

Table 13.4 from (1991AJ01): Energy levels of ^{13}C ^a

E_x in ^{13}C (MeV \pm keV)	$J^\pi; T$	τ_m or $\Gamma_{\text{c.m.}}$ (keV)	Decay	Reactions
g.s.	$\frac{1}{2}^-; \frac{1}{2}$		stable	5, 6, 7, 8, 10, 11, 13, 14, 15, 19, 20, 21, 22, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 67, 68, 69, 70, 71, 72, 73
3.089443 ± 0.020	$\frac{1}{2}^+$	$\tau_m = 1.55 \pm 0.15 \text{ fs}^c$	γ	5, 6, 7, 8, 11, 13, 19, 20, 21, 22, 27, 28, 29, 31, 32, 35, 36, 40, 41, 42, 43, 44, 45, 46, 47, 50, 59, 60, 61, 62, 63, 64, 65, 67, 69, 71
3.684507 ± 0.019	$\frac{3}{2}^-$	$1.59 \pm 0.13 \text{ fs}^c$	γ	5, 6, 7, 8, 11, 13, 14, 19, 20, 21, 22, 27, 28, 29, 31, 32, 34, 37, 40, 41, 42, 43, 44, 45, 46, 47, 48, 59, 60, 61, 62, 63, 64, 67, 69
3.853807 ± 0.019	$\frac{5}{2}^+$	$12.4 \pm 0.2 \text{ ps}^d$	γ	5, 6, 7, 8, 11, 13, 19, 20, 21, 27, 28, 29, 30, 32, 34, 37, 40, 41, 42, 43, 44, 45, 46, 50, 59, 60, 62, 64, 69, 71
6.864 ± 3^f	$\frac{5}{2}^+$	$\Gamma = 6$	γ, n	5, 6, 7, 8, 11, 12, 13, 19, 21, 23, 27, 28, 29, 40, 43, 45, 46, 59, 61, 64, 67
7.492 ± 10	$(\frac{7}{2}^+)$	< 5		5, 8, 12, 14, 19, 21, 28, 40, 45, 46, 63, 64

Table 13.4 from (1991AJ01): Energy levels of ^{13}C ^a (continued)

E_x in ^{13}C (MeV \pm keV)	$J^\pi; T$	τ_m or $\Gamma_{\text{c.m.}}$ (keV)	Decay	Reactions
7.547 ± 3	$\frac{5}{2}^-$	1.2 ± 0.3	γ, n	5, 8, 11, 12, 14, 19, 21, 23, 28, 37, 40, 41, 42, 43, 44, 45, 46, 47, 48, 59, 63, 64, 67
7.686 ± 6	$\frac{3}{2}^+$	70 ± 5	γ, n	11, 12, 19, 21, 28, 29, 38, 43, 45, 46, 59, 64
8.2 ± 100	$\frac{3}{2}^+$	1100 ± 300	γ, n	8, 23, 28, 29, 30, 43, 59
8.860 ± 20	$\frac{1}{2}^-$	150 ± 30	γ, n	19, 23, 28, 37, 40, 41, 43, 45, 46, 59, 60, 63, 64, 67
9.4998 ± 0.1^b	$\frac{9}{2}^+$	≤ 5	γ, n	5, 8, 12, 19, 23, 27, 28, 29, 30, 40, 43, 45, 46, 59, 63, 64, 67
9.897 ± 5	$\frac{3}{2}^-$	26 ± 3	γ, n	5, 11, 12, 19, 23, 28, 37, 38, 40, 43, 45, 59, 64
10.46		200	n	23
10.753 ± 4	$\frac{7}{2}^-$	55 ± 2	γ, n	5, 12, 19, 23, 28, 29, 40, 43, 45, 64
10.818 ± 5	$(\frac{5}{2}^-)$	24 ± 3	γ, n	5, 12, 19, 23, 28, 40, 43, 45, 64
10.996 ± 6	$\frac{1}{2}^+$	37 ± 4	γ, n, α	2, 19, 23, 28, 38, 43, 59, 64
11.080 ± 5	$\frac{1}{2}^-$	< 4	γ, n, α	2, 19, 23, 28, 40, 43, 45, 46, 59, 64, 67
11.748 ± 10	$\frac{3}{2}^-$	110 ± 15	n	19, 23, 28, 43, 59, 64
11.848 ± 4	$\frac{7}{2}^+$	68 ± 4	γ, n	5, 23, 28, 40, 41, 43, 45, 46, 60, 67
11.95 ± 40	$\frac{5}{2}^+$	500 ± 80	n, α	2, 23, 28, 40, 43
12.106 ± 5	$\frac{3}{2}^+$	540 ± 70	$(\gamma), n, (\alpha)$	2, 23, 28, 38, 43
12.13 ± 50	$\frac{5}{2}^-$	80 ± 30	n, (α)	2, 5, 23, 64
12.14 ± 70	$\frac{1}{2}^+$	430 ± 70	n, (α)	2, 23, 43
12.187 ± 10	$\frac{3}{2}^-$	150 ± 40	$\gamma, n, (\alpha)$	2, 23, 40

