

Table 15.25 from (1976AJ04): Resonances in $^{14}\text{N} + \text{p}$

E_p (keV)	Γ_{lab} (keV)	$\omega\Gamma_\gamma$ (eV)	Particles out	J^π	E_x (MeV)	Refs.
278.1 ± 0.4	1.7 ± 0.5	0.014	γ	$\frac{1}{2}^+$	7.5568	A
1058.0 ± 0.5	3.9 ± 0.7	0.95	γ	$\frac{3}{2}^+$	8.2843	A, (1972NE05)
1550 ± 6	34	0.16	γ	$\frac{1}{2}^+$	8.743	A
1742 ± 2	≈ 4	0.16	γ, p_0	$(\frac{5}{2}^+)$	8.922	(1971LA23, 1972KR14)
1747 ± 2	≈ 4	0.06	γ, p_0	$(\frac{1}{2}^-)$	8.927	(1971LA23, 1972KR14)
1806.4 ± 1.5	4.2 ± 0.4	0.52	γ	$(\frac{1}{2}, \frac{3}{2})^-$	8.9824	A, (1966EV01, 1972KR14)
2348 ± 3	10.8 ± 0.5	2.4	γ	$\frac{5}{2}^-$	9.488	A, (1970KU09)
2368 ± 32	300 ± 26		γ	$(\frac{1}{2}^+)$	9.506	A, (1970KU09)
2479 ± 1.7	9.4 ± 0.5	3.3	γ	$\frac{3}{2}^-$	9.610	A, (1970KU09)
2537 ± 4	2 ± 1		p_0	$(\frac{7}{2}, \frac{9}{2})^-$	9.664	(1967LA05, 1967LA10)
2600 ± 50	1270 ± 50	46	γ	$(\frac{1}{2}, \frac{3}{2})^+$	9.72	(1951DU08)
3209 ^a	3 ± 1		p_0	$(\frac{5}{2}^-)$	10.291	(1970DI1D, 1972CH28)
3215 ^a	12 ± 2^b		p_0	$\frac{5}{2}^+$	10.296	(1970DI1D, 1972CH28)
3410 ^c	27 ± 5		γ, p_0	$(\frac{3}{2})^-$	10.478	(1970DI1D, 1972CH28)
3440 ^c	150 ± 45		γ, p_0	$(\frac{3}{2})^+$	10.506	(1970DI1D, 1972CH28)
3880 ± 15	97		p_0	$\frac{7}{2}^+$	10.916	A
		Γ_{γ_0} (eV)				A, (1970KU09, 1972PH02)
3903 ± 3	106 ± 5	14 ± 3	γ, p_0, p_1	$\frac{1}{2}^+$	10.938	A, (1972PH02)
3996 ± 3	27 ± 2	1.4 ± 0.4	γ, p_0, p_1	$\frac{1}{2}^-$	11.025	(1969WE02)
4130 ± 15	< 10		p_0		11.150	(1969WE02, 1970KU09, 1972PH02)
4203 ± 3	43 ± 4	5.2 ± 0.4	γ, p_0	$\frac{3}{2}^+$	11.218	(1969WE02)
4575 ± 15	< 10		p_0		11.565	(1969WE02, 1972PH02)
4580 ± 15	21 ± 15	0.7 ± 0.2	γ, p_0	$\frac{5}{2}^-$	11.569	(1970KU09)

