

Table 15.4 from (1976AJ04): Energy levels of  $^{15}\text{N}$  <sup>a</sup>

$E_x$ (MeV $\pm$ keV)	$J^\pi; T$	$\tau_m$ (psec) or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
0	$\frac{1}{2}^-; \frac{1}{2}$		stable	2, 3, 4, 11, 12, 14, 16, 18, 19, 20, 21, 22, 31, 33, 34, 35, 39, 40, 42, 43, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88
5.27040 $\pm$ 0.17	$\frac{5}{2}^+$	$\tau_m = 2.6 \pm 0.2$ $g = +(0.9 \pm 0.3)$	$\gamma$	3, 4, 11, 12, 13, 16, 17, 18, 19, 21, 29, 30, 31, 33, 39, 40, 51, 64, 68, 69, 73, 76, 77, 84, 86, 87
5.29887 $\pm$ 0.12 <sup>b</sup>	$\frac{1}{2}^+$	$(2.5 \pm 0.7) \times 10^{-2}$	$\gamma$	3, 4, 11, 12, 13, 17, 18, 21, 29, 30, 31, 39, 40, 51, 60, 64, 68, 73, 76, 77, 87
6.32385 $\pm$ 0.12	$\frac{3}{2}^-$	$(0.22 \pm 0.03) \times 10^{-3}$	$\gamma$	3, 4, 11, 12, 14, 18, 29, 30, 39, 40, 51, 64, 68, 69, 73, 75, 76, 77, 82, 84, 87
7.15536 $\pm$ 0.11	$\frac{5}{2}^+$	0.028 $\pm$ 0.008	$\gamma$	3, 4, 11, 12, 18, 29, 30, 33, 39, 51, 64, 68, 69, 76, 84
7.30109 $\pm$ 0.17	$\frac{3}{2}^+$	$(0.25 \pm 0.10) \times 10^{-3}$	$\gamma$	3, 4, 11, 12, 18, 19, 29, 33, 39, 51, 60, 64, 68, 69, 76, 84
7.5671 $\pm$ 1.0	$\frac{7}{2}^+$	0.06 $\pm$ 0.02	$\gamma$	3, 4, 11, 12, 16, 17, 18, 19, 29, 30, 32, 39, 51, 56, 64, 68, 69, 73, 84
8.31279 $\pm$ 0.14	$\frac{1}{2}^+$	$< 0.020$	$\gamma$	3, 4, 11, 12, 18, 29, 30, 35, 39, 51, 60, 68, 69, 73, 84
8.5714 $\pm$ 1.0 <sup>b</sup>	$\frac{3}{2}^+$	$\lesssim 0.1$	$\gamma$	3, 4, 11, 12, 16, 17, 18, 29, 30, 39, 51, 60, 68, 69, 84
9.0500 $\pm$ 0.7 <sup>b</sup>	$\frac{1}{2}^+$	$\lesssim 0.1$	$\gamma$	3, 4, 11, 12, 29, 39, 51, 60, 73
9.15224 $\pm$ 0.22	$\frac{3}{2}^-$	$< 0.040$	$\gamma$	3, 4, 11, 12, 16, 17, 18, 29, 30, 35, 39, 51, 64, 68, 69
9.15527 $\pm$ 0.11	$\frac{5}{2}$	$(< 0.010)$	$\gamma$	3, 4, 11, 12, 16, 17, 18, 29, 30, 35, 39, 51, 68, 69
9.225 $\pm$ 3	$\frac{1}{2}^-$	$< 0.13$	$\gamma$	12, 29, 39, 51, 73
9.760 $\pm$ 5	$\frac{5}{2}^-$		$\gamma$	12, 13, 19, 29

