

Table 12.7 from (1980AJ01): Energy levels of ^{12}C ^a

E_x in ^{12}C (MeV \pm keV)	$J^\pi; T$	$\Gamma_{\text{c.m.}}$ (keV)	Decay	Reactions
g.s.	$0^+; 0$	—	stable	4, 10, 11, 12, 13, 21, 22, 23, 24, 25, 26, 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, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 113
4.43891 ± 0.31	$2^+; 0$	$(10.8 \pm 0.6) \times 10^{-6}$	γ	4, 10, 11, 12, 13, 21, 22, 23, 25, 26, 30, 31, 32, 35, 36, 37, 44, 46, 47, 48, 50, 52, 53, 54, 56, 57, 58, 59, 60, 65, 69, 70, 71, 72, 73, 74, 75, 84, 85, 86, 88, 90, 91, 92, 94, 95, 96, 97, 100, 102, 111, 112
7.6542 ± 0.15	$0^+; 0$	$(8.5 \pm 1.0) \times 10^{-3}$	γ, π, α	4, 10, 11, 12, 13, 21, 23, 31, 36, 44, 47, 48, 52, 53, 54, 57, 69, 73, 74, 75, 86, 91, 95, 96, 97
9.641 ± 5	$3^-; 0$	34 ± 5	γ, α	4, 10, 11, 12, 21, 23, 30, 31, 35, 44, 46, 47, 48, 50, 52, 53, 54, 57, 59, 74, 75, 83, 86, 95, 96, 97
10.3 ± 300	$(0^+); 0$	3000 ± 700	α	10, 36, 47, 69
10.844 ± 16	$1^-; 0$	315 ± 25	α	10, 11, 21, 30, 31, 47, 48, 50, 52, 53, 54, 83
(11.16 ± 50)	$(2^+); 0$	430 ± 80		30, 31
11.828 ± 16	$2^-; 0$	260 ± 25	α	11, 21, 23, 30, 31, 47, 50, 52, 53, 54, 83

Table 12.7 from (1980AJ01): Energy levels of ^{12}C ^a (continued)

E_x in ^{12}C (MeV \pm keV)	$J^\pi; T$	$\Gamma_{\text{c.m.}}$ (keV)	Decay	Reactions
12.710 \pm 6	1 ⁺ ; 0	(18.1 \pm 2.8) $\times 10^{-3}$	γ, α	21, 22, 23, 30, 31, 44, 47, 48, 50, 52, 53, 54, 69, 72, 73, 74, 75, 85, 86
13.352 \pm 17	(2 ⁻); 0	375 \pm 40	α	21, 30, 31, 54, 86
14.083 \pm 15	4 ⁺ ; 0	258 \pm 15	α	21, 48, 52, 53, 54, 57, 60, 85, 86, 91, 95, 97
15.110 \pm 3	1 ⁺ ; 1	(42.0 \pm 1.7) $\times 10^{-3}$	γ, α	21, 22, 23, 30, 31, 37, 44, 46, 48, 50, 52, 69, 70, 72, 73, 74, 85, 86
(15.4 \pm 100)		2000 \pm 200		48, 52, 53
16.1067 \pm 0.5	2 ⁺ ; 1	5.2 ^{+0.5} _{-0.3}	γ, p, α	13, 21, 27, 30, 31, 37, 44, 52, 70, 72, 73, 74, 85, 91
16.58	2 ⁻ ; 1	300	γ, p, α	21, 27, 29, 30, 44, 52
17.23	1 ⁻ ; 1	1150	γ, p, α	27, 29, 30, 37
17.76 \pm 20	0 ⁺ ; 1	80 \pm 20	p, α	13, 27, 29, 91
18.13	(1 ⁺ ; 0)	600 \pm 100	γ, p	27, 44
(18.27 \pm 50)	(4 ⁻ ; 0)	280 \pm 50		31
18.35 \pm 30	3 ⁻ ; (1)	220 \pm 50	γ, p, α	27, 31, 48
18.40 \pm 60	0 ⁻ ; (1)	43	p	29, 52
(18.6 \pm 100)	(3 ⁻)	300		44
18.71	($T = 1$)	100	p, α	27
18.80 \pm 40	2 ⁺ ; 1	100 \pm 10	$\gamma, \text{n}, \text{p}$	27, 28, 29
19.25	(1 ⁻ ; 1)	1100	$\gamma, \text{n}, \text{p}, \alpha$	27, 28, 29, 31, 44, 46
19.40	(2 ⁺ ; 0)	\approx 800	γ, p, α	27, 29, 44, 46, 48, 86
19.56 \pm 40	(4 ⁻ ; 1)	400 \pm 60		31, 48, 52
19.71	1 ⁺	230 \pm 35	n, p	28, 29
19.91		370	p	29
20.27 \pm 50		140 \pm 50	n, p	28, 29, 48
20.5 \pm 100	(3 ⁺ ; 1)	180	γ, p, α	21, 27, 44, 46, 86
20.6 \pm 100	(3 ⁻ ; 1)	200 \pm 40	$\gamma, \text{n}, \text{p}, \alpha$	27, 28, 29, 31, 46, 48
20.98		270	n, p	28