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E_p (keV)	Γ_{lab} (keV)	$\omega\Gamma_\gamma$ (eV)	Particles out	J^π	E_x (MeV)	Refs.
4580	150		γ		11.57	(1969WE02, 1972PH02)
4630 \pm 15	86 \pm 50		γ, p_0	$(\frac{3}{2}, \frac{1}{2})^-$	11.616	(1969WE02)
4740 \pm 15	< 10		p_0		11.718	A, (1972PH02)
4772 \pm 3	106 \pm 5		$\gamma, \text{p}_0, \text{p}_1$	$\frac{5}{2}^+$	11.748	A, (1972PH02)
4877 \pm 3	70 \pm 3		$\gamma, \text{p}_0, \text{p}_1$	$\frac{5}{2}^-$	11.846	(1969WE02, 1972PH02)
5025 \pm 15	21 \pm 5		p_0, p_1	$\frac{5}{2}^-$	11.984	(1969WE02, 1972PH02)
5180 \pm 15	214 \pm 50		p_0, p_1	$\frac{5}{2}^+$	12.129	(1972PH02)
5280 \pm 20	106 \pm 50		p_1^{d}		12.222	(1969WE02, 1972PH02)
5547 \pm 3	82 \pm 4		p_1, p_2	$\frac{5}{2}^- (\frac{3}{2}^-)$	12.471	(1970KU09)
5900	\approx 250		γ		12.80	(1972PH02)
5937 \pm 3	17 \pm 1		p_2^{e}		12.835	(1968SH11)
(6100)	30		$\text{p}_0 \rightarrow \text{p}_2, \alpha_0$	$\frac{5}{2}^+$	(12.99)	(1972PH02)
6123 \pm 3	230 \pm 30		p_2^{e}		13.008	(1972PH02)
6141 \pm 3	43 \pm 30		p_2^{e}		13.025	(1968SH11, 1970KU09)
6600	\approx 1000		$\gamma, (\text{p}_2, \alpha_0)$	$(\frac{1}{2}, \frac{3}{2})^+$	13.45	(1968SH11)
6640			$(\text{p}_0), (\text{p}_2)$	$(\frac{3}{2}^+)$	13.49	(1968SH11)
6760			α_0	$\frac{5}{2}^+$	13.60	(1968SH11)
6870			p_2	$\frac{3}{2}^-$	13.70	(1968SH11)
6960			$\text{p}_1, \text{p}_2, \text{p}_4, \alpha_0$	$\frac{3}{2}^-$	13.79	(1970KU09)
7050	\approx 150		γ		13.87	(1968SH11)
7370			α_0	$\frac{5}{2}^-$	14.17	(1964KU06, 1968SH11, 1970ME30)
7500	\approx 500		$\text{n}, \text{p}_0 \rightarrow \text{p}_2, {}^3\text{He}, \alpha$		14.29	(1968SH11)
7550			α_0	$\frac{5}{2}^+$	14.34	(1964KU06, 1970ME30)

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E_p (keV)	Γ_{lab} (keV)	$\omega\Gamma_\gamma$ (eV)	Particles out	J^π	E_x (MeV)	Refs.
7700			n, p ₀ , α_0		14.48	(1964KU06)
7950	170 ± 50		n		14.71	(1964KU06, 1970ME30)
8200			n, p ₂ \rightarrow p ₆ , ^3He , α_0 , α_1		14.94	(1970KU09)
8400 ^f	≈ 1000		γ	$(\frac{1}{2}, \frac{3}{2})^+$	15.1	(1964KU06)
9050 ^f			n		15.74	(1964KU06)
g						
9370 ± 20	≈ 200		n, p ₂ , p ₈ , α_1		16.04	(1964KU06, 1970ME30)
9580 ± 20	≈ 150		p ₀ , p ₁ , p ₃ \rightarrow p ₇ , p ₉ , ^3He , α_1		16.23	(1970ME30)
9850 ± 50	600 ± 100		n, ^3He		16.48	(1964KU06, 1970ME30)
10300 ^f	≈ 1000		γ	$(\frac{1}{2}, \frac{3}{2})^+$	16.9	(1970KU09)
10600			p ₄ \rightarrow p ₉ , α_0 , α_1		17.2	(1970ME30)
11900	≈ 1000		γ	$(\frac{1}{2}, \frac{3}{2})^+$	18.4	(1970KU09)
14200	≈ 2000		γ	$(\frac{1}{2}, \frac{3}{2})^+$	20.5	(1970KU09)
15800	≈ 2000		γ	$(\frac{1}{2}, \frac{3}{2})^+$	22.0	(1970KU09)

A: See earlier references for this resonance in (1970AJ04).

^a Previously [see (1970AJ04)] a single resonance at $E_p = 3200 \pm 8$ keV was reported [$\Gamma_{\text{lab}} = 17 \pm 4$ keV].

^b (1971SH1D, 1972KU1J; abstracts) report $\Gamma_{\text{lab}} = 9 \pm 2$ keV, $\Gamma_p/\Gamma \approx 1.0$.

^c Previously [see (1970AJ04)] a single resonance at $E_p = 3390 \pm 10$ keV was reported [$\Gamma_{\text{lab}} = 50$ keV]. See also (1970KU09). (1971SH1D, 1972KU1J; abstracts) report that one of these states has $\Gamma \leq 2$ keV and the other [$J^\pi = (\frac{3}{2}, \frac{5}{2})^-$] has $\Gamma = 30 \pm 5$ keV.

^d Weak.

^e Strong.

^f See also (1970ME30).

^g (1974HU02) report three large structures in the α_0 yield [$E_p = 9$ to 12 MeV] corresponding to excitations of 16.2, 17.2 and 17.8 MeV in ^{15}O : these appear to be composed of substructures. For instance $^{15}\text{O}^*(16.2)$ appears to have components at $E_x = 15.9, 16.1$ and 16.25 MeV; $^{15}\text{O}^*(17.2)$ appears to involve $E_x = 17.0$ and a sharper peak at 17.25 MeV; $^{15}\text{O}^*(17.8)$ involves $E_x = 17.7$ and 17.9 MeV. It appears that this region is better studied via the $^{12}\text{C} + ^3\text{He}$ reaction: see Table 15.20.