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$E_x$ (MeV $\pm$ keV)	$J^\pi; T$	$\tau_m$ (psec) or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
9.829 $\pm$ 3	$\frac{7}{2}$	< 0.19	$\gamma$	3, 4, 12, 17, 18, 19, 29, 30, 32, 39, 51, 68, 69
9.928 $\pm$ 4	$(\frac{1}{2}, \frac{3}{2})^+$	$\lesssim 0.1$	$\gamma$	12, 18, 19, 29, 39, 51, 76
10.070 $\pm$ 3	$\frac{3}{2}^+$		$\gamma$	12, 18, 29, 51, 68, 69
10.4497 $\pm$ 0.3	$\frac{5}{2}^-$	$\Gamma < 0.5$	$\gamma, p$	4, 11, 12, 19, 29, 30, 39, 51
10.5333 $\pm$ 0.5	$\frac{5}{2}^+$		$\gamma, p$	4, 11, 12, 18, 29, 35, 39, 51
10.6932 $\pm$ 0.3	$\frac{9}{2}^+$		$\gamma, p$	4, 12, 16, 17, 18, 30, 31, 35, 36, 68
10.7019 $\pm$ 0.3 <sup>c</sup>	$\frac{3}{2}^-$	$\Gamma = 0.2$ keV	$\gamma, p$	12, 29, 30, 35, 36, 51, 68, 76
10.804 $\pm$ 2	$\frac{3}{2}^{(+)}$	< $1 \times 10^{-3}$	$\gamma, p$	5, 12, 18, 35, 36, 37, 45, 46
11.235 $\pm$ 5	$\geq \frac{3}{2}$	3.3	n	39, 45
11.2929 $\pm$ 0.8	$\frac{1}{2}^-$	8 $\pm$ 3	$\gamma, n, p$	12, 35, 36, 37, 39, 45, 68
11.4375 $\pm$ 0.7	$\frac{1}{2}^+$	41.4 $\pm$ 1.1	$\gamma, n, p, \alpha$	5, 12, 18, 35, 36, 37, 45, 46
(11.44)		$\ll 40$		39
11.615 $\pm$ 4	$\frac{1}{2}^+; T = \frac{3}{2}$	405 $\pm$ 6	$\gamma, n, p$	12, 35, 36, 37
11.778 $\pm$ 5	$\frac{3}{2}^+$	40	n, p, $\alpha$	5, 36, 37, 45, 46
11.876 $\pm$ 3	$\frac{3}{2}^-$	25	n, p, $\alpha$	5, 36, 37, 45, 46
11.942 $\pm$ 6	$\frac{11}{2}$	$\leq 3.0$	n, $\alpha$	4, 5, 12, 18, 30, 32, 45, 68
11.965 $\pm$ 3	$\frac{1}{2}^-$	17	n, p	4, 12, 17, 18, 30, 32, 36, 37, 45, 46
12.095 $\pm$ 3	$\frac{5}{2}^+$	14 $\pm$ 5	n, p, $\alpha$	5, 6, 36, 37, 38, 39, 45, 46, 50
12.145 $\pm$ 3	$\frac{3}{2}^-$	47 $\pm$ 7	n, p, $\alpha$	5, 6, 36, 37, 45, 46, 50
12.327 $\pm$ 4	$\frac{5}{2}$	22	n, p	17, 18, 30, 36, 37, 45, 46
12.493 $\pm$ 4	$\frac{5}{2}^+; \frac{1}{2}$	40 $\pm$ 5	n, p, $\alpha$	5, 6, 31, 36, 37, 38, 45, 46, 50
12.522 $\pm$ 8	$\frac{5}{2}^+; \frac{3}{2}$	58 $\pm$ 4	$\gamma, p$	35, 68
12.559 $\pm$ 10	$(\frac{9}{2})$			4, 12, 17, 18, 68
12.920 $\pm$ 4	$\frac{3}{2}^-$	56 $\pm$ 11	n, p, $\alpha$	5, 6, 9, 18, 19, 36, 37, 38, 45, 46, 50
12.940 $\pm$ 10	$\frac{5}{2}^+$	81	p, $\alpha$	6, 9, 36, 38
13.004 $\pm$ 10	$\frac{11}{2}^-$			4, 11, 12, 16, 18, 30, 31, 32
13.149 $\pm$ 10		7 $\pm$ 3	n, p, $\alpha$	5, 6, 19, 50
13.173 $\pm$ 7	$(\frac{9}{2})$	7 $\pm$ 3	n, p, $\alpha$	4, 5, 6, 12, 16, 17, 18, 31, 37, 45, 50

