

Table 13.4 from (1981AJ01): Energy levels of  $^{13}\text{C}$  <sup>a</sup>

$E_x$ in $^{13}\text{C}$ (MeV $\pm$ keV)	$J^\pi; T$	$\tau_m$ or $\Gamma_{\text{c.m.}}$ (keV)	Decay	Reactions
g.s.	$\frac{1}{2}^-; \frac{1}{2}$		stable	7, 8, 9, 13, 15, 16, 17, 24, 25, 26, 27, 29, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 47, 48, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 65, 66, 67, 68, 69, 70, 71, 75, 77, 78, 79, 80, 81, 83, 85, 86, 87, 88, 89, 91, 92, 93, 94
$3.089443 \pm 0.020$	$\frac{1}{2}^+$	$\tau_m = 1.55 \pm 0.15$ fsec	$\gamma$	8, 9, 13, 15, 24, 26, 35, 36, 37, 40, 43, 44, 52, 53, 54, 55, 56, 57, 58, 61, 69, 70, 71, 78, 80, 81, 83, 87, 88, 91
$3.684482 \pm 0.023$	$\frac{3}{2}^-$	$1.59 \pm 0.13$ fsec	$\gamma$	7, 8, 9, 13, 15, 16, 24, 26, 29, 35, 36, 37, 39, 40, 47, 52, 53, 54, 55, 56, 57, 58, 61, 69, 70, 71, 77, 78, 79, 80, 81, 87, 88, 91
$3.853783 \pm 0.022$	$\frac{5}{2}^+$	$12.5 \pm 0.3$ psec	$\gamma$	8, 9, 13, 15, 24, 26, 35, 36, 37, 38, 39, 40, 42, 43, 44, 52, 53, 54, 55, 56, 57, 58, 61, 69, 70, 71, 80, 81, 87, 91
$6.864 \pm 3$	$\frac{5}{2}^+$	$\Gamma = 6$	$\gamma, n$	7, 8, 9, 14, 15, 24, 26, 30, 35, 36, 52, 55, 57, 58, 81
$7.492 \pm 10$	$(\frac{7}{2}^+)$	$< 5$		7, 9, 14, 24, 26, 36, 43, 53, 58, 80, 81
$7.547 \pm 3$	$\frac{5}{2}^-$	$1.2 \pm 0.3$	$\gamma, n$	7, 9, 14, 16, 24, 26, 30, 35, 36, 47, 49, 52, 53, 55, 57, 58, 79, 80, 81, 87
$7.686 \pm 6$	$\frac{3}{2}^+$	$70 \pm 5$	$\gamma, n$	14, 24, 26, 30, 36, 49, 58, 81
$8.2 \pm 100$	$\frac{3}{2}^+$	$1000 \pm 300$	$\gamma, n$	9, 30, 36, 49
$8.860 \pm 20$	$\frac{1}{2}^-$	$150 \pm 30$	$\gamma, n$	24, 30, 36, 47, 49, 52, 57, 77, 80, 81, 87, 88
$9.4998 \pm 0.1$	$\frac{9}{2}^+$	5	n	7, 9, 14, 24, 30, 35, 36, 52, 53, 57, 80, 81, 87