Table 12.7 from (1980AJ01): Energy levels of ^{12}C ^a (continued)

E_x in ^{12}C (MeV \pm keV)	$J^\pi; T$	$\Gamma_{\text{c.m.}}$ (keV)	Decay	Reactions
21.60 \pm 60	2 ⁺	1200 \pm 150	γ, n, p, α	27, 28, 29, 44, 48, 52, 53
21.95 \pm 150	1 ⁻ ; 1	800 \pm 100		44, 48
22.40 \pm 40	1 ⁻ ; 1	275 \pm 40	γ, n, p	31, 48, 53, 86
22.6	1 ⁻ ; 1	3200	γ, n, p, α	27, 38, 39, 44, 48
23.05	(2 ⁻ ; 1)	60	n, p	28
23.52 \pm 30	1 ⁻ ; 1	230 \pm 80	γ, n, p, α	13, 27, 28, 48, 86
23.92 \pm 80	(1 ⁻ ; 1)	400 \pm 100	n, p	28, 48
24.43		100	n, p	28, 29
24.92		920	n, p	28
(25.24)		165	n, p	28
25.3 \pm 150	(1 ⁻ ; 1)	510 \pm 100	n, p	28, 48
25.4	(1 ⁻ ; 1)	\approx 2000	γ, n, p	27, 38, 39, 44, 50, 52, 53
25.95		\approx 400	n, d, α	15, 17, 19, 28, 48
26.8		270	n, p, d, α	17, 19, 28
27.0 \pm 300	(1 ⁻ ; 1)	1400 \pm 200	γ, p	27, 48, 50, 53
27.5950 \pm 2.4	0 ⁺ ; 2	\leq 30		13, 80
27.9		\approx 350	$\gamma, n, p, ^3\text{He}$	5, 27, 50
28.2	1 ⁻ ; 1	1600	$\gamma, ^3\text{He}$	4
28.83 \pm 40		1540 \pm 90	$\gamma, p, d, ^3\text{He}, \alpha$	4, 19, 27, 53
29.4 \pm 300		1400 \pm 200	$\gamma, n, p, t, ^3\text{He}$	8, 27, 48
29.63 \pm 50	$T = 2$	\lesssim 200		80
30.29 \pm 30		1960 \pm 150	$\gamma, ^3\text{He}$	4
31.16 \pm 30		2100 \pm 150	$\gamma, ^3\text{He}$	4
32.29 \pm 40		1320 \pm 230	$\gamma, ^3\text{He}$	4
33.47 \pm 210		1930 \pm 50	$\gamma, ^3\text{He}$	4
35.7 \pm 700			γ, p	39
b				

^a See also Tables 12.8, 12.12 and 12.14.

^a See also reaction 2.