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$E_x$ (MeV $\pm$ keV)	$J^\pi; T$	$\tau_m$ (psec) or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
13.362 $\pm$ 8	$\frac{3}{2}^-$	16 $\pm$ 8	n, p, $\alpha$	5, 6, 9, 36, 37, 38, 50
13.390 $\pm$ 10	$\frac{3}{2}^+$	56	$\gamma$ , n, p, $\alpha$	6, 9, 35, 36, 37, 38, 46
13.537 $\pm$ 10	$\frac{3}{2}^-$	85 $\pm$ 30	n, p, $\alpha$	5, 9, 12, 36, 37, 38
13.608 $\pm$ 7	$\frac{5}{2}^-$	18 $\pm$ 4	n, p, $\alpha$	5, 6, 18, 45, 46, 50
(13.612 $\pm$ 10)	$\frac{1}{2}^+$	90	n, p, $\alpha$	9, 36, 37, 38
13.713 $\pm$ 10		26 $\pm$ 8	n, p, $\alpha$	5, 46, 50
13.84 $\pm$ 30	$\frac{3}{2}^+$	75	n, p, $\alpha$	4, 5, 9, 12, 45, 46, 50
13.9	$\frac{1}{2}^+$	930	$\gamma$ , p	35, 36
13.99 $\pm$ 30		98 $\pm$ 10	n, p, $\alpha$	5, 36, 38
14.090 $\pm$ 7		22 $\pm$ 6	n, p, $\alpha$	4, 5, 12, 18, 38, 45, 46, 50, 68
14.10 $\pm$ 30	$\frac{3}{2}^+$	$\approx$ 100	n, p, $\alpha$	4, 5, 9, 12, 38, 45, 46, 50, 68
14.162 $\pm$ 10	$(\frac{3}{2})$	27 $\pm$ 6	n, $\alpha$	4, 5, 12, 45, 46, 50, 68
14.24 $\pm$ 40	$\frac{5}{2}^+$	150	$\alpha$	9
14.38 $\pm$ 40	$\frac{7}{2}^+$	100	$\alpha$	9
14.4		$\approx$ 1900	n, p, $\alpha$	45, 46, 50
14.55 $\pm$ 20		74 $\pm$ 7	n, p, $\alpha$	5, 36, 38, 45, 46, 50
14.647 $\pm$ 10		33 $\pm$ 6	n, $\alpha$	5
14.71		750	$\gamma$ , p	35
14.720 $\pm$ 10		140 $\pm$ 20	n, p, $\alpha$	5, 11, 12, 18, 38, 45, 46, 50, 62
14.86 $\pm$ 20		48 $\pm$ 11	n, $\alpha$	5, 9, 50
14.920 $\pm$ 10		13 $\pm$ 3	n, (p), $\alpha$	5, 36
15.025 $\pm$ 10		13 $\pm$ 3	n, (p), $\alpha$	5, 36
15.09 $\pm$ 20		80 $\pm$ 25	n, p, $\alpha$	5, 9, 32, 36, 38, 45, 50, 68
15.288 $\pm$ 10		22 $\pm$ 6	n, p, $\alpha$	5, 9, 35, 36, 38, 50
15.373 $\pm$ 10	$\frac{13}{2}^+, \frac{15}{2}^+$			4, 11, 12, 16, 17, 18, 31
15.38 $\pm$ 40		75 $\pm$ 25	n, t, $\alpha$	5, 9, 15, 19
15.43 $\pm$ 20		$\approx$ 100	n, $\alpha$	5, 9
15.45		750	$\gamma$ , p	35
15.53 $\pm$ 20		$\approx$ 35	n, $\alpha$	5
15.60 $\pm$ 20		95 $\pm$ 25	n, $\alpha$	5, 62
(15.782 $\pm$ 10)				18
15.93 $\pm$ 20		35 $\pm$ 5	n, t, $\alpha$	5, 15, 17