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$E_x$ in $^{13}\text{C}$ (MeV $\pm$ keV)	$J^\pi; T$	$\tau_m$ or $\Gamma_{\text{c.m.}}$ (keV)	Decay	Reactions
9.897 $\pm$ 5	$\frac{3}{2}^-$	26 $\pm$ 3	$\gamma, n$	7, 14, 24, 30, 36, 47, 49, 51, 52
10.46		200	n	30
10.753 $\pm$ 4	$\frac{7}{2}^-$	55 $\pm$ 2	n	14, 24, 30, 36, 81
10.818 $\pm$ 5	$(\frac{5}{2}^-)$	24 $\pm$ 3	n	7, 9, 14, 24, 36, 81
10.996 $\pm$ 6	$\frac{1}{2}^+$	37 $\pm$ 4	$\gamma, n, \alpha$	4, 24, 30, 36, 49, 80, 81
11.080 $\pm$ 5	$(\frac{1}{2}^-)$	< 4	$\gamma, n, \alpha$	4, 24, 30, 36, 52, 81, 87
11.748 $\pm$ 10		107 $\pm$ 14	n	24, 36, 53, 81
11.851 $\pm$ 5	$(\frac{3}{2}^-)$	68 $\pm$ 4	n	30, 36, 52, 57, 77, 80, 87
11.95 $\pm$ 40	$(\frac{5}{2}, \frac{7}{2})^+$	$\approx$ 200	n, $\alpha$	4, 6, 36, 55, 80
12.106 $\pm$ 5	$> \frac{7}{2}$	81 $\pm$ 8	n, $\alpha$	4, 30, 36, 81
(12.187 $\pm$ 10)		110 $\pm$ 50		52
12.438 $\pm$ 12	$\frac{7}{2}^-$	160 $\pm$ 40	n, $\alpha$	4, 30, 52, 87
(13.28)	$(\frac{3}{2}^-)$	340	$\alpha$	6
13.0 $\pm$ 1000		broad	$\gamma, n$	49
13.41	$(\frac{9}{2}^-)$	35 $\pm$ 3	n, $\alpha$	4, 6
13.56	$(\frac{3}{2}, \frac{5}{2})^+$	$\approx$ 600	n, $\alpha$	4, 6, 30
13.76	$(\frac{5}{2}, \frac{3}{2})^+$	$\approx$ 300	n, $\alpha$	4, 6
14.12	$(\frac{5}{2}^-)$	$\approx$ 150	n, $\alpha$	4, 6
14.390 $\pm$ 15	$(\frac{1}{2}, \frac{5}{2})^-$	280 $\pm$ 70	n, $\alpha$	4, 52
14.582 $\pm$ 10		230 $\pm$ 50	n, $\alpha$	4, 52
14.983 $\pm$ 10	$(\frac{3}{2}^+)$	380 $\pm$ 60	n, $\alpha$	4, 52
15.1082 $\pm$ 1.2 <sup>b</sup>	$\frac{3}{2}^-; \frac{3}{2}$	5.49 $\pm$ 0.25	$\gamma, n, \alpha$	4, 6, 7, 24, 49, 52, 53, 57, 87
15.526 $\pm$ 11		150 $\pm$ 30	n, $\alpha$	4, 52
16.080 $\pm$ 7		150 $\pm$ 15	n, $\alpha$	4, 52
16.15 $\pm$ 50		230	n, $\alpha$	4, 52, 53
16.95 $\pm$ 50		330	n, $\alpha$	4
17.36 $\pm$ 100		190	n, $\alpha$	4, 53
17.699 $\pm$ 5		170	n, $\alpha$	4, 53
18.30 $\pm$ 50		300	n, $\alpha$	4

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$E_x$ in $^{13}\text{C}$ (MeV $\pm$ keV)	$J^\pi; T$	$\tau_m$ or $\Gamma_{\text{c.m.}}$ (keV)	Decay	Reactions
18.699 $\pm$ 5		100 $\pm$ 15	$\gamma$ , n, p, $\alpha$	4, 50, 52
19.5		$\approx$ 450	n	30
19.9		$\approx$ 600	n, p, d	18, 19
20.021 $\pm$ 13		230 $\pm$ 30	( $\gamma$ ), n, (p), d, $\alpha$	17, 18, 22, 50, 52
20.429 $\pm$ 8		116 $\pm$ 10	( $\gamma$ ), n, p, d	17, 18, 19, 32, 52
21.28 $\pm$ 15		159 $\pm$ 15	n, p, d	18, 19, 53, 55
21.466 $\pm$ 8		270 $\pm$ 20		52
21.81 $\pm$ 20		114 $\pm$ 21	n, d	18, 55
22		$\approx$ 1000	n, d	18, 52, 53
23		$\approx$ 1000	n	30
24		$\approx$ 4000	$\gamma$ , n, p	49, 50, 52
25.5		broad	$\gamma$ , p	50, 52
26.8			n, d	18
27.5			n, d	18, 52
30			$\gamma$ , n	49, 52

<sup>a</sup> See also Tables 13.5 and 13.6.

<sup>b</sup> See Table 13.7.