

Table 13.4 from (1976AJ04): Energy levels of ^{13}C ^a

E_x (Mev \pm keV)	$J^\pi; T$	τ_m or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
g.s.	$\frac{1}{2}^-; \frac{1}{2}$		stable	9, 10, 11, 12, 14, 16, 17, 18, 25, 26, 27, 28, 29, 30, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 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, 82, 83, 84, 86, 87, 88, 89, 90, 91
3.0884 ± 0.2	$\frac{1}{2}^+$	$\tau_m = 1.55 \pm 0.15$ fsec	γ	9, 10, 11, 14, 16, 25, 27, 31, 37, 38, 39, 42, 45, 49, 53, 55, 56, 57, 58, 59, 60, 64, 65, 72, 73, 75, 76, 78, 82, 83, 86
3.68437 ± 0.14 ^b	$\frac{3}{2}^-$	1.59 ± 0.13 fsec	γ	9, 10, 12, 14, 16, 17, 25, 27, 30, 38, 39, 41, 45, 48, 49, 53, 56, 57, 58, 60, 64, 65, 66, 72, 73, 74, 75, 76, 82, 83, 86, 88
3.85362 ± 0.15 ^b	$\frac{5}{2}^+$	12.2 ± 0.4 psec	γ	10, 11, 14, 16, 25, 27, 37, 38, 39, 40, 41, 42, 45, 56, 57, 58, 60, 64, 65, 72, 73, 76, 82, 86
6.864 ± 3	$\frac{5}{2}^+$	$\Gamma = 6$ keV	γ, n	9, 10, 15, 16, 25, 27, 31, 37, 38, 53, 57, 58, 75, 76, 82
7.492 ± 10	$(\frac{7}{2}^+)$	< 5		9, 15, 25, 27, 37, 38, 58, 75, 76, 82
7.547 ± 3	$\frac{5}{2}^-$	1.2 ± 0.3	γ, n	9, 15, 25, 27, 31, 37, 38, 48, 53, 57, 58, 75, 76, 82
7.677 ± 12	$\frac{3}{2}^+$	70 ± 10	n	15, 25, 27, 31, 37, 38, 76
8.2 ± 100	$\frac{3}{2}^+$	1000 ± 100	n	31, 38
8.860 ± 20	$\frac{1}{2}^-$	150 ± 20	γ, n	25, 27, 31, 38, 48, 53, 57, 72, 75, 76, 82, 83
9.498 ± 4	$(\frac{3}{2}^-)$	5	n	9, 15, 25, 27, 31, 32, 37, 38, 57, 75, 76, 82
9.897 ± 5	$\frac{3}{2}^-$	26 ± 3	γ, n	9, 15, 25, 27, 31, 32, 38, 48, 53, 76
10.46		200	n	32
10.753 ± 4	$\frac{7}{2}^-$	55 ± 2	n	15, 25, 31, 32, 38, 76

Table 13.4 from (1976AJ04): Energy levels of ^{13}C ^a (continued)

E_x (MeV \pm keV)	$J^\pi; T$	τ_m or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
10.818 \pm 5	$(\frac{5}{2}^-)$	24 \pm 3	n	9, 15, 25, 32, 38, 76
10.996 \pm 6	$(\frac{1}{2}^+)$	37 \pm 4	n, α	5, 25, 31, 32, 38, 76
11.080 \pm 5	$(\frac{1}{2}^-)$	< 4	γ , n, α	5, 25, 31, 32, 38, 53, 76, 82
11.748 \pm 10		107 \pm 14	n	25, 31, 38, 53, 76, 82
11.851 \pm 5	$(\frac{3}{2}^-)$	68 \pm 4	n	12, 32, 38, 53, 57, 74, 75, 82
11.97 \pm 40 ^c	$(\frac{7}{2}^-, \frac{5}{2}^+)$	\approx 200	n, α	5, 8, 9, 38
12.106 \pm 5	$(> \frac{7}{2})$	81 \pm 8	n, α	5, 9, 31, 32, 38, 76
12.40 \pm 50	$\frac{7}{2}^-$	150	n, α	5, 31, 32, 82
(13.28)	$(\frac{3}{2}^-)$	340	α	8
13.3 \pm 1000		5000 \pm 1000	γ , n	50
13.41	$(\frac{9}{2}^-)$	35 \pm 3	n, α	5, 8, 9
13.56	$(\frac{3}{2}^+, \frac{5}{2}^+)$	500	n, α	5, 8, 31, 32
13.76	$(\frac{5}{2}^+, \frac{3}{2}^+)$	300	n, α	5, 8
14.12 ^b	$(\frac{5}{2}^-)$	\approx 200	n, α	5, 8, 9
14.39 \pm 100	$(\frac{1}{2}^-, \frac{5}{2}^-)$	260	n, α	5, 9
14.63		210	n, α	5, 9
14.94 \pm 50	$(\frac{3}{2}^+)$	380	n, α	5
15.106 \pm 2 ^d	$\frac{3}{2}^-; \frac{3}{2}$	5.0 \pm 0.7	γ , n, α	9, 25, 31, 53, 57, 66, 82
15.55 \pm 50		220	n, α	5
16.01		210	n, α	5, 31
16.15 \pm 50		230	n, α	5, 31, 53
16.95 \pm 50		330	n, α	5, 53
17.36 \pm 100		190	n, α	5
17.71 \pm 50		170	n, α	5, 53
18.30 \pm 50		300	n, α	5, 53
18.75 \pm 30		70	n, α	5
19.5	$(\frac{1}{2}, \frac{3}{2}, \frac{5}{2})^-$	\approx 450	n, d	19, 31, 32
19.9		\approx 600	n, p, d	19, 20
20.24		\approx 200	(γ), n, d, α	18, 19, 23
20.52 \pm 10		116 \pm 10	(γ), n, p, d	18, 19, 20
21.28 \pm 15		159 \pm 15	n, p, d	19, 20

Table 13.4 from (1976AJ04): Energy levels of ^{13}C ^a (continued)

E_x (MeV \pm keV)	$J^\pi; T$	τ_m or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
21.81 \pm 20		114 \pm 12	n, d	19
\approx 22 ^e		\approx 7000	γ , n	50
22.23		broad	n, d	19, 53
23		\approx 1000	n	31
23.5 ^e		\approx 3000	γ , p	51
25.5		broad	γ , n, p	50, 51, 53
26.8			n, d	19
27.5			n, d	19, 53

^a See also Tables 13.5, 13.6 and 13.7.

^b See (1969AL17).

^c May be unresolved.

^d See also Table 13.7.

^e In $^{13}\text{C}(e, e)$ the giant resonance is reported split into two peaks near $E_x = 20.5$ and 24.5 MeV, with widths of ≈ 3 and ≈ 4 MeV and $T = \frac{1}{2}$ and $\frac{3}{2}$, respectively (1971BE51): see reaction 53 and see also Table 13.21.