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$E_x$ (MeV $\pm$ keV)	$J^\pi; T$	$\tau_m$ (psec) or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
15.944 $\pm$ 15		21 $\pm$ 6	n, t, $\alpha$	5, 15
16.026 $\pm$ 10		62 $\pm$ 12	n, t, $\alpha$	5, 9, 15, 18, 32
16.190 $\pm$ 10			n, t, $\alpha$	5, 17, 18, 32
16.26 $\pm$ 20		130 $\pm$ 14	n, p, t, $\alpha$	5, 9, 15, 17, 19, 36, 38, 50
16.32 $\pm$ 20		$\approx$ 30	n, p, t, $\alpha$	5, 15
16.39 $\pm$ 20		44 $\pm$ 11	n, p, t, $\alpha$	5, 15, 17, 50
16.46		560	$\gamma$ , p	35
16.576 $\pm$ 15		27 $\pm$ 15	n, p, t, $\alpha$	5, 15, 38, 50
16.677 $\pm$ 15	$\frac{3}{2}^+; \frac{1}{2}$	90 $\pm$ 10	$\gamma$ , n, p, d, t, $\alpha$	5, 15, 23, 24, 26, 35, 38, 45, 50, 62
16.76 $\pm$ 30			n, t, $\alpha$	15, 17, 62
16.85 $\pm$ 30	$\frac{5}{2}$	110 $\pm$ 50	n, p, t, $\alpha$	13, 15, 38, 45, 50
16.91		$\approx$ 350	n, p, t, $\alpha$	15, 23, 24
(17.05)			p, t	15
17.11		broad	d, t, $\alpha$	15, 27
(17.16 $\pm$ 50)			t, $\alpha$	15
17.23 $\pm$ 40		$\approx$ 175	d, t	26
17.37 $\pm$ 40		$\approx$ 250	n, p, t	15, 24, 26, 27, 45, 50
17.58 $\pm$ 40		$\approx$ 175	n, d, t, $\alpha$	26, 50
17.67 $\pm$ 40		$\approx$ 500	$\gamma$ , n, d, $\alpha$	22, 23, 27
17.72 $\pm$ 10		48 $\pm$ 10	n, (p), d, t, $\alpha$	19, 24, 26, 27, 50
17.81		167	n, $\alpha$	19, 45, 50
18.06 $\pm$ 10		19 $\pm$ 4	(n), d, $\alpha$	17, 23, 27
18.09 $\pm$ 20		$\approx$ 40	(n), p, d, t	23, 24, 26
18.22		158	n, $\alpha$	45, 50
18.28 $\pm$ 30		235 $\pm$ 60	n, p, d, $\alpha$	23, 24, 27, 50'
19.16	$(\frac{1}{2}^+; \frac{1}{2})$	$\approx$ 130	( $\gamma$ ), n, p, d	23, 32, 35
19.5	$\frac{3}{2}^+; (\frac{3}{2})$	$\approx$ 400	$\gamma$ , p	35, 36
(19.77 $\pm$ 60)				17
20.5	$\frac{3}{2}^+$	$\approx$ 400	$\gamma$ , n, p	12, 23, 24, 35, 62
21.72			$\gamma$ , p, d	22, 35, 62
22.9			$\gamma$ , p	29, 35
25.5	( $T = \frac{3}{2}$ )		$\gamma$ , p	35

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$E_x$ (MeV $\pm$ keV)	$J^\pi; T$	$\tau_m$ (psec) or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
(26.8)			t	<a href="#">15</a>
$\approx 37$			$\gamma, p$	<a href="#">35</a>

<sup>a</sup> See also Tables [15.5](#), [15.6](#) and [15.12](#).

<sup>b</sup> See [Table 15.2](#).

<sup>c</sup> See, however, ([1976KO11](#)).