_2$	18.78	$1^-$
10.057	475	$\alpha_2$	18.88	$4^+$
10.112	452	$\alpha_2$	18.93	$2^+, 3^-$
10.306	872	$\alpha_2$	19.10	$3^-$
11.237	575	$\alpha_2$	19.90	$2^+$

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$E_d$ (MeV $\pm$ keV)	$\Gamma_{\text{c.m.}}$ (keV)	Particles out	$^{14}\text{N}^*$ (MeV)	$J^\pi; T$
11.348	506	$\alpha_2$	19.99	$1^-$
12.094	1071	$\alpha_2, \alpha_3$	20.63	$4^+$
12.122	612	$\alpha_2$	20.65	$5^-$
12.809	414	$\alpha_2$	21.24	$4^+$
13.124	233	$\alpha_2$	21.51	$3^-$
13.148 <sup>e</sup>	362	$\alpha_2$	21.53	$5^-$
13.323	357	$\alpha_2$	21.68	$4^+$
14.002 <sup>e</sup>	65	$\alpha_2$	22.26	$4^+$
14.054	568	$\alpha_2$	22.31	$5^-$
15.334	640	$\alpha_2$	23.40	$5^-$

<sup>a</sup> For references see [Table 14.15 in \(1976AJ04\)](#).

<sup>b</sup> See also [\(1983JI04, 1983JI1B\)](#).

<sup>c</sup> A study of this resonance shows that either f-shell components are present in the wave function or that the coupling is very strong or that both effects are present.

<sup>d</sup>  $S$ -matrix analysis of  $\alpha_2$  by [\(1981JO02\)](#) leads to the resonance parameters for the states shown below, all of which are isospin-mixed. See also [Table 14.14 in \(1981AJ01\)](#) and [Table 1 in \(1981JO02\)](#). Uncertainties in  $\Gamma_{\text{c.m.}}$  and  $E_x$  are about 10% of  $\Gamma_{\text{c.m.}}$ .

<sup>e</sup> Uncertainties in  $\Gamma_{\text{c.m.}}$  and  $E_x$  are about 20% of  $\Gamma_{\text{c.m.}}$ .