Table 13.4 from (1991AJ01): Energy levels of ^{13}C ^a (continued)

E_x in ^{13}C (MeV \pm keV)	$J^\pi; T$	τ_m or $\Gamma_{\text{c.m.}}$ (keV)	Decay	Reactions
12.438 \pm 12	$\frac{7^-}{2}$	140 \pm 30	γ, n, α	2, 23, 40, 43, 67
13.0 \pm 1000		broad	γ, n	38
(13.28)	$(\frac{3^-}{2})$	340	α	4, 43, 59
13.41	$(\frac{9^-}{2})$	35 \pm 3	n, α	2, 4, 5, 43
13.57	$\frac{7^-}{2}$	620 \pm 50	n, α	2, 4, 23, 43
13.76	$(\frac{5}{2}, \frac{3}{2})^+$	\approx 300	n, α	2, 4, 43
14.13	$\frac{3^-}{2}$	\approx 150	n, α	2, 4, 5, 23, 43
14.390 \pm 15	$(\frac{1}{2}, \frac{5}{2})^-$	280 \pm 70	γ, n, α	2, 40, 43
14.582 \pm 10	$(\frac{7^+}{2}, \frac{9^+}{2})$	230 \pm 40	γ, n, α	2, 40, 43
14.983 \pm 10	$(\frac{7^-}{2})$	380 \pm 60	γ, n, α	2, 23, 40, 43
15.1082 \pm 1.2 ^e	$\frac{3^-}{2}; \frac{3}{2}$	5.49 \pm 0.25	γ, n, α	2, 4, 19, 23, 40, 43, 45, 59, 67
15.27	$\frac{9^+}{2}$		n	23
15.526 \pm 11	$(\frac{3^-}{2})$	150 \pm 30	γ, n, α	2, 23, 4, 43
16.080 \pm 7	$(\frac{7^+}{2})$	150 \pm 15	γ, n, α	2, 23, 40, 41, 43, 45
16.15 \pm 50	$(\frac{5^-}{2})$	230	n, α	2, 43
(16.183 \pm 28)		(40 \pm 20)	γ	40
16.95 \pm 50		330	n, α	2, 43
17.36 \pm 100		190	n, α	2, 43
17.533 \pm 3	$(T = \frac{3}{2})$	17 \pm 6	n	23
17.699 \pm 5	$(\frac{3}{2}, \frac{5}{2})$	170	n, α	2, 43
(17.92 \pm 50)				41
18.082 \pm 3	$(T = \frac{3}{2})$	12 \pm 7	n	23
18.30 \pm 50		300	n, α	2, 43
(18.497 \pm 10)		(91 \pm 23)	γ	40
18.699 \pm 5	$(\frac{3^+}{2}, \frac{5^+}{2})$	100 \pm 15	$\gamma, n, (p), \alpha$	2, 39, 40, 43
19.51	$(\frac{5^-}{2})$	\geq 500	n, d	16, 23, 43
19.9		\approx 600	n, p, d	16, 43
20.021 \pm 13		230 \pm 30	γ	40, 43
20.057 \pm 4		11 \pm 8	n	23

Table 13.4 from (1991AJ01): Energy levels of ^{13}C ^a (continued)

E_x in ^{13}C (MeV \pm keV)	$J^\pi; T$	τ_m or $\Gamma_{\text{c.m.}}$ (keV)	Decay	Reactions
(20.11)	$(\frac{1}{2}^-)$	1090	n	23
(20.11)	$(\frac{5}{2}^+)$	440	n	23
20.20 \pm 70	$(\frac{7}{2}^+)$	560 \pm 90	γ , n, d, α	15, 16, 18, 22, 23
(20.30)	$(\frac{7}{2}^-)$	1560	n	23
(20.34)	$(\frac{9}{2}^+)$	320	n	23
20.429 \pm 8		115 \pm 25	γ , n, p, d	16, 40, 43
20.52 \pm 70		510 \pm 70	γ , n, p	16, 23
20.6 \pm 800		5600 \pm 400	γ , n, d	15, 22, 38
(20.93 \pm 100)		(240 \pm 100)		43
21.28 \pm 15		159 \pm 15	n, p, d	16, 17, 43
21.466 \pm 8	$(\frac{7}{2}^+, \frac{9}{2}^+)$	270 \pm 20	γ	40, 43
21.703 \pm 4	$(T = \frac{3}{2})$	18 \pm 9	n	23, 27
21.81 \pm 20	$(\geq \frac{5}{2})$	114 \pm 21	n, d	16, 43
22.2 \pm 100	$(\leq \frac{5}{2})$	1100 \pm 500	n, d	16, 43
23	$(\leq \frac{5}{2})$	\approx 1000	n	23, 43
24		\approx 4000	γ , n, p	38
(26)		broad	γ , p	39
26.8			n, d	16
27.5		\approx 1000	n, p, d, t	16
30			γ , n	38

^a See also Table 13.5.

^b See footnote ^b in Table 13.10.

^c From Table 13.5 in (1981AJ01).

^d Weighted mean of values displayed in Table 13.5 in (1981AJ01) and in (1981RU04).

^e See Table 13.6.

^f See also footnote ^c in Table 13.11.